Time Perspective in Relation to Academic Performance and Subjective Well-Being among Chinese Adolescents

Zihan Wu

Abstract-In an effort to contribute to the study on time perspective and its influence on adolescents, the present study aimed to investigate the relationship between the time perspective and adolescents' academic performance and time perspective and adolescents' subjective well-being. In this study, time perspective has three dimensions, the past, present, and future, and is divided into time relation, time orientation, time frequency, and time attitudes. Subjective well-being consisted of four subscales to assess adolescents' subjective well-being score, including the joy of learning, school connectedness, education purpose, and academic efficacy. A total of 379 students (176 males and 203 females) from seven middle and high schools in China participated in our study by responding to an online survey. The results showed that adolescents who think more frequently about the future and present and hold positive attitudes towards the present usually had better academic performance. Thinking more frequently about the present exerted a positive influence on adolescents' subjective well-being. In contrast, past time perspective was not a major determining factor on either adolescent's academic performance and subjective well-being.

Index Terms—Time perspective, subjective well-being, adolescents' academic performance.

I. INTRODUCTION

Kurt Lewin (1942) once considered time perspective as a main determining factor of individuals' actions, emotions, and morals [1], and he (1951) later defined time perspective as the "the totality of the individual's views of his psychological future and psychological past existing at a given time" [2]. Therefore, the time perspective usually reflects how an individual organizes and apprehends time, and how it influences a person's attitude, performance, and goal [3]. With the concept provided above, studying adolescents' time perspective in relation to their academic performance and subjective well-being is a relevant topic for psychological research. Adolescence is an important period of time as a transition from childhood to adulthood, and time perspective would have a stronger influence on adolescents' actions, emotions, and morale. With their maturation and recognition of identity, gradual psychologists had put some focus on this special group and had different opinions and study results that showed the adolescents' preferred time perspective in relation to academic performance and subjective well-being.

A. Time Perspective and Academic Performance

The ability for adolescents to understand time was one of

the indicators of intellectual development [4], and time perspective had presented a certain correlation with adolescents' academic performance [5]. Empirically, adolescents who had a future-oriented time perspective showed higher grades and better academic performances at school than those with present orientation and past orientation [6]. In their study, the results showed that people who focused more on future time perspective were more associated with high grades and more studying time per week self-reported by the participants. Usually, good academic performances and achievements were more distant-future goals that can mostly be attained through good future planning and an understanding of delayed gratification. The future time perspective provided adolescents a motivation of reaching their more distant goals and gratifications, which was proved in Lens and Volder's research [7]. Compared to the students with lower grade point averages (GPA) and low study persistence, the study showed that students with higher GPAs perceived studying hard as more beneficial for reaching goals in the distant future and open present. Research by Steinburg (2008) in his neuroscience study further provides scientific evidence that the future orientation increases from early to midadolescence [8]. However, in the study by Lessing (1972), they concluded that the future time perspective is an unreachable fantasy that cannot be obtained through hoping or dreaming [9]. And Dickstein (1969) found a negative relationship between the future time perspective and academic performance, indicating that people thinking about future less achieved better academic performance [10].

B. Time Perspective and Subjective Well-Being

"Subjective well-being (SWB) is defined as a person's cognitive and affective evaluations of his or her life"[11], where cognitive evaluation refers to an individual's concern about life satisfaction in global terms, and affective evaluation refers to specific momentarily feelings or emotion and can be classified as both positive and negative. In other words, SWB is a way to evaluate individuals' life satisfaction and shares an interchangeable definition with the quality of life [12]. SWB has three components: life satisfaction (LS), positive affect (PA), and negative affect (NA) [13]. For example, a person would be scored a high SWB often when the person has LS and constant PA, whereas a person who lacks LS and has a constant NA usually gains a low level of SWB [14]. Moreover, time perspective organizes information into different categories whereby giving meaning to people's lives to enable them to define their affective evaluation (e.g. PA or NA)[15], which allows people to recall their previous evaluative reactions within specific time frames and forms a cognitive evaluation with global judgments of SWB[16].

Manuscript received June 1, 2022; revised August 23, 2022.

Z. W. Author is from Wilbraham & Monson Academy, MA 01095 USA (e-mail: Zihan_wu@126.com).

Among the three main categories of time perspective: the past, present, and future, "future time perspective (FTP) plays an important role in shaping goals, plans, and selfregulating activities that manage actions and outcomes related to achievement, adjustment, and well-being [17]. And the previous studies had also proved a correlation between future time perspective and subjective well-being, which included the studies on happiness, life satisfaction, subjective general health, anxiety, and depression. Usually, individuals who paid more attention to the future than present and past presented themselves with positive or optimistic views about their future and also showed more confidence in reaching future goal as studies in [7]. Those desires of reaching future goals had a positive effect on individuals' mental health [18]. On the contrary, individuals who paid less attention to the future than past and present tended to view their future in a more pessimistic way, which often led to an increased worry and anxiety about the unpredictable future and a likelihood to live on negative past experience than individuals who showed more focus on future time period [19]. However, in Zimbardo & Boyd's studies in [6], they proposed and proved the validity of the benefit of balanced time perspective (BTP), which was a consistent balance and concern about the past, present, and future and eventually helped to increase individuals' subjective well-being.

C. The Present Study

The present study aims to further investigate the following three relationships specifically to Chinese high school students: 1) time perspective and academic performance, 2) time perspective and subjective well-being. Drawing conclusions from earlier studies, we anticipate that Chinese adolescents who have a stronger tendency of thinking about the future would have better academic performance and a higher score in subjective well-being.

II. METHOD

A. Participants

The sample for the current study included 379 adolescents from 7 middle and high schools in China aged 13 to 19 (M = 15.56, SD = 2.135) from grade 7 to 13 (M = 9.91, SD = 2.217), which consisted of 176 males and 203 females.

B. Procedure and Measures

Participants were invited to participate in an online survey through the Wenjuan Xing platform. The overall survey form had 3 major parts regarding adolescents' time perspective, academic achievements, and subjective wellbeing. Participants' demographic information (e.g., gender, age, grade) was also collected at the end of the survey.

C. Adolescents' Time Perspective

In the first part of the survey, we adapted Adolescent Time Inventory (ATI; Mello & Worrell, 2007) to measure participants' time perspective, which consisted of four components: time frequency, time orientation, time relation, and time attitudes. Time frequency refers to the frequency of participants' thinking about the past, present, and future, respectively. Participants answered three questions of how

often they think about each time period by picking a value from a 5-point scale - Almost never, seldom, sometimes, often, almost always. Time orientation has a set of seven corresponding circle configurations with a bigger circle indicating the importance and allows participants to choose one of the seven that show the relative emphasis adolescents place on each time period: Past Oriented, Present Oriented, Future-Oriented, Past-Future Oriented. Past-Present Oriented, Present-Future Oriented, Balanced. Time Relation is assessed with a set of four circle configurations, and the overlaps among circles indicate the perceived relationship among three time periods: Unrelated, Present-Future Related, Linearly Related, and Interrelated. Time attitude measures the participants' positive and negative attitudes toward the past, the present, and the future, which consists of six subscales: Past Positive, Past Negative, Present Positive, Present Negative, Future Positive, and Future Negative. Each subscale corresponds to 5 multiple-choice questions (statements) that combine into a total of 30 multiple-choice questions (statements), using Totally Disagree, Disagree, Neutral, Agree, and Totally Agree to allow the participants to pick the most appropriate description.

a) Academic performance

The academic performance consisted of 4 questions: participants self-reported midterm grades in percent obtained in three courses: Chinese, Mathematics, and English, the overall satisfaction of the courses taken during the 2020-2021 school year scaled from 1 (very unsatisfied) to 5 (very satisfied), the academic ranking in class scaled from top 15%, 30%, 45%, 60% to below 60%, and the academic ranking from current grade scaled from top 15% 30%, 45%, 60% to below 60%.

b) Adolescents' subjective well-being

This study used the Student Subjective Wellbeing Questionnaire (SSWQ; Renshaw et al., 2015) to measure adolescents' school-specific well-being which includes four subscales: (1) Joy of Learning such as, "I get excited about learning new things in class," (2) School Connectedness such as, "I feel like I belong at my school," (3) Educational Purpose such as, "I believe the things I learn at school will help me in my life," and (4) Academic Efficacy such as, "I am a successful student." The questionnaire consisted of 16 multiple choice questions, and each contained a statement and a five-point scale from "almost never" to "almost always," which required the participants to choose one of the best fit.

III. RESULTS

A. Preliminary Analysis

Several statistical techniques were used to address participants' age and gender in relation to their perceived time perspective (time relation, time orientation, time frequency, and time attitudes), academic performance, and subjective well-being (joy of learning, school connectedness, education purpose, and academic efficacy). Two chi-square tests were conducted on the relationships between gender and individuals' time relation and gender and individual's perceived time orientation, which showed that there was no significant difference between gender groups in either perceived time relation, χ^2 (3, N = 378) = 2.15, p = .542, or perceived time orientation, χ^2 (6, N = 378) = 9.58, p = .143. Similarly, the subsequent analyses using independent t-test suggested that the difference in the frequency of thinking about past, t (376) = -.30, p = .763, present, t(376) = -.41, p = .686, and future, t(376) = -.785, p= .433, between males (past: M = 3.23, SD = 0.86; present: M = 3.85, SD = 0.78; future: M = 3.71, SD = 0.85) and females (past: M = 3.26, SD = 0.86; present: M = 3.81, SD =0.79; future: M = 3.78, SD = 0.87) was not significant. As for the association between time attitudes (past negative, past positive, present negative, present positive, future negative, and future positive) and gender, the difference in participants' scores of present negative, t (376) = -1.37, p =.172, future negative, t (376) = -.688, p = .505, and future positive, t(376) = 1.781, p = .076 between males (present negative: M = 2.63, SD = 0.75; future negative: M = 2.33, SD = 0.65; future positive: M = 3.82, SD = 0.68) and females (present negative: M = 2.74, SD = 0.77; future negative: M = 2.38, SD = 0.67; future positive: M = 3.70, SD= 0.64) were not significant. However, on the past negative subscale, the female participants generally achieved higher scores (M = 2.57, SD = 0.765) than the male participants (M= 2.38, SD = 0.72), t (372.79) = -2.42, p = 0.016; the males (past positive: M = 3.76, SD = 0.74; present positive: M =3.50, SD = 0.67) scored higher than females (past positive: M = 3.52, SD = 0.72; present positive: M = 3.33, SD = 0.65) on the past positive, t (364.28) = 3.24, p = .001, and present positive subscales, t (365.09) = 2.44, p = .015. And for the relationship between academic performance and gender, the participants' academic performance between males, M =3.50, SD = 0.94, and females, M = 3.34, SD = 0.84, were non-significant; as well as when examining the relationship between subjective well-being, there was no significant difference between gender groups in either education purpose, t (376) = 1.10, p = .274, or academic efficacy subscales, t (376) = 1.85, p = .066. However, significant differences existed between the male and female participants on the joy of learning, t (355.78) = 3.01, p = .003, and school connectedness subscales, t (353.20) = 3.11, p = .002, indicating that males generally had higher scores on the two subscales (joy of learning: M = 2.70, SD = 0.66; school connectedness: M = 2.68, SD = 0.66) than female participants (joy of learning: M = 2.51, SD = 0.60; school connectedness: M = 2.48, SD = 0.59).

We then conducted multinomial logistic regression analyses with age groups as the independent variable and participants' perceived time relation and time orientation as the dependent variables. The results showed that there was no significant effect of age on participants' perceived time relation and time orientation, ps > .05. Besides, different correlation analyses were used on the strength of associations between age and other variables tested in the current study, including time frequency, time attitudes, academic performance, and subjective well-being. The results showed that age positively correlated with the frequency of thinking about the present (r = .117, p = .023) and the future (r = .119, p = .021), but not the past (r = .040, p = .441), indicating that older participants were more likely to think about the present and the future more often than younger participants. For the relation between time attitudes and age, age correlated with five out of six subscale scores among time attitudes scale. There were positive correlations between age and past negative (r = .155, p = .003), present negative (r = .159, p = .002), and future negative (r = .145, p = .005), but age was negatively correlated with past positive (r = -.189, p = .000) and future positive (r = -.159, p = .002), and no correlation between age and present positive (r = -.073, p = .158). Elder participants tended to have higher scores on past negative, present negative, and future negative subscales but lower scores on past positive and future positive subscales. Also, no significant linear relationship between age and academic performance (r = .064, p = .214) was found.

Again, we used correlation analyses to investigate the relationship between subjective well-being (joy of learning, school connectedness, education purpose, and academic efficacy) and age. The results showed that there were negative correlations between age and joy of learning (r = .187, p < .001) and education purpose (r = .241, p < .001), and no correlation between age and school connectedness (r = .064, p = .215) and academic efficacy (r = .034, p = .510). Elder participants tended to have lower scores on the joy of learning and education purpose subscales.

IV. MAIN ANALYSIS

A. Academic Performance and Time Perspective

Two different tests were employed to analyze the relationship between individuals' academic performance and time perspective. ANOVA tests were used to examine the relationship between academic performance and individuals' perceived time relation, academic performance and participants' time orientation. Neither participants' perceived time relation nor time orientation showed a significant effect on the participants' academic performance. The results of the multiple regression tests revealed that there was not a significant relationship between five out of six subscales of the time attitudes and academic performance, ps> .05. However, a positive relation was found between academic performance and the subscale score of present positive, B = .371, SE = .106, t = 3.492, p =.001, suggesting that participants who achieved higher scores on the present positive subscale tended to have better academic performance. Similarly, participants' perceived time relation and time orientation did not show significant effects on the participants' academic performance either.

When examining the relationship between time perspective and participants' scores on time frequency, participants who think more about the future and present tended to have better academic performance, and no correlation between academic performance and frequency of thinking about the past (r = -.065, p = .210).

B. Subjective Well-being and Time Perspective

Two different tests were employed to analyze the relationship between individuals' subjective well-being and time perspective. The relationships between four subscales of subjective well-being and time attitudes were examined through multiple regression. Table 1 showed that there were significant relationships between most of the subscales of the time attitudes and joy of learning, except future negatives. In the relation between participants' time attitudes and school connectedness, there was a significant relationship between most of the subscales of time attitudes and school connectedness (past positive: B = .113, SE = .056, t = 2.021, p = .044; present negative: B = .123, SE = .060, t = -2.064, p = .040; present positive: B = .312, SE = .066, t = 4.730, p < .001; future positive: B = .128, SE = .061, t = 2.091, p = .037), except future negative and past

negative, p > .05. Besides, the relationship between participants' time attitudes and education purpose was also found in the multiple regression tests. The results showed that there was no significant relationship between four out of six subscales of time attitudes and education purpose, but a significant relationship between past positive scales and education purpose and future positive and education purpose as Table II indicates.

TABLE I: RELATIONSHIPS BETWEEN THE JOY OF LEARNING AND TIME ATTITUDES							
	Unstandardized B	Coefficient Std. Error	Standardized Coefficient Beta	t	р		
Past Negative	.139	.053	.164	2.593	.010		
Past Positive	.181	.055	.210	3.279	.001		
Present Negative	186	.059	233	-3.145	.002		
Present positive	.222	.065	.232	3.404	.001		
Future negative	.006	.066	.006	.090	.929		
Future Positive	.163	.061	.170	2.688	.008		

TABLE II: RELATIONSHIPS	BETWEEN EDUCATION PURPOSE AND TIME ATTITUDES
INDEL II. RELATIONSTILL	DEI WEEN EDUCATION I UNI ODE AND TIME ATTICOLS

	Unstandardized B	Coefficient Std. Error	Standardized Coefficient Beta	t	р
Past Negative	.077	.055	.093	1.395	.164
Past Positive	.195	.057	.229	3.403	.001
Present Negative	114	.061	139	-1.863	.063
Present positive	.124	.068	.131	1.827	.068
Future negative	122	.068	128	-1.784	.075
Future Positive	.128	.063	.135	2.040	.042

The results of the relationship between time attitudes and academic efficacy showed that there was no significance between most of the time attitudes subscales and academic efficacy but a significance between present positive and academic efficacy, B = .325, SE = .067, t = 4.854, p < .001 and future positive and academic efficacy, B = .130, SE = .062, t = 2.098, p = .037.

The results regarding the relationship between time frequency and SWB showed that the frequency of thinking about the past showed no correlation with either of the four subscales of subjective well-being; the frequency of thinking about the present was positively correlated with all four subscales of subjective well-being; the frequency of thinking about the future has positive correlations with joy of learning, education purpose, and academic efficacy. Participants who think more about the present generally had higher total scores in subjective well-being scale.

IV. DISCUSSION

People's perception of time determines the way of

viewing themselves, others, and life. For adolescents, although not all of them can identify their "time personality," their perspectives on different time periods have subtly shaped their characteristics and identity, which is reflected in their academic performance and subjective well-being. In this study, we initially hypothesized that Chinese adolescents who have a stronger tendency of thinking about the future would have better academic performance and a higher score in subjective well-being. Our study results supported our hypotheses that academic performance was positively related to the frequency of thinking about the future, and subjective well-being (joy of learning, education purpose, and academic efficacy) was positively related to the frequency of thinking about the future and positive future attitudes as well.

In line with the previous literature, our results concluded that the future time perspective generally would have a strong influence on adolescents' academic performance and subjective well-being. However, our study results only supported part of our hypotheses. Positive attitudes towards the future did positively affect one's subjective well-being, but in terms of academic performance, only the frequency of thinking about the future, but not the time relation, time orientation, or time attitudes regarding the future, had a positive effect on one's academic performance.

In addition to our hypotheses, the findings also suggested that the individuals who held positive attitudes towards the present and think more frequently about the present also had better academic performance. In terms of participants' subjective well-being, thinking more frequently about the present would generally enhance adolescents' subjective well-being in all four subscales.

Our findings are consistent with previous studies as they proved that the future time perspective helped to improve adolescents' academic performance and subjective wellbeing. Unexpectedly, in our study, positive present attitudes also plays an important role in determining adolescents' better academic performance, whereas the literature we reviewed show a significant relationship between future time perspective and academic performance (Barber et al. 2009; Shell & Husman, 2001) [20]-[21], due to a presumption that individuals who are future-oriented would tend to recognize the benefit of planning everything ahead and the delayed gratification. Meanwhile, those previous studies also concluded that holding a present time perspective usually causes worse academic performance than those who are future-oriented [20]-[22]. The reason for causing the discrepancy may partially be due to the participants we used -- they are younger and all are Chinese students -- or possibly that focusing on the present can also motivate adolescents' interests in learning, as well as establishing their self-confidence.

Interestingly, Mello et al.'s finding (2009) showed a discrepancy with previous and our research findings. It showed that in terms of the frequency with which participants reported thinking about the past, the present, and the future in relation to academic achievement, the frequency of thinking about the past predominantly determined the adolescents' academic performance [23], whereas the previous and our studies indicated that the frequency of thinking about the present and future are the major determining factors.

V. LIMITATIONS AND FUTURE DIRECTIONS

The limitation of this study is mainly due to the sample we collected. Our sample consisted of only a group of students in China. In order to generalize our findings to a broader population, we encourage future researchers to further verify our research findings with other types of samples from different populations and examine the cultural differences. Also, the present study used surveys as a correlational research method, which cannot determine the causal relations between academic performance and time perspective and subjective well-being and time perspective. For example, we were unsure about whether participants' academic performance was influenced by their time perspective or has an impact on individuals' time perspective. We encourage future research to examine the cause and effect between academic performance and time perspective and subjective well-being and time perspective, or if other factors exist that influence individuals' academic performance and subjective well-being. Moreover, in our

survey, only three academic subjects -- Chinese, Mathematics, and English -- were selected. These academic subjects, although included in the general subjects all students must study in the Chinese secondary curriculum, will probably exclude the student who will be more likely to succeed in other subjects, like chemistry, physics, and history. So, future studies should extend the scope of academic subjects in order to give a more fair and valid result.

VI. CLOSING

As life becomes more stressful in modern days, having a higher subjective well-being score seems important for adolescents' mental health. Based on the investigation of our study, adolescents who scored higher on the subjective well-being scale presented a general tendency of thinking about one or several time periods more often than those who received lower scores on subjective well-being -- for example, adolescents who frequently think about the future and present usually had high subjective well-being scores. In this way, our study can provide theoretical evidence for any intervention program that focuses on how to increase adolescents' subjective well-being by letting them focus on a specific time period that will increase their subjective well-being and have a positive effect on real life.

CONFLICT OF INTEREST

The author declares no conflict of interest.

AUTHOR CONTRIBUTIONS

This work was all done by Zihan Wu. This includes conducting research, analyzing data, and writing the paper.

ACKNOWLEDGMENT

This paper would not have been possible without the instruction of Zihan Wu's supervisor from Cornell University Ph.D., Li Guan. Her knowledge and attention to detail were critical to keeping Zihan's research on track. Zihan also thanks to the 376 participants who helped complete the online survey, which was important for the data analysis and the final results of this study.

REFERENCES

- K. Lewin, Time Perspective and Morale, 1942.
- [2] K. Lewin, "Field theory in the social sciences: Selected theoretical papers," New York: Harper, 1951.
- [3] U. Sailer, P. Rosenberg, A. A. Nima, A. Gamble, T. Gärling, T. Archer, and D. Garcia, "A happier and less sinister past, a more hedonistic and less fatalistic present and a more structured future: Time perspective and well-being," 2014.
- [4] J. Piaget, "The development of time concepts in the child," *Psychopathology of Childhood*, pp. 34–44, 1955.
- [5] K. Phalet, L. Andriessen, and W. Lens, "How future goals enhance motivation and learning in multicultural classrooms," *Educational Psychology Review*, vol. 16, no. 1, 59-89, 2004.
- [6] P. G. Zimbardo and J. N. Boyd, "Putting time in perspective: A valid, reliable individual differences metric," *Journal of Personality and Psychology*, vol. 77, no. 6, pp. 1271-1288, 1999.
- [7] D. Volder and M. L. W. Lens, "Academic achievement and future time perspective as a cognitive-motivational concept," *Journal of Personality and Psychology*, vol. 42, no. 3, pp. 66-571, 1982.
- [8] L. Steinberg, "A social neuroscience perspective on adolescent risktaking," *Developmental Review*, vol. 28, pp. 78–106, 2008.

[1]

- [9] E. E. Lessing, "Extension of personal future time per- spective, age, and life satisfaction of children and adolescents," *Developmental Psychology*, vol. 6, pp. 457- 468, 1972.
- [10] L. S. Dickstein, "Prospective span as a cognitive ability," *Journal of Consulting and Clinical Psychology*, vol. 33, pp. 757-760, 1969.
- [11] E. Diener, S. Oishi, and R. E. Lucas, "Subjective well-being: The science of happiness and life satisfaction," *Handbook of Positive Psychology*, Oxford and New York: Oxford University Press, 2022.
- [12] C. L. Proctor, "Subjective well-being, encyclopedia of quality of life and well-being research," pp. 6437-6441, 2014.
- [13] F. M. Andrews and S. B. Withey, "Social indicators of well-being: Americans' perceptions of life quality," *New York: Plenum*, 1976.
- [14] E. Diener, E. M. Suh, and S. Oishi, "Recent findings on subjective well-being," *Indian Journal of Clinical Psychology*, vol. 24, pp. 25– 41, 1997.
- [15] P. G. Zimbardo and J. N. Boyd, "The time paradox," New York, NY: Free Press, 2008.
- [16] C. Kim-Prieto, E. Diener, M. Tamir, C. Scollon, and M. Diener, "Integrating the diverse definitions of happiness: A time-sequential framework of subjective well-being," *Journal of happiness Studies*, vol. 6, no. 3, pp. 261-300, 2005.
- [17] D. Kooij, R. Kanfer, M. Betts, and C. W. Rudolph, "Future time perspective: A systematic review and meta-analysis," *Journal of Applied Psychology*, vol. 103, no. 8, p. 4, 2018.
- [18] K. M. Prenda and M. E. Lachman, "Planning for the future: A life management strategy for increasing control and life satisfaction in adulthood," *Psychology and Aging*, vol. 16, no. 2, pp. 206–216, 2001.
- [19] A. J. Shipp, J. R. Edwards, and L. S. Lambert, "Conceptualization and measurement of temporal focus: The subjective experience of

the past, present, and future," *Organizational Behavior and Human Decision Processes*, vol. 110, 2009.

- [20] L. K. Barber, D. C.Munz, P. G. Bagsby, and M. J. Grawitch, "When does time perspective matter? Self-control as a moderator between time perspective and academic achievement," *Personality and Individual Differences*, vol. 46, no. 2, pp. 250-253, 2009.
- [21] D. F. Shell and J. Husman, "The multivariate dimensionality of personal control and future time perspective beliefs in achievement and self-regulation," *Contemporary Educational Psychology*, vol. 26, no. 4, pp. 481-506, 2001.
- [22] D. H. Adelabu, "Time perspective and school membership as correlates to academic achievement among African American adolescents," vol. 42, no. 167, pp. 525-538, 2007.
- [23] Z. R. Mello, F. C. Worrel, J. R. Andretta, "Variation in how frequently adolescents think about the past, the present, and the future in relation to academic achievement," *Journal of Childhood and Adolescence Research*, vol. 4, no. 2, pp.173-183, 2009.

Copyright © 2022 by the authors. This is an open access article distributed under the Creative Commons Attribution License which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited (CC BY 4.0).

Zihan Wu is a high school student at Wilbraham & Monson Academy in the United States. She is from Beijing, China and went to the High School Affiliated to Renmin University of China in Beijing.