Research

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Predictive Role of the Time Perspective on the Probability of Suicide

Zaman Perspektifinin İntihar Olasılığı Üzerindeki Yordayıcı Rolü

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ABSTRACT

Objective: Time perspective has the potential to determine how we evaluate events, how we see life, and how we act. This research aimed to examine the predictive effect of time perspectives and deviations from a balanced time perspective on the probability of suicide.

Method: This cross-sectional study, which used convenience and snowball sampling methods, included a sample of 384 female (61%) and 245 male (39%) participants (Mean = 37.08; SD = 13.79). Participants completed a Personal Information Form, the Suicide Probability Scale, and the Zimbardo Time Perspective Inventory.

Results: The findings showed that positive past time perspective and future time perspective were inversely related to the probability of suicide; while other time perspectives (negative past, fatalistic present) and deviations from a balanced time perspective were positively related to the probability of suicide. After controlling for demographic variables, the first hierarchical model showed that past-positive (β = -0.272), past-negative (β = 0.306), and present-fatalistic (β = 0.103) perspectives significantly predicted suicide probability (R^2 Change = 0.254). In the second model, deviation from balanced time perspective significantly and positively predicted suicide probability (β = 0.476, R^2 Change = 0.213).

Conclusion: The time perspective and deviation from a balanced time perspective are strong predictors of suicide probabilty; incorporating these variables into efforts to assess and prevent suicide probability may be of critical importance.

Keywords: Time perspective, balanced time perspective, probability of suicide, mental health

ÖZ

Amaç: Zaman perspektifi olayları nasıl değerlendireceğimizi, yaşamı nasıl gördüğümüzü ve nasıl hareket edeceğimizi belirleme potansiyeline sahiptir. Bu araştırma, zaman perspektiflerinin ve dengeli zaman perspektifinden sapmanın intihar olasılığı üzerindeki yordayıcı etkisini incelemeyi amaçlamıştır.

Yöntem: Kesitsel bir çalışma olan kolayda ve kartopu örnekleme yöntemleri kullanılan bu araştırmanın örneklemini 384 kadın (% 61) ve 245 erkek (% 39) katılımcı (Mean = 37,08; SD = 13,79) oluşturmaktadır. Katılımcılara veri toplama aracı olarak Kişisel Bilgi Formu, İntihar Olasılığı Ölçeği ve Zimbardo Zaman Perspektifi Envanteri uygulanmıştır.

Bulgular: Çalışmanın bulguları olumlu geçmiş zaman perspektifi ve gelecek zaman perspektifinin intihar olasılığı ile ters yönde ilişkili olduğunu gösterirken; diğer zaman perspektifleri (olumsuz geçmiş, şimdi kaderci) ve dengeli zaman perspektifinden sapmanın intihar olasılığı ile pozitif yönde ilişkili olduğunu göstermiştir Demografik değişkenler kontrol edildikten sonra ilk hiyerarşik modelde olumlu geçmiş (β = -0,272), olumsuz geçmiş (β = 0,306) ve kaderci şimdiki zaman (β = 0,103) intihar olasılığını anlamlı yordamıştır (R^2 Change = 0,254). İkinci modelde ise dengeli zaman perspektifinden sapma intihar olasılığına pozitif yönde anlamlı katkı sağlamıştır (β = 0,476, R^2 Change = 0,213).

Sonuç: Bu çalışmada zaman perspektifi ve dengeli zaman perspektifinden sapmanın, intihar olasılığı puanları için anlamlı bir yordayıcı olduğu; bu değişkenlerin intihar olasılığını değerlendirme ve önleme çalışmalarına dahil edilmesinin önemli ipuçları sunabileceği söylenebilir.

Anahtar sözcükler: Zaman perspektifi, dengeli zaman perspektifi, intihar olasılığı, ruh sağlığı

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Introduction

Throughout their lives, individuals attempt to make sense of their experiences through an automatic and nonconscious mechanism (Zimbardo & Boyd 1999). According to Zimbardo and Boyd (2018), this mechanism is conceptualized as time perspective. Later grounded within a theoretical framework, it posits that personal experiences are partitioned into three temporal frames—past, present, and future—forming five distinct temporal orientations (Zimbardo & Boyd 1999). Individuals construct their lived experiences within a unique frame across each perspective. The past-negative time perspective is characterized by an unfavorable evaluation of the past, commonly paired with emotional states such as regret and pessimism; individuals with this orientation often remain preoccupied with past adversities. In contrast, the past-positive perspective reflects an affectionate longing for prior experiences and a tendency to recall the past favorably. The present-hedonistic perspective is linked to the pursuit of immediate gratification and sensation seeking. Conversely, the present-fatalistic perspective is marked by a detachment from hedonistic concerns, underpinned by the belief that life events are outside personal control and that one's actions have little effect on outcomes. Finally, the future time perspective enables individuals to formulate long-term goals, implement action plans, and organize behaviors to achieve those objectives (Zimbardo & Boyd 1999).

Excessively focusing on one of these five perspectives while neglecting the others is undesirable. Because interpreting personal experiences through a single temporal lens can shape individuals' motivation, affect, cognitions, and behaviors, it may also substantially affect mental health (Stolarski et al. 2018). Consequently, the balanced integration of these time perspectives is considered vital for psychological well-being (Bhadoriya & Meena, 2025). The capacity to demonstrate temporal flexibility between different perspectives in response to one's needs promotes the creation of an optimal temporal profile, thereby supporting well-being and positive mental health (Boniwell & Zimbardo 2015, Stolarski et al. 2018). Indeed, numerous studies demonstrate that an excessive focus on a specific time perspective yields dysfunctional outcomes and predicts negative psychological consequences. For instance, an excessive focus on past-negative and present-fatalistic perspectives is closely linked to depression, anxiety, and lower self-esteem (Anagnostopoulos & Griva 2012, Kaya Lefèvre et al. 2019, Nowakowska et al. 2026). Similarly, elevated levels of the present-hedonistic perspective are associated with heightened risk-taking behaviors, including alcohol and substance use, gambling, and unsafe sexual practices (Wassarman 2001, Chavarria et al. 2015, Jochemczyk et al. 2017). Previous studies further suggest that psychological vulnerabilities stem not only from an overemphasis on a particular perspective but also from the neglect of others. In this regard, elevated past-negative scores combined with low future temporal orientation have been shown to correlate with negative affect, such as depression and anxiety (van Beek et al. 2011, Kooij et al. 2018, Allemand et al. 2025).

A lack of temporal flexibility across time perspectives has also been linked to suicide, a major public health concern. Although suicide is recognized as a complex phenomenon, certain mechanisms are known to either predispose individuals to or protect them from suicidal behavior. These mechanisms are multifaceted, operating as both risk and protective factors (Eskin 2014, Holman & Williams 2022). According to Lennings (1994), the relationship between time perspective and suicide warrants particular attention. Lennings suggested that time perspective could serve as a risk or protective factor, noting that individuals' positive and negative temporal attitudes may help predict suicidal ideation and attempts. In contrast to Lennings, Yufit and Benzies (1973) suggested that suicide stems largely from impairments in time perspective. Indeed, just as overemphasizing specific perspectives or neglecting others relates to mental health difficulties such as depression and anxiety, this imbalance is also regarded as an important factor in suicidal ideation and behavior. In one such study, Laghi et al. (2009) demonstrated that among adolescents—an at-risk group for suicide—an excessive focus on a past-negative time perspective played a significant role in predicting suicidal ideation. These findings were further corroborated by Shahnaz et al. (2019), who noted that a dominant past-negative orientation may exacerbate psychological distress and contribute to suicidal tendencies. Accordingly, research has consistently linked a past-negative time perspective to an elevated risk of suicidal ideation and actions across diverse populations, including adolescents and adults (Laghi et al. 2009, Shahnaz et al. 2019, Karslı 2022). Conversely, maintaining a past-

positive time perspective has been highlighted as a potential protective factor against suicidal behavior, as it allows individuals to appraise prior experiences favorably (van Beek et al. 2011, Shahnaz et al. 2019). In their study, Laghi et al. (2009) found that adolescents who maintained a past-positive orientation reported an absence of suicidal ideation. Accordingly, it has been proposed that past time perspectives (both positive and negative) play a central role in understanding suicidal thoughts and behaviors (Shahnaz et al. 2019).

The literature indicates that suicide is not related exclusively to past (positive and negative) time perspectives. It has also been proposed that present-hedonistic and present-fatalistic perspectives can serve as predictors of suicidal behavior (Karaytuğ et al. 2022). Although empirical studies examining the link between present orientations (fatalistic and hedonistic) and suicide remain relatively limited, Laghi et al. (2009) found that a present-fatalistic time perspective was associated with increased suicidal ideation, whereas individuals with severe suicidal ideation exhibited low levels of a present-hedonistic orientation. While an elevated focus on present-fatalistic and present-hedonistic perspectives may pose a risk for suicide, this vulnerability can also stem from the neglect of a future time perspective. In their study, Karaytuğ et al. (2022) found that a future time perspective may serve as a protective factor, noting that individuals with a future orientation are less likely to exhibit suicidal tendencies compared to those lacking this perspective. According to Taylor et al. (2011), future temporal orientation is closely linked to hopelessness; an absence of this future perspective can exacerbate feelings of hopelessness, thereby elevating suicidal ideation. Accordingly, because the lack of positive future expectancies is associated with hopelessness, it is thought to play an important role in the progression of suicidal behavior and can distinguish between suicide attempters and non-attempters (MacLeod et al. 1993, MacLeod et al. 1998). Furthermore, a future perspective is thought to moderate the relationships between depression, hopelessness, and suicide, with a hopeful outlook on future events playing an important role (Chin & Holden 2013, Wang et al. 2024). In light of these considerations, evidence supports that a positive focus on the future time perspective acts as a protective buffer against suicide by fostering hope (Hirsch et al. 2006, Hirsch et al. 2007).

Overall, the literature demonstrates that while some individuals focus excessively on a specific time perspective, others neglect certain temporal orientations, each resulting in distinct psychological consequences. Accordingly, individual differences exist in temporal perceptions; however, these perceptions are not innate but rather learned and, like other acquired behaviors, can be relearned (Zimbardo & Boyd 2018). Furthermore, rather than remaining fixed within a single temporal orientation, individuals are considered capable of acquiring an ideal temporal profile. Indeed, Boniwell and Zimbardo (2015) emphasized the ability to transition flexibly between time perspectives based on personal situational demands. Similarly, Stolarski et al. (2018) highlighted a balanced and flexible temporal perception that enables individuals to select the most appropriate time orientation for a given situation. Zimbardo and Boyd (1999) conceptualized the balanced time perspective as an optimal combination of low levels of maladaptive dimensions (past-negative and present-fatalistic) alongside high levels of adaptive dimensions (past-positive, present-hedonistic, and future). The balanced time perspective is recognized as a foundational component within positive psychology and has attracted growing scholarly interest (Chen et al. 2023). A comprehensive review revealed that a balanced time perspective exhibits notable associations with a broad array of psychological variables, including well-being, mental health, personality traits, cognitive functioning, self-regulatory capacity, interpersonal relationship quality, biological correlates, and demographic characteristics (Stolarski et al. 2020). From this standpoint, flexibly adopting contextualized time perspectives inherently promotes higher psychological adaptation and functioning compared to chronically adhering to a rigid, invariant temporal orientation (Zimbardo & Boyd 2018). Sailer et al. (2014) similarly characterized the balanced time perspective as comprising a more positive and less negative evaluation of the past, a more pronounced hedonistic and weaker fatalistic orientation toward the present, and a more structured perspective on the future. They posited that such a balanced profile fosters elevated levels of both subjective and psychological well-being. Empirical investigations into the balanced time perspective have documented its robust links to heightened well-being, greater life satisfaction, reduced negative affect, and stronger optimism and self-efficacy (Sobol-Kwapinska & Jankowski 2016). Grounded in these findings, the balanced time perspective has been identified as

functioning as an adaptive mechanism (Zhang et al. 2013). Furthermore, in a comparison of clinical and control groups, Pyszkowska et al. (2023) demonstrated that individuals diagnosed with depression exhibited significantly higher deviation from a balanced time perspective, a disparity that persisted irrespective of current symptom severity. These findings indicate that a balanced time perspective is not merely a correlate of well-being, but functions as an independent vulnerability factor in the development of psychopathologies such as depression. In a systematic review across diverse clinical populations, Stolarski et al. (2024) similarly demonstrated that unbalanced and inflexible time perspective profiles are consistently associated with greater symptom severity. Consequently, the Deviation from a Balanced Time Perspective (DBTP) metric—developed to operationalize the balanced time perspective in the literature—quantifies the extent to which an individual's temporal profile departs from the theoretical ideal balance. Higher scores on this index reflect not temporal balance itself, but rather divergence from an optimal profile and disharmony among temporal dimensions.

This study aims to examine the predictive role of distinct time perspectives and deviation from a balanced time perspective on suicide probability among adults aged 18 to 65. Although an established literature has investigated individuals' mental representations of the past, present, and future across diverse psychological variables, empirical research directly addressing suicidal behavior remains relatively sparse. To date, within the national literature, no research has examined the association between suicide and time perspective, with the exception of a single thesis study (Karslı 2022). Furthermore, empirical investigations directly examining the potential relationship between a balanced time perspective—conceptualized as an adaptive mechanism—and suicide risk remain absent from the broader literature. Consequently, the lack of studies delineating the link between a balanced time perspective and suicide across both national and international contexts represents a notable gap, underscoring the need for targeted empirical research to address this shortfall. Accordingly, this study aimed to determine whether suicide probability is predicted both by an excessive focus on or neglect of specific time perspectives, and by deviation from a balanced time perspective—the capacity to transition flexibly between different temporal orientations depending on contextual demands. The findings obtained from this study may not only address an empirical gap in the literature, but also provide mental health professionals with novel perspectives for suicide prevention and intervention. To this end, the study sought to answer the following research questions:

1. Do time perspective dimensions (past-negative, past-positive, present-hedonistic, present-fatalistic, and future) significantly predict suicide probability after controlling for demographic variables?

2. Does the Deviation from a Balanced Time Perspective (DBTP) score significantly predict suicide probability after controlling for demographic variables?

Based on these research questions, the study tested the following hypotheses:

H1: After controlling for demographic variables, past-negative and present-fatalistic time perspectives will significantly and positively predict suicide probability, whereas past-positive, present-hedonistic, and future time perspectives will significantly and negatively predict suicide probability.

H2: After controlling for demographic variables, deviation from a balanced time perspective will significantly and positively predict suicide probability.

Method

Sample

The study sample was recruited using convenience and snowball sampling techniques. Data were collected between October 2023 and June 2025 using paper-and-pencil survey questionnaires. The inclusion criteria were being 18 years of age or older, being literate, and providing voluntary informed consent to participate. Failing to complete the survey or not following the instructions served as the exclusion criteria. A total of 749 individuals initially participated in the data collection process. However, 120 of these participants (43 females and 77 males) were excluded from the sample due to premature termination of the survey or

improperly completed scale items. Consequently, the final sample comprised 629 participants who completed the survey fully. The statistical adequacy of the sample size was determined prior to data collection via an a priori power analysis performed with G*Power software (v3.1.9.7) for linear multiple regression (fixed model, R2 deviation from zero). Specifying a small effect size (f2 = 0.05), a significance level of $\alpha = 0.05$, a statistical power of 80% (1 - $\beta = 0.80$), and five predictor variables, the minimum required sample size was calculated as N = 263. The final sample of 629 participants achieved in this study substantially exceeded this required threshold, ensuring robust statistical power.

Procedure

Ethical approval was obtained from the Human Research Ethics Committee in Social and Human Sciences at Erzincan Binali Yıldırım University (Date: 22.09.2023 / Protocol No: 08/07). The study was conducted with a community sample in Erzincan, Türkiye. Participants recruited through convenience and snowball sampling were informed about the study's objectives and procedures, and written informed consent was obtained prior to participation. The administration was carried out directly by the researcher, with completion of the paper-and-pencil survey taking approximately 20–30 minutes. Given the sensitivity of collecting data on suicide probability, ethical considerations surrounding participant risk were addressed systematically. To ensure confidentiality, data were collected completely anonymously. While this anonymity precluded identifying specific individuals who scored at elevated suicide risk for direct clinical referral, essential referral resources were provided proactively. In accordance with ethical standards, the informed consent document contained detailed contact information for local psychological support services, crisis helplines, and mental health resources should participants experience psychological distress. To ensure data security, completed paper questionnaires were stored in a locked filing cabinet, and the digitized dataset was maintained on a password-protected computer accessible exclusively by the researcher.

Measures

Demographic Information Form

Participants completed a five-item questionnaire assessing age, gender, marital status, perceived income level, and educational attainment.

Suicide Probability Scale (SPS)

Developed by Cull and Gill (1988), the SPS is a 36-item self-report instrument designed to assess suicide risk. Items are rated on a 4-point Likert-type scale ranging from 0 to 4 (or scored from 1 to 4 depending on coding). The scale was initially adapted into Turkish by Atlı et al. (2009) and subsequently revised by Durak-Batıgün and Hisli-Şahin (2018). Higher scores indicate an increased probability of suicide. In the adaptation study, the internal consistency reliability coefficient was reported as $\alpha = .89$; in the present study, Cronbach's alpha was calculated as $\alpha = .90$.

Zimbardo Time Perspective Inventory (ZTPI)

The ZTPI is a 56-item self-report scale rated on a 5-point Likert-type scale designed to assess five temporal dimensions (Zimbardo & Boyd 1999). Akirmak (2021) conducted the Turkish validity and reliability study, reporting internal consistency coefficients for the subscales ranging from .68 to .84. In the present study, the internal consistency coefficients ranged from .59 to .82.The study also aimed to assess the balanced time perspective (BTP). Mooney et al. (2017) noted that various operationalization methods have been utilized to evaluate BTP, including cut-off criteria, hierarchical cluster analysis, and the Deviation from a Balanced Time Perspective (DBTP) method. In this study, the DBTP method proposed by Stolarski et al. (2020) was adopted, as it has been documented to offer greater predictive utility and consistency across empirical studies (Mooney et al. 2017). The calculation of the DBTP score relies on a standardized Euclidean distance formula benchmarked against theoretical ideal scores identified through cross-cultural investigations. These ideal reference scores are designated as follows: 4.60 for Past-Positive (PP),

1.95 for Past-Negative (PN), 3.90 for Present-Hedonistic (PH), 1.50 for Present-Fatalistic (PF), and 4.00 for Future (F). The formula for calculating the DBTP score is defined as:

$$DBTP = \sqrt{(oPNTP - ePNTP)2 + (oPPTP - ePPTP)2 + (oPFTP - ePFTP)2 + (oPHTP - ePHTP)2 + (oFTP - eFTP)2}$$

To explain the formula: oPN, oPP, oPF, oPH, and oF denote the individual's empirical scores observed on each of the five subscales of the Zimbardo Time Perspective Inventory, whereas ePN, ePP, ePF, ePH, and eF represent the fixed optimal/ideal reference values across all individuals. Within this framework, the DBTP score reflects the Euclidean distance between an individual's observed scores and the empirically established ideal balanced profile across all five temporal dimensions. Consequently, the DBTP metric does not quantify balance directly; rather, it measures the degree of divergence or detachment from this theoretical benchmark. Higher DBTP values thus indicate a greater deviation from a balanced temporal orientation, reflecting elevated temporal dysregulation or imbalance.

Statistical Analysis

Descriptive statistics were first computed for the preliminary examination of the dataset. Subsequently, bivariate correlation analyses and two separate hierarchical multiple regression analyses were performed. Hierarchical regression was employed to evaluate the predictive effects of the independent variables on the dependent variable while controlling for potential confounding influences of demographic characteristics. Because the Deviation from a Balanced Time Perspective (DBTP) index is mathematically derived from the five distinct temporal dimensions (past-negative, past-positive, present-hedonistic, present-fatalistic, and future), entering them simultaneously into a single regression equation would introduce severe multicollinearity. Therefore, two independent hierarchical regression models were estimated to avert this collinearity risk. In the first step (Block 1) of both hierarchical regression models, age along with demographic variables including gender, educational level, marital status, and perceived income were entered as control covariates. Prior to model estimation, categorical demographic variables were dummy-coded using designated reference categories (female, undergraduate degree, married, and low income). In the second step (Block 2), predictors were entered simultaneously via the enter method: the five distinct time perspective dimensions were added in the first hierarchical model, whereas only the DBTP score was entered in the second model.

Prior to conducting the regression analyses, statistical assumptions were systematically tested. Univariate normality was evaluated by inspecting skewness and kurtosis values; values falling within the range of -1.5 to +1.5 confirmed that the normality assumption was met (Tabachnick & Fidell 2013). Diagnostic assessments were conducted to evaluate additional regression assumptions. Variance Inflation Factor (VIF) values ranged between 1.035 and 1.905 (VIF < 5), and all tolerance values exceeded 0.20, confirming the absence of multicollinearity. In addition, the Durbin–Watson test statistics fell within acceptable parameters (1.898 and 1.907; 1.5 < DW < 2.5), verifying the independence of residuals. Cook's distance values were well below 1.0, indicating no influential outliers distorting the regression models (Field 2009). These diagnostic metrics are summarized in Tables 2 and 3.

Results

The sample comprised 384 females (61.0%) and 245 males (39.0%), with a mean age of 37.08 years (SD = 13.79). Regarding marital status, 50.9% of the participants were married (n = 320), 43.7% were single (n = 275), and 5.4% reported other marital arrangements (n = 34). In terms of perceived income level, 33.5% reported low income (n = 211), 58.8% reported moderate income (n = 370), and 7.6% reported high income (n = 48). With respect to educational attainment, 10.8% had completed primary school (n = 68), 7.3% middle school (n = 46), 23.4% high school (n = 147), 56.9% undergraduate education (n = 358), and 1.6% postgraduate education (n = 10).

Descriptive statistics, including means, standard deviations, skewness, and kurtosis values, along with bivariate correlations among the study variables, are presented in Table 1. As shown in the results, past-positive time perspective was significantly and negatively correlated with past-negative time perspective

(r = -.29, p < .01), present-fatalistic time perspective (r = -.12, p < .05), deviation from a balanced time perspective (r = -.57, p < .01), and suicide probability (r = -.45, p < .01). Conversely, past-positive time perspective showed significant positive correlations with present-hedonistic time perspective (r = .28, p < .01) and future time perspective (r = .34, p < .01). Past-negative time perspective was significantly and positively correlated with present-fatalistic time perspective (r = .51, p < .01), present-hedonistic time perspective (r = .22, p < .01), deviation from a balanced time perspective (r = .81, p < .01), and suicide probability (r = .50, p < .01). However, it showed no significant correlation with future time perspective (r = -.04, p = .92). Present-fatalistic time perspective was significantly and positively correlated with present-hedonistic time perspective (r = .33, p < .01), deviation from a balanced time perspective (r = .72, p < .01), and suicide probability (r = .32, p < .01), whereas it was significantly and negatively correlated with future time perspective (r = -.19, p < .01). Present-hedonistic time perspective had a significant positive correlation with future time perspective (r = .08, p < .05) and deviation from a balanced time perspective (r = .16, p < .01), but was not significantly correlated with suicide probability (r = .04, p = .25). Future time perspective showed significant negative correlations with deviation from a balanced time perspective (r = -.40, p < .01) and suicide probability (r = -.17, p < .01). Finally, deviation from a balanced time perspective was significantly and positively correlated with suicide probability (r = .56, p < .01).

Table 1. Descriptive statistics for study variables

Variable	M	SD	Skewness	Kurtosis	Cronbach α	1	2	3	4	5	6	7
1. PPTP	3.70	0.67	-0.33	0.14	.81	-	-0.29**	-0.12*	0.28**	0.34**	-0..57**	-0.45**
2. PNTP	3.19	0.79	-0.19	-0.26	.75		-	0.51**	0.22**	-0.04	0.81**	0.50**
3. PFTP	2.87	0.63	-0.09	0.21	.71			-	0.33**	-0.19**	0.72**	0.32**
4. PHTP	3.45	0.54	-0.08	0.28	.67				-	0.08*	0.16**	0.04
5. FTP	3.55	0.46	-0.30	0.37	.53					-	-0.40**	-0.17**
6. DBTP	3.65	0.86	-0.02	-0.27							-	0.56**
7. SP	69.18	16.40	0.70	0.37	.90							-

M = mean; SD = standard deviation; PPTP = Past-Positive Time Perspective; PNTP = Past-Negative Time Perspective; PFTP = Present-Fatalistic Time Perspective; PHTP = Present-Hedonistic Time Perspective; FTP=Future Time Perspective; DBTP = Deviation from a Balanced Time Perspective; SP = Suicide Probability. *p < .05. **p < .01. ***p < .001.

Two separate hierarchical multiple regression analyses were performed to evaluate the predictive effects of demographic control variables and the five temporal dimensions (past-negative, past-positive, present-hedonistic, present-fatalistic, and future), as well as demographic control variables and deviation from a balanced time perspective (DBTP), on suicide probability. Furthermore, because the sets of independent variables differed between the two hierarchical regression models, the resulting R2 and Change R2 values were not compared directly across models. First, the extent to which the demographic control variables and the five time perspectives (past-negative, past-positive, present-hedonistic, present-fatalistic, and future) predicted suicide probability was examined. In the first step (Model 1) of the hierarchical regression analysis, the control covariates (age, gender, educational level, marital status, and perceived income) were entered into the equation. This initial model was statistically significant, F(5, 623) = 30.995, p < .001, accounting for approximately 20% of the total variance in suicide probability (R2 = .199). In the second step, the inclusion of the five time perspective dimensions increased the explained variance to 45% (R2 = .453), with the overall model remaining statistically significant, F(10, 618) = 51.172, p < .001. The addition of the temporal dimensions contributed an incremental 25% of explained variance, which was statistically significant (Change R2 = .254, Change F(5, 618) = 57.336, p < .001). Additionally, the effect size for the incremental variance explained was determined using Cohen's f2 metric, yielding a large effect size (f2 = 0.464). An inspection of the standardized regression coefficients (β) in the final step revealed that, after controlling for demographic covariates, past-negative (β = .306, p < .001), past-positive (β = -.272, p < .001), and present-fatalistic (β = .103, p < .01) time perspectives significantly predicted suicide probability scores. In contrast, present-hedonistic (β = -.003, p = .937) and future (β = -.034, p = .309) time perspectives were not significant predictors (Table 2).

Subsequently, the extent to which the demographic control variables and the deviation from a balanced time perspective (DBTP) score predicted suicide probability was evaluated. In the first step (Model 1) of the hierarchical regression analysis, the demographic control covariates (age, gender, educational level, marital status, and perceived income) were entered into the equation. This baseline model was statistically

significant, F(5, 623) = 30.995, p < .001, accounting for approximately 20% of the total variance in suicide probability (R2 = .199). In the second step, the inclusion of the deviation from a balanced time perspective (DBTP) score increased the explained variance to 41% (R2 = .412), with the overall model maintaining statistical significance, F(6, 622) = 72.561, p < .001. The addition of the DBTP score contributed an incremental 21% of explained variance, which was statistically significant (Change R2 = .213, Change F(1, 622) = 224.738, p < .001). Additionally, the effect size for the incremental variance explained was evaluated using Cohen's f2 metric, which demonstrated a large effect size (f2 = 0.356). An examination of the standardized regression coefficient (β) in the final step revealed that, after adjusting for demographic covariates, the deviation from a balanced time perspective (DBTP) score significantly and positively predicted suicide probability (β = .476, p < .001; Table 3).

Table 2. Hierarchical regression analysis results for the predictive role of time perspectives on suicide probability

Variable	**Step 1**			**Step 2**				
	B / [CI]	SE	β	B / [CI]	SE	β	Tolerance	VIF
Step 1: Control Variables								
Constant	79.844 [74..305; 85.382]	2.820		78.133 [66.735; 89.532]	5.804			
Age	-0.230 [-0.344; -0.117]	0.058	-0.194	-0..167 [-0.263; -0.071]	0.049	-0.140	0.543	1.842
Gender	1.805 [-0.602; 4.212]	1.226	0.054	1.723 [-0.289; 3.735]	1.025	0.051	0.967	1.035
Education	-3.955 [-6.672; -1.237]	1.384	-0.116	-3.583 [-5.872; -1.295]	1.165	-0.105	0..780	1.282
Marital status	5.902 [2.847; 8.958]	1.556	0.180	3.446 [0.886; 6.007]	1.304	0.105	0.571	1.752
Income	-4.824 [-7.319; -2.330]	1.270	-0.139	-2.842 [-4.941; -0.744]	1.068	-0.082	0.960	1.042
Step 2: Independent Variables								
PNTP				6.373 [4.829; 7.9189]	0.786	0.306	0.621	1.611
PPTP				-6.602 [-8.346; -4.857]	0.888	-0.272	0.663	1.508
PHTP				-0.084 [-2.153; 1.986]	1.054	-0.003	0.732	1.365
PFTP				2.680 [0.788; 4.571]	0.963	0.103	0.639	1.564
FTP				-1.190 [-3..488; 1.107]	1.170	-0.034	0.814	1.228
Model Summary								
R^2	0.199			0.453				
Adjusted R^2	0.193			0.444				
R^2 Change	0.199			0.254				
F	30.995***			51.172***				
F Change	30.995***			57.336***				
Cohen's f^2				0.464				
Durbin-Watson				1.898				
Cook's Distance (maximum)				0.032				

N = 629. Variables were entered at each step using the Enter method within a hierarchical regression framework. Reference categories: Gender (Female), Education level (Bachelor's degree), Marital status (Married), Income level (Low income). PPTP = Past-Positive Time Perspective; PNTP = Past-Negative Time Perspective; PFTP = Present-Fatalistic Time Perspective; PHTP = Present-Hedonistic Time Perspective; FTP = Future Time Perspective; B = unstandardized regression coefficient; SE = standard error; β = standardized regression coefficient; VIF = variance inflation factor; R2 = coefficient of determination; Change R2 = R2 change; Change F = F change; Cohen's f2 = effect size; Durbin–Watson = test statistic for autocorrelation in residuals; Cook's D = Cook's distance. *p < .05. **p < .01. ***p < .001.

Table 3. Hierarchical regression analysis results for the predictive role of deviation from a balanced time perspective on suicide probability

Variable	Step 1			Step 2				
	B / [CI]	SE	β	B / [CI]	SE	β	Tolerance	VIF
Step 1: Control Variables								
Constant	79.844 [74.305; 85.382]	2.820		44.686 [38.069; 51.303]	3.369			
Age	-0.230 [-0.344; -0.117]	0.058	-0.194	-0.191 [-0.288; -0.093]	0.050	-0.160	0.541	1.847
Gender	1.805 [-0.602; 4.212]	1.226	0.054	1.804 [-0.261; 3.868]	1.051	0.054	0.967	1.035
Education	-3.955 [-6.672; -1.237]	1.384	-0.116	-3.497 [-5.829; -1.165]	1.187	-0.103	0.780	1.283
Marital status	5.902 [2.847; 8.958]	1.556	0.180	3.689 [1.052; 6.326]	1.343	0.113	0.564	1.774
Income	-4.824 [-7.319; -2.330]	1.270	-0.139	-3.014 [-5.166; -0.861]	1.096	-0.087	0.948	1.068
Step 2: Independent Variables								
DBTP				9.118 [7.923; 10.312]	0.608	0.476	0.936	1.068
Model Summary								
R2	0.199			0.412				
Adjusted R2	0.193			0.406				
R2 Change	0.199			0.213				
F	30.995***			72.561***				
F Change	30.995***			224.738***				
Cohen's f2				0.356				
Durbin-Watson				1.907				
Cook's Distance (maximum)				0.031				

N = 629. Variables were entered at each step using the Enter method within a hierarchical regression framework. Reference categories: Gender (Female), Education level (Bachelor's degree), Marital status (Married), Income level (Low income). PPTP = Past-Positive Time Perspective; PNTP = Past-Negative Time Perspective; PFTP = Present-Fatalistic Time Perspective; PHTP = Present-Hedonistic Time Perspective; FTP = Future Time Perspective; B = unstandardized regression coefficient; SE = standard error; β = standardized regression coefficient; VIF = variance inflation factor; R2 = coefficient of determination; Change R2 = R2 change; Change F = F change; Cohen's f2 = effect size; Durbin–Watson = test statistic for autocorrelation in residuals; Cook's D = Cook's distance. *p < .05. **p < .01. ***p < .001

Discussion

This study examined whether time perspective, a factor that shapes how individuals make sense of their experiences, predicted suicide probability. The hierarchical regression analysis indicated that the demographic variables entered in the initial step significantly accounted for suicide probability. Furthermore, the addition of time perspectives in the first hierarchical regression model (Change R2 = .254) and deviation from a balanced time perspective in the second model (Change R2 = .213) in Block 2 yielded significant increases in explained variance. This finding demonstrates that both time perspectives and deviation from a balanced time perspective contribute significantly to explaining suicide probability beyond demographic variables. Although there has been growing interest in examining the relationship between time perspective and various psychological variables, studies investigating its link to suicide remain relatively limited (Chen et al. 2023, Stolarski et al. 2020). The findings of the present study aim to contribute to this sparse literature. In this context, the obtained results are consistent with prior research while also revealing several notable differences.

The results largely support previous studies, as differences in suicide probability depending on individuals' time perspectives are considered an expected outcome (Yufit & Benzies 1973, Lennings 1994). The present findings similarly demonstrate variations in suicide probability across time perspectives. Specifically, the correlation analysis revealed that higher past-positive time perspective was associated with lower suicide probability. Hierarchical regression analysis indicated that, after controlling for demographic variables, past-positive time perspective was a significant predictor of suicide probability. This finding was in line with expectations, as a positive view of the past allows individuals to evaluate their past experiences constructively and favorably (Zimbardo & Boyd 1999, Zimbardo & Boyd 2018). Given its essential role in emotional balance and its negative association with suicide, a past-positive temporal orientation can be considered a protective factor against suicide risk (Laghi et al. 2009, van Beek et al. 2011, Shahnaz et al. 2019). A high past-positive time perspective may enhance emotional well-being and psychological resilience by evoking pleasant memories, which in turn can buffer individuals against suicide probability. Consequently, elevated levels of past-positive time perspective are thought to play a functional role in mitigating negative affect (van Beek et al. 2011, Sailer et al. 2014, Nowakowska et al. 2026).

The correlation findings indicated that an increase in past-negative time perspective was associated with an increase in suicide probability; furthermore, in the hierarchical regression model, past-negative time perspective remained a significant predictor of suicide probability after controlling for demographic variables. These results were consistent with prior studies, as an elevated past-negative time perspective is linked to an excessive focus on aversive past memories. In such cases, individuals may repeatedly recall distressing, upsetting experiences and feel persistent regret over them (Zimbardo & Boyd 1999, Zimbardo & Boyd 2018). Consequently, a high past-negative time perspective can disrupt emotional balance and exacerbate psychological distress, which may increase suicidal ideation and behavior (Laghi et al. 2009, Shahnaz et al. 2019). These considerations support the view that an excessive focus on a past-negative time perspective acts as a significant predictor of suicide probability. A review of the literature further indicates that past-negative time perspective is closely linked to mental health problems such as depression and anxiety, which are well-established risk factors for suicide (Anagnostopoulos & Griva 2012, Eskin 2014, Kaya Lefèvre et al. 2019, Nowakowska et al. 2026). In this regard, given the higher likelihood of depression and anxiety among individuals with elevated past-negative time perspectives, an increased vulnerability to suicide is expected. Therefore, enduring a persistent negative perception of one's past can be profoundly overwhelming, leading individuals to view terminating their life as a means of escaping such distress (Eskin 2014).

Another finding of the study was that present-fatalistic time perspective was associated with suicide probability. Previous studies have shown that an excessive focus on this temporal orientation is linked to increased suicidal ideation (Laghi et al. 2009, Kaya Lefèvre et al. 2019, Karaytuğ et al. 2022). Given Zimbardo and Boyd's (1999) conceptualization that a present-fatalistic time perspective leads individuals to perceive a lack of control over their lives and actions, it can be argued that this mindset fosters feelings of powerlessness and helplessness, ultimately leading individuals to view their future as predetermined and unalterable. Consequently, the belief that one exerts no agency over any aspect of life may drive individuals toward suicide. In line with this notion, the correlation findings of the present study revealed that higher present-fatalistic time perspective was associated with increased suicide probability. Furthermore, in the hierarchical regression model, present-fatalistic time perspective significantly predicted suicide probability after adjusting for demographic variables.

In contrast to existing literature, no significant correlational relationship was found between present-hedonistic time perspective and suicide probability in the current study. Similarly, the results of the hierarchical regression model demonstrated that this temporal dimension was not a significant predictor of suicide probability after controlling for demographic variables. Conversely, Laghi et al. (2009) proposed that low levels of present-hedonistic time perspective could contribute to severe suicidal ideation. Present-hedonistic time perspective is generally linked to tendencies toward pleasure-seeking and sensation-seeking (Zimbardo & Boyd 1999, Zimbardo & Boyd 2018). At this point, low levels of present-hedonistic time perspective may restrict individuals' capacity to derive pleasure from life, potentially leading them to perceive life as unlivable. As demonstrated by Laghi et al. (2009), it may thus emerge as a

variable associated with suicidal ideation. Conversely, elevated levels of present-hedonistic time perspective could also serve as a positive predictor of suicide risk, as earlier research has linked high present-hedonism to engagement in risky behaviors (Zimbardo & Boyd 1999, Wasserman 2001, Chavarria et al. 2015, Abousselam et al. 2016). However, the findings of the present study do not align with this literature. This discrepancy suggests that personal and interpersonal mechanisms—such as the pleasure-oriented nature of present-hedonistic time perspective fostering greater social engagement and broader social support networks, alongside immediate emotion regulation facilitated by rapid shifts in attentional focus—may prevent the emergence of a direct relationship with suicide probability (Zimbardo & Boyd 1999, Zimbardo & Boyd 2018).

Although the correlational finding regarding the relationship between future time perspective and suicide probability in the present study was consistent with the literature, the results of the hierarchical regression analysis revealed that future time perspective was not a significant predictor of suicide probability after controlling for demographic variables. However, prior research has demonstrated that a low future time perspective is associated with higher suicidal tendencies (Hirsch et al. 2006, Hirsch et al. 2007, Wang et al. 2024). Consequently, future time perspective was expected to emerge as a robust predictor of suicide probability in the current study as well, since possessing a restricted future orientation may hinder the generation of positive expectations and the establishment of meaningful life goals (Zimbardo & Boyd 1999, Zimbardo & Boyd 2018). A review of other studies indicates that individuals at risk of suicide often experience fewer positive future events and, consequently, an impaired capacity for prospective imagination; this lack of future orientation can exacerbate hopelessness and suicidal ideation, while future time perspective may moderate the pathways among depression, hopelessness, and suicide (MacLeod et al. 1993, MacLeod et al. 1998, Taylor et al. 2011, Chin & Holden 2013). Unlike other studies, the fact that future time perspective was not a significant predictor of suicide probability in this study may be related to the characteristics of the sample group. Considering that cultural elements such as fatalism tendencies may play a role in shaping expectations and planning regarding the future in Turkish society, the fact that future time perspective did not emerge as a significant predictor of suicidal behavior can be evaluated within a possible cultural context. In this context, it is possible that a cognitive focus on past experiences and regrets regarding them, rather than expectations and planning for the future, showed a stronger relationship with suicide risk. However, since cultural variables were not directly measured in the study, this explanation should be considered not as a definite cause, but as one of the possible interpretations of the finding.

Finally, the correlation results indicated that an increase in deviation from a balanced time perspective (i.e., moving away from the ideal balanced profile) was associated with an increase in suicide probability. At the same time, the results of the hierarchical regression model demonstrated that, after controlling for the effect of demographic variables, as the deviation from a balanced time perspective score increased—that is, as individuals moved away from the ability to transition flexibly and adaptively among past, present, and future dimensions—suicide probability scores also increased, and deviation from a balanced time perspective was found to be a significant predictor of suicide probability. These findings were among the expected outcomes of the study. This is because, rather than an excessive focus on or neglect of a single time perspective, the ability to switch flexibly between time perspectives according to contextual demands has previously been suggested to contribute positively to well-being, higher life satisfaction, less negative affect, and greater optimism and self-efficacy (Sobol-Kwapinska & Jankowski 2016). Therefore, a balanced time perspective is recognized as functioning as an adaptive mechanism (Zhang et al. 2013, Boniwell & Zimbardo 2015, Stolarski et al. 2020). In addition, in a clinical psychiatric sample, Pyszkowska et al. (2023) demonstrated the relationship between deviations from a balanced time perspective and clinical profiles. Furthermore, a systematic review conducted by Stolarski et al. (2024) indicated that imbalanced and inflexible temporal profiles may constitute a transdiagnostic risk mechanism. At this point, although no study in the literature has examined the link between deviation from a balanced time perspective and suicide probability, it was hypothesized in the present study that, drawing upon its established relationships with constructs such as well-being, life satisfaction, and optimism, deviation from a balanced time perspective would also predict suicide probability.

As with any study, the present study has several notable limitations. First, data regarding individuals' time perspectives and suicide probabilities were collected using self-report measurement instruments. In such methods, the issue may arise that participants' responses could be biased due to various factors, such as social desirability. Therefore, this constitutes a limitation. Additionally, given that participants were selected through convenience and snowball sampling methods, these sampling strategies may introduce selection bias by leading to an overrepresentation of individuals who are more willing to participate or who share similar characteristics relevant to the research topic. Consequently, the generalizability of the findings to broader populations with diverse characteristics may be limited. Another limitation of the study is that clinical evaluation and referral procedures could not be conducted for participants identified as being at high risk for suicide due to the anonymous nature of data collection. Although participants were informed during the informed consent process about psychological support and referral resources they could contact if needed, the anonymous nature of data collection precluded the individual identification and direct clinical follow-up of participants at high risk. Another limitation is the cross-sectional design of the study; therefore, the obtained findings should not be interpreted within a causal framework. An additional limitation stems from the direct application of cross-culturally established time perspective cutoff scores and normative profiles to the Turkish sample in this study, particularly given that individuals' temporal perception and orientation may be influenced by cultural values, the individualism–collectivism balance, and socioeconomic conditions. Furthermore, no data were gathered regarding participants' prior suicide history or existing psychopathological diagnoses. The omission of clinical and psychosocial variables that may be related to suicide probability—such as depression, anxiety, a history of psychiatric illness, hopelessness, and past suicidal ideation or attempts—hampers the ability to evaluate the relationship between time perspectives and suicide probability independent of potential confounding factors. Therefore, the observed associations in this study should not be interpreted as causal or entirely independent relationships. Because this information could potentially influence suicide probability scores, its omission represents an important limitation for this research. Finally, as a psychometric limitation of the study, the internal consistency coefficients of the Present-Hedonistic ($\alpha = .67$) and Future ($\alpha = .53$) time perspective subscales of the Zimbardo Time Perspective Inventory fell somewhat below the widely accepted threshold of .70. This may have also introduced measurement error into the DBTP scores. Consequently, while this limitation suggests that the strength of the observed associations may have been somewhat attenuated, it necessitates a cautious interpretation of the findings.

Despite these limitations, the obtained findings address an important gap in the literature and provide a foundation for future research. For instance, subsequent studies could examine the cultural and indirect mechanisms underlying the relationship between time perspectives, balanced time perspective, and suicide in greater detail. Additionally, responses to the self-report measures employed in this study may have been influenced by participants' momentary affective states during data collection, which could constrain the interpretation of the findings. In future research, structuring clinical referral and follow-up protocols for participants at high risk of suicide—while adhering strictly to ethical and confidentiality guidelines—is strongly recommended. Employing alternative methodologies, such as probability sampling, in future studies could help enhance the generalizability of the findings. In the present study, the application of externally derived normative values without accounting for characteristics unique to Turkish culture may have led to an underrepresentation of specific nuances in temporal perception pertinent to the Turkish sample. Therefore, establishing normative scores tailored specifically to Turkish samples would be advantageous in future investigations. Furthermore, to more robustly delineate temporal changes and causal pathways among these variables over time, the adoption of longitudinal research designs in future studies is strongly recommended. Furthermore, evaluating and controlling for clinical and psychosocial variables that may be associated with suicide probability—such as depression, anxiety, a history of psychiatric illness, hopelessness, and past suicidal ideation or attempts—in future studies could contribute to a more comprehensive understanding of the link between time perspectives and suicide risk. Understanding the role of time perspective in individuals' suicidal thoughts and behaviors can offer mental health professionals an innovative framework for suicide prevention and clinical intervention. Based on findings from both previous literature and the present study, these insights could inform the development of psychoeducational programs and structured interventions aimed at mitigating suicide

probability by targeting maladaptive temporal orientations and fostering a more balanced perspective across the past, present, and future.

Conclusion

This study examined the predictive role of time perspectives and deviation from a balanced time perspective on individuals' suicide probability. The analyses revealed that the concept of time perspective—reflecting the ways individuals perceive and make sense of time—was significantly associated with suicide probability. In conclusion, evaluating past experiences through a chronic focus on negativity and regret (past-negative) and approaching the present through a fatalistic lens (present-fatalistic) showed a statistically significant positive relationship with suicide probability. Conversely, establishing a positive relationship with one's past (past-positive) was identified as a significant negative predictor of suicide probability. Moreover, the finding that higher levels of deviation from a balanced time perspective positively predicted suicide probability is one of the pivotal contributions of this study; notably, no prior empirical study in the literature has directly examined the relationship between these two constructs. The finding that suicide probability increased as individuals' deviation in time perspectives increased underscores that clinical assessment and suicide prevention efforts should focus not merely on a single temporal dimension, but rather on the overall balance of an individual's time perspective profile.

In conclusion, this study demonstrates the predictive power of temporal perception—particularly negative attributions toward the past, fatalistic resignation toward the present, and deviation from a balanced time perspective—in understanding suicide probability among young adults. Based on the findings, integrating subscales that evaluate individuals' time perspective profiles into suicide risk screening protocols is recommended. Furthermore, in psychotherapeutic practice, incorporating temporal perspectives that allow clients to reframe the burdens and unresolved resentments of the past while fostering renewed hope and goal-directedness toward the future is considered vital for reducing suicide probability. Future research evaluating the efficacy of such temporally focused psychoeducational and preventive interventions through clinical trials will provide valuable contributions to the field.

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