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Passing the Temporal Borders Across the Selves: Examining the Association Between Time Perspectives, Consideration of Future Consequences and Future Self-Continuity

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Abstract

In the complex landscape of human decision-making and behaviour, several psychological constructs play a crucial role in shaping people's attitudes towards the past, present, and future. This study examines the interplay between how we perceive our future selves, our consideration of future consequences, and our general time perspectives aiming to deepen our understanding of temporal cognition and its implications for human behavior. The study explored how these factors interact and potentially influence our decisions and behaviour. Through a web survey questionnaire data was collected from the university students. Quantitative analyses explored the associations between individuals' levels of consideration of future consequences, future self-continuity, and their temporal orientations as measured by Zimbardo's Time Perspective Inventory. Results of the study suggests complex associations between these constructs, with individuals' time perspectives and future self-continuity exerting significant influences on consideration of future consequences. By understanding these relationships, gained valuable insights into how individuals make decisions that bridge the gap between their present and future selves and its association with temporal orientations. We discussed implications of the present study on the consideration of future consequences and it provides insights for future investigations.

Keywords: *Time perspectives; Consideration of future consequences; Future self-continuity*

Introduction

Most of our decisions are based on balancing the short-term and long-term consequences of our behaviours. For example, smoking and drinking alcohol are behaviours that pose a dilemma due to their long-term effects. The decision-making process in these "temporal dilemmas" has been an attractive issue in psychology for decades. Our study considers future consequences (CFC) as a relevant personality variable (Strathman et al., 1994) and its associations with the variables, including future self-continuity and time perspective, to elucidate individual differences. To achieve this objective, we offer a model of the antecedents of CFC. In the complex landscape of human decision-making and behaviour, several psychological constructs are crucial in shaping people's attitudes towards the past, present, and future. CFC, Future Self-Continuity (FSC), and time perspective are three such constructs that have received considerable attention in psychological research because of their profound implications for various aspects of human cognition and behaviour.

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Consideration of Future Consequences

CFC refers to the extent to which individuals contemplate and prioritize the potential outcomes of their present actions on future events (Strathman et al., 1994). This construct captures individual differences in future-oriented thinking, influencing decision-making processes across diverse domains of life, from financial planning to health behaviours. Strathman et al. (1994) introduced the concept of CFC as a personality trait influencing decision-making. This trait guides people's intentions and attitudes towards their current behaviour and the processing of information that will guide their behaviour (Orbell et al., 2004). This trait has been extensively studied in psychology to understand how it influences individual behaviours and motivation. This concept highlights the extent to which individuals consider the potential future outcomes of their actions and the degree to which these imagined outcomes influence them.

Strathman's work (Strathman et al., 1994) laid the groundwork for further research on CFC. Later studies like Joireman et al. (2006) proposed models that integrate CFC research with other areas of psychology to understand why some people naturally consider future consequences more than others. These models explore the influence of broader personality traits, time perception (how individuals construct their perception of time), decision-making across different time frames (intertemporal choice), delay of gratification abilities, and self-control mechanisms. By examining these factors, researchers aim to understand better the cognitive and emotional processes underlying individual variations in CFC. Strathman's concept of CFC has become a valuable tool in understanding decision-making and behaviour. It provides a framework for exploring why people make different choices, particularly when faced with trade-offs between immediate gratification and long-term consequences. By continuing to explore CFC and its underlying mechanisms, researchers can develop strategies to help individuals make better choices that align with their long-term goals.

Furthermore, when investigating the CFC, the impact of future self-continuity is a crucial variable within the framework of time perspectives, which offers a comprehensive understanding of how time is perceived and will yield more explanatory relationships. Individuals vary in their attachment to their future selves. Future self-continuity is related to many social psychological variables, although it has been studied more intensively in organizational and applied psychology. For instance, future self-continuity is related to academic performance, financial decisions, delinquency, and ethical behaviour (Van Gelder et al., 2015). The concept of the connectedness of intertemporal selves may explain many variables. The effect of future self-continuity on decision-making processes, which have individual and social outcomes, should be considered concerning different variables.

Future Self Continuity

The sense of temporal continuity is an inherent feature of the human self. Because it is difficult to have a personal self without a sense of permanence, there is a need for a permanent and continuous structure (Sani, 2010). Accordingly, when individuals have less connection with their future selves, they value the utility experienced by their future selves less. In other words, as the connectedness with the future self decreases, the subjective value of possible future outcomes will also decrease. In this context, self-continuity is an essential concept for individuals to learn from their past experiences while taking responsibility for their behaviours and choices, planning their future behaviours, and setting their goals. Therefore, for various

reasons, not having a sense of self-continuity has become an issue frequently found in many studies (Bluck & Alea, 2009; Bluck & Liao, 2013; Sani, 2010).

The research line related to the future self in the field of psychology is handled within the framework of the time-related structuring of the self, and it is noteworthy that it is studied under the concept of "future self-continuity" (Ersner-Hershfield et al., 2009; Hershfield, 2011a). The state of being connected with the future self-related to future self-continuity is addressed within the framework of three concepts: (1) similarity to the future self, (2) vitality of the future self, and (3) positivity of the future self (Hershfield, 2011). The first self-continuity element, similarity, is associated with individuals feeling more connected to people who are similar to them, and feeling more similar to the future self is a situation that supports future self-continuity (e.g., Ersner-Hershfield et al., 2009) (Bartels & Rips, 2010a); Bartels & Urminsky, 2011; Hershfield et al.) If the future self is vividly imagined, individuals are expected to feel more connected to their future selves (e.g., Hershfield et al., 2011; van Gelder, Hershfield, & Nordgren, 2013; van Gelder, Luciano, Kranenbarg, & Hershfield, 2015). At this point, positivity emerges as a factor that facilitates future self-continuity. In other words, the more positive the individual's attitude towards the future self, the easier it becomes to feel continuity towards the future self (Hershfield, 2011). Future self-continuity conceptually suggests that the previously mentioned components of similarity, vitality and positivity regarding the future self are interrelated. The fact that the future self is perceived and evaluated as similar to a stranger is essential in understanding long-term decision-making mechanisms (Hershfield, 2019a). However, when the literature was examined, it was noticed that most studies on future self-continuity focused on only one of the three proposed components—all three components needed to be tested together in a single framework in the studies published to date.

People are not evenly distributed in terms of dissociation from their future selves. Correspondingly, people's future self-continuity varies according to how attached they are to the person they will be. Those with low future self-continuity tend to see their future selves, i.e. their selves in a month or years, as very different from themselves. This situation leads to lower empathy for the future self, which the person perceives as a stranger. As a result, it may be more appealing to make decisions that focus on short-term outcomes in the present rather than the future (Hershfield, 2019). When future self-continuity is not high, it may be less desirable to make decisions in the future self's best interests by considering the future self's well-being, as the future individual is perceived as a stranger. Therefore, as future self-continuity decreases, this situation disadvantages the person in terms of making decisions in terms of financial, health, or long-term interests (Hershfield et al., 2012).

On the contrary, those with high future self-continuity are in a more advantageous position in many respects. For example, in this case, high future self-continuity leads to less procrastination, more financial savings and more investment in being healthy (Rutchick et al., 2018). Furthermore, high future self-continuity can provide individuals with higher life satisfaction in the long term than those with low self-continuity (Reiff et al., 2020). Therefore, based on these findings, having strong self-continuity may increase the likelihood of making more logical and healthy decisions in the future. In light of this information, it is considered essential to address the concept of future self-continuity, which has health and economic contributions related to the individual's benefit and whose relationships with the variables in

this subject are mainly studied, with critical moral decisions, judgements and evaluations for both the individual and society.

Research indicates that individuals vary in their level of future self-continuity, which refers to the extent to which they feel connected to their future selves (Ersnser-Hershfield et al., 2009). Research findings suggest that individuals with higher continuance levels are more likely to consider their future interests. For instance, they tend to save more money for their retirement (Hershfield et al., 2008), exhibit greater ethical responsibility (Hershfield et al., 2012), and are more effective at maintaining their health (Rutchick et al., 2018). On the other hand, situations with lower future self-continuity are a significant predictor of behaviours such as procrastination, which can be considered self-sabotage. For instance, Hershfield et al. (2011) conducted a study demonstrating that individuals may struggle to identify with their future selves due to a lack of belief or imagination. The researchers discovered that participants who interacted with their future selves were more inclined to accept financial rewards for the future and save considerably more money for their retirement than those who viewed their current avatar (Hershfield et al., 2011). Similarly, this study is based on the idea that different behavioural outcomes can increase or decrease the importance of future consequences and their effects when self-continuity is low or high. FSC may have a mediating effect on the association between CFC and time perspectives.

Time Perspectives

Zimbardo and Boyd (1999) defined the time perspective as the entirety of an individual's views on their psychological past and future related to a specific moment, based on Lewin's approach. Thus, the time perspective is conceptualized as a fundamental mental process in individuals, and its social functionality is re-established. Despite various studies on different aspects, it is noteworthy that there needs to be a systematic research line on the concept of time in psychology. For instance, while some researchers focus on the passage of time and time intervals (e.g. Sucala et al., 2011; Zakay, 2016), others conduct research on time usage and management (Adams & Jex, 1999; Eerde, 2003). On the other hand, the conceptualization of time only partially answers how it affects an individual's emotions, thoughts, and behaviours. Other studies (e.g. Gjesme, 1983; Zimbardo et al., 1997) have also been conducted. Zimbardo and Boyd (1999) presented a different perspective on time studies in psychology by focusing on how time is perceived individually, which has become an essential part of psychological research. According to these studies, time-related experiences include not only evaluations of the passage of time but also remembering the past, being aware of the present, and thinking about the future. Both internal and external factors influence our way of thinking about time.

An individual's time orientation, encompassing past, present, and future perspectives, is believed to play a crucial role in comprehending social cognition and behaviour. According to Holman and Zimbardo (2009) and Zimbardo and Boyd (1999), an individual's emotions, thoughts, and behaviours are influenced by their time perspective, which refers to their perceptions of the past, present, or future. Time perspective helps make essential decisions, judgments, and taking action. Evaluations of past experiences, both positive and negative, can influence present behaviour, as well as decisions and judgments that consider the potential future consequences of that behaviour (Boniwell & Zimbardo, 2015).

A cognitive bias towards the past, present, and future may develop in an individual's decision-making process due to temporal orientation. This occurs when a time perspective is more effective (Zimbardo & Boyd, 1999). Zimbardo and Boyd (1999) explain time perspectives using five different orientation dimensions: past-negative, past-positive, present-hedonistic, present-fatalistic, and future-time orientation. The present and future time perspectives were employed in the current research, as our investigation concerns variables in the context of the present and future time perspectives rather than the past. Each perspective offers unique insights into how individuals perceive and interact with time. This study's primary purpose is to understand how individuals' perceptions of the present and future time influence their future-oriented behaviour or decision-making processes(Boniwell & Zimbardo, 2015). In line with this purpose, by only examining present (hedonistic and fatalistic) and future time perspectives, the study not only overlooks critical dimensions of temporal orientation but also could maintain a clear and focused research question without spreading resources too thin.

The present hedonistic time perspective is an orientation in which individuals focus less on and are less concerned about the future consequences of their actions in the present. This often leads to impulsive and pleasure-seeking behaviours and a greater tendency to take risks (Zimbardo & Boyd, 1999). Individuals with an intense time perspective may continue to seek pleasure even when they are aware that their behaviour will have harmful long-term consequences. The present fatalistic time perspective is an accepting orientation that expresses the belief that the future is predetermined and cannot be changed by human effort. This perspective excludes the effectiveness of human beings in the face of fate. Intense experiences of this time perspective may lead to a perception of life as more hopeless, as a predetermined life can create a sense of helplessness and hopelessness. The characteristics associated with this time perspective are the tendency to act without considering the possible consequences of behaviours and the tendency to believe that one is not in control (Zimbardo & Boyd, 1999). A future-time perspective defines behaviours that express effort focused on future goals and rewards (Stolarski et al., 2015; Zimbardo & Boyd, 1999). Individuals with a dominant future-time perspective are more goal-oriented and try to achieve these goals. Behaviours are controlled by considering the possible negative or positive consequences in the future. Future time perspective is associated with higher socioeconomic status, academic achievement, lower thrill-seeking, and fewer risky behaviours (Stolarski et al., 2015). Future time perspective has been found to affect quality of life positively.

Time perspective has cognitive, emotional, and social components. It is influenced by various factors such as career, economic or political instability, substance use, individual achievements, traumatic events, and socialization processes (Boniwell & Zimbardo, 2015). Furthermore, the concept of time perspective is viewed as a framework that integrates with a meaningful understanding of life in a coherent manner. Therefore, time perspective, which is central to human nature, influences various actions such as perception, attention, and decision-making. Gorman and Wessman (1977) argue that viewing temporal orientations, attitudes and experiences as enduring personality traits is possible. In support of this view, although contextual and situational factors can influence time perspective, it can emerge as a relatively stable personal disposition when a particular temporal bias becomes dominant (Boniwell & Zimbardo, 2015).

It is noteworthy that future time studies have been conducted in the area of health behaviour and education. Studies that have examined how health behaviours are affected by time

perspective have found that a future time perspective, i.e. a more general consideration of the future and its consequences, is associated with fewer risky and unhealthy behaviours, such as smoking and drinking alcohol, safe driving, environmental behaviour, more health checks, more exercise, and healthy eating (Keough et al., 1999; Zimbardo et al., 1997). Studies in education have shown that positive attitudes towards the future positively impact students' motivation and interest, as well as career planning and attitudes (e.g. Bembenutty & Karabenick, 2004; Kauffman & Husman, 2004). Other variables that are positively related to future time perspective include psychological well-being and psychological adjustment (e.g., Zimbardo & Boyd, 2008), self-esteem and self-confidence (e.g., Anagnostopoulos & Griva, 2012), conscientiousness (e.g., Keough et al., 1999) and interest in the future after death (e.g., Öner-Özkan, 2007). Studies on the nature of time suggest that although the understanding of time is open to situational changes and possibilities, the learned and preferred perspective on time is a more enduring personality trait (Zimbardo & Boyd, 1999). This study constructs a multiple mediation model based on the assumption that in shaping future cognition and behaviour, possible selves also influence social cognitive structures and behaviour in the present. The hypothesis is that FSC has a mediating role in the association between the present and future time perspectives and CFC.

Method

Sampling and procedure

Firstly, the Ethics Committee approval was obtained from the Dokuz Eylül Technical University Institute of Social Sciences Ethics Committee. Then, the research battery was prepared using the measurement tools mentioned below. The participants of this study were 382 convenience-sampled college students from two four universities in Izmir and Manisa, Turkey. The questionnaire was distributed through the Microsoft Forms survey platform to students from the Dokuz Eylül University (N = 150) and Manisa Celal Bayar University (N = 232) to complete. The research is based on the principle of volunteerism, and all participants clicked on the consent option before completing the web-based questionnaire. Participants were informed about the research topic when invited to the web survey. In the web survey application, participants fill in the voluntary consent form and the demographic information form separately. They answer the measurement tools related to the variables of future self-continuity, time perspectives and consideration of future consequences. As a result, data analysis was conducted with 377 valid questionnaires. Of the sample, 65% were female, 35% were male. There were 246 males and 131 females. Data were collected from university students aged between 18 and 36 (M = 20.08, SD = 3.05).

Instruments

The following measurement tools were used in this study.

Demographical Information Form

A personal information form prepared to determine the characteristics of the research sample is used. The personal information form prepared by the researchers includes questions to determine the demographic characteristics of the participants, such as age, gender, marital status, educational status, employment status and income level.

The Future Self Continuity Scale

The Future Self-Continuity Scale (FSCS) is a single-item index of Future self-continuity. Participants were asked to evaluate the continuity of the future self with the item developed by Ersner-Hershfield and colleagues (2009) to measure the continuity of the future self, which was developed by using the Euler Circle to assess how connected and similar it is to the future self they imagined in ten years (Ersner-Hershfield et al., 2009). The Future Self-Continuity Scale assesses for perceived self-change between present and future self traits.

In order to ensure the continuation of the effect of imagining the future while measuring future self-continuity, it will be reminded by instructing, "Now think of yourself again as the person you imagined yourself to be in that future". Future self-continuity is measured with two items on a 7-point scale marked at each point, ranging from no to complete overlap. The first item asks participants to select the pair of circles that best describes how similar they feel to their future self in 10 years on a scale ranging from 1 (not at all similar) to 7 (completely similar). Participants were also asked to rate two items relating to how much they like their future selves and how important it is to them. Higher scores indicate higher future self-continuity. The higher the total score, the higher the level of future self-continuity of the individual. In this study, the Cronbach α value of FSCS was 0.60.

Zimbardo Time Perspective Inventory

The Zimbardo Time Perspective Inventory developed by Zimbardo and Boyd (1999) is used to examine the differences in time orientation of the participants and the effect of these differences on other research variables. The scale items are evaluated on a 5-point Likert-type scale where 1 = very uncharacteristic and 5 = very characteristic. The scale consists of 56 items. The inventory consists of five sub-dimensions: "past/positive", "past/negative", "present/hedonistic", "present/fatalistic", and "future orientation" dimensions, and in this study, present/hedonistic, present/fatalistic and future dimensions were used. The scores on the present hedonistic perspective reflect an orientation towards present pleasure with minimal concern for future consequences (e.g. 'Taking risks keeps my life from becoming boring').

In contrast, the present fatalistic perspective describes a helpless and hopeless attitude towards the future and one's life (e.g. 'Forces control my life I cannot influence'). On the other hand, the future perspective indicates behaviour dominated by striving for future goals and rewards (e.g. 'When I want to achieve something, I set goals and consider specific means for reaching those goals') (Zimbardo et al., 1997). The validity and reliability study of the scale was conducted by Kışlalı-Erginbilgiç (2014). In the Turkish version validity and reliability study, Cronbach's alpha internal consistency coefficients of the scale are .80 for past/positive, .82 for past/negative, .79, for present/preferential, .74 for present/fatalistic and .77 for future orientation. In our sample, for present/preferential (Cronbach α = .80), for present/fatalistic (Cronbach α = .63), and for future orientation (Cronbach α =. 74) scales had adequate internal consistency.

Consideration of Future Consequences

Consideration of future consequences (CFC) was assessed using the Consideration of Future Consequences Scale (CFCS) initially developed by Strathman et al. (1994), which is a self-report measure containing 12 items providing an overall measure of CFC [20]. The validity

and reliability study of the Turkish version of this scale was conducted by (Dalğar et al., 2011) in Turkey. The scale consists of 12 items answered on a 5-point Likert scale ranging from 1 (extremely uncharacteristic) to 5 (extremely characteristic). The CFC scale comprises two subscales, each containing six items, which evaluate an individual's level of concern for future consequences (CFC–Future; e.g., "I consider how things might be in the future, and try to influence those things with my day-to-day behaviour.") and concern for immediate consequences (CFC–Immediate; e.g., "My convenience is a big factor in the decisions I make or the actions I take"). Higher scores indicate higher levels of respondents' CFC. In our sample the CFC had good internal consistency (CFC Cronbach α =. 80, CFC–Future Cronbach α =.60, CFC–Immediate Cronbach α =.82).

Analytic Approach

JAMOVI 2.4.14. The data was used for descriptive statistics, correlation and mediation analysis to analyze the effect of college student's present and future time perspectives on considering future consequences and the mediating role of future self-continuity. The bootstrap method was applied to estimate 95% confidence intervals for mediating effect by randomly sampling 1000 Bootstrap samples. All continuous variables were standardized. A $p \leq .05$ alpha level was adopted for all operations, and 95% bias-corrected confidence intervals (CIs) were calculated. If CIs did not include zero, the corresponding effects were significant.

Results

Data was collected from the university students through a web survey questionnaire. Quantitative analyses explored the associations between individuals' levels of CFC, Future Self Continuity, and their temporal orientations as measured by Zimbardo's Time Perspective Inventory. Additionally, potential moderating factors such as demographic variables were examined.

Descriptives and Correlations

The results of all measures are presented (data on CFC, FSC, and time perspectives are shown in Table 1).

Pearson's correlation also evaluated the correlation between the CFC, three dimensions of time perspective and FSC (Table 2). As seen in the correlation matrix, all variables were significantly correlated with the outcome variable CFC. As seen in Table 2, the future-oriented time perspective significantly positively correlated with CFC and FSC, indicating that those who scored higher on the future-oriented time perspective were more likely to have higher consideration of future consequences and higher future self-continuity. Present-hedonistic and present-fatalistic time perspectives were significantly negatively correlated with CFC and FSC, indicating that those who scored higher on the present-hedonistic and present-fatalistic time perspective were more likely to have lower consideration of future consequences and lower future self-continuity.

Table 2. Means, Standard Deviations and Pearson's Correlations for CFC, FSC, Future, Present Hedonistic and Present Fatalistic Time Perspectives (N = 377)

Variable	*M*	*SD*	1	2	3	4
1. CFC	3.67	0.50				
2. FSC	5.38	0.85	0.343***			
3. Future	3.60	0.54	0.550***	0.204***		
4. Present-Hedonistic	3.50	0.56	-0.295***	0.003	-0.279***	
5. Present-Fatalistic	2.61	0.58	-0.382***	-0.230***	-0.178***	0.281***

Also, the mediation model analysis assumptions were checked, and collinearity diagnostics revealed that the Variance Inflation Factor (VIF) values were examined for each predictor variable. VIF values ranged from [minimum] to [maximum], with all values below the conventional threshold of 10, indicating no evidence of problematic collinearity. These findings suggest that multicollinearity among predictor variables is not a concern in the current regression model.

Mediation Analyses

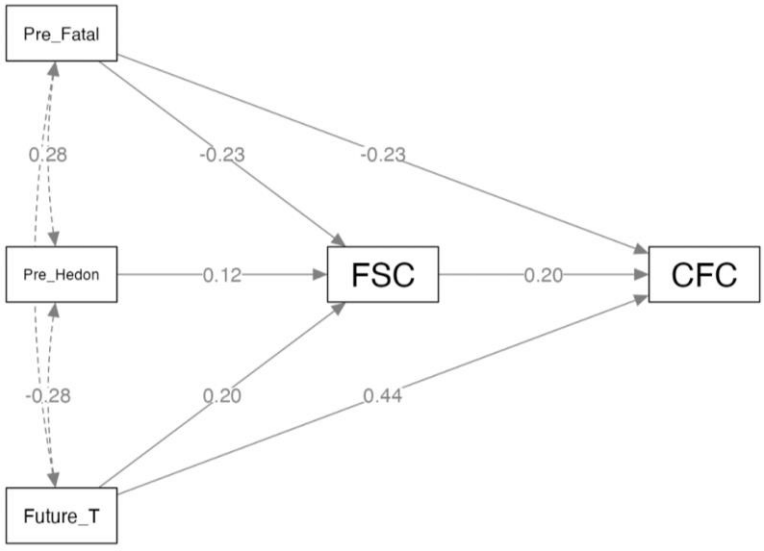
A mediation model examined the indirect effect of present fatalistic, present hedonistic and future time perspectives on CFC and FSC as the mediator. As shown in Fig. 1 and Table 3, the future-oriented time perspective positively predicted FSC and CFC (β = -0.29, $p < 0.01$; β = 0.55, $p < 0.01$; β = 0.39, $p < 0.01$). Mediation model with Bootstrap method displayed a significant partial mediating effect of future self-continuity between three-time perspectives and consideration of future consequences through three different paths (Ind1 X1 → M1 → Y1; Ind3 X2 → M1 → Y1; Ind3 X3 → M1 → Y1).

Table 3. Indirect and total effects of the mediation model

				95% C.I. (a)				
Type	**Effect**	**Estimate**	**SE**	**Lower**	**Upper**	**β**	**z**	**p**
Indirect	Future_T ⇒ FSC ⇒ CFC	0.0365	0.0120	0.01533	0.06648	0.0398	3.03	0.002
Indirect	Pre_Hedon ⇒ FSC ⇒ CFC	0.0220	0.0105	0.00288	0.04352	0.0247	2.10	0.035
	Pre_Fatal ⇒ FSC ⇒ CFC	-0.0399	0.0121	-0.06973	-0.01611	-0.0463	-3.31	< .001
	Future_T ⇒ FSC	0.3103	0.0807	0.15046	0.47512	0.1974	3.84	< .001
	FSC ⇒ CFC	0.1176	0.0238	0.06639	0.16856	0.2018	4.94	< .001
	Pre_Hedon ⇒ FSC	0.1874	0.0805	0.02333	0.34494	0.1226	2.33	0.020
	Pre_Fatal ⇒ FSC	-0.3396	0.0761	-0.51365	-0.16990	-0.2295	-4.47	< .001
	Future_T ⇒ CFC	0.4010	0.0381	0.31876	0.47776	0.4377	10.53	< .001
Direct	Pre_Hedon ⇒ CFC	-0.0979	0.0375	-0.17777	-0.01468	-0.1099	-2.61	0.009
	Pre_Fatal ⇒ CFC	-0.1954	0.0361	-0.26841	-0.12163	-0.2266	-5.41	< .001
	Future_T ⇒ CFC	0.4375	0.0386	0.36096	0.52013	0.4775	11.34	< .001
Total	Pre_Hedon ⇒ CFC	-0.0758	0.0385	-0.15757	0.00415	-0.0851	-1.97	0.049
	Pre_Fatal ⇒ CFC	-0.2353	0.0364	-0.30756	-0.16232	-0.2729	-6.47	< .001

Mediation model suggest a compelling role of FSC in explaining the relationship between time perspectives and CFC. Through mediation analysis, we found evidence supporting a significant indirect effect of future (β = .44, $p < .01$), present hedonistic (β = -.11, $p < .01$) and present fatalistic (β = -.23, $p < .01$) on CFC through FSC.

Figure 1. Multiple mediation model



Discussion

This research contributes to the growing literature on temporal cognition by providing empirical evidence of the interconnections between consideration of future consequences, future self-continuity, and time perspectives (present/hedonistic, present/fatalistic and future orientation). The relationships between time perspectives and consideration of future consequences of negative behaviours reveal the mechanisms that enable individuals to understand their perspective on the consequences of future situations that may have positive or negative outcomes in terms of self-control and self-esteem and their tendency to act according to the future consequences (Zimbardo & Boyd, 1999). Accordingly, the direct and indirect effects of time perspective, caring about future outcomes and self-continuity variables were examined in the present study. Our findings suggest a compelling role of FSC in explaining the relationship between time perspectives and CFC.

Through mediation analysis, we found evidence supporting a significant indirect effect of future, present hedonistic and present fatalistic on CFC through FSC. This indicates that while time perspectives directly influence CFC, a substantial portion of its effect is transmitted through the pathway involving FSC. These results underscore the complexity of the relationship between time perspectives and CFC, emphasizing the importance of considering FSC as a critical mechanism driving this association. The study's results were also consistent with the recent work of Guo et al. (2023), which suggests that considering future consequences and exercising self-control play essential roles in how time perspectives influence engagement in healthy lifestyles among young Chinese adults. Consistent with the findings of this study, previous research has demonstrated that perceptions of past, present, and future have varying effects on psychological variables, including decision-making processes, substance use, and risk-taking behaviour (Keough et al., 1999; Zimbardo et al., 1997). Therefore, time perspective is a significant factor in individuals' life choices and perceptions of the social world.

In this respect, the relationships between the study variables, the significance of which has been proved by the findings, are considered to be complementary to the field of social psychology, which deals with individual mechanisms and decision-making processes depending on time, in ways that have not been addressed in previous studies. It is known that people are more patient when they perceive their present and future selves as similar (Bartels & Rips, 2010). Here, being patient is less temporal devaluation of action outcomes, valuing future gains, and delaying pleasure. When assessed in this way, it is thought that individuals' self-continuity, i.e. how similar and connected they see themselves between their present and future selves, enables them to behave less impulsively and more patiently.

The study's findings are also in line with the following statements of the authors (Agerström & Björklund, 2009). In more specific terms, a distal time perspective activated the ideal self, whereas a proximal time perspective activated the pragmatic self. The ideal self is a mental representation of the self in which principles and inner values are more important than practical concerns. In contrast, the pragmatic self is a mental representation where practical considerations and instrumental rewards are more important than values and principles. Individuals often envision their future selves in alignment with their ideal self-concept. This alignment serves as a motivational force driving individuals to bridge the gap between their present and ideal selves over time. As individuals maintain a strong sense of continuity between their present and future selves, they are more likely to perceive their future selves as extensions of their ideal selves. This perception reinforces the commitment to long-term goals, values, and aspirations consistent with their ideal self-concept(Hershfield, 2011).

These findings have implications for promoting future-oriented positive living practices and offer directions for future research in this area. Empirical studies have supported the notion that future self-continuity, which refers to the extent to which the self is positioned in the future and evaluated about the current version of the self, differs from considering the future alone (Hershfield et al., 2012). Examining whether the time perspective mediates within the theoretical model while exploring the relationship between future self-continuity and moral decision-making would contribute to the literature. This study quantitatively examined the impact of self-continuity, which relates to self-evaluations over time, and time orientations, which are characterized by time perception, on consideration of future outcomes. Moreover, the perception of continuity with one's future self enhances the emotional connection and investment in future-oriented endeavours. Individuals who feel a strong connection with their future selves are likelier to engage in behaviours that benefit their long-term well-being and fulfilment (Hershfield, 2011). This may include making sacrifices in the present to achieve future goals, prioritizing long-term rewards over immediate gratification, and persisting in the face of obstacles or setbacks. Future-oriented individuals may exhibit a more remarkable ability to regulate impulses and impulses, as they are more likely to consider the potential long-term consequences of their actions(Hershfield, 2019; Molouki & Bartels, 2017). This can lead to better decision-making in various domains, such as finances, health, and relationships. Beyond philosophical appeal, individual differences in self-continuity experience could have pragmatic consequences for financial well-being. According to the present study, the relationship between present and future time perspectives and caring about future outcomes can be elucidated as the future time perspective has implications for self-control and self-confidence. For instance, through self-control, an individual may demonstrate more significant concern for the consequences of harmful behaviour as a consequence of caring about future consequences and may be more likely to resist and avoid the negative behaviour

(e.g., saving behaviour) (Ersner-Hershfield et al., 2009). Consequently, the tendency to demonstrate positive behaviour is observed with greater frequency.

This study has limitations. Primarily, the data were collected via a questionnaire survey, which needs more temporal depth. Additionally, the subjects were university students, which introduces a potential bias. Considering that the data for the study were collected near the COVID-19 pandemic and the 2023 earthquake in Turkey, and uncertainty perception was not assessed during this period, it can be regarded as another limitation because the study of Wang and colleagues (2022) revealed that tolerance of uncertainty and future self-continuity are related constructs. From this perspective, it is suggested that the societal events in question may be associated with perceptions of time and the future, and incorporating uncertainty perception into future studies may be beneficial for understanding this relationship.

In conclusion, the study contributes to understanding how individuals perceive and interact with time by examining the relationships between future and present time perspectives, consideration of future consequences, and future self-continuity. This insight is crucial for understanding human behaviour and decision-making processes across various contexts. The findings have implications for promoting future-oriented positive living practices and offer directions for future research in this area.

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