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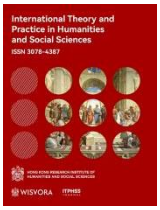

From Wealth to Wellness: Time Management as a Mediator Between Socioeconomic Status and Student Anxiety

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Abstract

The transition from high school to university is fraught with difficulties and challenges. In China specifically, substantial differences exist between high school and college education styles, along with significant urban-rural economic disparities, which may lead to maladaptation for first-year undergraduates. Given the increasing concerns about college students' mental health, this study investigated the relationship between socioeconomic status (SES) and anxiety symptoms. The study also analyzed time management ability as a mediator. The research included 1055 first-year students (43.70% females, mean age =18.19 ± 0.67) who completed the MacArthur scale of subjective social status, the Adolescence Time Management Disposition Scale (ATMD) and the Generalized Anxiety Disorder Questionnaire (GAD) online. Results from mediation analysis showed that SES was significantly negatively associated with anxiety symptoms. Additionally, time management ability - specifically time control and time efficacy - completely mediated this relationship. These findings indicated that effective time management skills can reduce the negative effects of low SES on anxiety. The results demonstrate the significance of time management during the transitional phase to prevent anxiety. The findings suggest that educators and counselors should focus additional attention on students from low SES backgrounds and provide targeted tutorials to enhance students' time management skills, which may relieve their anxiety to a certain extent.

1. Introduction

Time management has become a central part of daily life. Time is both an irreversible and limited resource. Thus, the ability to manage and use time effectively is important to modern people, particularly students. Researchers recognized time management ability as a multidimensional process. Wolters and Brady (2021) conceptualized it as a combination of skills: setting and prioritizing goals, planning for short-term and long-term tasks, calculating time requirements, tracking time use, and systematically organizing time allocation. In the educational context, time management plays a significant role in each stage of students' academic activities. From Wolters and Brady's (2021) point, time management functions as an essential self-regulatory process that monitors students' awareness of their engagement in academic tasks, which is positively related to academic engagement and performance.

As studies of time management in student populations have advanced and become more comprehensive, research has shown that time management ability can predict students' mental health outcomes. For example, poor time management ability is related to more stressful experiences (Ahmady et al., 2021; Häfner et al., 2015; Häfner et al., 2014; Pellegrini et al., 2012; Zeeman et al., 2023), higher levels of depression (Przepiorka et al., 2021; Radeef & Faisal, 2018) and increased problematic Internet use (Ali et al., 2024; Siddiqi et al., 2016; Yas et al., 2022). Research has established connections between time management and several academic factors, including academic performance (George et al., 2008; He & Zhang, 2019; Modna & Scott, 2017; Trentepohl et al., 2022), academic achievement (Karakose, 2015; Romero et al., 2024), academic procrastination (Herut & Gorfu, 2024; Shih, 2017). Additionally, studies have found links between time management and parents' educational level (Gherghinescu & Glaveanu, 2015) as well as anxiety symptoms (Kelly, 2003; Wang & Wang, 2018; Zhang et al., 2021).

Most studies about students' time management ability are based on Western cultures, while the Chinese educational environment is distinguishingly different from the Western system. Chinese first-year college students, in particular, come from an education system that primarily focuses on

grades and examinations before university admission. The first-year involves a stressful period of adaptation. These substantial changes can create various types of stress that are associated with vulnerability and mental health issues (Bantjes et al., 2021; Chen et al., 2022; Erol et al., 2023; Hussain et al., 2013; Islam et al., 2022). During this transition period, students experience effects not only on their mental health but also on their time management abilities, which can influence their overall development during early adulthood.

Research examining the relationship between SES and anxiety symptoms remains limited. Although anxiety is a prominent negative emotion experienced by first-year undergraduate students and a frequent psychological concern for Chinese university freshmen (Gao et al., 2020; Xiong et al., 2024), studies investigating this relationship are sparse. While some researchers have identified connections between SES and anxiety in student populations (Baucal, 2012; Gellisch et al., 2024), there are few studies focusing on university students, particularly first-year students. Additionally, considering China's educational approach and the uneven distribution of regional educational resources (Liu et al., 2023; Liu et al., 2009), SES and first-year students' anxiety symptoms likely share some correlation. An analysis of this relationship could provide more specific guidance for addressing college freshmen's adjustment challenges.

Based on the literature review, the hypothesis and exploratory aim of this research are (1) Students with lower SES would report higher anxiety, whereas students with higher SES would report lower anxiety; (2) Despite the lack of consensus regarding the relationship between students' SES and time management, this study also explored the relationship between SES and time management ability in Chinese first-year students.

2. Materials and methods

2.1 Participants

The questionnaire survey was conducted among 1127 freshmen (aged between 17 and 24 years) with a cluster sampling method from Sun Yat-sen University in Guangdong Province. All participants volunteered to complete an online questionnaire survey in the classroom. Questionnaires with more than 10% missing values were considered invalid. After excluding these, the sample included a total of 1055 participants (594 males and 461 females, with an average age of 18.19 years).

2.2 Procedure

Before conducting the investigation, ethical approval was granted by the relevant institutional ethics committee. All the survey data were collected after informed consent had been obtained from the participants. Participants were told that their personal information would be protected, and they were free to quit the survey at any time without any punishment. To enhance the validity of the responses, participants filled in the questionnaires anonymously.

2.3 Measurement tools

2.3.1 Subjective socioeconomic status

Subjective socioeconomic status (SES) was assessed using the MacArthur scale of subjective social status-youth version (Goodman et al., 2001). This tool uses the visual aid of ladders to assess family socioeconomic placement in society and personal socioeconomic placement from 1 to 10. In this study, we chose the first item of the MacArthur Scale and collected four stages (before age six,

in elementary school, middle school, and high school) as a measure of childhood SES. Early studies revealed the use of ladder ranking is more powerful in reflecting the relationship between SES and individual mental health than other traditional objective indicators (Adler et al., 2000; Goldman et al., 2006; Ostrove et al., 2000). Ferreira suggested that participants who choose the bottom four rungs (1–4) of the MacArthur Scale should be considered to be from a Low SES family (Ferreira et al., 2018).

2.3.2 Time management disposition

Time management disposition (TMD) was assessed by the Adolescence Time Management Disposition Scale (ATMD; Huang & Zhang, 2001), which contains 44 items (each item ranges from 1 to 5). ATMD could be divided into three subscales: the sense of time value, the sense of time control, and the sense of time efficacy. Higher scores indicate a greater level of TMD. Empirical evidence supported the reliability and validity of the scale (Huang & Zhang, 2001). In the current study, the Cronbach's alpha for the entire scale was 0.925, and the three subscales ranged from 0.792 to 0.887.

2.3.3 Anxious symptoms

Anxious symptoms were assessed with the 7-item Generalized Anxiety Disorder questionnaire (GAD-7, Spitzer et al., 2006). GAD-7 is a 4-point Likert scale (from 0 = Not at all to 3 = Nearly every day) with a total maximum score of 21. Participants with scores of 10 or above have been shown to have moderate to severe anxious symptoms (Spitzer et al., 2006). The Cronbach's alpha for this scale in the present study was 0.892.

2.4 Data analysis

First, descriptive analysis was performed to summarize the sociodemographic characteristics, using the mean and standard deviations. Second, we examined the differences between low-SES and high-SES in TMD and its dimensions and anxious symptoms. We used the t-test to compare the differences in TMD and anxious symptoms between low-SES and high-SES individuals. Pearson's correlation analysis was conducted to examine the correlations between the main variables. After that, we performed path analysis to examine the mediating roles of TMD in the associations between SES and anxious symptoms. Bootstrapping with 5000 iterations was used to test the significance of direct and indirect effects. All analyses were performed by R 4.3.3.

3. Results

3.1 Preliminary analyses

Descriptive statistics for the full sample are presented in Table 1. About 14.6% (n = 154) of individuals experienced low SES in the current study, and 85.4% were in high-SES. 77 individuals were found to have moderate or severe anxious symptoms. Individuals with lower SES exhibited reduced levels of the TMD (t = -5.42, $p < 0.001$) and its two associated dimensions (t = -5.17, t = -6.67, $p < 0.001$) but not in the sense of time value (t = -1.70, p = 0.090). Moreover, individuals with lower SES showed higher anxious symptoms than those with high SES (t = 2.58, p = 0.011, see Table 2).

Table 1: Socio-demographic characteristics of the full sample (N = 1055)

Variables	Categories	*N* (%)
Age (*Mean* ± *SD*)		18.19 (0.67)
Sex		
	Male	594 (56.30)
	Female	461 (43.70)
SES		
	Low	154 (14.6)
	High	901 (85.4)
Anxious symptoms		
	No	978 (92.7)
	Yes	77 (7.3)

Note: *SD* = standard deviation.

Table 2: Differences in TMD and anxious symptoms between low and high SES (*N* = 1055)

	Low-SES	High-SES	*t*
TMD	145.96 (18.42)	154.74 (19.50)	-5.42***
Time value	36.35 (5.70)	37.20 (5.86)	-1.70
Time control	76.17 (11.33)	81.31 (11.80)	-5.17***
Time efficacy	33.44 (4.77)	36.23 (4.99)	-6.67***
Anxious symptoms	4.67 (3.62)	3.85 (3.59)	2.58*

Note: TMD = Time management disposition; SES = socioeconomic status.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Correlations between the main variables are summarized in Table 3. Anxious symptoms were significantly negatively correlated with SES. SES was positively correlated with TMD and its dimensions. The sense of time control and time efficacy were negatively correlated with anxious symptoms, while the sense of time value was not.

Table 3: Pearson's correlations, means, and SDs of the main variables (*N* = 1055).

	SES	TMD	Time value	Time control	Time efficacy	Anxious symptoms
SES	1					
TMD	0.267***	1				
Time value	0.076*	0.694***	1			
Time control	0.270***	0.945***	0.470***	1		
Time efficacy	0.314***	0.853***	0.429***	0.771***	1	
Anxious symptoms	-0.078*	-0.125***	0.041	-0.121***	-0.247***	1
Mean ± SD	6.90 ± 1.67	153.46 ± 19.58	37.08 ± 5.84	80.56 ± 11.87	35.83 ± 5.06	3.97 ± 3.60

Note: TMD = Time management disposition; SES = socioeconomic status.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

3.2 Time control and efficacy mediated the association between SES and anxious symptoms.

The current results found that higher SES significantly predicted higher time control and efficacy ($\beta = 0.270$, $p < 0.001$; $\beta = 0.314$, $p < 0.001$), which then led to lower anxious symptoms ($\beta = -0.107$, $p = 0.003$; $\beta = -0.246$, $p < 0.001$; see Figure 1–3). However, the analysis revealed that the sense of time value could not mediate the association between SES and anxious symptoms ($\beta = 0.076$, $p < 0.05$; $\beta = 0.047$, $p > 0.05$).

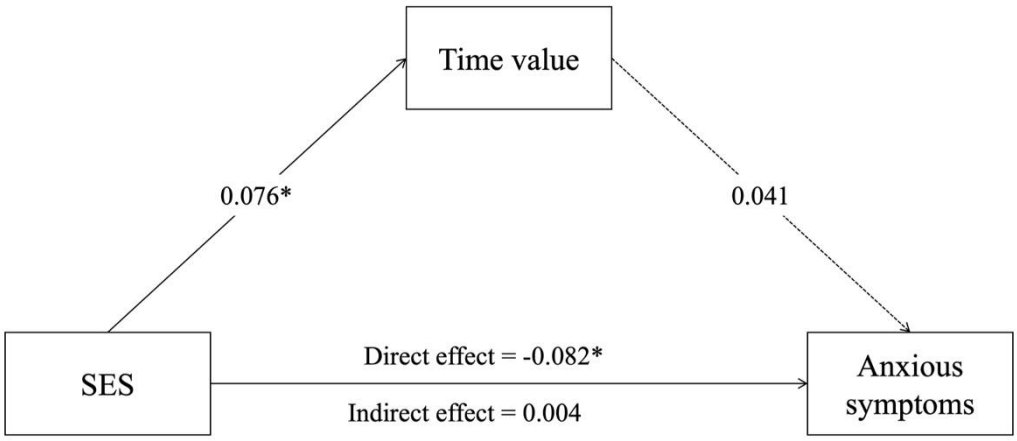

Figure 1: Model 1

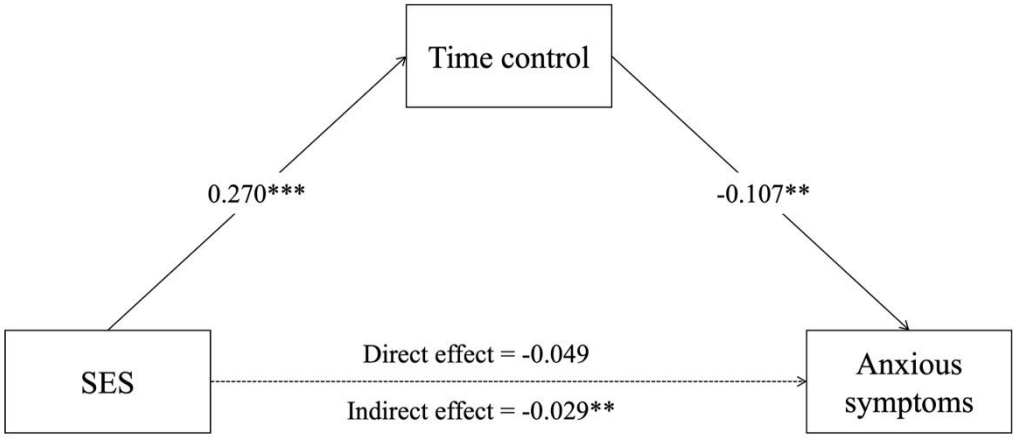

Figure 2: Model 2

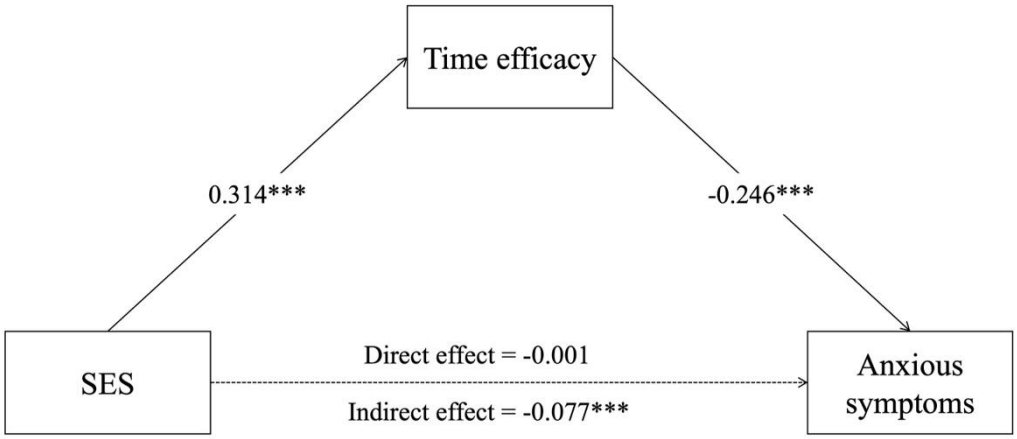

Figure 3: Model 3

Table 4: The paths and effect analysis between SES and anxious symptoms (N = 1055)

Model	Effect	Path	Effect Estimate		
			Effect	**SE**	**95% CI**
Model1					
	Direct effect	SES→anxious symptoms	**-0.082**	**0.035**	**(-0.146, -0.010) ***
	Indirect effect	SES→time value→anxious symptoms	0.004	0.003	(-0.000, 0.012)
	Total effect		**-0.078**	**0.035**	**(-0.143, -0.006) ***
Model2					
	Direct effect	SES→anxious symptoms	-0.049	0.037	(-0.118, 0.028)
	Indirect effect	SES→time control→anxious symptoms	**-0.029**	**0.010**	**(-0.051, -0.010) ****
	Total effect		**-0.078**	**0.035**	**(-0.144, -0.005) ***
Model3					
	Direct effect	SES→anxious symptoms	-0.001	0.036	(-0.069, 0.071)
	Indirect effect	SES→time efficacy→anxious symptoms	**-0.077**	**0.013**	**(-0.107, -0.054) *****
	Total effect		**-0.078**	**0.035**	**(-0.146, -0.007) ***

Note: SES = socioeconomic status.

95% CI, 95% bias-corrected confidence interval.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

4. Discussion

This study analyzed the relationship between SES and anxious symptoms. The findings aligned with expectations, showing that students from lower SES backgrounds experienced higher anxiety levels, while students from higher SES backgrounds reported fewer anxious symptoms. These results support previous research on SES and anxious symptoms relationships (e.g., Baucal, 2012; Gellisch et al., 2024; Mistry-Patel & Brooker, 2023). Furthermore, the study found that time management disposition mediated the relationship between SES and anxious symptoms. Specifically, time control and time efficacy served as full mediators, indicating that SES had a positive effect on time management ability, which in turn predicted lower anxious symptoms.

Studies on the correlation between SES and anxious symptoms have yielded mixed results. Although most research found that SES was negatively related to stress, Salami and Walker (2014) found that students from high SES experienced higher levels of anxiety, deviating from their hypothesis. This result may be due to the choice of participants. While most studies, including the present one, focused on the majority population, the survey conducted by Salami and Walker (2014) was based on African American students, usually recognized as the minority in the US, which meant the association between anxiety and SES was more complicated. Despite these differences, the current findings align with Conger et al.'s (2000) Family Stress Model. Economic stress may worsen parents' subjective well-being and further negatively impact children's mental health. Students from high-SES backgrounds might experience less stress from family financial issues and less indirect stress from their parents. Research also indicates that parents of wealthier students tend to give more attention to their children's mental health (Moulton et al., 2021). Conversely, students from low-SES families must manage both family financial pressures and living expenses, often with limited access to mental health resources. These factors may explain the higher anxiety levels found among students from lower SES backgrounds.

Time management difficulties are common among college students and have become a major source of stress (Gök et al., 2023; Lovin & Bernardeau-Moreau, 2022). This study pioneered the discovery that time management ability could mediate the relationship between SES and anxiety. Consistent with previous research (Lafçi & Öztunç, 2015; Lang, 1992; Wang & Wang, 2018; Zhang et al., 2021), the findings showed that time management skills can lower levels of anxious symptoms. Taylor et al.'s mental simulation theory offers a plausible explanation: when students plan their time, they mentally simulate future events, which allows for emotional adjustment and increases their sense of control. This theory also suggests that time management skills extend beyond practical abilities and connect closely to mental well-being. The study found that only time control and time efficacy showed significant mediation effects, supporting previous findings (Zheng et al., 2018). Time value, unlike time control and efficacy, represents a more psychological variable (Kelly, 2003) that reflects time perception (Lim & Kim, 2024). While most research using TMD to assess time management ability views it as a unified concept, studies examining the relationship between time value and mental health outcomes, such as anxious symptoms, remain limited. Further research should investigate the mechanisms of time value.

Although China's education system has made considerable advances, the Gaokao system (National College Entrance Examination) has led to test-focused education in secondary schools (Liu et al., 2023). This system limits students' opportunities for self-management, potentially reducing their time management abilities later, as our findings suggest. Educational inequalities persist in China, with SES remaining one of the most challenging and socially significant issues (Gong et al., 2012; Yang & Qiu, 2016). Students in highly developed cities have more access to

quality education that promotes overall development, while those in economically disadvantaged areas often receive only basic test-oriented education. As a result, students from wealthier backgrounds may have more opportunities to manage their time according to their interests, developing time management skills through practice, while less wealthy students may lack such opportunities. Research shows that SES positively predicts self-control (Wang et al., 2017). Although time management is not explicitly taught in high school, it may correlate with SES as a component of self-control. Therefore, students from higher SES backgrounds can develop time management skills both through higher-quality education and through participation in various extracurricular activities. The connection between China's educational environment and regional economic differences helps explain why students with higher SES demonstrate better time management skills.

The study's findings suggest several practical implications for addressing university students' mental health. First, the relationship between SES and anxiety levels indicates that university educators and clinical psychologists should provide additional financial and psychological support to students from lower SES backgrounds. Second, the mediating role of time management ability presents another important consideration. Previous studies have shown that time management training can reduce university students' anxiety (Häfner & Stock, 2010; Häfner et al., 2015; Häfner et al., 2014; Wang & Wang, 2018; Zhang et al., 2021a). Building on this research, our study highlights time management as an effective and practical strategy for anxiety prevention. Universities should consider implementing group counseling sessions focused on time management skills to help students adapt more effectively during their transition from high school to college.

The study has several limitations. First, the participant sample size was limited. The study collected data from only one city in mainland China, which may restrict the generalizability of the findings. Additionally, the cross-sectional design prevents establishing causal relationships among SES, time management ability, and anxious symptoms. Future research should include samples from multiple locations, including both developed and developing urban and rural areas across China. Furthermore, since previous research indicates that lower-year university students experience more anxiety than senior students (Radeef & Faisal, 2018), future studies should examine whether the relationship between SES and anxiety remains consistent among lower-year university students.

5. Conclusion

Results from the present study suggest that students from lower SES backgrounds are more susceptible to anxiety, while those from higher SES backgrounds show lower anxiety levels. Furthermore, the results emphasize the mediating role of time management ability in the relationship between SES and anxiety, demonstrating that enhanced time management skills can help reduce anxiety levels to some degree. While these findings partially align with previous research in this field, they extend the existing literature by specifically examining how time management skills function within this relationship.

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Conflict of interest

The authors report there are no competing interests to declare.

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