The Relationship Between Balanced Time Perspective and Mental Health: Mechanisms and Theoretical Framework

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Abstract

Time perspective (TP) is the essential psychological temporal framework through which individuals categorize, organize, and manage their life and social experiences. In today' s fast-paced and highly competitive society, seeking a balance among past, present, and future time perspectives is considered an important approach to optimizing individual social adaptation, enhancing well-being, and promoting mental health. However, due to ambiguous conceptual orientations, limited measurement methods, and other factors, existing research on the relationship between balanced time perspective and mental health is rather complex, the underlying mechanisms remain unclear, and there is a lack of theoretical frameworks from a macro perspective. Through a systematic review of existing research and by examining different conceptual orientations of balanced time perspective, we integrate and propose a dual-pathway theoretical model of balanced time perspective, which includes both direct and indirect pathways through which time-switching orientation and overall health orientation of balanced time perspective influence mental health, as well as potential boundary conditions. Future research should distinguish between different conceptual orientations of balanced time perspective and conduct extended studies on each separately, with a particular focus on developing measurement tools for the time-switching orientation of balanced time perspective, and deepening theoretical and empirical investigations into balanced time perspective and mental health within the Chinese cultural context.

Full Text

Balanced Time Perspective and Mental Health: Mechanisms and Theoretical Framework

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Abstract
Time Perspective (TP) is a fundamental psychological temporal framework through which individuals classify, organize, and manage their life and social experiences. In today' s fast-paced and highly competitive society, achieving balance among past, present, and future time perspectives is considered essential for optimizing social adaptation, enhancing well-being, and promoting mental health. However, research on the relationship between Balanced Time Perspective (BTP) and mental health remains fragmented, with unclear mechanisms and a lack of macro-level theoretical frameworks, primarily due to ambiguous conceptual orientations and limited measurement methods. By reviewing existing studies and examining different conceptual orientations of BTP, this paper integrates a dual-pathway theoretical model of BTP that encompasses both direct and indirect pathways linking time-shift orientation and general health orientation BTP to mental health, along with potential boundary conditions. Future research should distinguish between these different conceptual orientations of BTP, develop measurement tools for time-shift orientation BTP, and deepen theoretical and empirical investigations into BTP and mental health within Chinese cultural contexts.

Keywords: time perspective, balanced time perspective, mental health
Classification: B842

1 Introduction

Time is embedded in all human thought and behavior, serving as a crucial psychological reference for organizing, constructing, and interpreting the past, present, and future (Mohammed & Nadkarni, 2011). In psychology, the variable used to describe individuals' psychological temporal differences across past, present, and future is called Time Perspective (TP). According to Zimbardo and Boyd' s (1999) TP theory, TP represents an adaptive process to external social and cultural environments that broadly influences behavioral choices and mental health. How individuals organize past events, consider future goals, and act in the present is particularly vital for physical and psychological well-being, making the relationship between TP and mental health a focus of extensive research (Li & Lyu, 2022a; Diaconu-Gherasim et al., 2023; Webster et al., 2021; Zong et al., 2022). Currently, researchers widely agree that seeking balance

among past, present, and future TP represents the optimal approach for enhancing physiological functioning, strengthening social adaptation, and promoting mental health (Boniwell et al., 2010). Consequently, the relationship between Balanced Time Perspective (BTP) and mental health has become a prominent research topic. Nevertheless, significant deficiencies persist in this field, including conceptual misunderstandings and misapplications stemming from unclear conceptual orientations, as well as methodological limitations that rely solely on single-concept-orientation measurements of BTP. These issues hinder both theoretical development and practical applications of BTP research.

Addressing these concerns, the present study distinguishes between different conceptual orientations of BTP, examines their relationships with mental health, and constructs a dual-pathway theoretical model of BTP and mental health. This framework aims to provide guidance for future research on BTP conceptual development, measurement tool construction, and mechanisms underlying relationships with relevant psychological variables.

1.1 Conceptual Orientations of BTP

The BTP concept evolved from TP research. Past, future, and present TP constitute essential psychological temporal frameworks for classifying, organizing, and managing life and social experiences, describing how individuals recall the past, anticipate the future, and live in the present (Zimbardo & Boyd, 1999). TP can function as both an ongoing temporal cognitive process—the sum of psychological past and future within a specific timeframe—and as a stable behavioral disposition. When individuals habitually use or overuse a particular temporal orientation, they develop trait-like temporal biases (Lewin, 1951; Lyu & Huang, 2005; Stolarski et al., 2020). Zimbardo and Boyd (1999) identified five common TP dimensions: Past Negative (PN) and Past Positive (PP) reflect negative and negative cognitive attitudes toward past experiences, respectively; Present Hedonistic (PH) reflects preference for immediate pleasure and enjoyment; Present Fatalistic (PF) measures the tendency to feel unable to control one' s life and submit to fate; and Future (F) reflects the capacity to think about and plan for future long-term goals. All five dimensions have demonstrated close relationships with well-being-related variables and adaptive behaviors (Boniwell et al., 2010; Cunningham et al., 2015; Diaconu-Gherasim et al., 2023).

BTP was proposed to contrast with specific temporal biases and construct an optimal TP pattern for personal well-being and social adaptation. Zimbardo and Boyd (1999) first conceptualized BTP as the process of adaptively exhibiting appropriate temporal insight according to social life circumstances, rather than rigidly favoring a specific temporal orientation. Zimbardo (2002) further proposed that optimal TP involves the joint participation and flexible operation of past, present, and future orientations—the ability to shift adaptively according to situational demands. Boniwell and Zimbardo (2004) regarded temporal shifting flexibility as the core component of BTP, suggesting that overcoming the limitations of specific temporal biases to achieve BTP is key to quality of

life. However, this theoretical concept proved difficult to operationalize in empirical research. Consequently, Zimbardo and Boyd (2008) redefined BTP as an optimal combination pattern of the five TP dimensions: relatively high levels of Past Positive, Present Hedonistic, and Future orientations, combined with relatively low levels of Past Negative and Present Fatalistic orientations. This optimal combination pattern essentially measures a general healthy temporal orientation: a combination of high adaptive TP and low maladaptive TP.

Additionally, Webster (2011) defined BTP as individuals' tendency to think about the past and future frequently and equally, measuring BTP in practice by combining Past Positive and Future Positive TP. In summary, BTP conceptual orientations can be divided into two categories: (1) **Time-shift orientation** (also called temporal cognitive flexibility), which concerns the allocation of attentional resources within specific timeframes and requires individuals to exhibit the most suitable TP orientation when adapting to external environmental changes; and (2) **General health orientation**, which treats BTP as an optimal combination pattern of various temporal insights—positively viewing the past and future while fully living in the present. These two orientations are not entirely separate but represent different perspectives on balance. The "balance" in time-shift orientation reflects the cognitive process of shifting among different temporal orientations according to situational demands, whereas the "balance" in general health orientation reflects a relatively stable adaptive behavioral tendency. Time-shift orientation reflects the theoretical conceptualization of BTP, emphasizing flexibility in shifting among temporal dimensions, while general health orientation, as an operationalized conceptual approach, focuses on exploring the adaptive value of optimal combination patterns among TP dimensions.

1.2 Research Methods for BTP

The general health orientation of BTP currently dominates research, with most measurement methods based on this conceptualization. These methods include:

(1) Cut-off-point approach: This method classifies individuals as "balanced" if their scores on the Zimbardo Time Perspective Inventory (ZTPI) fall below the 33rd percentile on Past Negative and Present Fatalistic factors while exceeding the 33rd percentile on Past Positive, Present Hedonistic, and Future factors (Drake et al., 2008). Although this approach aligns relatively well with Zimbardo and Boyd' s (2008) operational definition of BTP, its strict screening criteria identify only a small minority as balanced. Moreover, the cut-off-point approach yields inconsistent results across samples because it classifies balance based on statistical characteristics of the current sample rather than consistent psychological variable differences.

(2) Cluster analysis: This method employs hierarchical cluster analysis on standardized scores from ZTPI's five subscales to identify distinct profiles (Boniwell et al., 2010). Using this approach, Boniwell et al. (2010) classified 179

British university students into four types: Future-oriented, Hedonistic, Negative, and Balanced, subsequently identifying a fifth "Risk-taking" type among 289 Russian university students. Cluster analysis lacks uniform classification standards, and both the extracted types and results depend heavily on sample characteristics, making it difficult to obtain consistent results across different samples, similar to the cut-off-point approach (McKay et al., 2019).

(3) Balanced Time Perspective Scale (BTPS): Webster (2011) argued that present awareness operates on a different scale than past and future awareness—present consciousness spans only a limited timeframe, whereas past and future can extend infinitely. Based on this view, Webster' s BTPS includes only past-oriented and future-oriented dimensions, using sample medians to classify individuals into four types: Time Expansive (or Balanced), Time Restrictive, Futurist, and Reminiscers. Although BTPS' s classification method is straightforward after ignoring the present dimension, both reconstructing the past and anticipating the future occur in the present (Zimbardo & Boyd, 1999). Regardless of whether recalling the past or anticipating the future, individuals can only experience happiness in the present moment (Zimbardo & Boyd, 2008), making the present dimension likely a core factor of BTP (Seema & Sircova, 2013). Furthermore, BTPS' s use of medians as classification criteria is relatively crude, sharing similar disadvantages with cut-off-point and cluster analysis methods, yielding unstable results across samples.

(4) Deviation from Balanced Time Perspective (DBTP): The deviation method (DBTP) is currently the most widely used and effective approach (Stolarski et al., 2020). This method first calculates the difference between individuals' actual scores and optimal scores on the five ZTPI dimensions, then computes the sum of squared differences, and finally applies a square root transformation (Stolarski et al., 2011). The formula is:

$$\mathrm{DBTP} = \sqrt{(o_{\mathrm{PN}} - e_{\mathrm{PN}})^2 + (o_{\mathrm{PP}} - e_{\mathrm{PP}})^2 + (o_{\mathrm{PF}} - e_{\mathrm{PF}})^2 + (o_{\mathrm{PH}} - e_{\mathrm{PH}})^2 + (o_{\mathrm{F}} - e_{\mathrm{F}})^2}$$

In this formula, e_{PN}, e_{PP}, e_{PF}, e_{PH}, and e_{F} represent actual scores for Past Negative, Past Positive, Present Fatalistic, Present Hedonistic, and Future, respectively, while o_{PN}, o_{PP}, o_{PF}, o_{PH}, and o_{F} denote optimal cutoff values for each dimension. Stolarski et al. (2011) proposed that each TP dimension has an optimal cutoff value that maximizes well-being, with balance determined by how closely actual scores approximate these optimal values. DBTP serves as a reverse indicator of BTP, with scores approaching zero representing greater balance. Based on Zimbardo and Boyd' s (2008) cross-cultural database, Stolarski et al. (2011) proposed optimal values of 4.60 for Past Positive, 3.90 for Present Hedonistic, 4.00 for Future, 1.95 for Past Negative, and 1.50 for Present Fatalistic. These cutoff values correspond to the 90th, 80th, 80th, 10th, and 10th percentiles, respectively, in cross-cultural sample data. Following Zimbardo and Boyd' s (2012) database update, the optimal values were revised to 3.67 for Past

Positive, 4.33 for Present Hedonistic, 3.69 for Future, 2.10 for Past Negative, and 1.67 for Present Fatalistic.

Despite its widespread use, DBTP' s optimal cutoff values have faced considerable criticism (Jankowski et al., 2020; McKay et al., 2019). Examining the actual numerical settings, all optimal values fall in the middle rather than at the extremes of the ZTPI scale range (1–5), meaning individuals can score above or below optimal cutoff values. According to Stolarski et al.' s (2011) description, optimal values correspond to maximum well-being, implying that well-being decreases when TP dimension scores are either above or below optimal cutoffs. This suggests an inverted U-shaped relationship between TP and well-being. However, this cutoff definition is ambiguous. For instance, based on definitions of Past Negative and Present Fatalistic, these orientations are clearly maladaptive, suggesting lower scores should be better. Yet the DBTP formula yields poorer balance when individuals score below 1.95 (the optimal value for Past Negative). Furthermore, numerous empirical studies support linear rather than curvilinear relationships between TP and well-being indicators (Jankowski et al., 2020; Li & Lyu, 2022a; Stolarski et al., 2020). Jankowski et al. (2020) compared linear and quadratic regression models examining relationships between TP dimensions and well-being, finding predominantly linear relationships. Quadratic models showed statistical significance only in rare cases and explained far less variance than linear models under equivalent conditions. Consequently, using extreme values (minimum or maximum scores for each dimension) as optimal values appears more reasonable.

In summary, existing research methods primarily measure individuals' overall positive levels of temporal cognition, experience, and behavioral tendencies from a general health orientation perspective, yet virtually none can assess the dynamic shifting process or shifting flexibility of TP (Stolarski et al., 2020; Stolarski & Witowska, 2017). Most current empirical research measures BTP based on general health orientation concepts but interprets BTP' s effects on mental health indicators from a time-shift orientation perspective (Stolarski et al., 2020). This discrepancy highlights the necessity of theoretically distinguishing relationships between these two conceptual orientations and mental health to provide more appropriate guidance for future research.

2 Mechanisms and Theoretical Framework of the BTP-Mental Health Relationship

BTP holds significant value for mental health. From a general health orientation perspective, habitually thinking about the past and future positively while fully engaging in the present can substantially enhance well-being, facilitate growth from past experiences, maintain positive present self-perceptions, and enable appropriate future orientation (Kairys et al., 2017; Sobol-Kwapinska & Jankowski, 2016). From a time-shift orientation perspective, balance hinges on individuals' ability to overcome limitations of specific temporal biases and adopt corresponding temporal strategies based on situational characteristics, with such temporal

orientation coordination considered most adaptive (Boniwell & Zimbardo, 2004; Zimbardo & Boyd, 1999).

Since Boniwell and Zimbardo (2004) introduced BTP into positive psychology, numerous studies have explored relationships between BTP and mental health indicators. Using the ZTPI and DBTP method, BTP has demonstrated significant positive correlations with various aspects of positive mental health outcomes—well-being, including positive affect (Stolarski et al., 2014), gratitude (Zhang et al., 2013), appreciation (Szczesniak & Timoszyk-Tomczak, 2018), psychological well-being (Drake et al., 2008), mindfulness (Rönnlund et al., 2019), life satisfaction (Boniwell et al., 2010; Chen et al., 2021), and emotional intelligence (Stolarski et al., 2011). Studies using other methods support these findings. For example, Sobol-Kwapinska and Jankowski (2016) identified through cluster analysis that balanced individuals (characterized primarily by Past Positive, Future Positive, and present focus) reported the highest positive affect scores. Barsics et al. (2017) examined relationships between BTP and positive affect and emotion regulation using scale-based methods, finding significant positive correlations between BTP and both positive affect and cognitive reappraisal. Additionally, BTP shows significant negative correlations with negative mental health indicators, including anxiety (Akirmak et al., 2019), depression (Mooney et al., 2017), psychological stress (Rönnlund et al., 2018), and post-traumatic stress disorder (Stolarski & Cyniak-Cieciura, 2016). A meta-analysis revealed moderate-to-strong correlations between BTP and mental health indicators (coefficients ranging from 0.35 to 0.65), with BTP explaining approximately 40% of variance in well-being (Stolarski et al., 2020). Research has also examined relationships between personal traumatic experiences and BTP, finding that greater trauma exposure correlates negatively with BTP and that BTP mediates the relationship between trauma experience and optimism (Tomich & Tolich, 2021). These empirical findings support the adaptive value of BTP for mental health.

Although BTP' s benefits for mental health are well-established, the underlying mechanisms remain poorly articulated. Building on Cunningham et al.' s (2015) theoretical framework, this study proposes a dual-pathway theoretical model incorporating both BTP conceptual orientations to provide more appropriate theoretical guidance for future BTP research. Cunningham et al.' s (2015) dual-pathway model proposes that TP influences well-being through top-down (direct) and bottom-up (indirect) pathways. The former emphasizes direct effects of habitual temporal cognitive processes on well-being, while the latter highlights TP' s role in behavioral selection and how behaviors indirectly affect well-being outcomes. Accordingly, relationships between different conceptual orientations of BTP and mental health may also follow top-down and bottom-up patterns (see Figure 1 [Figure 1: see original paper]).

Figure 1. Dual-pathway model of relationships between two BTP orientations and mental health

2.1 Dual-Pathway Model of General Health Orientation BTP

General health orientation BTP can influence mental health through top-down (direct) pathways. Specifically, individuals primarily evaluate life satisfaction based on cognitive experiences of past events (Durayappah, 2011). Through intentional recall of positive events and cognitive reappraisal of negative events, people can directly enhance well-being (Cunningham et al., 2015). Simultaneously, positive anticipation of future events generates and amplifies pleasure, with hopeful futures fostering happiness (Bryant, 2003; Li & Lyu, 2022). Conversely, consistently viewing one' s past and future from negative perspectives tends to elicit more negative emotional experiences (Mckay et al., 2019; Mooney et al., 2017). For instance, both depression and anxiety relate directly to abnormal TP combination patterns. Depression typically stems from excessive rumination on past negative experiences and negative cognition of current situational events (Beck, 2019), reflecting dominance of Past Negative and Present Fatalistic TP (Kaya Lefèvre et al., 2019). Anxiety primarily arises from excessive worry about future uncertainty, which also prevents individuals from enjoying and grounding themselves in the present (Liang et al., 2021), reflecting imbalance between present and future TP (Altan-Atalay & Biriz, 2020). In other words, individuals with higher BTP levels tend to think about the past positively, experience the present fully, and anticipate the future optimistically, thereby maintaining good mental health.

General health orientation BTP can also influence mental health through bottom-up (indirect) pathways. Regarding past orientation, Past Negative tendencies can trigger rumination and aggressive behaviors associated with depressive symptoms and low well-being (Carpenter et al., 2022; Orkibi & Ronen, 2019), whereas Past Positive individuals show higher gratitude tendencies, which in turn enhance life satisfaction (Przepiorka & Sobol-Kwapinska, 2021). Regarding present orientation, individuals preferring Present Hedonistic TP show poorer delay of gratification, exhibiting more risk behaviors such as alcohol abuse and drug use that reduce well-being (Keough et al., 1999; Kim et al., 2020). Regarding future orientation, adolescents with high Future TP are more willing to resist current pleasures for future gains, regulate their present behavior, and consequently achieve better academic performance (Kooij et al., 2018; Li & Lyu, 2022b), which further enhances life satisfaction (Shek & Li, 2016). Future TP also relates to sustainable behaviors such as healthy eating, exercise, and environmental protection (Milfont et al., 2012; Tasdemir-ozdes et al., 2016), which indirectly promote mental health. In summary, when maladaptive, unsustainable TP patterns (e.g., Past/Future Negative, Present Fatalistic) dominate, individuals' behavioral tendencies become more impulsive and less developmental (e.g., aggression, substance addiction), undermining mental health. Conversely, positive, sustainable TP patterns trigger adaptive behaviors that safeguard mental health.

2.2 Dual-Pathway Model of Time-Shift Orientation BTP

The core of time-shift orientation BTP lies in flexibly switching temporal perspectives according to situational demands, involving greater flexibility in temporal cognitive processes that may closely relate to cognitive abilities. Research has found that BTP correlates significantly positively with fluid intelligence and cognitive inhibition abilities (Zajenkowski, Stolarski, Maciantowicz, et al., 2016; Zajenkowski, Stolarski, Witowska, et al., 2016). Fluid intelligence reflects individuals' capacity to adapt to new problems and situations (Carpenter et al., 1990), facilitating adjustment of temporal orientation to situational demands. Cognitive inhibition reflects the ability to intentionally suppress automatic or potential responses (Miyake et al., 2000), helping individuals inhibit automatic biases toward past, present, or future and instead exhibit appropriate TP based on situational characteristics. Studies have also linked BTP to temporal metacognitive skills. Temporal metacognition refers to metacognitive skills based on temporal perspective, including knowledge, experience, and strategies related to temporal cognition. Individuals with high BTP demonstrate strong metacognitive skills in controlling temporal focus (i.e., inhibiting and activating appropriate TP), cognitively reconstructing the past, and effectively connecting past, present, and future (Stolarski & Witowska, 2017). Therefore, from a top-down perspective, compared with non-balanced individuals who can only passively and fixedly select temporal perspectives, individuals with BTP can consciously shift temporal perspectives to appropriate TP dimensions, resulting in better psychological and social adaptation.

From a bottom-up (indirect) perspective, time-shift orientation BTP likely influences mental health primarily through individuals' self-regulatory behaviors. Self-regulation refers to the process by which individuals modify behavioral responses by comparing expected versus actual behavioral outcomes, encompassing observation, evaluation, and reaction phases (Bandura, 2001). Time-shift orientation BTP requires individuals to regulate their TP according to situational characteristics, with high BTP indicating better ability to observe and evaluate environmental features, thereby inhibiting maladaptive TP and exhibiting adaptive TP. This process resembles self-regulation. Therefore, time-shift orientation BTP may influence mental health through self-regulatory behaviors. For example, self-control—a crucial component of self-regulation—reflects individuals' efforts to inhibit impulses and actively regulate behavior to achieve goals (Gillebaart, 2018). Self-control shares common cognitive foundations with time-shift BTP processes, and existing research often treats BTP as an important factor explaining individual self-control (Stolarski et al., 2020). Studies have found that BTP promotes overall self-control levels (Baird et al., 2018) and correlates positively with self-control-related variables, including lower delay discounting rates (Milfont & Swarzenthal, 2014), fewer aggressive behaviors (Orkibi & Ronen, 2019), and lower compulsive buying tendencies (Unger et al., 2018). Thus, the adaptive function of time-shift orientation BTP likely operates through self-control. Additionally, emotion regulation strategy selection

may represent another indirect mechanism through which time-shift orientation BTP affects mental health. Selecting appropriate emotion regulation strategies according to context is necessary for maintaining mental health (Dimanova et al., 2022; McRae & Gross, 2020), with different strategies yielding different mental health outcomes: adaptive cognitive reappraisal increases positive experiences, whereas expressive suppression typically correlates negatively with well-being (Haga, 2009). Time-shift orientation BTP requires individuals to control or flexibly adjust behavioral choices according to situational demands, and this capacity to adjust cognitive processing based on environmental needs is precisely key to effective cognitive reappraisal strategy use. For example, under negative event stimulation, individuals with high flexibility can better maintain emotional stability and readily adopt cognitive reappraisal strategies to reduce negative emotional experiences, whereas individuals with low flexibility tend to use suppressive or avoidant strategies to cope with stress or conflict (Goschke & Bolte, 2014; Piguet et al., 2016).

Although time-shift orientation BTP may influence mental health through both direct and indirect pathways, the lack of corresponding measurement methods has left its mechanisms insufficiently supported by empirical research. Some studies have attempted to examine relationships between BTP and cognitive function from a dynamic TP shifting perspective (Witowska & Zajenkowski, 2019, 2021; Zajenkowski, Stolarski, Maciantowicz, et al., 2016), but the methods actually measured general health orientation BTP. Moreover, without longitudinal and experimental research, causal inferences regarding relationships between BTP and cognitive flexibility or cognitive inhibition remain impossible. Based on existing findings, bidirectional influences may also exist (Witowska & Zajenkowski, 2021; Zajenkowski, Stolarski, Maciantowicz, et al., 2016). Future research must first develop measurement tools aligned with time-shift orientation BTP that genuinely assess individuals' ability or process of shifting among different temporal perspectives before further investigating relationships between time-shift orientation BTP and cognitive function and their effects on mental health.

2.3 Boundary Conditions

2.3.1 Moderating Effect of Age on the BTP-Mental Health Relationship Given their shared temporal nature, age and TP are intrinsically related, raising the question of whether TP' s effects on mental health show age-specific patterns. Previous research has found that relationships between TP and mental health differ across age groups (Diaconu-Gherasim et al., 2023). For example, Chan et al. (2016) found that Present Hedonistic TP correlated positively with anxiety among adolescents, whereas Zhang et al. (2013) found that Present Hedonistic TP benefited life satisfaction in adult samples. Rönnlund et al. (2017) discovered that Future Negative TP undermined overall well-being in 60–75-year-olds but showed no such effect in those over 80.

Research examining age' s moderating role in the BTP-mental health relation-

ship remains scarce but converges on consistent findings: BTP positively affects mental health across different life stages. For instance, Boniwell et al. (2010) found that balanced profiles correlated positively with better life satisfaction and positive affect in young, middle-aged, and older adult samples. Simons et al. (2018) found that age did not moderate the relationship between BTP and subjective well-being, indicating cross-age consistency in BTP' s effects on well-being. However, the mechanisms through which BTP affects mental health may differ across ages. From a general health orientation perspective, optimal TP combination patterns may vary between young and older adults. According to socioemotional selectivity theory, optimizing the future is more important for young adults, who emphasize future exploration and pursuit of life meaning, whereas older adults focus more on present satisfaction and pursue emotionally meaningful goals and activities (Carstensen, 2006; Charles & Urban, 2015; Li & Lyu, 2018). This suggests that young adults may promote mental health development primarily by activating positive future expectations and selecting future-oriented behaviors, whereas older adults may maintain mental health by recalling positive past experiences, cherishing the present, and selecting behaviors oriented toward immediate pleasure. From a time-shift orientation perspective, young adults' cognitive flexibility helps them select TP dimensions most suitable for current situations, whereas older adults with declining executive control functions may need to rely on crystallized intelligence advantages to integrate their past, present, and future (Christensen et al., 1994), thereby maintaining better mental health. Therefore, age' s role in the BTP-mental health relationship is likely complex and requires systematic, in-depth investigation in future research.

2.3.2 Moderating Effect of Living Environment on the BTP-Mental Health Relationship TP development is rooted in individuals' social and cultural environments, such that individuals in specific environments may develop particular TP patterns that, together with external circumstances, influence mental health (Fieulaine & Apostolidis, 2015). For example, homelessness narrows individuals' TP, making them more inclined to adopt strategies satisfying immediate needs (Epel et al., 1999), whereas for those experiencing the 9/11 attacks, maintaining a future orientation benefited mental health recovery (Holman et al., 2016). Poverty represents a typical adverse living environment: on one hand, psychological characteristics of poverty are reflected in maladaptive TP patterns—focusing on immediate interests (high Present Hedonistic) while neglecting long-term future goals (low Future orientation) (Haushofer & Fehr, 2014; Hu et al., 2019); on the other hand, unbalanced TP patterns may further impair individuals' ability to cope with material and social pressures in impoverished environments, leading to more psychological disorders.

Different BTP orientations may interact with environmental characteristics to affect mental health in distinct ways. From a general health orientation perspective, individuals who have experienced trauma or poverty often become trapped in negative past experiences and struggle to establish BTP, directly reducing

their optimism (Tomich & Tolich, 2021) and subjective well-being (Clark et al., 2016). Stressful environments also foster negative temporal preferences, inclining individuals toward Present Hedonistic or Present Fatalistic orientations (Fu et al., 2020), potentially triggering psychological disorders and substance addiction (Xu et al., 2021). Activating future orientation benefits post-trauma mental health recovery (Holman et al., 2016); for instance, research during the COVID-19 pandemic found that positive cognitions about future selves and society helped alleviate anxiety and depression (Li & Lyu, 2021). From a time-shift orientation perspective, safe and stable environments encourage individuals to view past, present, and future as an integrated whole, providing sufficient psychological resources to flexibly select appropriate TP orientations when coping with life events. Conversely, uncertain environments fragment individuals' self-continuity, reducing available adaptive psychological resources (Lampraki et al., 2023). For example, individuals with lower socioeconomic status perceive their future as similar to their present and attend less to their future selves, evaluating their future selves more negatively (Antonoplis & Chen, 2020). PTSD patients and depressed populations, due to traumatic experiences, have temporal perspectives more fixed on Past Negative dimensions, making it difficult to shift toward positive present and future orientations (Sword et al., 2014), and harder to select appropriate strategies for effective emotion regulation when encountering difficulties (Gao et al., 2021). Therefore, for individuals facing scarce environments, trauma experiences, or low subjective and objective socioeconomic status, the dual-pathway relationships between both BTP conceptual orientations and mental health may exhibit unique characteristics worthy of further investigation.

3 Summary and Outlook

In today' s fast-paced and highly competitive society, how individuals organize past events, consider future goals, and act in the present is particularly crucial for mental health. BTP provides an optimal way of coping with past, present, and future, thereby optimizing social adaptation and psychological well-being. Based on existing literature and theoretical research, this paper has distinguished between general health orientation and time-shift orientation BTP, summarized dual-pathway models linking both conceptual orientations to mental health, and discussed boundary conditions for these models. However, the dual-pathway model of BTP and mental health requires more empirical research to validate its feasibility and completeness.

3.1 Development of BTP Research Methods

Regarding general health orientation BTP, existing research methods require optimization. Currently, the most widely used method for general health orientation BTP is DBTP (Stolarski et al., 2020), but it is operationally complex and its optimal cutoff values are ambiguous. The optimal TP combination pattern actually measures the degree to which individuals score high on adaptive TP

and low on maladaptive TP. In other words, the extent to which individuals show more positive than negative tendencies across past, present, and future timeframes can determine their overall balance. Therefore, using the difference between positive and negative TP scores could represent balance. Previous research has used similar approaches to calculate overall positive tendencies for psychological variables. For example, considering that individuals may adopt multiple coping styles when facing environmental changes, Dai (2010) proposed using the difference between positive and negative coping styles to represent overall coping tendencies. In achievement motivation measurement, the difference between success-seeking and failure-avoidance scores typically represents overall achievement motivation (Ye & Hagtvet, 1992). These analogous computational approaches provide justification for using difference scores to measure BTP. Of course, this method' s effectiveness requires thorough examination and testing in future research.

From a time-shift orientation perspective, future research should prioritize developing a scale to measure temporal shifting flexibility or designing an effective procedure to assess individuals' processes of switching from one TP to another. This could reference research on emotion regulation flexibility, as its definition —individuals' ability to flexibly select emotion regulation strategies according to situational characteristics to achieve adaptive emotion regulation—resembles the theoretical connotation of time-shift orientation BTP, both aiming to measure shifting abilities and flexibility in specific domains (Boniwell & Zimbardo, 2004; Wang et al., 2016; Zimbardo & Boyd, 1999). However, focusing solely on temporal shifting flexibility may have limited practical application value, as it only reflects overall temporal flexibility without precisely identifying problematic timeframes or categories. Combining it with existing TP tools may be more comprehensive, enabling reflection of both temporal shifting flexibility processes and specific characteristics of individuals' past, present, and future TP.

3.2 Mechanism Research on BTP and Mental Health

Current research on BTP and mental health remains fragmented, methodologically homogeneous, and predominantly uses cross-sectional designs to examine relationships between general health orientation BTP and mental health (Mooney et al., 2017; Stolarski et al., 2020), lacking experimental and longitudinal studies to establish causal relationships. Although most studies treat mental health as the ultimate outcome variable of BTP, reverse pathways may also exist. Individuals with higher mental health levels (stable well-being and lower anxiety and depression tendencies) may develop more positive past and future cognitions through accumulation of positive emotions in daily life events (Stolarski et al., 2014; Stolarski et al., 2020), suggesting that mental health may also promote BTP formation and development. Future research should employ longitudinal surveys to determine reciprocal relationships between BTP and mental health.

Furthermore, despite the scarcity of research on BTP' s physiological and neural

mechanisms, revealing such mechanisms can both demonstrate that the concept describes a genuine phenomenon and enhance understanding of variable relationships' essential nature. Olivera-Figueroa et al. (2015) found that individuals with high BTP showed lower cortisol levels under induced stress compared to low BTP individuals. Research has also linked lower BTP scores to smaller gray matter volume in the ventral precuneus (Chen et al., 2022; Guo et al., 2017; Wu et al., 2019), a brain region closely associated with life satisfaction (Kong et al., 2014). These findings may provide physiological and neural foundations for the positive link between BTP and well-being. However, relevant physiological and neural mechanism research remains limited. Future studies could systematically investigate activation and connectivity strength of relevant brain regions in the BTP-mental health relationship using fMRI technology to better explore underlying cognitive-neural mechanisms.

3.3 Time Perspective Therapy: Intervention Research on BTP' s Effects on Mental Health

Time Perspective Therapy is a narrative therapy developed based on Zimbardo' s time perspective theory to improve clients' TP balance. Zimbardo and Boyd (2008) argued that TP exerts implicit influences on most decisions and behaviors, with overuse of particular TP orientations—especially negative TP—causing mental health problems. Accordingly, Time Perspective Therapy aims to help clients construct balanced, flexible TP by recognizing their personal TP orientations, enabling adaptation to changing external situations and improved mental health. Time Perspective Therapy has proven effective in treating PTSD, anxiety, and depression (Sword et al., 2014). However, intervention research examining whether enhancing individuals' TP shifting flexibility improves mental health remains scarce. Future research could draw on the dual-pathway model to construct comprehensive strategies for enhancing mental health and alleviating psychological stress by improving both overall TP positivity and flexible shifting ability.

3.4 Exploring BTP in Chinese Cultural Contexts

Temporal concept development is rooted in cultural backgrounds, with different cultural ideologies potentially shaping distinct TP types and BTP patterns. First, the concept of "balance" differs significantly between Chinese and Western cultural contexts. Chinese culture emphasizes dialectical and holistic thinking manifested as value orientations of "moderation," "appropriateness," and "harmony" (Du et al., 2014), whereas Western culture emphasizes linear logical thinking with simpler, more explicit analysis of phenomena (Peng & Nisbett, 1999). Research has found that when presented with two contradictory propositions, Chinese individuals accept both moderately, while Americans' views polarize (Peng & Nisbett, 1999). Therefore, Chinese understanding of "balance" may emphasize compromise and moderation, viewing BTP as generally adaptive rather than emphasizing extreme positivity of any single TP dimension. Western un-

derstanding of "balance" may emphasize opposition and extreme states, viewing BTP as approximating ideal scores on each TP dimension. These differences may mean existing general health orientation BTP methods (e.g., DBTP) cannot accurately reflect the "balance" concept in Chinese populations.

Second, Chinese civilization' s millennia-long history may have fostered a uniquely broad TP among the Chinese people. Compared to Westerners, Chinese individuals possess greater TP breadth, including more past and future orientations (Gao, 2016; Ji et al., 2019). This broad temporal perspective helps Chinese people develop a "non-linear" view of change—believing that all things constantly change and develop cyclically, with failure and success, suffering and happiness being mutually transformable (Ji, 2023). Consequently, Chinese BTP more likely incorporates past, present, and future as an integrated whole, generating more frequent TP dimension shifting. In Chinese culture, the conclusion of historical events and the passing of historical figures do not signify disappearance and termination but largely maintain moral and cultural continuity. Chinese idioms such as "learn from past experiences," "take history as a mirror," and "become newer with time" embody Chinese people' s ability to stand at the intersection of past and future, transcend Western notions of time as "pure forms of sensible intuition," extract moral and cultural values from past time, and better extend them to the present and future (Han & Qian, 2006).

In summary, due to historical and cultural differences, Chinese BTP may exhibit unique manifestations, and its relationships and mechanisms with mental health may differ from Western patterns. Therefore, blindly following Western approaches to study Chinese BTP may be inappropriate. Future research should adopt indigenous cultural perspectives to develop more suitable measurement tools and deeply explore characteristics of Chinese BTP and its relationship with mental health.

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