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A Structural Model of Past Time Perspective and Life Satisfaction: Mediating Roles of Informational and Normative Identity Styles

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ABSTRACT

Background: Time perspective has been shown to influence psychological well-being, including life satisfaction. However, the mechanisms underlying this relationship—particularly the mediating role of identity styles—remain underexplored in young adult populations. This study aimed to examine the direct and indirect effects of past-negative and past-positive time perspectives on life satisfaction among university students, with informational and normative identity styles considered as mediators.

Methods and Materials: A descriptive-correlational study was conducted among 584 university students (aged 23–30; 55.1% female) in Tehran, Iran. Participants were selected using multistage cluster sampling. They completed the Zimbardo Time Perspective Inventory (ZTPI), Satisfaction with Life Scale (SWLS), and Berzonsky's Identity Style Inventory (ISI-6G). Data were analyzed using structural equation modeling (SEM) with AMOS version 24. Model fit was assessed using standard indices.

Results: The hypothesized model demonstrated an acceptable fit ($\chi^2/df = 2.76$, GFI = 0.86, AGFI = 0.84, CFI = 0.91, RMSEA = 0.05). Past-negative time perspective had a significant negative direct effect on life satisfaction ($\beta = -0.294$, $p < 0.01$), while past-positive had a significant positive direct effect ($\beta = -0.182$, $p < 0.01$). However, neither informational nor normative identity styles significantly mediated these relationships ($p > 0.05$).

Conclusion: Time perspectives significantly predict life satisfaction in young adults, but identity styles do not mediate this relationship. Interventions designed to foster a more positive view of the past may enhance subjective well-being among university populations.

Keywords: Time perspective, Life satisfaction, Identity style, University students, Structural equation modeling.

Introduction

The characteristics of health and mental well-being have always attracted the attention of psychologists across all life stages. Each stage of life holds its own particular importance. Erikson considered young adulthood to be the longest developmental stage, spanning from the end of adolescence—approximately age 18—until about age 35 (Schultz et al., 2009). One of the most common and significant decisions made by young adults during this period is pursuing higher education. Universities are institutions that annually attract a significant number of young individuals and develop their academic and practical competencies over a defined period of time (Bakhshipour Roudsari et al., 2005). In addition to acquiring academic and practical skills and completing coursework, students also need to maintain balanced psychological well-being.

Health—whether individual or collective—is undoubtedly one of the most critical aspects of human life and a prerequisite for fulfilling social roles properly. People can only be fully active when they perceive themselves as healthy and are also perceived as healthy by society. According to the World Health Organization (WHO), health is defined not merely as the absence of mental illness, but also includes mental well-being, self-efficacy, autonomy, competence, social integration, flourishing, and emotional and cognitive potential (Tehrani et al., 2013).

Life satisfaction has been identified as a strong predictor of psychological health. Individuals with higher life satisfaction tend to have a more positive outlook, higher self-esteem, and greater academic self-efficacy, and they are generally in better physical and mental health (Feldman & Snyder, 2005). According to many experts, satisfaction is the result of the subjective evaluation of one's performance in comparison to personal expectations. Therefore, any positive feeling arising from this comparison is referred to as satisfaction (Barimani et al., 2020).

Students' mental health and life satisfaction are shaped by a variety of factors, including economic, social, cultural, family, academic, and other circumstances that can influence whether or not individuals—including students—are satisfied with their lives. One key factor that this study focuses on is the subcomponents of time perspective and the mediating role of identity styles. The

current study seeks to answer the question: Is there a relationship between time perspective and life satisfaction in university students in Tehran, mediated by identity styles?

Perception of time is one of the factors that affects how people interpret cognitive processes, structure, evaluate, and recall life events (Kluckhohn & Strodtbeck, 1961; Allan, 1979). Carstensen et al. (1999), experts in behavioral surgery, argued that time perception plays a vital role in the selection and pursuit of social goals and has important emotional, cognitive, and motivational implications (Charles & Carstensen, 1999). Zhang et al. (2013) suggested that by studying time perspective and psychological well-being (life satisfaction), we can understand essential components of happiness. Prior studies have consistently confirmed the strong positive relationship between a balanced time perspective and psychological well-being (Bonniwell et al., 2010; Drake et al., 2008). Time is the most valuable resource available to human beings, as all other resources gain value only if time exists (Zimbardo et al., 1997).

People have different psychological orientations toward time, which shape how they mentally segment their experiences into past, present, and future (Zimbardo & Boyd, 2014). Time perspective refers to the role that time plays in individuals' lives. It links a person's attitudes and thoughts to time. Personality traits, judgment, and problem-solving styles can all be described in temporal terms. Time also plays a central role in shaping individuals' behavior, motivation, and goal-directedness (Stolarski et al., 2018). An individual's dominant temporal focus influences their decisions (Stolarski et al., 2011).

Time perspective is a fundamental dimension of the psychological structure of time that manifests as categorization of cognitive experiences into past, present, and future frameworks. How individuals relate to each of these temporal domains and how these relationships affect their thoughts and behaviors is central (Zimbardo & Boyd, 2014). People's time orientations and how they share these views with others have a powerful impact on various aspects of life. Nonetheless, most people—whether academically inclined or not—underestimate the importance of time (Zimbardo & Boyd, 2008).

A strong preference for a specific temporal frame or the neglect of one can shape and align a person's functioning with that time frame (Holman & Silver, 1998; Kruger et al., 2008). Their time perspective influences the type of goals people pursue. Shifts in goal prioritization as a function of future-oriented time perspective help reduce negative emotions and increase life satisfaction (Davis & Hicks, 2013; Zhang et al., 2013).

Distinct types of time perspectives, as proposed by Zimbardo et al. (1997), are significantly associated with key aspects of human functioning. Time perspective is linked to self-esteem, energy, happiness, life satisfaction, and mindfulness (Daugherty & Brase, 2010; Boniwell & Zimbardo, 2004; Drake et al., 2008; Klingeman, 2001; Sobol-Kwapinska, 2013; Sobol-Kwapinska et al., 2016; Stolarski et al., 2014; Zhang & Howell, 2011; Zimbardo et al., 1997). Zimbardo et al. (1997) proposed five main factors of time perspective: future, present-fatalistic, present-hedonistic, past-positive, and past-negative.

Future time perspective reflects a general orientation toward the future and is typically associated with goal-directed behavior (Zimbardo et al., 1997). Individuals with a past time perspective are heavily influenced by their past and often preoccupied with it, particularly in a negative and pessimistic way, finding the past distressing (Milfont et al., 2008). Past-positive time perspective, by contrast, reflects a sentimental and emotionally warm attitude toward the past and is the opposite of past-negative (Anagnostopoulos & Griva, 2012; Zimbardo & Boyd, 2014). Present-hedonistic orientation is characterized by risk-taking and pleasure-seeking. Such individuals live in the moment, avoid discomfort, and actively pursue pleasurable experiences (Zimbardo & Boyd, 2014). Present-fatalistic time perspective, on the other hand, reflects a hopeless outlook toward the future and life in general (Zimbardo & Boyd, 2008).

Life satisfaction is defined as an individual's level of personal awareness or, more precisely, as a cognitive evaluation of the quality of life, which can reflect both global and domain-specific assessments (Headey & Wearing, 1991). Diener & Suh (2000) similarly define life satisfaction or subjective well-being as individuals' cognitive and emotional evaluation of their lives and how

they feel about their existence. In essence, life satisfaction represents the gap between what a person desires and what they actually have. It reflects a divergence between reality and the ideal (Layard, 2010; Sousa & Sanja, 2001). It is an inner experience characterized by the presence of positive emotions and the absence of negative feelings (Krueger & Stone, 2014; Rood, 2005).

Methods and Materials

Population, sample, and Measurement Approach

This study is applied in nature and employs a descriptive-correlational design for data collection. The statistical population consists of all university students in Tehran aged 23 to 30, who were enrolled in the 2019–20 academic year. Given the estimated size, the population was treated as infinite. The sampling method was single-stage cluster sampling, a form of random sampling frequently used in survey studies. Cluster sampling is particularly suitable when the population is highly dispersed geographically, lacks a complete list of members, or when data collection is costly and time-intensive. In such cases, the population is divided into clusters, and a subset of these clusters is randomly selected for analysis.

In this study, universities in Tehran were first clustered, and then a selection of academic disciplines was chosen. The sample consisted of students from clusters representing the fields of medical sciences, engineering, basic sciences, and arts. Of the 600 distributed questionnaires, 584 were deemed complete and valid (response accuracy rate = 97.33%). Data were collected through both library-based and field methods. For theoretical and literature review purposes, academic books, Persian and international articles, journals, and related theses were utilized. The main instrument for data collection was a questionnaire, comprising closed-ended Likert-scale questions covering life satisfaction, time perspective, identity styles, and demographic information. The questionnaire was divided into two main sections. The first section addressed participants' demographic characteristics, including age, marital status, education level, gender, and field of study.

Instruments

Zimbardo Time Perspective Inventory (ZTPI)

The Zimbardo Time Perspective Inventory (ZTPI), developed by Zimbardo & Boyd (2014), is a self-report tool containing 56 items, scored on a 5-point Likert scale ranging from “very untrue” to “very true.” It assesses five temporal dimensions as defined by Zimbardo and Boyd. In a validation study conducted on a sample of 606 U.S. university students, exploratory and confirmatory factor analyses were used to evaluate the construct validity of the inventory. Exploratory factor analysis revealed that the items were saturated across five factors, which together explained 36% of the shared variance. Confirmatory factor analysis supported the five-factor model, and the chi-square goodness-of-fit test confirmed the model’s adequacy. The reliability of the ZTPI was evaluated using both Cronbach’s alpha (for internal consistency) and test–retest (after four weeks), with results for each subscale presented below. Items 9, 24, 25, 41, and 56 are reverse-scored (Zimbardo & Boyd, 2014).

Satisfaction with Life Scale (SWLS)

The Satisfaction with Life Scale (SWLS) was developed by Diener et al. (1985) for use across all age groups. Originally consisting of 408 items related to life satisfaction and well-being, factor analysis reduced this to five items, which now form the widely used SWLS. Diener et al. (1985), using a sample of 176 undergraduate students, reported a mean score of 23.5, a standard deviation of 6.43, a test–retest correlation of 0.82, and a Cronbach’s alpha of 0.87. Lewis et al. (1995) confirmed the construct validity of the SWLS for university students. Schimmack et al. (2002) reported Cronbach’s alpha values across nationalities as follows: U.S. = 0.90, Germany = 0.82, Japan = 0.79, Mexico = 0.76, China = 0.61. The SWLS, developed by Diener et al. (1985), uses a 7-point Likert scale (1= strongly disagree to 7= strongly agree) across five items, yielding scores from 5 to 35. Higher scores indicate greater life satisfaction. In the present study, Cronbach’s alpha was 0.92, indicating high internal consistency.

Berzonsky’s Identity Style Inventory (ISI)

Developed by Berzonsky, this inventory comprises 40 items, including 11 items for informational style, 10 items for diffuse/avoidant style, nine items for normative style, and 10 items for identity commitment. The items are scored on a 5-point Likert scale, from “strongly disagree” to “strongly agree.” Items 9, 11, 14, and 20 are reverse-scored (Berzonsky et al., 2013). Reported reliability coefficients for the subscales were: informational, 0.62; normative, 0.66; and diffuse/avoidant, 0.73. In an Iranian study (Crocetti & Shokri, 2010), Cronbach’s alpha values were reported as Informational: 0.75, Normative: 0.75, Diffuse/Avoidant: 0.71, and Commitment: 0.55. In the current study, Cronbach’s alpha values were as follows: Informational: 0.77, Normative: 0.79, Diffuse/Avoidant: 0.88, and Commitment: 0.75.

Data Analysis

Data analysis was conducted using descriptive statistics to understand the demographic characteristics of the sample and to describe the key research variables. Inferential statistics and structural equation modeling (SEM) were employed to test the research hypotheses, which were conducted using SPSS 24 and AMOS 24.

Ethical Considerations

This study was conducted in accordance with ethical principles approved by the Ethics Committee of Islamic Azad University, Semnan Branch. All participants were fully informed about the objectives and procedures of the research and provided written informed consent before participation. All procedures adhered to ethical and legal standards governing human research.

Results

The statistical population of the present study consisted of students from universities in Tehran. Based on the sampling method employed, this section describes the demographic structure of the sample in terms of variables such as gender, marital status, age, education level, and academic field. The descriptive statistics are presented in Table 1.

Table 1

Descriptive demographic characteristics (categorical variables)

Variable	Category	Frequency	Relative Frequency (%)
Gender	Female	322	55.1
	Male	262	44.9
Marital Status	Single	316	54.1
	Married	268	45.9
Education Level	Bachelor's Degree	307	52.6
	Master's Degree	228	39.0
	Doctorate	49	8.4
	Humanities	202	34.6
Academic Field	Engineering	148	25.3
	Basic Sciences	75	12.8
	Medical Sciences	97	16.6
	Arts	62	10.6

To assess univariate normality of the data distributions, kurtosis was used, which refers to the height of a distribution. In other words, kurtosis measures the peak of the curve at its maximum point. Positive kurtosis indicates a sharper peak compared to the normal distribution, while negative kurtosis reflects a flatter peak (Table 1).

The results show that the means for all variables are close to or above 3 (the midpoint), indicating relatively high levels of life satisfaction, time perspective, and identity styles among participants. Among the

components, Past-Negative, Past-Positive, Present-Hedonistic, Future-Oriented, Informational Identity, Normative Identity, and Commitment Identity scored above the mean. In contrast, Diffuse/Avoidant Identity and Present-Fatalistic scored below the mean. The skewness and kurtosis values for each variable and component are presented in Table 2. All values fall within the acceptable ranges, confirming that the data distributions meet normality assumptions.

Table 2*Descriptive Statistics of Study Variables*

Variable/Component	Mean	SD	Skewness	Kurtosis
Time Perspective	3.82	0.115	-0.008	0.055
Past-Negative	3.40	0.515	-0.360	-0.277
Past-Positive	3.11	0.493	-0.770	1.070
Present-Hedonistic	4.98	0.628	0.219	-0.545
Present-Fatalistic	2.50	0.577	0.230	-0.554
Future-Oriented	5.10	0.620	0.008	-0.704
Life Satisfaction	3.22	0.416	-0.223	-0.441
Identity Styles	3.27	0.110	0.165	0.046
Informational Identity	3.82	0.392	-0.123	-0.147
Normative Identity	3.28	0.371	0.300	-0.110

Table 3*One-Sample t-Test Results for Study Variables*

Variable/Component	Test Value	Mean	t-Value	Sig. (p)	Result
Time Perspective	3.00	3.41	48.54	0.000	Confirmed
Past-Negative	3.40	3.40	19.17	0.000	Confirmed
Past-Positive	3.46	3.40	33.24	0.000	Confirmed
Present-Hedonistic	3.32	4.98	18.72	0.000	Confirmed
Present-Fatalistic	2.77	2.50	-8.34	0.000	Confirmed
Future-Oriented	3.92	5.10	46.95	0.000	Confirmed
Life Satisfaction	3.00	3.22	6.58	0.000	Confirmed
Identity Styles	3.00	3.27	23.76	0.000	Confirmed
Informational Identity	3.82	3.82	50.92	0.000	Confirmed
Normative Identity	2.28	3.28	12.23	0.000	Confirmed

Table 4*Correlation Matrix of Study Variables*

Variable	1	2	3	4	5
1. Past-Positive	1				
2. Past-Negative	-0.157**	1			
3. Informational Identity	0.035	-0.023	1		
4. Normative Identity	0.099*	0.018	-0.453**	1	
5. Life Satisfaction	0.175**	-0.299**	0.092*	-0.103*	1

* $p < .05$, ** $p < .01$

The correlation matrix above presents pairwise correlations between study variables. A significant positive correlation was found between the Past-Positive perspective and Life Satisfaction ($r = 0.175$, $n = 584$, $p < .01$), and a significant negative correlation was found

between the Past-Negative perspective and Life Satisfaction ($r = -0.299$, $n = 584$, $p < .01$) (Table 4).

To test the main research hypothesis, structural equation modeling (SEM) was conducted. The corresponding model is illustrated in Figure 1.

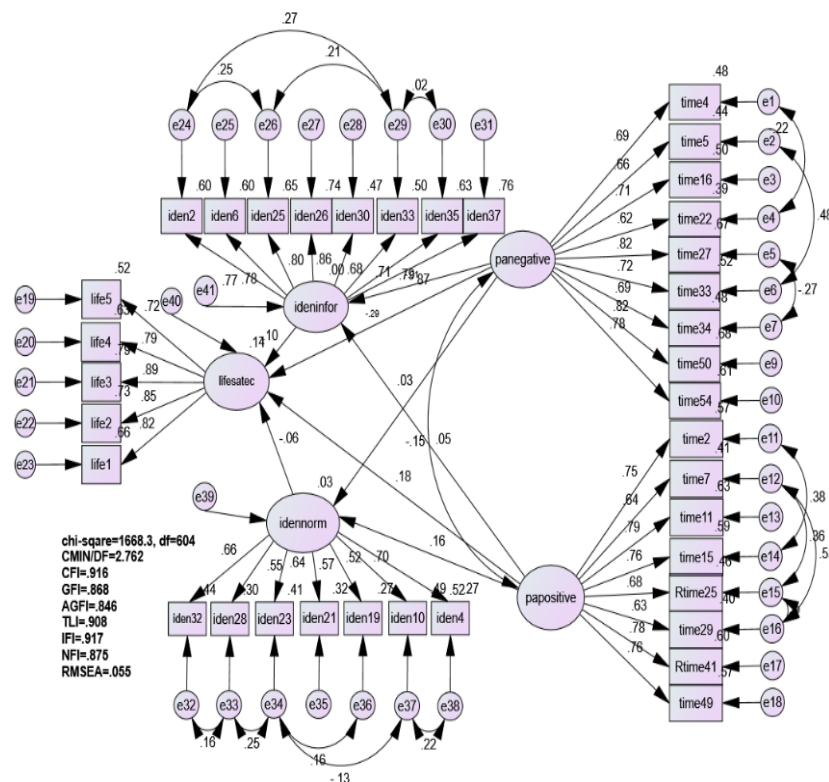
**Figure 1. The Tested Research Model**

Table 5*Model Fit Indices for the Tested Model*

Index	GFI	AGFI	CFI	NFI	IFI	χ^2/df	PCFI	RMSEA
Obtained Value	0.86	0.84	0.91	0.875	0.91	2.76	0.83	0.05
Acceptable Threshold	> 0.90	> 0.80	> 0.90	> 0.90	> 0.90	< 3.00	> 0.60	0.03–0.08

In evaluating model fit, it is generally considered sufficient for a model to exhibit acceptable values on at least three major indices, especially in large samples. In this study, the obtained values for all indices either meet or closely approach the recommended thresholds (Table 5).

Therefore, the structural model demonstrates an adequate and desirable fit. Table 6 presents the direct, indirect, and total effects between variables along with the mediating role of identity styles, based on bootstrap analysis.

Table 6*Path Coefficients and Significance Levels for the Model with Informational Identity Style as Mediator*

Relationship	Direct Effect	Indirect Effect	Total Effect (Mediated)	Mediation Through Informational Identity Style
Past-Negative → Life Satisfaction	-0.294***	0.000 ($\beta = 0.979$)	-0.294***	Significant
Past-Positive → Life Satisfaction	-0.182***	-0.006 ($\beta = 0.203$)	-0.188***	Significant

Table 7*Path Coefficients and Significance Levels for the Model with Normative Identity Style as Mediator*

Relationship	Direct Effect	Indirect Effect	Total Effect (Mediated)	Mediation Through Normative Identity Style
Past-Negative → Life Satisfaction	-0.294***	-0.008 ($\beta = 0.214$)	-0.286***	Significant
Past-Positive → Life Satisfaction	-0.182***	-0.016 ($\beta = 0.053$)	-0.197***	Significant

* Significant at $p < .01$ based on bootstrap estimates

According to Table 6 and Table 7, both Past-Negative and Past-Positive time perspectives have statistically significant direct effects on life satisfaction at the 0.01 level. The significance of the indirect effects, tested via a bootstrap procedure, indicates that the presence of identity styles as mediators—both informational and normative—strengthens or modifies the relationship between time perspective and life satisfaction. These results confirm the mediating role of identity styles in this model.

Discussion

The present study aimed to test a structural model examining the relationships between *past-negative* and *past-positive time perspectives* and *life satisfaction* among university students in Tehran, considering the mediating roles of *informational* and *normative identity styles*. The conceptual model was evaluated through structural equation modeling, and the findings regarding both direct and mediated relationships are summarized below.

According to the results, both *past-negative* and *past-positive* time perspectives had a significant direct effect on life satisfaction. Individuals who are preoccupied with their past tend to associate current experiences with past events, often engaging in persistent and distressing rumination. This negative orientation is typically rooted in adverse or traumatic events and is strongly correlated with depression, anxiety, and low self-esteem (Zimbardo & Boyd, 2014). Consistent with prior research, past-negative time orientation was significantly associated with higher levels of depressive and anxious symptoms and lower levels of life satisfaction (Anagnostopoulos & Griva, 2012).

In contrast, a *past-positive time perspective* reflects an emotional and sentimental attachment to the past, standing in opposition to the negative outlook. As suggested by Anagnostopoulos & Griva (2012), individuals with a past-positive orientation respond to nostalgic cues in a way that reinforces positive cognitive structures. These individuals tend to be psychologically well-adjusted, and any maladaptive behaviors are generally the result of external environmental

interactions. Prior studies have shown that reflecting positively on the past can enhance intrinsic motivation and promote the development of latent potentials rooted in one's personal history, ultimately fostering self-actualization—a key determinant of life satisfaction. These findings are aligned with those reported by Sobol-Kwapinska et al. (2016).

However, in terms of mediating effects, the results showed that neither *informational* nor *normative identity styles* significantly mediated the relationship between time perspectives and life satisfaction. Although both identity styles were modeled as mediators, they failed to absorb a meaningful portion of the variance in the relationship. This finding is consistent with the study by Hemati et al. (2025), which highlighted that a past-negative orientation among male and female students was associated with various psychological difficulties, including lower happiness, increased anxiety and depression, and reduced life satisfaction.

Despite its contributions, the present study has limitations. The large number of items and constructs may have induced participant fatigue, potentially introducing response bias. Furthermore, since the data were collected exclusively from university students within a limited age range and academic environment, the generalizability of the findings to other populations should be approached with caution.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Declaration of Helsinki, which provides guidelines for ethical research involving human participants. Ethical considerations in this study included the fact that participation was entirely optional. The study has been approved by the Ethical Committee at the Faculty of Nursing/ University of Baghdad (Institutional Review Board). Written informed consent was obtained from the mothers before the study commenced, and they had the right to refuse participation.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contribute to this study.

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