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**Research Article**

# The effect of high school students' time perspective perceptions on their cognitive flexibility and academic self-efficacy

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**Abstract**

This study aims to reveal the relationship between time perspectives, cognitive flexibility, and academic self-efficacy among secondary school students. The study, which was prepared using the correlational survey method from quantitative research designs, included a sample group of 300 students enrolled at Keçiören Vatansever Şehit Tümgeneral Aydoğan Aydın Science High School, Nahit Menteşe Anatolian High School, and Mamak Science and Art Centre in the districts of Keçiören and Mamak in Ankara. In addition to the form prepared to determine the demographic information of the participants, the Cognitive Flexibility Scale, Zimbardo's Time Perspective Scale, and Academic Self-Efficacy Scale were used after obtaining the necessary permissions. According to the findings obtained as a result of the analyses, the cognitive flexibility of high school students in the "Past Positive Time", "Present Hedonic Time" and "Future Time" perspectives positively affect their cognitive flexibility and academic self-efficacy. Furthermore, female students scored higher than male students, and students whose mothers did not work scored higher than those whose mothers worked in all time perspectives except for future time. In this context, it is recommended to develop educational programmes that enhance students' awareness of time perspectives and support cognitive flexibility.

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## Introduction

The concept of time is a subject that has been addressed by many different thinkers throughout history. In addition to approaching the perception of time from different angles, the point where these perspectives converge is that, conceptually, time affects the decisions and choices that individuals make and, consequently, their lives. At this point, it is necessary to explain the concept of time perspective. Time perspective is defined as "a cognitive and emotional framework that shapes individuals' decision-making processes, behaviours, and life experiences through their perceptions of the past, present, and future" (Zimbardo and Boyd, 1999). Zimbardo and Boyd (1999) stated that people perceive time consciously or unconsciously and shape their lives by making decisions and determining their preferences according to their time perspective. Based on this definition, they examined time in terms of five different perspectives: 'positive past time', 'negative past time', 'fatalistic present time', 'hedonistic present time' and 'future time'. Based on this point, it is expected that the concept of time will be evaluated in different ways among individuals. This is because it is widely believed that experiences influenced by an individual's time perspective are unique to that individual. Time perspective can have a direct or indirect effect on an individual's life. The way time is perceived also plays an important

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role in psychological problems that individuals may encounter in mental processes (Zimbardo et al., 2003). Individuals living within the multidimensional structure of time experience anxiety at times based on past experiences, at times based on the benefits of the present, and at times based on the uncertainty of the future (Wittman et al., 2006).

The study conducted by Zimbardo, Boyd and Keough (1997) on this subject contributed to a better understanding of the perspective of time. Zimbardo, Boyd and Keough (1997) examined time in five different categories. These five categories are "positive past time", "negative past time", "fatalistic present time", "hedonic/pleasure-seeking present time" and "future time". It is thought that people perceive time within these categories through unconscious processes and tend to cling to life according to their perceived time perspective (Zimbardo and Boyd, 1999). The most consistent use of time from a theoretical perspective is explained as the balanced use of past, present, and future time perspectives (Zimbardo and Boyd, 1999). However, although people tend to use time in a balanced manner, they also show a tendency to use a dominant time perspective (Milfont and Gapski, 2010). Every person's life contains unique patterns, and based on this original structure, the effects of time perspectives on individuals' lives can be evaluated in specific dimensions (Zimbardo and Boyd, 2009).

Individuals who tend to continue their lives based on experiences gained from their past have a past time perspective, regardless of whether the results are positive or negative, while those who live according to immediate stimuli in the present time have a present time perspective, and those who prepare strategies and plans for unfulfilled possibilities have a future time perspective (Zimbardo and Boyd, 1999).

It is thought that there may be many accompanying factors for a certain time perspective to dominate in an individual, and that these accompanying factors may include environment, climate, cultural structure, life events, and temperament (Yaşın and Sunal, 2016). The time perspective in which one lives begins to be used predominantly in the nature of life, and the aforementioned dominant time perspective can become routine for the individual and may be preferred even without the individual being aware of it (Akkoç Arabacı and Soysal, 2021). On the other hand, it is thought that time perspectives chosen unconsciously can sometimes change the balance of life. On the other hand, according to Zimbardo and Boyd (1999), time management increases the likelihood of a more qualitative course of life. According to Zimbardo and Boyd (1999), the concept of time is something that can be learned and can influence the decisions an individual makes and the actions they take in their life. Time perception ensures that individuals internalise their learning processes (Zimbardo and Boyd, 1999). Based on this, it is thought that individuals with a past time perspective try to act in a more familiar situation and exhibit risk-averse behaviour. When the literature on time perspective is examined, it is stated that certain behavioural patterns compatible with this perspective are observed more frequently. For example, it can be said that individuals with a hedonistic present time perspective are more likely to engage in risky behaviours (Zimbardo et al., 1997; Apostolidis et al., 2006). It has been observed that individuals who directly and predominantly use a future time perspective engage in very intensive work related to the future and choose to focus more on future tasks so that the present time is not wasted (Zimbardo and Boyd, 1999). In a study conducted by Gao (2011), it was stated that the pressure experienced by individuals in the aforementioned future-oriented work routine can lead to anxiety and stress. On the other hand, it has also been suggested that anxiety may be more related to negative past time and fatalistic present time perspectives than to the future time perspective (Zimbardo and Boyd, 1999). Similarly, a more depressive mood has been observed in individuals who tend to have a negative time perspective of the past (Zimbardo et al., 2003). This anxiety increases in individuals, especially with the increase in responsibilities. Therefore, adolescence is one of the periods when this anxiety is experienced at the highest level in individuals.

Adolescence is a transitional period in all societies characterised by growth, the transition from the immature state of childhood to the maturity of adulthood, and preparation for the future; it is a period of economic, social, psychological, and biological change (Larson, Wilson, & Rickman, 2009; Steinberg, 2013). However, adolescence is also defined as a normal biopsychosocial developmental process in which the basic construction of identity is integrated into the individual (Erickson, 1964). During this period, adolescents, who experience many new developments from a biological perspective, also begin to experience emotional and behavioural changes such as acting independently, making their own decisions and feeling anxious about the future (Steinberg, 2013). Along with development and change, adolescence is

also defined as a period in which every adolescent may face certain difficulties in academic, social, emotional, and physical areas. These challenges, which indirectly or directly affect the individual's social life, subjective well-being, and health, also cause adolescents to struggle with the responsibilities they must fulfil and the roles they must assume in later years (Jessor, 1991).

**Problem**

Adolescence is a period in which individuals experience emotional life differently than in childhood or adulthood. Adolescents experience negative and complex emotions much more frequently during this period, mood swings are more common, and their emotional responses to their experiences can be more intense. During this period, it is considered crucial for adolescents to be able to recognise their emotions, express them, and organise them in an orderly manner (McLaughlin et al., 2011). This is because, along with the changes that occur during this period, the ability to control emotions contributes to a healthier adolescence. In other words, due to both psychosocial and physical changes, the regulation of emotions becomes particularly important during this period (Spear, 2000). Numerous studies have shown that individuals who lack the ability to regulate their emotions frequently experience eating disorders, anxiety symptoms, and aggressive behaviour (Ulutaş, 2024).

In addition to the emotions mentioned above, stress, which is considered a part of development, is also experienced intensely during adolescence. Stress is most commonly defined as a state of intense arousal that occurs physically or psychologically after the dynamics originating from the external or internal environment are perceived as threatening or harmful to the individual (Lazarus and Folkman, 1987). Regardless of the words used to define stress, there are four important factors that must be taken into consideration. These factors are: the presence of an internal or external factor, the evaluation of this factor as harmful or beneficial, the evaluation of mental or physical resources for coping, and the formation of complex mental or physical effects, often referred to as a "stress response", when coping is not possible (Lazarus, 1993). However, stress can also be defined as physiological and psychological stress. In this context, psychological stress is defined as the strain experienced by an individual as a result of their resources being insufficient to respond to internal and external demands arising from their interaction with their environment. Physiological stress, on the other hand, is expressed as physical responses given by the body when the individual is exposed to stressors (Krohne, 2002).

Many situations that individuals must adapt to throughout their lives have the potential to cause stress. As detailed above, adolescence is one of the periods in which stress is experienced most intensely. The physiological changes experienced during this period, independence from parents, adaptation to cognitive capacities that are beginning to enrich with experience, fulfilment of academic obligations, establishing social relationships with both their own and the opposite sex, preparing for adult roles, and career planning are among the factors that cause stress for adolescents (Patterson and McCubbin, 1987). On the other hand, even small or large changes that may occur in the normal course of life can be a source of stress for adolescents, and these stressors can prevent them from developing healthily (Eryılmaz, 2009). At this point, the development of emotion regulation skills in individuals contributes to them going through this process with minimal problems.

In addition to emotion regulation skills, one of the factors that help individuals cope with stress and negative emotions is cognitive flexibility. Cognitive flexibility is defined as 'the ability of an individual to shift their cognitive focus in order to generate new information in response to a new problem or condition presented by their environment' (Deak, 2003). In other words, cognitive flexibility is a characteristic that enables individuals to perform multiple tasks and come up with appropriate solutions to new challenges (Ionescu, 2011). In this sense, cognitive flexibility can be briefly defined as "an important dynamic for the ability to adapt to difficult and new life conditions". Cognitive flexibility can also be examined in three areas: the desire to control difficult situations, awareness of different options for solving difficult situations, and the ability to come up with solutions to deal with these difficult situations. Individuals with high cognitive flexibility may be more willing to cope with difficult life conditions, while those with low or rigid cognitive flexibility may be prone to pathological responses to such situations (Dennis and Vander Wall, 2010). However, high cognitive flexibility can also reduce the likelihood of negative emotions. As a result, positive emotions

and life satisfaction, along with the positive evaluations expected from the individual, can positively affect subjective well-being (Satan, 2014). Indeed, studies have found that cognitive flexibility contributes positively to subjective well-being in adolescents (Satan, 2014; Demirbilek, 2021; Sağar, 2022). On the other hand, it is also possible to say that cognitive flexibility reduces the stress experienced by individuals in the face of difficult life conditions and facilitates their struggle with stress, as well as negatively affecting them. Indeed, when examining studies that investigate the relationship between cognitive flexibility and stress in adolescents, some studies have found that cognitive flexibility negatively affects stress (Kuyumcu and Kirazcı, 2020; Özcan, 2022; Alsaif et al., 2024), while other studies indicate that stress negatively affects cognitive flexibility (Hillier, Alexander, and Beversdorf, 2006; Harms et al., 2018; Doğan Laçin and Yalçın, 2019). Finally, when examining studies that investigate the relationship between emotion regulation and cognitive flexibility, it has been found that cognitive flexibility has a positive effect on emotion regulation and a negative effect on emotion regulation difficulties (Rajabi, Nazarpour, and Tabnak, 2017; Yıldız, 2018; Öztürk, 2019; Özbak, 2021; Bozorgi Kazerooni and Gholamipour, 2023). In conclusion, it can be said that cognitive flexibility contributes to individuals experiencing less stress in the face of difficult life conditions, facilitates emotion regulation, and has a positive effect on subjective well-being.

One of the problems encountered during adolescence is related to academic self-efficacy, a concept related to perceived self-efficacy in academic terms. Academic self-efficacy is defined as an individual's perceived ability to perform academic tasks at a specified level (Honicke and Broadbent, 2016). Students with high academic self-efficacy are willing to take on tasks with a higher level of difficulty and make serious efforts to accomplish them (Deng et al., 2022). In addition, students with high academic self-efficacy are students with higher academic goals and demonstrate more serious resistance to difficulties by determining self-regulation strategies more effectively (Artino, 2012; Dullas, 2018; Yokoyama, 2019). From this point of view, it can be said that academic self-efficacy can directly affect students' academic performance. Experiences in developing self-efficacy levels in individuals and lessons learned from these experiences are also considered to be very important. Kleppang et al. (2023) expressed the subjective evaluations of individuals based on their past experiences as "mastery experience" in relation to academic self-efficacy. Bilginer (2022) stated that successful experiences strengthen individuals' perceptions of self-efficacy, while unsuccessful experiences reduce their belief in self-efficacy. As can be understood from this, the correct analysis of an individual's past experiences is extremely valuable for academic self-efficacy. At this point, it is considered extremely valuable for the individual to have a correct time perspective.

When evaluated in general terms, it is a well-known fact that adolescence is a stressful period in an individual's life, causing serious changes in both emotional and physical terms. Undoubtedly, adolescent individuals, who are forced to struggle with many different adjustment problems and negative emotions during this stressful period, sometimes think about the past, when they had few responsibilities, a time when they had little responsibility and a lot of free time, sometimes they think about the present, when they do not think about the past or the future and just try to get through the day, and sometimes they think about the future, when they act according to their plans for the future. They try to cope with the difficulties they encounter according to these different time perspectives. This study was designed based on this premise and focuses on the effects of cognitive flexibility levels and academic self-efficacy on the struggles of high school students in coping with challenges according to Zimbardo's time perspective.

**Significance of the Study**

Adolescence is described as the period during which individuals begin to explore and evaluate their psychological characteristics in order to discover how they adapt to social life and who they really are (Steinberg and Morris, 2001). During this period, adolescents experience social, psychological, and physiological changes, as well as new emotional experiences, and tend to react more intensely to their lives emotionally compared to individuals younger and older than themselves (Silk, Steinberg, and Morris, 2003).

During this period, which is characterised by new emotional experiences and adaptation to changes in various areas, certain problems may arise. Examples of such problems include cognitive and emotional symptoms such as exaggerated

anxiety, fear and depression, as well as negative behaviours such as theft, aggression, substance and alcohol use, and lying (Steinberg, 2013).

The resolution of these potential problems has a direct positive impact on the individual's development. When individuals regulate these emotions in a healthy manner, it becomes easier for them to cope with stressful situations (Folkman et al., 1986). On the other hand, individuals' thoughts, beliefs, and knowledge influence their assessment of stressful events. While stressful situations may be perceived as threatening by some individuals, they may be seen as a challenge or an exciting opportunity by others (Hampel and Petermann, 2006). As a result of their cognitive evaluations, when individuals interpret the situation they are experiencing as stressful, they ask themselves the question "What can I do?" and evaluate their stress coping preferences and resources (Folkman and Lazarus, 1985). At this point, individuals can examine the situation they are experiencing from different time perspectives.

It has been thought that the time perspective plays an important role in understanding stress and anxiety in a person's life. In this regard, when a person's stress coping methods and resources are insufficient, high cognitive flexibility comes into play and alternative solutions are produced to achieve adaptation (Cañas et al., 2003).

In light of this information, it can be said that stress has two important structures in psychological terms, namely emotional and cognitive, and that when adolescents have high cognitive flexibility and use their emotion regulation skills effectively during adolescence, it is easier for them to cope with both the crises associated with the development and change they experience and the stress caused by these crises. In this context, it is considered important for the planned study to provide information about the time perspectives of individuals in this age group, reveal their cognitive skills and academic self-efficacy, and explain the relationship between these three variables. In studies conducted on the subject, it has been determined that the variables have been examined separately; however, no study has been found that examines time perspective, cognitive flexibility, and academic self-efficacy together. This situation highlights the originality of the study and also shows how important it is in terms of filling a gap in the literature.

**The Purpose of the Research**

The purpose of this study is to examine the effect of time perspectives of high school students on their cognitive flexibility and academic self-efficacy in coping with challenges they face. In this context, the main problem of the study is determined as "How do time perspectives of high school students affect their cognitive flexibility and academic self-efficacy levels?" Based on the main problem of the study, the following sub-problems have also been identified and will be addressed in the study:

- What is the relationship between each time perspective of high school students and their cognitive flexibility and academic self-efficacy?
- How are the time perspectives of high school students distributed according to age, gender, mother's occupation, father's occupation, and income level?

**Assumptions**

In this study; The student group selected as the sample group reflects the population, The scales selected as data collection tools are appropriate for the purpose of the study, The students in the sample group answered the data collection tools correctly, without being influenced by any person or group, and in a way that reflects their own thoughts, It is assumed that the sources cited in the literature related to the subject accurately reflect the truth.

## Method

This section provides information about the research model, population-sample, data collection tools, and data analysis.

**Research Model**

This study utilised the correlational survey model, which is one of the quantitative research methods. The correlational survey model is a research model that aims to determine the coexistence or degree of change between two or more variables (Karasar, 2013).

**Universe-Sample**

The scope of the study was determined as high school students enrolled in secondary education. In addition, due to the large number of students in this age group, who are also in their adolescence, across the country and the difficulty of reaching each high school student, it was decided to take a sample. In this context, the sample of the study consists of 300 high school students enrolled at Mamak Science and Art Centre (Mamak), Keçiören Vatansever Şehit Tümgeneral Aydoğan Aydın Science High School (Keçiören), and Nahit Menteşe Anatolian High School (Mamak) in Ankara province, which are under the Ministry of National Education. Table 1 presents the demographic characteristics of all students in the sample group.

**Table 1.** Demographic characteristics of students participating in the study (general)

| Demographic Information | | Frequency (n) | Percentage (%) |
|---|---|---|---|
| Age | 14 | 92 | 30,67 |
| | 15 | 105 | 35,00 |
| | 16 | 49 | 16,33 |
| | 17 | 47 | 15,67 |
| | 18 | 7 | 2,33 |
| | **Total** | **300** | **100,0** |
| Gender | Girl | 186 | 62,00 |
| | Boy | 114 | 38,00 |
| | **Total** | **300** | **100,00** |
| Mother's Occupation | Not working | 134 | 44,67 |
| | Public Sector | 87 | 29,00 |
| | Private Sector | 79 | 26,33 |
| | **Total** | **300** | **100,00** |
| Father's Occupation | Not working | 10 | 3,33 |
| | Public Sector | 112 | 37,33 |
| | Private Sector | 178 | 59,33 |
| | **Total** | **300** | **100,00** |
| Income Level | Less than 30.000 TL | 37 | 12,33 |
| | 30.001 TL – 45.000 TL | 73 | 24,33 |
| | 45.001 TL – 60.000 TL | 48 | 16,00 |
| | 60.001 TL – 75.000 TL | 33 | 11,00 |
| | 75.001 TL – 90.000 TL | 54 | 18,00 |
| | 90.001 TL and above | 55 | 18,33 |
| | **Total** | **300** | **100,00** |

When Table 1 is examined, it is observed that among the high school students who participated in the study; 15-year-olds (105 students, 35.00%), females (186 students, 62.00%), those whose mothers do not work (134 students, 44.67%), those whose fathers work in the private sector (178 students - 59.33%), and those whose family income is between 30,001 TL and 45,000 TL (73 students - 24.33%) are in the majority.

**Data Collection Tools**

In line with the objectives, problems and sub-problems identified in the study, a data collection tool consisting of four scales was used. The first scale collects information about the demographic characteristics of the participating students. The second part of the scale is the Cognitive Flexibility Scale adapted to Turkish culture by Sapmaz and Doğan (2013). The third part of the scale consists of Zimbardo's Time Perspective Scale, developed by Akırmak (2019), while the final section comprises the Academic Self-Efficacy Scale, developed by Kandemir (2010).

***Cognitive Flexibility Scale (CFS)***

The Cognitive Flexibility Scale is a 20-item, five-point Likert-type measure developed by Dennis and Vander Wal (2010) to assess individuals' levels of cognitive flexibility. The scale consists of two dimensions: "control" and "alternatives". The 'control' subscale consists of seven items and includes statements related to the belief that difficult situations can be controlled. The 'alternatives' dimension consists of 13 items and includes statements related to the belief that individuals can find alternative solutions to difficult situations or that alternative explanations may exist for life situations and individual behaviours. The Cronbach Alpha internal consistency coefficient for the entire scale was found to be 0.91.

***Zimbardo's Time Perspective Scale***

The participants in the scale development process consisted of 554 undergraduate students. The ages of the participants ranged from 18 to 51, and they were mostly university students studying at various higher education institutions in Turkey, with the majority attending Istanbul Bilgi University. As in the original scale, the Turkish translation also consists of a total of 56 items scored on a five-point Likert scale. The scale has five subscales: Past Positive, Past Negative, Present Fatalistic, Present Hedonistic, and Future. The Cronbach Alpha values for these subscales are .84, .74, .75, .78, and .68, respectively. It can be seen that there are a total of 9 items in the Past Positive Time sub-dimension, a total of 10 items in the Past Negative Time sub-dimension, a total of 15 items in the Present Hedonistic Time sub-dimension, 9 sub-items in the Present Fatalistic Time sub-dimension, and 13 items in the Future Time sub-dimension. In this context, the calculations were made as follows: The lowest possible score in the Past Positive Time sub-dimension is 9, and the highest possible score is 45. The lowest possible score in the Past Negative Time sub-dimension is 10, and the highest possible score is 50. the lowest possible score in the Present Hedonistic Time sub-dimension is 15, and the highest possible score is 75; the lowest possible score in the Present Determinism Time sub-dimension is 9, and the highest possible score is 45; and the lowest possible score in the Future Time sub-dimension is 13, and the highest possible score is 65.

***Academic Self-Efficacy Scale (ASES)***

To determine the construct validity of the scale, a preliminary application was conducted on a total of 468 university students, including 243 female and 225 male students from different class levels. Using the data obtained from the application, Exploratory Factor Analysis was conducted to determine the factor structure of the scale, and it was found that the scale has a three-factor structure. In addition to the Confirmatory Factor Analysis, Cronbach's Alpha coefficients based on item analysis were calculated to evaluate the reliability of the scores obtained from the scale. According to the calculations, the coefficient for the first factor was .90, for the second factor .78, and for the third factor .77, while the coefficient for the entire scale was .92.

**Data Collection**

Within the scope of the study, permission was obtained via email from the academics who developed the scales (Appendix 5) for the use of the Cognitive Flexibility Scale, Zimbardo's Time Perspective Scale, and the Academic Self-Efficacy Scale. Following this process, permission to collect data from students at the educational institutions identified for the study was obtained from the Ministry of National Education's Council of Education. After obtaining the necessary permissions, the scales were prepared in sufficient quantities, distributed to the schools selected as samples, and administered to students after obtaining the approval of school administrators and parents, thereby completing the data collection process.

**Data Analysis**

Within the scope of the study, after collecting data from educational institutions, the researcher transferred all scale data to Microsoft Excel and prepared the data set for analysis. During this process, incorrect, incomplete, or inappropriate scales were excluded from the study at this stage, resulting in the final raw data. In line with the aim of the study and the research questions, SPSS version 22 was used to analyse the data and present the findings. An acceptable error margin of 5% was determined for the analyses conducted within the scope of the research.

In the analyses conducted within the scope of the study, normality tests were first performed for all three scales that made up the data collection tool and are presented in Table 2.

**Table 2.** Normality tests for the three scales used to create the data collection tool

| | N | Mean | Skewness | | Kurtosis | |
|---|---|---|---|---|---|---|
| | Statistics | Statistics | Statistics | Standard Error | Statistics | Standard Error |
| Overall Mean | 300 | 3,1495 | -,505 | ,141 | ,601 | ,281 |
| CFS | 300 | 3,5210 | ,049 | ,141 | -,262 | ,281 |
| ASES | 300 | 3,0891 | ,334 | ,141 | -,207 | ,281 |
| N Value | 300 | | | | | |

Normality tests were conducted for the scales that comprise the data collection tool, and skewness and kurtosis values were examined accordingly. As can be seen in Table 2, both values for the three scales were between -1 and +1. Accordingly, it can be stated that "the scales meet the normality assumption".

Following the normality analyses, the findings obtained based on the main and sub-problems of the study are presented below.

## Findings

The findings obtained in the study are listed according to sub-problems.

***The effect of high school students' time perspectives on their cognitive flexibility and academic self-efficacy levels***

Within the scope of this study, first, the effect of high school students' time perspectives on their cognitive flexibility and academic self-efficacy levels was examined in general terms, and then the effect of each time perspective on cognitive flexibility and academic self-efficacy levels was examined.

Regression analysis was conducted to determine how high school students' time perspectives affect their cognitive flexibility and academic self-efficacy, and the findings are presented in Tables 3a and 3b below.

**Table 3a.** Model Summary

| Model Summary[b] | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Model | R | $R^2$ | Adjusted $R^2$ | Standard Error | Change Statistics | | | | | Durbin-Watson |
| | | | | | $R^2$ Change | F Change | df1 | df2 | Sig. F Change | |
| 1 | ,470[a] | ,221 | ,215 | 19,03594 | ,221 | 42,045 | 2 | 297 | ,000 | 1,494 |
| a. Predictors: (Constant) ASES, CFS | | | | | | | | | | |
| b. Dependent Variable: Time Perspective Scale | | | | | | | | | | |

**Table 3b.** Table showing the relationship between cognitive flexibility and academic self-efficacy among high school students

| ANOVA[a] | | | | | | |
|---|---|---|---|---|---|---|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 30471,525 | 2 | 15235,763 | 42,045 | ,000[b] |
| | Residual | 107623,022 | 297 | 362,367 | | |
| | Total | 138094,547 | 299 | | | |
| a. Dependent Variable: Time Perspective Scale | | | | | | |
| b. Predictors: (Constant), ASES, CFS | | | | | | |

When Table 3b is examined, since the Sig. value is 0.00 < 0.05, it can be stated that "the cognitive flexibility and academic self-efficacy of high school students have a positive effect on the time perspectives of the students in question". However, according to Table 3a, the R2 value of 0.221 indicates that approximately 22.1% of the variation in time perspective among high school students is explained by their cognitive flexibility and academic self-efficacy.

In light of these findings, the study examined the effect of each time perspective on the cognitive flexibility and academic self-efficacy of the participating students, and the results are presented in the tables below.

### *The relationship between high school students' past positive time perspective and their cognitive flexibility and academic self-efficacy*

Under this heading, regression analysis was conducted to determine whether the dependent variable (past positive time average) affected the independent variables (cognitive flexibility scale and academic self-efficacy scale). The findings are presented in Tables 4a and 4b below.

**Table 4a.** Model Summary

| Model Summary [b] | | | | | |
|---|---|---|---|---|---|
| Model | R | $R^2$ | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
| 1 | ,461[a] | ,213 | ,208 | 19,70876 | 1,623 |
| a. Predictors: (Constant), ASES, CFS | | | | | |
| b. Dependent Variable: Time Perspective Scale | | | | | |

**Table 4b.** Relationship between high school students' past positive time perspective and cognitive flexibility and academic self-efficacy

| ANOVA[a] | | | | | | |
|---|---|---|---|---|---|---|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 28,480 | 2 | 14,240 | 40,171 | ,000[b] |
| | Residual | 105,281 | 297 | ,354 | | |
| | Total | 133,761 | 299 | | | |
| a. Dependent Variable: Past positive time average | | | | | | |
| b. Predictors: (Constant), ASES, CFS | | | | | | |

When Table 4b is examined; since the Sig. value is 0.00 < 0.05, it can be stated that "the independent variables (Cognitive Flexibility Scale and Academic Self-Efficacy Scale) have a positive effect on the dependent variable (Past Positive Time Average)". Additionally, according to Table 4a, it was found that "the change observed in the past positive time average from the time perspectives explains approximately 21.3% of the changes observed in the cognitive flexibility and academic self-efficacy scales (R2 = 0.213)".

### *The relationship between high school students' past negative time perspective and their cognitive flexibility and academic self-efficacy*

Regression analysis was conducted to determine whether the dependent variable, past negative time average, affected the independent variables, cognitive flexibility and academic self-efficacy scales, and the findings are presented in Table 5a and Table 5b.

**Table 5a.** Model Summary

| Model Summary [b] | | | | | |
|---|---|---|---|---|---|
| Model | R | $R^2$ | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
| 1 | ,046[a] | ,002 | -,005 | ,51337 | 1,565 |
| a. Predictors: (Constant), ASES, CFS | | | | | |
| b. Dependent Variable: Past negative time average | | | | | |

**Table 5b.** Relationship between high school students' past negative time perspective and cognitive flexibility and academic self-efficacy

| ANOVA[a] | | | | | | |
|---|---|---|---|---|---|---|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | ,164 | 2 | ,082 | ,312 | ,732[b] |
| | Residual | 78,275 | 297 | ,264 | | |
| | Total | 78,439 | 299 | | | |
| a. Dependent Variable: Past negative time average | | | | | | |
| b. Predictors: (Constant), ASES, CFS | | | | | | |

According to Table 5b, since the Sig. value is 0.732 > 0.05, it was found that 'the independent variables (cognitive flexibility scale and academic self-efficacy scale) do not have a positive effect on the dependent variable (past negative time average)'. However, as seen in Table 5a, it was found that the change observed in the past negative time average explains approximately 0.2% of the changes observed in the cognitive flexibility scale and academic self-efficacy scale (R2 = 0.002).

***The relationship between high school students' current hedonistic time perspective and their cognitive flexibility and academic self-efficacy***

Under this heading, regression analysis was conducted to determine whether the independent variables (Cognitive Flexibility Scale and Academic Self-Efficacy Scale) affected the dependent variable (Current Hedonistic Time Average). The findings are presented in Table 6a and Table 6b below.

**Table 6a.** Model summary

| Model Summary [b] | | | | | |
|---|---|---|---|---|---|
| Model | R | $R^2$ | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
| 1 | ,532[a] | ,283 | ,278 | ,46269 | 1,7799 |
| a. Predictors: (Constant), ASES, CFS | | | | | |
| b. Dependent Variable: Current hedonistic time average | | | | | |

**Table 6b.** Relationship between high school students' current hedonistic time perspective and cognitive flexibility and academic self-efficacy

| ANOVA[a] | | | | | | |
|---|---|---|---|---|---|---|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 25,077 | 2 | 12,538 | 58,568 | ,000[b] |
| | Residual | 63,583 | 297 | ,214 | | |
| | Total | 88,660 | 299 | | | |
| a. . Dependent Variable: Current hedonistic time average | | | | | | |
| b. Predictors: (Constant), ASES, CFS | | | | | | |

When Table 6b is examined, it is observed that the independent variables (Cognitive Flexibility Scale and Academic Self-Efficacy Scale) have a positive effect on the dependent variable (Current Hedonistic Time Average) (Sig. value 0.00 < 0.05). However, according to Table 6a, it was found that the change observed in the present hedonic time average explains approximately 28.3% of the changes observed in the cognitive flexibility scale and academic self-efficacy scale (R2 = 0.283).

***The relationship between high school students' current deterministic time perspective and their cognitive flexibility and academic self-efficacy***

Under this heading, regression analysis was performed to determine whether the dependent variable (current fatalistic time average) affected the independent variables (cognitive flexibility scale and academic self-efficacy scale), and the findings are presented in Table 7a and Table 7b.

**Table 7a.** Model Summary

| Model Summary [b] | | | | | |
|---|---|---|---|---|---|
| Model | R | $R^2$ | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
| 1 | ,091[a] | ,008 | ,002 | ,52083 | 1,638 |
| a. Predictors: (Constant), ASES, CFS | | | | | |
| b. Dependent Variable: Current deterministic time average | | | | | |

**Table 7b.** Relationship between high school students' present-oriented time perspective and cognitive flexibility and academic self-efficacy

| ANOVA[a] | | | | | | |
|---|---|---|---|---|---|---|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | ,677 | 2 | ,339 | 1,248 | ,289[b] |
| | Residual | 80,566 | 297 | ,271 | | |
| | Total | 81,243 | 299 | | | |
| a. Dependent Variable: Current deterministic time average | | | | | | |
| b. Predictors: (Constant), ASES, CFS | | | | | | |

When Table 7b is examined, it is determined that the independent variables (cognitive flexibility scale and academic self-efficacy scale) do not have a positive effect on the dependent variable (current deterministic time average) (Sig. value 0.289 > 0.05). However, in Table 7a, it was found that "the change observed in the present deterministic time average explains approximately 0.2% of the changes observed in the cognitive flexibility scale and academic self-efficacy scale (R2 = 0.002)".

***The relationship between high school students' future time perspective, cognitive flexibility, and academic self-efficacy***

Under this heading, regression analysis was performed to determine whether the dependent variable (future time average) was affected by the independent variables (cognitive flexibility scale and academic self-efficacy scale), and the findings are presented in Table 8a and Table 8b.

**Table 8a.** Model Summary

| Model Summary [b] | | | | | |
|---|---|---|---|---|---|
| Model | R | $R^2$ | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
| 1 | ,427[a] | ,183 | ,177 | ,43171 | 1,674 |
| a. Predictors: (Constant), ASES, CFS | | | | | |
| b. Dependent Variable: Future time average | | | | | |

**Table 8b.** Relationship between high school students' future time perspective and cognitive flexibility and academic self-efficacy

| ANOVA[a] | | | | | | |
|---|---|---|---|---|---|---|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 12,367 | 2 | 6,183 | 33,177 | ,000[b] |
| | Residual | 55,353 | 297 | ,186 | | |
| | Total | 67,720 | 299 | | | |
| a. Dependent Variable: Future time average | | | | | | |
| b. Predictors: (Constant), ASES, CFS | | | | | | |

When Table 8b is examined, it is understood that the independent variables (cognitive flexibility scale and academic self-efficacy scale) have a positive effect on the dependent variable (future time average) (Sig. value 0.00 < 0.05). Furthermore, according to Table 8a, another finding is that "the observed change in future time average explains approximately 18.3% of the changes observed in the cognitive flexibility scale and academic self-efficacy scale (R2 = 0.183)".

***Distribution of high school students' time perspectives according to age, gender, mother's occupation, father's occupation, and income level***

Findings related to each demographic variable based on the sub-problems identified in the scope of the research are presented in Tables 9, 10, 11, 12, and 13.

**Table 9.** Distribution of time perspectives of high school students according to age

| | | Past Positive Time Average | Past Negative Time Average | Current Hedonistic Time Average | Current Deterministic Time Average | Future Time Average | Overall Average |
|---|---|---|---|---|---|---|---|
| **Age** | **14** | 3,35 | 3,22 | 3,38 | 2,89 | 3,11 | 3,21 |
| | **15** | 3,38 | 3,30 | 3,39 | 2,99 | 3,01 | 3,22 |
| | **16** | 3,21 | 3,11 | 3,12 | 2,88 | 3,07 | 3,08 |
| | **17** | 2,98 | 3,01 | 3,04 | 2,79 | 2,91 | 2,96 |
| | **18** | 2,95 | 3,43 | 3,28 | 2,79 | 3,01 | 3,11 |

When Table 9 is examined, it was determined that among the participants in the study, those with the highest average positive time were 15 years old with 3.38, and those with the lowest average positive time were 18 years old with 2.95. It was determined that the participants with the highest average past negative time were 18 years old with 3.43, while the participants with the lowest average past negative time were 17 years old with 3.01. It was determined that the participants with the highest average present hedonic time were 15 years old with 3.39, while the participants with the lowest average present hedonic time were 17 years old with 3.04. The participants with the highest present deterministic time average were 15 years old with an average of 2.99, while those with the lowest average were 17 and 18 years old with an average of 2.79. The participants with the highest future time average were 14 years old with an average of 3.11, while those with the lowest average were 17 years old with an average of 2.91. When examining the overall average, it was determined that the highest average among the participating students was 3.22 at age 15, while the lowest average was 2.96 at ages 17 and 18.

**Table 10.** Distribution of high school students' time perspectives by gender

| | | Past Positive Time Average | Past Negative Time Average | Current Hedonistic Time Average | Current Deterministic Time Average | Future Time Average | Overall Average |
|---|---|---|---|---|---|---|---|
| **Gender** | **Female** | 3,29 | 3,23 | 3,30 | 2,92 | 3,02 | 3,16 |
| | **Male** | 3,24 | 3,16 | 3,27 | 2,88 | 3,06 | 3,13 |

When Table 10 is examined, it is determined that among the participants in the study; female students had the highest past positive time average with 3.29, female students had the highest past negative time average with 3.23, male students had the highest present hedonistic time average with 3.27, the current deterministic time average was highest among female students at 2.92, and the future time average was highest among male students at 3.06. When the overall average was examined, the highest average was found to be 3.16 among female students.

**Table 11.** Distribution of high school students' time perspectives according to their mothers' occupations

| | | Past Positive Time Average | Past Negative Time Average | Current Hedonistic Time Average | Current Deterministic Time Average | Future Time Average | Overall Average |
|---|---|---|---|---|---|---|---|
| **Mothers' Occupations** | **Not working** | 3,44 | 3,29 | 3,37 | 2,98 | 3,11 | 3,24 |
| | **Working in the government/public sector** | 3,22 | 3,22 | 3,23 | 2,92 | 3,03 | 3,13 |
| | **Working in the private sector** | 2,99 | 2,94 | 3,16 | 2,72 | 2,93 | 2,97 |
| | **Other** | 3,21 | 3,29 | 3,29 | 2,92 | 2,89 | 3,12 |

Table 11 shows that among the students who participated in the study, the mothers of participants with the highest average positive time in the past were "not working" with 3.44, while the mothers of participants with the lowest average positive time in the past were "working in the private sector" with 2.99. The mothers of participants with the highest average negative time in the past were "not working" with 3.29 and "other", while the mothers of participants with the lowest current negative time average had an average of 2.94 and were "employed in the private sector". The mothers of participants with the highest current hedonistic time average had an average of 3.37 and were "not employed", while the mothers of participants with the lowest current hedonistic time average had an average of 3.16 and were "employed in the private sector", the current deterministic time average is highest among participants whose mothers are 2.98 "not working" and the lowest among participants whose mothers are 2.89 "working in the private sector" and finally, the mothers of participants with the highest future time average were 3.11 for "not working" and the mothers of participants with the lowest future time average were 2.72 for "other". When looking at the overall average, it was found that the mothers of participants with the highest average were 3.24 "not working" and the mothers of participants with the lowest average were 2.97 "working in the private sector". It was noted as a striking finding that the mothers of the participating students who were employed in the "public sector" occupational group did not stand out in any time perspective.

**Table 12.** Distribution of high school students' time perspectives according to their fathers' occupations

| | | Past Positive Time Average | Past Negative Time Average | Current Hedonistic Time Average | Current Deterministic Time Average | Future Time Average | Overall Average |
|---|---|---|---|---|---|---|---|
| **Fathers' Occupations** | **Not working** | 3,43 | 3,18 | 3,26 | 2,96 | 2,61 | 3,07 |
| | **Working in the government/public sector** | 3,26 | 3,20 | 3,29 | 2,93 | 3,09 | 3,16 |
| | **Working in the private sector** | 3,27 | 3,16 | 3,29 | 2,85 | 3,05 | 3,14 |
| | **Other** | 3,27 | 3,27 | 3,28 | 2,95 | 2,99 | 3,16 |

Table 12 shows that among the students who participated in the study, the fathers of participants with the highest average positive time were 3.43 "not working" while the fathers of participants with the lowest average positive time were 3.26 "working in the government/public sector" , the fathers of participants with the lowest average past negative time were 3.16, "working in the private sector" the fathers of participants with the highest average past positive time were 3.43, "other" and the fathers of participants with the lowest average past positive time were 3.16, "working in the private sector" and "working in the private sector" while the fathers of participants with the lowest current hedonistic time average were 3.26 with "not working in any job". The fathers of participants with the highest current deterministic time average were 2.96 with "not working in any job" while the fathers of participants with the lowest current deterministic time average were 2.85 with "working in the private sector". Finally, the fathers of participants with the highest future time average were found to be 3.09 with "working in the public/government sector", while the fathers of participants with the lowest future time average were 2.61 with "not working". When looking at the overall average, it was found that the fathers of participants with the highest average were 3.16 in the "public sector" and "other" categories, while the fathers of participants with the lowest average were 3.07 in the "not employed" category.

**Table 13.** Distribution of high school students' time perspectives according to their families' income status

| | | Past Positive Time Average | Past Negative Time Average | Current Hedonistic Time Average | Current Deterministic Time Average | Future Time Average | Overall Average |
|---|---|---|---|---|---|---|---|
| **Family income** | **30,000 TL and below** | 3,38 | 3,36 | 3,44 | 3,01 | 3,07 | 3,26 |
| | **30001-45000 TL** | 3,26 | 3,21 | 3,28 | 2,89 | 3,04 | 3,15 |
| | **45001-60000 TL** | 3,38 | 3,30 | 3,26 | 3,00 | 3,08 | 3,20 |
| | **60001-75000 TL** | 3,05 | 3,13 | 3,21 | 2,84 | 2,99 | 3,06 |
| | **75001-90000 TL** | 3,14 | 3,03 | 3,16 | 2,74 | 2,94 | 3,02 |
| | **90,000 TL and above** | 3,37 | 3,21 | 3,37 | 2,98 | 3,09 | 3,21 |

When Table 13 is examined, it is seen that among the students who participated in the study, the income status of the families of students with the highest average positive time in the past is 3.38 with "30,000 TL and below" and "45,001-60,000 TL" , while the lowest was 3.05 for the category "60,001–75,000 TL". Similarly, the average past negative time of students with the highest average past positive time was 3.36 for the income category "30,000 TL and below". The current hedonic time average is highest among students with a score of 3.44, corresponding to an income level of "30,000 TL and below" and lowest among students with a score of 2.74, corresponding to an income level of "75,001-90,000 TL". The current deterministic time average is highest among students with a score of 3.01, corresponding to an income level of "30,000 TL and below" and the lowest is 2.74 for students with a future time average of 3.09, corresponding to "75,001-90,000 TL". Finally, the income level of the families of students with the highest future time average is 3.09, corresponding to "90,000 TL and above" and the lowest is 2.94 for students with a future time average of 3.09, corresponding to "75,001-90,000 TL". When looking at the overall average, it was determined that the income level of the families of participants with the highest average was 3.26, corresponding to the "30,000 TL and below" category, while the income level of the families of participants with the lowest average was 3.02, corresponding to the "75,001-90,000 TL" category. Accordingly, when time perspectives are examined, it is a notable finding that the highest average income level is "30,000 TL and below" in all time perspectives except for the future time perspective.

## Conclusion and Discussion

This study aimed to examine the effect of high school students' time perspectives on cognitive flexibility and academic self-efficacy within the framework of Zimbardo's time perspective. The findings obtained from the analysis conducted with 300 high school students are discussed below in comparison with the relevant literature:

The study found that high school students' perspectives on "Past Positive Time", "Present Hedonistic Time" and "Future Time" had a positive effect on cognitive flexibility and academic self-efficacy, with the "Present Hedonistic Time" perspective having the highest effect among all time perspectives. This result is similar to Yayman's (2024) study, which examined the relationship between cognitive flexibility and career fit in university students. Yayman noted that the future time perspective showed a positive relationship with cognitive flexibility and was particularly effective in the "focus on possibilities" sub-dimension. Similarly, Gürsoy's (2024) study, which found a positive relationship between future time perspective and self-efficacy in middle school students, supports the positive effect of future time perspective on academic self-efficacy in this research. Additionally, Zimbardo and Boyd (1999) emphasised that future-oriented individuals' planning and goal-oriented behaviours enhance academic achievement. This emphasis provides a theoretical basis for explaining the relationship between future time perspective and academic self-efficacy in the present study. However, it was concluded that the "Past Negative Time" and "Present Fatalistic Time" perspectives did not have a

significant effect on cognitive flexibility and academic self-efficacy. This result is consistent with the study by Zimbardo and others (2003), which indicated that the past negative time perspective is associated with depressive mood and may negatively affect academic performance. The ineffectiveness of the present fatalistic time perspective can be explained by the findings of Apostolidis and others (2006), who suggested that fatalistic tendencies may limit individuals' proactive behaviour.

In the study, the effect of the "Present Hedonistic Time" perspective on cognitive flexibility and academic self-efficacy was found to be higher than that of other perspectives. This finding suggests that the pursuit of immediate pleasure during adolescence may support cognitive flexibility and academic self-efficacy. This result is partially similar to Şengül's (2021) study examining the motivational effects of hedonism in young people. Şengül noted that hedonistic tendencies may facilitate individuals' coping with stress by increasing positive affect, whereas Zimbardo and others (1997) suggested that a hedonistic time perspective may be associated with risky behaviour. This suggests that the positive effect of the hedonistic perspective in the study may be context-specific. In this regard, it can be said that pleasure-oriented behaviours may increase motivation towards academic tasks during adolescence, but further research is needed on the long-term sustainability of this effect.

Female students were found to have higher averages in time perspective tendencies compared to male students, while male students showed higher averages in the future time perspective. This result is similar to the study by Bilgiç and Bilgin (2016), which examined gender differences in adolescents. In the aforementioned study, it was stated that female students had higher levels of cognitive flexibility than male students. The fact that female students showed higher averages in past positive and present hedonic time perspectives may suggest that social and emotional factors support these tendencies. The fact that male students showed higher averages in future time perspective is consistent with Gao's (2011) study, which stated that future orientation may be related to career planning in males.

It was found that the majority of students with high time perspective tendencies had mothers who did not work. This suggests that the presence of the mother at home may support students' emotional and cognitive development. This result can be partially explained by Patterson and McCubbin's (1987) study, which stated that family dynamics affect adolescents' stress coping strategies. Non-working mothers spending more time with their children may provide emotional support that strengthens past positive and present hedonic time perspectives.

It was determined that the families of students with the highest average time perspective had an income level of "30,000 TL and below". This situation shows that students with low income levels tend to have more positive past and present hedonic time perspectives. This result is consistent with the study by Milfont et al. (2008), which stated that socioeconomic status affects time perspectives. In the aforementioned study, Milfont et al. (2008) stated that low-income individuals may be more prone to seeking immediate gratification or being past-oriented. However, the higher average future time perspectives of children from high-income families are supported by Kleppang et al. (2023), who noted that socioeconomic advantages support future-oriented planning.

## Recommendations

Based on the findings of this study, the following comprehensive recommendations have been made for educational practice, policymakers and future research:

### Recommendations for Educational Practice and Application

Considering the positive effect of high school students' past positive, present hedonistic, and future time perspectives on cognitive flexibility and academic self-efficacy, educational programmes that increase time perspective awareness should be developed in schools. For example, workshops conducted by guidance counsellors can encourage students to learn positive lessons from their past experiences, manage their pursuit of immediate gratification in a balanced manner, and set future-oriented goals. These programmes should be structured to support emotional and cognitive development, especially during adolescence.

Considering the positive effect of cognitive flexibility on academic self-efficacy, activities that develop problem solving, creative thinking, and multiple perspectives should be added to the curriculum. For example, group projects,

scenario-based discussions, and role-playing activities can strengthen students' ability to adapt to different situations.
3. Based on the finding that students with high academic self-efficacy are more resilient and goal-oriented, mentoring programmes and workshops that develop self-regulation skills should be organised in schools. These programmes can focus on groups that may be at risk, such as students from low-income families or students whose mothers work.

Considering the impact of a mother's occupational status (especially not working) on time perspectives, educational programmes should be organised for parents. These programmes could focus on how parents can play a role in supporting their children's emotional and cognitive development at home. To enhance the positive impact of time spent by non-working mothers with their children, activities that strengthen parent-child communication should be encouraged.

The finding that children from low-income families tend to have a past positive and present hedonistic time perspective suggests that these groups may need to develop future-oriented planning skills. Schools can offer free career counselling and scholarship programmes to support these students in career planning and long-term goal setting.

**Recommendations for Future Research**

The study found that past positive, present hedonistic, and future time perspectives have a positive effect on cognitive flexibility and academic self-efficacy. To understand the underlying reasons for these trends, in-depth studies using qualitative research methods (e.g., semi-structured interviews) can be conducted. Such studies can better explain how students form their time perspectives and how these perspectives influence their cognitive and academic processes.

Longitudinal studies should be conducted to understand the long-term effects of time perspectives on cognitive flexibility and academic self-efficacy. For example, the time perspectives of high school students can be examined to see how they change during the transition to university or in early adulthood.

The study found that low-income students tend to have past positive and present hedonistic time perspectives. Comparative studies with samples from different regions and socioeconomic groups could be conducted to test the generalisability of this finding across cultural and socioeconomic contexts.

The study found that past negative and present fatalistic time perspectives did not have a significant effect on cognitive flexibility and academic self-efficacy. To better understand the effects of these perspectives during adolescence, studies can be designed to examine the relationship between the aforementioned perspectives and variables such as psychological well-being, anxiety or depression.

**Recommendations for Policy Makers**

Findings supporting the relationship between time perspective, cognitive flexibility, and academic self-efficacy should be integrated into education policies. The Ministry of National Education can develop strategies to help students develop these skills by incorporating these concepts into teacher and counsellor training.

The finding that children from low-income families may be at a disadvantage in developing a future-oriented perspective highlights the importance of equity policies in education. Additional resources (such as free counselling services and educational materials) should be provided for these groups.

## Limitations

The study; Students enrolled in secondary education institutions selected as a sample for the 2024-2025 academic year, Is limited to the responses provided to the data collection tools.

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