



FACTORS AFFECTING ON GROWTH MINDSET OF ADOLESCENTS IN CHINA



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FACTORS AFFECTING ON GROWTH MINDSET OF ADOLESCENTS IN CHINA

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This study aims to investigate the relationships and effects of grit, optimism, school climate, peer influence and teacher mindset beliefs on growth mindset of Chinese adolescents. In 2025, a five-point Likert scale questionnaire titled Questionnaire on Growth Mindset and Its Influencing Factors was administered to a randomly selected sample of 350 students. The instrument contains 65 items across six sections. The overall Cronbach's Alpha value of the entire questionnaire scale was 0.924, reflecting a great level of reliability. Through correlation analysis and multiple linear regression analysis, the results revealed the following: (1) Grit, optimism, school climate, peer influence, and teacher mindset beliefs were significantly positively correlated with students' growth mindset; (2) Three significant predictors of students' growth mindset were identified: teacher mindset beliefs ($p < 0.001$), optimism ($p < 0.001$), and grit ($p < 0.05$), while school climate and peer influence had no significant impact; (3) The unstandardized regression equation was: $\hat{Y} = 0.152 + 0.308X_1 + 0.243X_2 + 0.455X_5$; (4) The standardized regression equation was: $Z = 0.289X_1 + 0.208X_2 + 0.379X_5$.

Keyword : Growth Mindset, Grit, Optimism, School Climate, Peer Influence, Teacher Mindset Beliefs

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CHAPTER 1

INTRODUCTION

1.1 Background

With the deepening of humanism concept in the practice of higher education reform in China, the school education emphasizes the non-intellectual factors of training students (Xia, 2025). As the core element of the formation of the quality of lifelong learning, growth mindset caters to the demand for education by the nature of teaching and educating people, and education is one of the topics that people need to pay most attention to in the adolescent stage (Zhang et al., 2022). Over the past twenty years, the concept of a growth mindset has drawn significant interest from educators, policymakers, and the media (Smith & Capuzzi, 2019). In May 2013, the Obama Administration held a dedicated conference titled “Excellence in Education: The Importance of Academic Mindsets,” highlighting the national significance of this topic. Boaler (2013) described the impact of mindset research as initiating a “mindset revolution” that is transforming educational practices. As a result, mindset-related studies were prioritized for funding as a key area in national education policy, leading to a substantial body of mainly applied research that has tested the fundamental propositions of Dweck’s theoretical framework (Rammstedt et al., 2022). The belief that intellectual ability is malleable, often referred to as a growth mindset, is drawing increasing interest in today’s educational landscape (Cavanagh et al., 2018).

Psychologist Carol Dweck introduced the concept of a growth mindset, which she defines as the belief that one’s abilities and intelligence can be developed and enhanced over time through effort, learning, and persistence. A growth mindset learning environment embodies the philosophy that success is abundant and accessible to everyone. In contrast, there is the concept of a fixed mindset, where individuals hold the belief that abilities and intelligence are fixed traits, unalterable by effort or learning. The fixed and growth mindsets are present in all of us, and the mindset we lean into

when facing challenges can have a profound impact on our life experiences (Brock & Hundley, 2016).

From the standpoint of positive psychology (Wang et al., 2021), mindset plays a vital role in coping with existential difficulties and fostering constructive transformation. Scholars have demonstrated that possessing a growth mindset is closely associated with individuals' resilience in facing challenges and their willingness to persist through effort. Academic achievement has similarly been connected to growth mindset, as students who endorse this mindset tend to employ innovative learning strategies and demonstrate enhanced creativity in their studies (Zhang et al., 2022). Moreover, those with stronger growth mindset orientations are generally less prone to experiencing academic burnout (Kim, 2020). A growth mindset fosters resilience by encouraging individuals to view failures as learning opportunities rather than as reflections of their abilities. This perspective helps people to cope better with stress and adversity. They are more likely to bounce back from setbacks and remain motivated to achieve their goals (Yeager & Dweck, 2012). Adopting a growth mindset encourages a love for learning and a willingness to take on new challenges throughout life. It instills the belief that one can always improve, which is essential for personal and professional growth in an ever-changing world. This mindset supports continuous self-improvement and adaptability. In professional and educational settings, a growth mindset encourages experimentation and innovation. When individuals are not afraid of making mistakes, they are more likely to take creative risks and come up with innovative solutions. This is particularly important in fields that require constant adaptation and creativity (Dweck, 2016).

In China, traditional education models often emphasize grades and rankings, which can easily lead students to develop a fixed mindset, the belief that intelligence and abilities are static and unchangeable (Yang, 2020). This mindset not only limits students' potential but also may cause them to develop negative emotions and a tendency to give up when facing setbacks. A fixed mindset often undermines intrinsic motivation, as students may feel they have limited control over their own

abilities. Those who believe intelligence is fixed are more likely to prioritize performance-based goals, aiming to receive praise or avoid criticism, rather than pursuing learning for its own sake (Haimovitz et al., 2011). Therefore, cultivating a growth mindset in adolescents not only helps them achieve better academic performance but also enhances their mental health and social adaptability (Yeager & Dweck, 2012).

Based on the above reasons, it is of great significance to study the factors of adolescents' growth mindset and change their thinking mode. In today's society, people are facing more and more uncertainty, and cultivating a growth mindset can help students effectively deal with challenges and live an active life. (Chang et al., 2024). In education, much of our attention focuses on shaping potential into achievement. While ability is a necessary component for realizing talent, it alone is insufficient. Elements such as motivation, mindset, and passion also play a critical role in achieving exceptional outcomes (Subotnik et al., 2018). These factors are not only significant in the process of talent cultivation but are also capable of being developed over time. Consequently, it is essential to investigate the variables that may either hinder or enhance individuals' potential, as well as explore how supportive environments can foster these attributes, beliefs, and competencies. Through this understanding, educators and practitioners can better assist students in pursuing a path toward high achievement. Among the influential factors, individuals' implicit beliefs about intelligence serve as key predictors (Flanigan et al., 2023).

In 2021, the OECD released *Sky's the Limit: Growth Mindset, Students, and Schools in PISA*, marking the most comprehensive international effort to examine growth mindset to date. The study involved approximately 600,000 students across 78 countries and economies. In this data, the growth mindset of students in other countries has been internalized and tends to be saturated. But Asbury (2016) found that compared with Western students, Chinese students have more fixed mindset, and even Chinese students who grew up in the United States have more growth mindset than Chinese students who grew up in China (Kim et al., 2017). Obviously, this psychological quality still has great potential for development in our country, the growth mindset of

Chinese students is much lower than the average. For a long time, the mainstream way of cultivating growth mindset has been to conduct growth mindset intervention for students, by setting up special courses to tell students that "your brain is like a muscle, as long as you believe that your intelligence can be changed and make efforts for it, you can do it" (DeBacker et al., 2018). However, the change of thinking mode can not only rely on students' own cognition but also need other forces to support. Research shows that in addition to individual factors, students' thinking patterns are also affected by multiple factors such as grit, optimism, school climate patterns, peers' influence patterns and teachers' mindset. It is these environmental factors that students perceive that will constantly influence students' interpretation of specific events and thus shape their growth mindset patterns(Xiao et al., 2023).

Grit refers to an individual's perseverance and passion for long-term goals (Angela L Duckworth et al., 2007). Research shows that grit plays a crucial role in students' academic and personal development. When students see themselves persisting through challenges and eventually achieving success, their growth mindset is enhanced. Conversely, if students lack grit when facing setbacks, they may develop self-doubt, leading to a fixed mindset (Dweck, 2006). Additionally, grit is closely related to the setting and achieving of long-term goals. Gritty students are more likely to set challenging goals and demonstrate sustained effort and commitment in achieving them (Angela L Duckworth et al., 2007).

Optimism, individual's positive expectations for the future and belief in their success (Carver & Scheier, 2024). Research shows that when students maintain an optimistic attitude and believe they can overcome difficulties, their growth mindset is enhanced. Conversely, if students hold a pessimistic attitude, they may doubt their abilities, leading to a fixed mindset (Dweck, 2006). Specifically, optimistic students are more likely to adopt proactive coping strategies when facing challenges and setbacks, rather than giving up or withdrawing (Carver & Scheier, 2014). These proactive coping strategies can help them believe that their abilities can improve through effort. Additionally, optimistic students are more likely to set challenging goals

and demonstrate sustained effort and commitment in achieving these goals (Scheier & Carver, 1985).

School climate refers to the overall atmosphere of the school environment, which includes various factors and conditions such as the physical environment, social relationships, emotional atmosphere, and academic environment (Thapa et al., 2013). The school climate plays a crucial role in influencing students' mindsets and tends to evolve as students advance through grade levels, often placing increasing emphasis on ability and performance (Wang & Degol, 2016). A positive school climate can make it easier for students to feel supported and encouraged, thereby making them more willing to try and face challenges. Study shows that a good school climate can promote students' academic performance and mental health, thereby enhancing their growth mindset (Thapa et al., 2013). As an essential aspect of the educational environment, school climate can affect students' cognitive perceptions, which lie at the core of the growth mindset framework (Banda & Liu, 2025).

Peer influence refers to the interactions and influences among peers, including peers' attitudes, behaviors, and values (Wentzel & Muenks, 2016). Research shows that when students observe similar peers succeeding in tasks, it can motivate them to attempt the task, especially when they believe they have the potential to succeed (Pajares & Schunk, 2001). Conversely, witnessing others fail may lead to self-doubt and reluctance to attempt the task. Additionally, peer influence can affect students' growth mindset through social comparison and modeling behaviors. Social comparison refers to students evaluating their abilities and achievements by comparing themselves with their peers (Festinger, 1954). Modeling behavior refers to students learning and developing their skills by observing and imitating their peers' behaviors (Bandura, 1986). When students see peers demonstrating persistence and effort in the face of challenges, they are more likely to emulate these behaviors, thereby enhancing their growth mindset (Cameron, 2001).

Teachers' mindset beliefs refer to the belief that teachers hold about whether students' abilities and intelligence can be improved

through effort and learning (Good et al., 2012). Research shows that if teachers believe that students' abilities can develop, they are more likely to adopt encouraging and supportive teaching methods. When students observe that teachers provide positive feedback on their efforts and progress, their growth mindset is reinforced. Conversely, if teachers hold a fixed mindset, believing that students' abilities are unchangeable, this may lead to students developing self-doubt, affecting their growth mindset (Dweck & Yeager, 2019). Specifically, teachers' feedback methods and teaching strategies largely reflect their mindset beliefs. Teachers with a growth mindset are more likely to provide constructive feedback, emphasizing the importance of effort and strategies rather than just focusing on outcomes (Mueller & Dweck, 1998).

This study explores the factors influencing the growth mindset of adolescents in China, emphasizing the importance of promoting grit and optimism, fostering a supportive school climate, encouraging positive peer and teacher influences. By understanding the interactions among these factors, educators, parents, and policymakers can better support students in developing a growth mindset, ultimately enhancing their academic performance and overall well-being. Targeted interventions and strategies addressing these key variables, providing a comprehensive approach to cultivating a growth mindset in adolescents. Future research should continue to explore these relationships and develop practical applications to further support students in their educational and personal development.

This research adopted a quantitative approach to explore the determinants affecting the growth mindset of adolescents in China. A questionnaire survey was employed to gather data on the assessment and factors influencing the growth mindset among this demographic. The study focuses on a population of 1,332 sophomore and junior undergraduates from the School of Management at a university located in Beijing, China. Following Krejcie and Morgan's (1970) sampling table, 302 students were initially selected using simple random sampling, which was later adjusted to 350 to account for potential invalid questionnaires. Focusing on sophomores and juniors is particularly relevant as these

students are typically in the process of adapting to the college environment, representing a critical developmental stage in adolescence. This period is ideal for examining variables such as school climate, peer influence, and teacher mindset beliefs. Furthermore, students in different academic years often exhibit varying psychological and academic developments, which may provide deeper insights into the factors influencing their perceptions.

1.2 Research Question

The aim of this study research project was to explore the relationship between the growth mindset of adolescents and the following.

RQ 1) What are the factors related adolescent's growth mindset?

RQ 2) What are the factors that affect adolescent's growth mindset?

1.3 Research Objectives

1.3.1 To investigate the relationship between grit, optimism, school climate, peer influence, teacher mindset belief and the growth mindset.

1.3.2 To investigate the influence of grit, optimism, school climate, peer influence, teacher mindset belief on the growth mindset of adolescent in china

1.4 Research significance

This study may have significance on several levels. First, from an educational perspective, it is important to understand the factors that influence the growth mindset among Chinese adolescents. By identifying these factors, educators can help students develop more effective learning strategies and cultivate a growth mindset. This mindset encourages students to accept challenges, persevere, and view hard work as a path to success, ultimately improving academic performance and fostering a love of lifelong learning. Second, this study aims to integrate the factors of growth mindset and provide a reference for educators and parents to better cultivate students' growth mindset by understanding the factors that affect growth mindset.

1.5 Scope of research

1. Population

The population of this study is 1332 freshmen from the School of Management at a university located in Beijing, China.

2. Sample

A simple random sampling method was used to select 350 people from a population of 1332 people.

1.6 Research Variables

1) The independent variables of the study are grit, optimism, school climate, peer influence, and teacher mindset belief.

2) The dependent variable is growth mindset.

1.7 Definition of Terms

1. growth mindset

Growth mindset refers to the belief that an individual's abilities and intelligence can be improved and developed through effort, learning, and perseverance.

2. Grit

Grit refers to an individual's passion and perseverance in pursuing long-term goals. Grit is embedded in two main facets: perseverance of effort and consistency of interest. It reflects not just a strong desire to achieve, but also the ability to maintain motivation and effort over extended periods, even when facing challenges, setbacks, or failures.

3. Optimism

Optimism is a psychological trait that refers to expecting the best possible outcome from any given situation. Optimistic people believe that good things will happen, that the future will be better, and that they can overcome difficulties and achieve success.

4. School climate

School climate refers to the overall quality and character of school life as perceived by students. It encompasses the nature of relationships among students and teachers, the level of support and care students receive, the fairness and inclusiveness of the environment

5. Peer influence

Peer influence refers to the impact that individuals of similar age or status exert on each other's attitudes, behaviors, and beliefs. It can shape various aspects of a young person's life, including their social norms, academic performance, and personal values. This influence can be both positive and negative.

6. Teacher mindset belief

Teacher mindset beliefs refer to teachers' fundamental beliefs and attitudes about the potential for students' abilities and intelligence to develop.

1.8 Research hypothesis

1.7.1 The grit, optimism, school climate, peer influence and teacher mindset belief, will correlate the growth mindset of adolescents in China.

1.7.2 The grit, optimism, school climate, peer influence and teacher mindset belief will influence the growth mindset of adolescents in China.

1.9 Research Conceptual Framework

The conceptual framework for this study is designed to investigate factors influencing growth mindset among Chinese adolescents. The independent variables include grit (Duckworth et al., 2007), optimism (Scheier & Carver, 1985), school climate (Cohen, 2009), peer influence (Brown, 2004), and teacher mindset beliefs (Rattan et al., 2012), with growth mindset (Dweck, 1999) as the dependent variable. This framework outlines hypothesized relationships between these independent variables and the development of a growth mindset in adolescents.

Independent Variable

dependent Variable

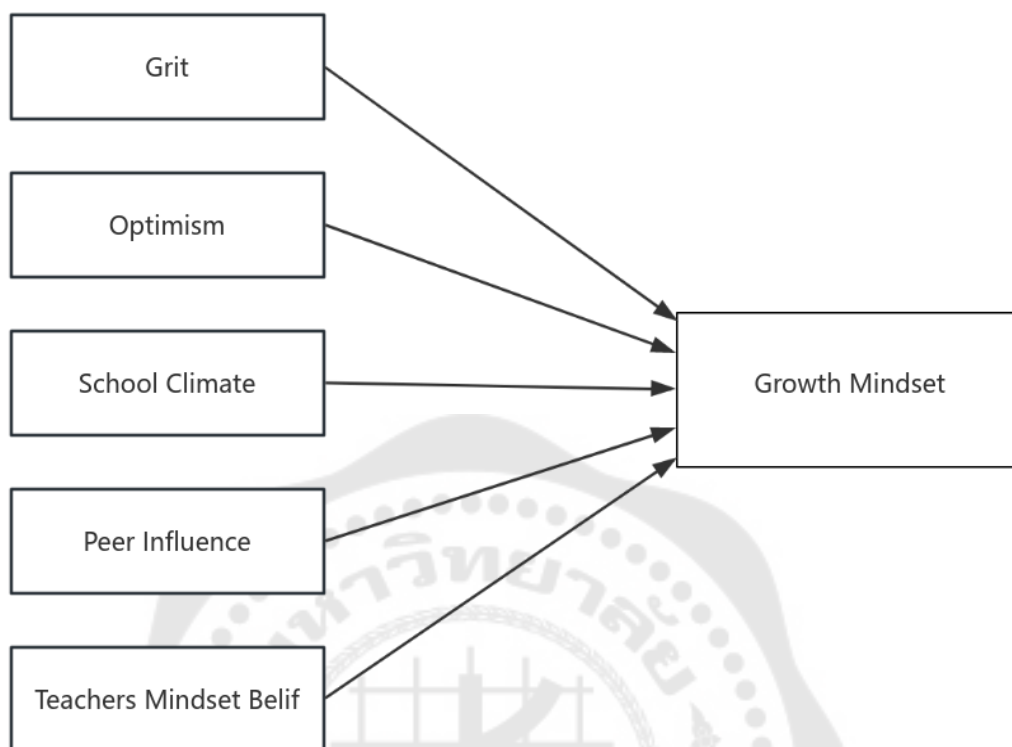


FIGURE 1 conceptual framework

CHAPTER 2

LITERATURE REVIEW

In this chapter, the dependent variable Growth mindset, and the five independent variables representing the factors influencing Growth mindset, will be thoroughly reviewed and expounded upon. Detailed explanation of each of these variables will be carried out combining with relevant theoretical literature, and the existing research on the correlations between these independent variables and the dependent variable will also be discussed in depth:

2.1 Growth Mindset

2.1.1 Definition of Growth Mindset

The concept of a growth mindset was proposed by psychologist Carol Dweck. In her 2006 book "Mindset: The New Psychology of Success," Dweck emphasized the idea that "intelligence can be developed," introducing the term "growth mindset." According to Dweck, a growth mindset refers to the belief that one's abilities and intelligence can be continuously improved through effort, learning, and perseverance. A growth mindset learning environment embodies the philosophy that success is abundant and accessible to everyone. In such an environment, both teachers and students learn about the brain's malleability and the positive effects of practice, perseverance, resilience, grit, and the application of various strategies (Ricci, 2024).

In contrast, there is the concept of a fixed mindset, where individuals believe that abilities and intelligence are innate and unchangeable through effort. These opposing mindsets exist within everyone, and the choice to view different aspects of our lives through the lens of either growth or fixed mindset can strongly affect our perspectives and achievements (Brock & Hundley, 2016).

Individuals who adopt a growth mindset view talents and abilities as qualities that can be cultivated through sustained effort, consistent practice, and guided learning. They do not assume that everyone possesses identical potential or that anyone can reach elite levels like Michael Phelps; rather, they recognize that even someone as

accomplished as Phelps required years of focused and passionate training to achieve success. Within this mindset, talent is perceived as a foundation to be nurtured and expanded—not merely a fixed trait to be showcased or relied upon without further development (Dweck, 2009).

Overall, in a growth mindset, students emphasize effort and the learning process rather than merely focusing on grades and results. They perceive failures and challenges as opportunities for learning and improvement, rather than as indicators of a lack of ability. Those with a growth mindset not only seek out challenges but also grow through them. The more significant the challenge, the greater the potential for growth. This mindset fosters resilience, persistence, and a passion for learning, driving students to continually enhance their abilities and achieve their full potential.

2.1.2 Characteristics of Growth Mindset

The incremental theory holds that people's abilities can be developed through effort and overcoming difficulties, whereas the entity theory maintains that abilities are innate and unchangeable. These contrasting beliefs form the basis for two key psychological frameworks: the growth mindset and the fixed mindset (Yeager & Dweck, 2012). Research has shown that adopting a growth mindset fosters resilience, while a fixed mindset tends to result in limited personal development (Dweck & Yeager, 2019).

Growth mindset, also known as growth mentality or growth-oriented psychology, is one of the most important members of the "character strength" family. Character strength refers to non-cognitive and non-intellectual factors that play a decisive role in life achievements and happiness. Academically, these are referred to as non-cognitive abilities by education economists and as non-intellectual factors by psychologists (Brock & Hundley, 2016).

From the perspective of positive psychology (Wang et al., 2021), mindset plays a crucial role in managing existential challenges and facilitating constructive change (Waters & Riordan, 2022). Studies by Dweck (2006) and Ronkainen (2019) have demonstrated a direct connection between an individual's growth mindset and their capacity to identify and overcome difficulties, as well as their persistence in

effort. Furthermore, students who hold a growth mindset tend to perform better academically, often employing innovative learning strategies and demonstrating greater creativity (Zhang et al., 2022). They are also less vulnerable to experiencing academic burnout (Kim, 2020).

Conversely, students with a fixed mindset are less likely to value effort as essential for success and more prone to adopting helpless responses when encountering setbacks. In contrast, Individuals with a growth mindset tend to increase their effort and adapt their strategies when encountering challenges (Blackwell et al., 2007). This tendency likely arises from the impact of mindset on the self-regulation processes students engage in while striving to achieve their goals (Burnette et al., 2013). Put differently, a growth mindset may not directly cause behavioral change, but it serves as a catalyst that promotes critical goal-monitoring and self-regulatory behaviors, which in turn contribute to more positive outcomes (Thomas et al., 2019).

A growth mindset places a strong emphasis on the role of effort in achieving success. Individuals with a growth mindset understand that effort is essential for developing skills and achieving mastery. This focus on effort helps them remain motivated and persistent, even in the face of difficulties (Blackwell et al., 2007). Those with a growth mindset are more open to feedback and use it constructively to improve their performance. They see feedback as a tool for learning and growth rather than as a critique of their innate abilities. This openness helps them to continuously improve and adapt (Yeager & Dweck, 2012).

In conclusion, growth mindset is characterized by a focus on learning and development goals rather than solely on performance outcomes. This orientation encourages individuals to prioritize skill development and knowledge acquisition, fostering long-term growth and improvement.

2.1.3 Importance of Growth Mindset

Growth mindset can be an important psychological resource, especially in adolescence (Pyo et al., 2024). Students who adopt a growth mindset tend to achieve higher academic outcomes. They are more likely to embrace challenges, persist in the

face of setbacks, and see effort as a path to mastery. This attitude not only improves their learning experience but also their performance (Dweck, 2006). Research has shown that interventions aimed at fostering a growth mindset can significantly enhance students' academic performance, including improvements in grades and standardized test scores (Blackwell et al., 2007).

Substantial research to date highlights the significance of the growth mindset. For instance, it has been linked to improvements in IQ (Mueller & Dweck, 1998), higher levels of educational achievement (Yeager & Dweck, 2012), and enhanced learning outcomes such as greater academic engagement, especially when students face difficult challenges (Good et al., 2012).

A growth mindset fosters resilience by encouraging individuals to view failures as learning opportunities rather than as reflections of their abilities. This perspective helps people to cope better with stress and adversity. They are more likely to bounce back from setbacks and remain motivated to achieve their goals (Yeager & Dweck, 2012).

Adopting a growth mindset encourages a love for learning and a willingness to take on new challenges throughout life. It instills the belief that one can always improve, which is essential for personal and professional growth in an ever-changing world. This mindset supports continuous self-improvement and adaptability (Dweck, 2016).

In professional and educational settings, a growth mindset encourages experimentation and innovation. When individuals are not afraid of making mistakes, they are more likely to take creative risks and come up with innovative solutions. This is particularly important in fields that require constant adaptation and creativity (Dweck, 2009).

In conclusion, the importance of a growth mindset extends across various domains of life. It enhances academic achievement, promotes resilience, encourages lifelong learning, improves motivation and engagement, strengthens relationships, and fosters innovation and creativity. By cultivating a growth mindset,

individuals and institutions can create environments that support continuous development and success.

2.1.4 Measurement of Growth Mindset

Dweck (2006) designed a set of questions to assess students' growth mindset, which has been widely applied across different educational backgrounds and cultural contexts. The design of this scale is based on Dweck's mindset theory, which distinguishes between a fixed mindset and a growth mindset.

The scale usually employs a 6-point or 7-point Likert rating system, ranging from "strongly disagree" to "strongly agree." Scores for each dimension can be calculated individually or combined to assess the overall growth mindset of the students.

Shan Chen, Yuanzhao Ding, and Xin Liu developed a measurement tool for growth mindset in 2023, examining its structural validity and reliability, and constructed a structural equation model to test the interrelationships, direct, and indirect effects within a Chinese sample. By integrating educational theory and practice with psychological research, they compared different groups to deeply analyze, investigate, and identify the relationships between factors. This questionnaire aims to examine the growth mindset of students in Chinese primary, secondary, and tertiary education. The questionnaire is designed based on the growth mindset theory (Dweck, 2017) and the research by Guidera (2014). It consists of 6 dimensions and 18 items, which are based on the theoretical framework and validated through a national educational review.

2.2 Grit

2.2.1 Definition of Grit

In psychology, grit refers to a positive, non-cognitive trait characterized by a person's perseverance of effort combined with their passion for a long-term goal. This powerful motivation drives individuals to achieve their objectives despite obstacles or challenges.

Psychologist Angela Duckworth and her colleagues, who extensively studied grit as a personality trait, defined it as "perseverance and passion for long-term goals." They observed that individuals high in grit maintain their determination and motivation over extended periods despite experiencing failure and adversity. Their observations revealed that individuals with high levels of grit sustain motivation and perseverance over long periods, even when facing setbacks and difficulties. The research concluded that grit serves as a stronger indicator of success than intellectual ability (IQ). This conclusion was drawn from analyses of adult educational achievement, GPA among Ivy League students, dropout rates at the U.S. Military Academy at West Point, and performance rankings in the National Spelling Bee (Sethi & Shashwati, 2019).

Duckworth (2007) argued that individuals who persistently persevere through obstacles, setbacks, and difficulties are more likely to attain greater success compared to those who lack such endurance. Achievement cannot be explained by talent alone; rather, it is the application of effort and the nurturing of that talent that drives success.

Grit consists of two main facets: perseverance of effort and consistency of interest. This interest is not about seeking immediate pleasure or short-term gratification but about finding personal meaning. Individuals must first assign deep personal significance to a long-term goal and cultivate a genuine passion that empowers them to confront adversity and hardship along the way. Sustaining one's effort and energy over time is crucial, as both components of grit are key contributors to success. Perseverance enables individuals to achieve mastery despite setbacks, while consistency of interest supports ongoing deliberate practice necessary for reaching expertise (Disabato et al., 2019).

In summary, grit is the combination of passion and perseverance for long-term goals. What sets gritty individuals apart is their ability to maintain consistent effort and enduring interest over extended periods, even when confronted with failures, setbacks, or plateaus in progress. Their perseverance empowers them to persist through challenges and obstacles without deviating from their chosen path.

2.2.2 Importance of Grit

Grit, a concept rooted in positive psychology, refers to a stable personality trait encompassing both sustained effort and consistent interest over time. It involves a determined pursuit of long-term goals, persisting through challenges, setbacks, and periods of slow progress (A. L. Duckworth et al., 2007). This construction emerged from research exploring factors beyond innate intelligence that contribute to personal success. Historical and biographical analyses have highlighted that qualities such as perseverance, passion, and goal-oriented focus play a critical role in achievement, alongside cognitive ability (Dai et al., 2023).

Recent studies have indicated that grit plays a significant role in improving student retention across educational levels, including schools, colleges, and universities (Bazelaïs et al., 2016). Additionally, scholars have emphasized the importance of students' early recognition of their academic interests and long-term goals, noting that such clarity is crucial for sustaining enrollment and commitment to their educational pathways (Kuh et al., 2006). More specifically, primary and high school students with enhanced levels of grit were increasingly likely to graduate from high school and with higher rates of attendance (Schimschal et al., 2021). For example, challenges related to student attendance and retention are frequently observed in high schools. Assessing and tracking students' levels of grit can enable educators to identify those at risk and connect them with appropriate support resources. Consequently, implementing interventions aimed at enhancing grit may lead to improvements in both attendance rates and student retention.

Over the past decade, extensive research has established grit as a significant predictor of both academic and career-related outcomes. Findings suggest that grit contributes uniquely to these outcomes beyond what is explained by cognitive ability, specific skills, or other personality dimensions (Zimmerman & Schunk, 2011). For example, Duckworth and Quinn (2009) demonstrated that individuals with higher grit levels were less likely to switch careers and more likely to attain higher levels of education. A longitudinal study further revealed positive correlations between

adolescents' grit and their grade point average (GPA), as well as negative associations with time spent watching television. Grit was also found to predict retention among cadets at the U.S. Military Academy and advancement in the Scripps National Spelling Bee (Duckworth & Quinn, 2009). Moreover, research by Duckworth, Quinn, and Seligman (2009) indicated that novice teachers with higher grit had a more substantial impact on student learning outcomes compared to their less gritty peers. Supporting this, Robertson-Kraft and Duckworth (2014) found that such teachers not only enhanced student performance but were also less likely to withdraw from teaching programs prematurely. These findings suggest that grit influences both performance and persistence—key components of long-term success. Since its introduction, the concept of grit has been examined in relation to other psychological constructs. Empirical studies have shown that grit shares a moderate correlation with achievement measures and a strong overlap with traits such as conscientiousness and self-control (Duckworth & Gross, 2014).

However, some traits might be essential to success no matter the domain. According to Duckworth (2007), a common trait found among highly successful individuals across various domains is grit. This construction is characterized by sustained passion and perseverance in pursuit of long-term objectives. Individuals with high grit demonstrate a consistent commitment to their goals, continuing to invest effort and maintain interest even in the face of setbacks, difficulties, or periods of slow progress. Unlike others who may abandon their efforts when encountering failure or monotony, gritty individuals persist, treating achievement as a long-term endeavor requiring resilience and endurance.

In conclusion, while cognitive abilities and academic performance are undeniably important, the role of grit in achieving long-term success cannot be overlooked. By recognizing and nurturing this trait, educators and leaders can better support individuals in reaching their full potential, ultimately fostering a more resilient and determined students.

2.2.3 Measurement of Grit

Duckworth et al. (2007) proposed a two-dimensional structure for their original 12-item Grit Scale (Grit-O), which evaluates the construct of grit through two subscales: Consistency of Interests and Perseverance of Effort. This self-report instrument was developed to assess sustained passion and perseverance toward long-term goals. The scale demonstrated strong internal reliability, with Cronbach's alpha coefficients of .85 for the total scale, .84 for Consistency of Interests, and .78 for Perseverance of Effort. Participants respond to items on a 5-point Likert scale ranging from 1 (not at all like me) to 5 (very much like me), with the Perseverance of Effort items reverse-coded. The total grit score can range from 1 to 5, where higher scores indicate greater grit. Although neither subscale consistently outperforms the other in predictive validity, the combined total score tends to offer stronger predictive power; thus, the full scale score is typically used in analyses.

The Short Grit Scale (Grit-S), developed by Duckworth and Quinn (2009), is an 8-item self-report measure designed to assess an individual's disposition toward sustained effort and interest in achieving long-term objectives. The scale comprises two components: Consistency of Interests (e.g., "New ideas and projects sometimes distract me from previous ones") and Perseverance of Effort (e.g., "I am diligent").

2.2.4 Grit and Growth mindset

Grit has been found to positively influence the development of a growth mindset. Individuals with high levels of grit are more inclined to engage in sustained and deliberate practice, which facilitates skill enhancement over time (Duckworth et al., 2011). Through repeated mastery experiences, these individuals may come to internalize the belief that effort and persistence yield meaningful outcomes. Supporting this, research in clinical psychology indicates that behavioral change can lead to shifts in underlying beliefs, suggesting that sustained effort may reinforce the perception that abilities can be developed through dedication and hard work.

Alan (2019) conducted a randomized controlled trial aimed at enhancing grit among elementary school students through teacher-led interventions. The findings

indicated that students whose teachers received the specialized training were more inclined to engage in challenging tasks and demonstrated improved academic performance, both in terms of grades and standardized test outcomes, compared to those in the control group. The intervention emphasized the concept that abilities can be developed through effort—an idea central to the growth mindset framework. Thus, the program integrated elements of both grit and growth mindset. This study reflects the underlying premise that grit and growth mindset are interrelated constructions that influence each other over time.

While cultivating positive traits like grit and a growth mindset is valuable at all life stages, it is especially crucial during adolescence. In a longitudinal study involving adolescents, Duckworth (2020) examined the dynamic interplay between these two attributes by repeatedly assessing them over time. The research aimed to explore whether the development of grit and growth mindset reinforces one another. The data analysis was theory-driven and aligned with specific research questions guiding the investigation.

In Kannangara's study, discovered a positive relationship between grit and mindset. Students who achieved high scores on the Grit Scale tended to also score highly on measures of growth mindset, indicating a strong association between grit and possessing a growth-oriented belief system. One possible explanation is that grit naturally aligns with the attitudes of students who hold a growth mindset. For example, students who believe that dedicated effort leads to skill improvement are generally more motivated and persistent in their pursuit of developing those abilities.

Sethi and Shashwati (2019) examined the connection between grit and growth mindset and demonstrated a significant correlation between these two traits. Facing challenges and setbacks is inevitable, but individuals with high grit tend to persist and continue striving despite difficulties. The key to their perseverance lies in their growth mindset—which encourages them to view obstacles not as barriers but as opportunities for learning and development. This positive outlook motivates them to keep pushing forward. In this context, grit serves as a vital quality for achieving meaningful

goals, with growth mindset acting as a facilitator. In other words, grit can be seen as the outcome that is nurtured through the presence of a growth mindset.

In summary, grit involves more than just persistence; it reflects a profound dedication to one's goals. This dedication fosters a strong sense of responsibility, motivating individuals to stay committed regardless of obstacles. No matter the challenges encountered, gritty individuals remain focused on their path, driven by a desire to learn and grow through every experience. Therefore, grit and growth mindset act as powerful motivators that encourage perseverance and resilience in the face of adversity. These two non-cognitive strengths complement each other, working together to help individuals maintain their drive and not be deterred by difficulties.

2.3 Optimism

2.3.1 Definition of Optimism

The word “optimism” originates from the Latin term *optimum*, meaning “best.” Typically, being optimistic means expecting the most favorable outcome in any situation (Yogi et al., 2021). In psychological terms, this is often described as dispositional optimism—a tendency to believe that future events will generally turn out well. As a personality trait, optimism contributes to resilience when facing stressful circumstances. Optimism represents an outlook characterized by hope or confidence that specific efforts or life in general will yield positive and desirable results. A classic example contrasting optimism and pessimism is the image of a glass filled halfway with water: an optimist views it as half full, whereas a pessimist sees it as half empty (Carver & Scheier, 2014).

Scientific definitions of optimism and pessimism center around expectations for what the future holds. These concepts are closely tied to the long-established expectancy-value theories of motivation. According to these theories, behavior is driven by the pursuit of goals—desired outcomes or actions. The importance of a goal to an individual determines its value (Higgins et al., 2010). Another key element in this framework is expectancy, which refers to one's confidence in achieving the goal. When

people doubt their ability to accomplish a goal, they may reduce their efforts, stop trying prematurely, or never even begin. Conversely, individuals who believe in their eventual success tend to persist, even when facing significant obstacles (Carver & Scheier, 2024). Optimists tend to anticipate positive outcomes in their lives, while pessimists expect negative events to occur. Common everyday understanding has long recognized these individual differences as significant (Carver & Scheier, 2024).

In summary, Optimism involves expecting positive outcomes and maintaining a hopeful outlook, which fosters resilience, problem-solving, and focusing on opportunities rather than obstacles. It is rooted in the belief that good things will happen, and challenges are temporary and specific rather than pervasive and permanent. This mindset, referred to as dispositional optimism, is linked to better stress management and overall well-being.

2.3.2 Characteristics of Optimism

Adolescence represents a crucial stage for cultivating optimism. Dispositional optimism is typically viewed as a stable personality trait that remains relatively consistent across different situations and overtime (Carver & Scheier, 2014). Researchers have examined optimism not only in terms of how to measure it but also regarding its related outcomes. In educational contexts, several studies have investigated the connection between optimism and key school-related outcomes. Boman (2003) reported that students with higher levels of optimism showed lower levels of hostility toward school and were less prone to expressing anger within school environments. Additionally, optimism was positively associated with greater classroom participation, which plays a vital role in overall student engagement.

Optimism has been conceptualized in multiple ways, but two key perspectives are particularly relevant to student outcomes: one views optimism as a stable personality trait (Scheier & Carver, 1985), while the other defines it as a cognitive process centered on expectations for the future (Gillham et al., 2001). Research examining both dispositional optimism and the cognitive aspect of expectancy has found links to non-academic outcomes such as students' engagement in school.

Dispositional optimism has been highlighted as crucial for mitigating negative expectations (Boman & Yates, 2001). Essentially, optimists tend to anticipate positive results, even when facing difficulties.

Optimism is an individual difference variable that reflects the extent to which people hold generally favorable expectancies for their future. Higher levels of optimism have been prospectively linked to greater subjective well-being, especially during times of adversity or challenge. Research shows that optimistic individuals are more likely to engage in active coping strategies, while those who are pessimistic tend to rely more on avoidance or disengagement. Optimism also correlates with proactive health behaviors, whereas pessimism is often connected to actions detrimental to health. Furthermore, optimism is associated with better physical health outcomes. The motivated and goal-oriented mindset of optimists extends benefits beyond health, contributing to greater persistence in educational pursuits and higher income later in life. Additionally, optimists generally experience more positive outcomes in interpersonal relationships compared to pessimists (Carver & Scheier, 2024).

The trait of optimism may offer important cognitive, coping, and contextual resources that contribute to better mental health. Indeed, the pattern of associations between optimism and various behavioral and cognitive tendencies provides broader insights into the nature of optimal living. Beliefs and expectations play a significant role in shaping life experiences and outcomes (Dardick & Tuckwillber, 2019).

Optimism is not only a positive psychological attitude but also a way of life. By cultivating the characteristics of optimism, individuals enhance their ability to cope with life's challenges, leading to healthier and happier lives. Furthermore, optimism positively influences those around them, fostering a more harmonious and supportive social environment (Conversano et al., 2010).

2.3.3 Measurement of Optimism

The Life Orientation Test–Revised (LOT-R) is a 10-item scale that assesses dispositional optimism, comprising three optimism items, three pessimism items, and four filler items to control for response bias.

The Optimism-Pessimism Scale (OPS) is a psychological measurement tool designed to assess an individual's tendencies towards optimism and pessimism. The scale consists of multiple sub-scales that separately measure aspects of optimism and pessimism. Each sub-scale contains several items, and respondents rate each item based on their actual experiences. Each sub-scale evaluates different dimensions of optimism or pessimism. The items are rated on a 5-point Likert scale, with responses ranging from "Never" to "Always."

2.3.4 Optimism and Growth mindset

Dardick (2019) explored the relationship between optimism, pessimism, and implicit theories of intelligence, finding that optimism was significantly associated with a growth mindset, while pessimism was significantly linked to a fixed mindset.

Optimism may play a vital role in the development of a growth mindset. Binning (2019) examined the effectiveness of a growth mindset intervention among American adolescents and found it to be significantly effective only for students with high educational expectations. This suggests that without optimistic expectations for future education, the belief in personal growth may hold little meaning or relevance (Pyo et al., 2024).

Expectations shape outcomes, and both optimism and mindset are partly composed of these expectations. It has been hypothesized that optimism represents a broader expectancy than mindset, with the anticipation of positive or negative future events potentially serving as a higher-order factor influencing one's mindset expectations (Dardick & Tuckwillber, 2019).

When students display higher levels of optimism, their mindset tends to lean more towards a growth mindset. Pyo (2024) found that optimism not only promotes the development of a growth mindset but also enhances individuals'

perseverance (Tuckwiller et al., 2017). Earlier research by Dardick and Tuckwiller (2019) revealed a strong association between optimism and growth mindset among college and graduate students. Similarly, Binning (2019) pointed out that interventions aimed at fostering a growth mindset are more effective for students with higher educational expectations. According to expectancy-value theory, as a core predictor of success, the effectiveness of a growth mindset depends on students' expectations for success and the value they place on their goals.

Paunesku (2015) finds that optimism and pessimism affect mindset factors. It is important to elucidate the complex influencing factors of mental development and potential targets for intervention. If the goal is to increase optimism, it will have a greater effect, because optimism affects the growth mindset. Research has shown that optimism is a malleable trait (Peters et al., 2010), supporting the idea that fostering optimism may be an effective pathway to promoting a growth mindset. It is possible that interventions aimed at increasing optimism may be as effective—or even more effective—than existing growth mindset interventions. Alternatively, combining optimism-focused interventions with growth mindset programs could amplify positive effects on key outcomes such as mindset, academic achievement, and motivation. According to Dardick (2019), students exhibit higher growth mindset when they possess greater optimism, whereas higher levels of pessimism are associated with increased fixed mindset beliefs.

The concept of growth mindset has become a central focus in educational research, leading to the development of numerous interventions designed to help educators foster a growth mindset in students. Given that optimism is a malleable trait linked to better overall school adjustment, incorporating optimism into these efforts may provide an additional pathway to enhance student resilience and success.

2.4 School Climate

2.4.1 Definition of School Climate

School climate refers to the overall quality and character of school life as perceived by students. It encompasses the nature of relationships among students and teachers, the level of support and care students receive, the fairness and inclusiveness of the environment. A positive school climate fosters a sense of social, emotional, and physical safety for all members of the school community. It encompasses the norms, beliefs, and relationships of students, parents, and school personnel, as well as teaching and learning practices, and the organizational and structural characteristics of the school (Cohen et al., 2009). According to the National School Climate Council (2007), a sustainable and positive school climate promotes students' academic success and social-emotional development.

Over the past two decades, research from diverse fields—including school reform, risk prevention, health promotion, moral and character education, mental health, and social-emotional learning—has identified evidence-based guidelines for school improvement that consistently promote safe, caring, responsive, and participatory school environments (Thapa et al., 2012). School climate matters profoundly; sustained positive school climate is linked to enhanced child and youth development, effective risk prevention and health promotion, improved student learning and academic achievement, higher graduation rates, and increased teacher retention (Thapa et al., 2013).

In summary, School climate encompasses the overall quality and character of school life, which is crucial for fostering safe, supportive, and engaging educational environments. It is influenced by safety, academic climate, community relationships, and the physical environment. Research underscores the significant impact of a positive school climate on student development, academic success, and mental well-being, highlighting the importance of ongoing efforts to improve school climate for optimal student outcomes.

2.4.2 Characteristics of School Climate

Positive school climate is linked to numerous beneficial student outcomes. For instance, it is associated with higher academic performance, improved mental health, and reduced bullying (Thomas & Grimes, 2002). Enhancing school climate can serve as a preventative strategy to decrease disruptive behaviors and boost attendance, academic achievement, as well as student and parent satisfaction with the school environment (Wang & Degol, 2016).

School climate refers to the overall atmosphere of the school environment, encompassing both structural characteristics and socio-emotional features (Wang & Degol, 2016). As students grow older and enter adolescence, the school climate tends to gradually pay less attention to students' emotional needs and shifts to place greater emphasis on individual abilities and academic achievement (Eccles & Roeser, 2011). This significant transition can have an important impact on the formation of adolescents' mindsets. Research shows that overemphasizing academic performance tends to encourage students to develop a fixed mindset, causing their goals to focus more on demonstrating existing abilities rather than on developing and improving them.

In summary, when schools prioritize holistic student development, balancing academic learning with social-emotional well-being—students may become less preoccupied with ability and more open to a growth mindset.

2.4.3 Importance of School Climate

The importance of school climate and the support it provides to students has been widely recognized in the field of education, as it positively influences students' academic performance and mental and physical well-being (Grazia, 2022). According to Cohen (2009), school climate encompasses the overall quality and experience of school life, including intangible factors such as relational emotions and emotional attachment, as well as tangible factors like daily teacher-student interactions and instructional practices (Reyes et al., 2012). It includes all internal factors that differentiate types of schools and significantly affect behavior within the school. The cultivation of a positive school climate is influenced by teaching methods, the setting of

achievement goals, curriculum design, and ongoing professional development for teachers (Shindler et al., 2016).

Numerous studies have demonstrated that school climate is strongly associated with adolescent mental health and academic achievement (Jia et al., 2009). Research shows that a positive school climate can enhance students' learning abilities, positively predict adolescents' self-esteem, and serve as a protective factor against depression, anxiety, and suicidal tendencies (Huang et al., 2020). Additionally, a supportive school climate plays a crucial role for minority and economically disadvantaged students (Schneider & Duran, 2010). Overall, students in positive school environments tend to exhibit less delinquent behavior and experience lower levels of bullying and sexual harassment.

Collie (2012) further asserted that school climate can either foster resilience or pose a risk factor for students, teachers, administrators, parents, and the broader school community. Similarly, Katsantonis (2019) highlighted that literature reviews indicate school climate significantly influences student achievement, teachers' intention to remain in the profession, and the overall health of the school environment (Requena et al., 2024).

In summary, school climate plays a crucial role in the holistic development of students, the job satisfaction of teachers, and the harmony and progress of the entire educational community. Creating and maintaining a positive school climate requires the collective effort of school administrators, teachers, students, and parents.

2.4.4 Measurement of School Climate

Measurement of School Climate involves using various validated scales and surveys designed to capture the perceptions of students, teachers, and parents regarding the overall environment of a school. CSCI is a widely used tool that assesses school climate across various dimensions including safety, relationships, teaching and learning, and the school environment. Research has shown that the CSCI provides reliable and valid measures of school climate across different school settings (Cohen et

al., 2009). School climate is a heterogeneous concept with a multitude of standardized and validated instruments available to measure it.

2.4.5 School Climate and Growth mindset

School climate can shape students' mindset and evolve as they progress through higher grades, with a focus on ability and performance (Wang & Degol, 2016). During adolescence, beliefs about growth and fixed mindsets become more nuanced and context specific. Adolescents' perceptions of their school's prevailing mindset are shaped by their broader worldviews on fairness and their experiences of the school climate (Thomas et al., 2019).

There is also evidence of a relationship between students' growth mindset regarding intelligence and emotional connectedness to school. Students who believe in their academic growth potential tend to experience more positive emotions related to school. These students typically hold more favorable attitudes toward learning and cognitive effort. When students perceive their intelligence as malleable and believe that effort can lead to improvement, they are more likely to feel engaged and motivated in academic settings. According to Ryan and Deci (2017), experiencing autonomous development fosters a sense of control, reinforcing the belief in one's capacity for growth and enhancing the motivation to work hard (Chen et al., 2024).

The results of the study by Liu (2023) provide support for Bandura's (1989) theoretical framework to investigate the relationship between school climate and growth mindset. In this context, school climate functions as a critical environmental factor that can shape students' cognitive processes, particularly their beliefs about the nature of intelligence and learning—core elements of a growth mindset. Just like other motivational constructs, students' mindsets are highly susceptible to contextual influences. A supportive and inclusive school environment can reinforce the belief that abilities can be developed through effort and learning, thereby fostering a growth-oriented perspective among students (Yu et al., 2022).

In conclusion, school climate plays a crucial role in shaping students' mindsets. School climate can not only change students' perceptions of the nature of

intelligence and learning but also promote the formation and development of a growth mindset. Research indicates that various factors and conditions within the school environment, such as social relationships and physical environment, interact with students' personal factors to collectively influence their behaviors and beliefs.

2.5 Peer Influence

2.5.1 Definition of Peer Influence

Peer influence refers to the impact that individuals of similar age or status exert on each other's attitudes, behaviors, and beliefs. In the context of adolescent development, peer influence is particularly significant as it can shape various aspects of a young person's life, including their social norms, academic performance, and personal values. This influence can be both positive and negative, depending on the nature of the interactions and the behaviors being modeled and encouraged within the peer group (Laursen & Veenstra, 2021).

Research over the past few decades has consistently revealed an important but seemingly simple finding about adolescent development: the behaviors and attitudes of adolescents are very similar to those of their friends. Many years ago, a different but interrelated set of processes was proposed to help explain this important phenomenon (Kandel, 1986).

According to Kandel (1978), peer influence refers to the process by which an individual's values and behaviors are shaped through exposure to others who are perceived to be similar in age, status, or social group membership. In simpler terms, peer influence involves the direct impact peers have on an individual, prompting them to conform to group expectations by modifying their attitudes, values, or behaviors to align with those of the influencing group (Borsari & Carey, 2001). Steinberg and Monahan (2007) further emphasize peer influence as the pressure exerted by individuals of similar age or status to conform to established norms related to behavior, appearance, or attitudes. Such influence is developed through ongoing social interactions.

In summary, peer influence can be described as the powerful impact exerted by one's peers or social circle, which shapes and guides an individual's

attitudes, behaviors, and decision-making across various domains of life, including social interactions, academic performance, and health-related decisions. Peer influence plays a critical role in an individual's development and can significantly affect their choices and lifestyle.

2.5.2 Characteristics of Peer Influence

A peer group is typically defined as a cohort of individuals of similar age who share common interests or identities and maintain ongoing social interactions (Sallee & Tierney, 2007). Research on peer groups has shown that peer affiliations are significantly associated with various learning outcomes, including academic achievement, motivation-related beliefs, school behavior, and overall school adjustment. For instance, Altermatt and Pomerantz (2003) found that peer group dynamics influence students' motivational beliefs, Berndt (1999) reported links between peer associations and school behavior. Wentzel and Caldwell (1997) demonstrated that group membership among 6th- and 8th- grade students consistently predicted students' academic performance over time. Longitudinal research with older students indicates that the positive influence of peers on academic achievement extends into postsecondary education (Zimmerman, 2003).

Veronneau and Dishion (2011) found that peers tend to accurately perceive each other's competence levels, which can subsequently shape their own behaviors and attitudes. Furthermore, research on peer modeling has demonstrated that peers exert the greatest influence when they are perceived as competent in a given domain and when their perceived competence aligns closely with that of the observing student (Schunk, 1987). In such cases, the peer is seen as an attainable model, rather than a threatening standard. Since growth mindset emphasizes personal improvement and the potential for development over time, individuals who endorse this belief may be viewed as more goal-oriented and engaged in their learning. Consequently, such individuals may exert greater influence on their peers' academic behaviors and attitudes. This suggests that perceptions of peer competence may underlie the mechanism by which

peer mindset is transmitted and ultimately impacts learning outcomes (Sheffler & Cheung, 2020).

In conclusion, Peer influence plays a crucial role in the socialization process of individuals. By understanding and leveraging the characteristics of peer influence, we can better guide individuals toward positive development and reduce negative impacts. Additionally, educators and parents should pay attention to peer influence, helping individuals to establish healthy and positive peer relationships, thereby promoting their overall development.

2.5.3 Measurement of Peer Influence

The Peer Pressure Scale, developed by Singh and Saini (2010), is a multidimensional 25-item instrument designed to assess the extent to which individuals experience peer pressure in various areas of their lives. The measure captures the influence of peer pressure on decision-making and behavior, and its items are organized into five distinct subscales. Higher scores in each subscale reflect a greater susceptibility to peer influence in the corresponding domain. A revised version of the scale was later introduced by the same authors (Singh, 2017), further enhancing its applicability and psychometric robustness.

Measurement of Peer Influence involves assessing the impact that peers have on an individual's attitudes, behaviors, and overall development. The Peer Influence Scale is designed to assess the degree to which peers influence an individual's behavior and decision-making processes. It is commonly used in research related to adolescence, where peer influence is particularly significant. Measures how much an individual's behaviors are influenced by their peers (Brown et al., 1986).

2.5.4 Peer Influence and Growth mindset

In Limeri's (2020) study, Students reported that observing their peers significantly influenced their own mindset beliefs. Specifically, witnessing peers struggle and either persevering or fail led some students to reconsider their own views about the malleability of intelligence, prompting changes in their beliefs about whether intelligence can be developed through effort. When students observed their peers failing despite

putting in strong effort, they often attributed these failures to a lack of innate intelligence. This indicates that students can develop their own mindset beliefs by witnessing the experiences of their peers, even if they themselves have not directly faced failure or overcome challenges (Sheffler & Cheung, 2020).

Since growth mindset endorsement emphasizes improvement over fixed ability, individuals with a growth mindset are often perceived as more goal-driven and engaged. Consequently, peers may be more influenced by the attitudes and behaviors of those endorsing a growth mindset. This suggests that perceptions of peers' competence could underlie the transmission of mindset and its impact on learning outcomes—a mechanism that this study seeks to examine (Sheffler & Cheung, 2020).

When students observe their peers dealing with struggles or notice differences between peers. Many students reported being inspired by observing peers persevere through challenges, which led them to believe in their own capacity to overcome similar difficulties. Mindset interventions could leverage this social dynamic by encouraging students or near-peers to share stories of overcoming academic challenges through increased effort, seeking help. Such narratives may inspire students to believe they too can overcome their own difficulties. Additionally, students often interpret differences among their peers as indicative of either a growth or fixed mindset—depending on whether they see these differences as stable traits or as related to effort. Therefore, an effective intervention could also focus on shaping how students interpret peer differences, promoting the view that variations in performance are due to effort or strategy rather than fixed intelligence (Limeri et al., 2020).

In conclusion, the interplay between peer influence and growth mindset is a powerful dynamic that can significantly shape students' educational experiences and outcomes. By understanding and harnessing this relationship, educators, parents, and policymakers can develop more effective interventions and create environments that not only promote academic success but also foster a lifelong love of learning and personal growth. This comprehensive approach ensures that all students have the opportunity to reach their full potential.

2.6 Teachers mindset belief

2.6.1 Definition of Teachers mindset belief

Teacher mindset beliefs refer to teachers' fundamental beliefs and attitudes about the potential for students' abilities and intelligence to develop. Specifically, it includes whether teachers believe that students' abilities can be enhanced through effort and effective teaching strategies or whether they believe that students' abilities are fixed and unchangeable. This concept is grounded in Carol Dweck's research on fixed and growth mindsets.

Teachers who intentionally engage in growth-signaling behaviors while avoiding fixed-signaling ones can create a learning environment infused with a growth mindset, positively influencing students' psychological well-being and academic achievement (Rattan & Dweck, 2018). Specifically, teachers should avoid fixed mindset behaviors such as implying that some students are incapable, treating support for struggling students as a burden, or valuing effortless performance and innate talent above effort. Instead, by deliberately communicating that all students are capable, providing opportunities for practice and constructive feedback, supporting students who face challenges, and explicitly valuing learning and development, teachers can effectively convey their growth mindset beliefs (Kroeper et al., 2022).

Teachers with a growth mindset believe that all students have the ability to improve their academic performance and personal abilities through effort and learning. They think that every student has potential, and regardless of their starting point, they can achieve significant progress through appropriate guidance and support (Dweck, 2009).

Growth-minded teachers are more inclined to use diverse teaching strategies to meet the needs of different students. They focus on creating a positive learning environment, encouraging students to explore and experiment, and developing problem-solving skills. For instance, Yeager and Dweck (2012) found that when teachers endorse a growth mindset, they are more likely to provide students with opportunities to develop resilience and perseverance in the face of challenges.

Carol Dweck's research indicates that teachers' mindset beliefs have a significant impact on students' learning attitudes and academic achievements. According to a study by Rattan (2012), Students who perceive their teachers as endorsing a growth mindset tend to feel more supported, which enhances their motivation to engage in learning and contributes to improved academic performance.

In summary, Teacher mindset beliefs play a critical role in shaping educational outcomes. Teachers with a growth mindset are more likely to foster an environment that supports all students in their academic and personal development. By believing in the potential for growth and using varied teaching methods, these teachers help create a positive learning environment that encourages persistence and problem-solving.

2.6.2 Characteristics of Teacher mindset beliefs

Von Glasersfeld (1989) argues that the philosophy of a student-centered approach is centered on the notion of efficiently participating in the instructional process to inspire students to explore, grow, and produce new knowledge. Current studies have identified that for a student to excel academically, it depends on the mindset they develop which in turn is influenced by the predominant teaching approaches they experience. In the Ghanaian context, literature has established the influence of teaching approaches on students' achievement as Churcher et al. (2016) reported that student's academic achievement is predicted by teaching approaches. But for students to academically excel, it depends on the type of mindset developed as students with a growth mindset mentality produce higher grades as compared to students with a fixed mindset mentality (Chusna & Kismiantini, 2023).

Porter (2022) emphasized that student-centered instructional strategies can effectively foster students' intrinsic motivation and support the development of a strong growth mindset. To implement such approaches successfully, teachers should receive ongoing professional development that equips them to adopt more engaging and inquiry-based teaching methods. Additionally, both teachers and students should

participate in mindset interventions to understand and recognize the importance of cultivating a growth mindset.

To conclude, the mindset beliefs of teachers have a profound impact on their teaching methods and the learning experiences of their students. Teachers with a growth mindset tend to believe that all students can make progress through effort and effective teaching strategies. This belief encourages them to adopt diverse teaching methods, actively seek professional development opportunities, and continuously reflect on and improve their teaching practices. Additionally, these teachers are more inclined to create a supportive and inclusive learning environment, encouraging students to take risks and make mistakes, thereby fostering students' confidence and independent thinking skills. Finally, the positive characteristics of teachers' mindset beliefs are also reflected in their high expectations and personalized attention for students. They strive to understand each student's needs and potential, providing appropriate support and challenges. Overall, the characteristics of teachers' mindset beliefs not only influence their own professional growth but also play a crucial role in the academic achievement and holistic development of their students.

2.6.3 Measurement of Teachers mindset belief

Pajares, M. F. (1992) discussed the complexity and importance of teachers' beliefs and cited the Teacher Belief Scale (TBS) assessing teachers' beliefs. This tool is used to evaluate teachers' beliefs and attitudes in educational practice. These beliefs and attitudes can cover various aspects, including teaching methods, student ability, classroom management, assessment methods, etc.

Measurement of Teachers' Mindset Belief involves assessing the beliefs that teachers hold regarding the potential for students to develop their abilities through effort and effective strategies. The Mindset Survey has been validated across various populations and contexts, demonstrating good reliability and validity in measuring implicit beliefs about intelligence (Dweck, 2006). The Teacher Mindset Scale (TMS) is a specialized instrument designed to measure teachers' beliefs about the malleability of student abilities. It assesses teachers' endorsement of growth versus fixed mindsets

specifically in the educational context. Teacher Belief in Student Growth: Items that gauge the extent to which teachers believe their students can develop their abilities through effort (e.g., "With enough time and effort, students can significantly change their basic intelligence level"). Teacher Effort and Strategy Beliefs: Items that assess teachers' beliefs in the efficacy of their teaching strategies and efforts in influencing student outcomes.

2.6.4 Teachers' mindset belief and Growth mindset

Teachers play a crucial role in shaping students' beliefs about their abilities (Rubie-Davies, 2014). Dweck's theory posits that mindsets are learned and that teachers can significantly influence students' growth mindset by educating them about brain functioning and implementing strategies such as cooperative learning and positive education (Yeager et al., 2016). Schmidt (2015) found that the Brainology program positively influenced students' growth mindset and their perceived abilities in science. Their findings revealed a significant correlation between the amount of time teachers devoted to the intervention and the gains made by students, suggesting that greater teacher investment in growth mindset interventions is linked to higher student achievement in science.

Yeager (2022) found, based on theory and past research, that teachers' mindsets predict their support for the practice that teachers' mindsets are expected to follow (Muenks et al., 2020). Sun (2018) and Yeager & Dweck (2012) identified teaching strategies as crucial in developing students' mindsets. Effective strategies include guided inquiry and task differentiation, which are closely linked to students' mindset and account for significant variance between classes.

Teachers play a pivotal role in shaping students' mindsets through the feedback they offer and the motivational strategies they adopt (Jennings & Cuevas, 2021). Interestingly, students' own mindset beliefs may also color their perceptions of their teachers—those with a growth mindset tend to view their teachers as growth-oriented, while those with a fixed mindset are more likely to perceive their teachers as holding fixed beliefs (Kroeper et al., 2022).

There is evidence from the teacher education literature that teachers' mindset beliefs significantly influence their classroom behaviors (Mesler et al., 2021). For instance, teachers with a more fixed mindset tend to emphasize students' demonstration of ability, such as stressing the importance of earning high grades. In contrast, teachers with a growth mindset encourage students to focus on mastery, learning, and improvement (Park et al., 2020). Additionally, fixed-minded teachers often concentrate their attention on high-achieving students, as they may perceive investing time in low-achieving students as futile, believing that students either possess the skills and abilities to succeed or they do not. Conversely, growth-minded teachers typically devote more attention to low-achieving students, supporting their progress and development to help them keep up with the material (Rissanen et al., 2018).

Several studies have investigated teachers' beliefs about the nature of intelligence, suggesting that these beliefs can significantly impact instructional approaches (Swann & Snyder, 1980). Teachers who were led to believe that intelligence is fixed tended to offer less support to students, whereas those who believed intelligence is malleable provided greater support and set instructional goals that explicitly focused on teaching problem-solving skills. Similar findings have emerged outside the educational field, indicating that individual mindset beliefs also influence how supervisors interact with subordinates or mentees. For example, managers with a growth mindset are more likely to engage in coaching and provide help to employees compared to managers who believe that employees' traits and abilities are fixed. Dweck and Sherman (2001) measured the impact of implicit beliefs on the stability of ability as either fixed or growth for teachers and students. Results suggest that teachers holding malleable theories of intelligence tend to be more open to learner information about change over time.

Campbell (2021) found that engineering students developed a growth mindset as a result of interactions with teachers, highlighting the influence of teachers on students' mindsets. Teachers who focus solely on students' results rather

than mastery of content may inadvertently promote a fixed mindset (Hargreaves et al., 2021).

Research on school climate and the transmission of mindset beliefs by teachers underscores their critical importance. Within schools, teachers and administrators may unintentionally reinforce fixed mindset messages by labeling students according to their achievement, using phrases such as “he is an A student” or “a B student,” which links ability to identity rather than effort. This can occur even subtly or with positive intentions. For instance, instructors holding fixed mindset beliefs about a student’s capabilities might try to comfort struggling students by lowering expectations or assigning less challenging work, which inadvertently communicates low confidence in their potential (Rattan & Dweck, 2018). Similarly, praising students for their intelligence rather than their effort promotes a fixed mindset (Mueller & Dweck, 1998). Students can “catch” these implicit messages, leading to reduced motivation, engagement, and persistence (Rattan & Dweck, 2018). Adolescents are especially sensitive to the beliefs of others and often have a heightened ability to perceive subtle cues from educators and school personnel that may transmit these mindset beliefs.

A student's mindset is a significant determinant of their overall school success. By employing motivational strategies and providing constructive feedback, educators can help students develop and strengthen a growth mindset (Jennings & Cuevas, 2021). Understanding how a student learns and what drives their motivation allows teachers to tailor learning experiences and foster engagement and achievement (Taylor, 2017). A personalized approach to learning, informed by an understanding of a student's mindset, can significantly enhance educational outcomes.

In conclusion, the mindset and beliefs of teachers play a crucial role in the educational process. By cultivating and practicing a growth mindset, teachers can create a more inclusive and positive learning environment, fostering continuous development for both students and themselves. This positive

transformation not only helps to improve the quality of education but also contributes to the development of more creative and adaptable individuals in society.

2.7 Literature review summary

In summary, previous studies have identified five key factors influencing the development of a growth mindset: grit, optimism, school climate, peer influence, and teacher mindset beliefs. Grit and growth mindset are closely interrelated; gritty individuals tend to persist through challenges and, over time, reinforce the belief that effort leads to success. Optimism further enhances this belief by fostering positive expectations for the future, which strengthens one's motivation to grow. Additionally, supportive school climates and teacher practices that promote autonomy and mastery-oriented feedback are shown to cultivate growth-oriented beliefs. Peer influence also plays a significant role, as students learn from observing others' responses to challenges and successes, which can either reinforce or shift their own mindset beliefs.

However, despite the growing body of research, few studies have integrated these personal and contextual variables into a comprehensive framework—especially within the cultural context of Chinese higher education. To address this gap, the present study draws on Bandura's Social Cognitive Theory, which emphasizes the dynamic and reciprocal interaction between personal factors, environmental influences, and behavior. Within this framework, a growth mindset is not solely an internal trait but is shaped through social learning, wherein individuals continuously adjust their beliefs about the malleability of intelligence based on observed behaviors, feedback, and interpersonal interactions. This integrated perspective provides a more holistic understanding of how growth mindset develops, particularly during the critical stage of adolescence.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter will discuss the methodological framework used in our quantitative study, which aims to explore the factors influencing the growth mindset of Chinese adolescents. Building upon the previous chapters, we will provide a detailed overview of our research design, data collection methods, and analytical approaches by investigating the impact of grit, optimism, school climate, peer influence, and teachers' mindset beliefs on the development of a growth mindset.

3.1 The design of the research

This study adopted a quantitative research approach to explore the factors influencing the growth mindset of Chinese adolescents. A questionnaire survey was used to collect data related to adolescents' growth mindset and its influencing factors.

3.2 Population and Samples

According to Krejcie and Morgan's table (1970), 350 students were selected from a population base of 1332 using simple random sampling.

3.3 Research Instruments

This study developed a five-point Likert scale questionnaire titled *Questionnaire on Growth Mindset and Its Influencing Factors*. The questionnaire consists of six sections corresponding to the variables of this study, with a total of 65 items. The item design was informed by a thorough review of previous literature and was primarily based on well-established instruments, such as Dweck's (2006) Growth Mindset Scale, Duckworth et al.'s (2007) Grit Scale, Carver and Scheier's (2024) Optimism Scale, as well as measures related to school climate and peer influence developed by Yu et al. (2022) and Chen et al. (2024). Based on these frameworks, the items were revised and adapted to align with the developmental characteristics and cultural context of Chinese adolescents.

The content validity of the questionnaire was evaluated using the Index of Item-Objective Congruence (IOC), reviewed by three experts in the relevant field. Items with IOC scores greater than or equal to 0.5 were retained. Based on the experts' evaluations, all questionnaire items were carefully reviewed and revised where necessary. In addition, a pilot reliability test was conducted with a sample of 50 participants to examine the internal consistency of the scale. Detailed results regarding IOC score and reliability are presented in Table 1.

1) In the Growth mindset (9 items), IOC values were all 1; Cronbach's Alpha value was 0.740; CICT values ranged from 0.321 to 0.484). 2) In the Grit section (9 items), IOC values were all 1; Cronbach's Alpha value was 0.745; CICT values ranged from 0.284 to 0.593). 3) In the Optimism section (8 items), IOC values were all 1; Cronbach's Alpha value was 0.774, CICT values ranged from 0.264 to 0.703). 4) In the school climate section (23 items), IOC values were all 1; Cronbach's Alpha value was 0.924, CICT values ranged from 0.307 to 0.715). 5) In the peer influence (8 items), IOC values were all 1; Cronbach's Alpha value was 0.715, CICT values ranged from 0.247 to 0.547). 6) In the Teachers' Mindset Beliefs (8 items), IOC values were all 1; Cronbach's Alpha value was 0.785, CICT values ranged from 0.295 to 0.688). The overall Cronbach's Alpha value of the entire questionnaire scale was 0.924, reflecting a great level of reliability.

TABLE 1 Validity and Reliability of Scale

Variable Scale	N of Items	IOC	Cronbach's Alpha	CICT
Growth mindset	9	1.00	0.740	0.321-0.484
Grit	9	1.00	0.745	0.284-0.593

Optimism	8	1.00	0.774	0.264-0.703
School climate	23	1.00	0.924	0.307-0.715
Peer Influence	8	1.00	0.715	0.247-0.547
Teacher mindset beliefs	8	1.00	0.785	0.295-0.688
Overall	65		0.924	

In the questionnaire survey, students' responses were collected by choosing the corresponding options with their opinion among "Strongly Agree" "Agree" "Neutral" "Disagree" "Strongly Disagree". The following are some details of the questionnaire.

TABLE 2 Likert Scale Options and Scoring Method

Option	Description	Score (Positive Statement)	Score (Negative Statement)
Strongly Agree	Strongly agree with the statement	5	1
Agree	Generally agree, but may hold some reservations	4	2

Neutral	Neither agree nor disagree	3	3
Disagree	Disagree with the statement	2	4
Strongly disagree	Strongly disagree and may have other related thoughts/opinions	1	5

3.3.1 Growth Mindset Scale

In this study, I designed to measure whether an individual has a growth mindset or a fixed mindset. This consists of nine items, each rated on a 5-point Likert scale.

TABLE 3 Growth Mindset Scale

Statement	1	2	3	4	5
1. I believe my abilities are mostly innate and unchangeable.					
2. I believe that effort is the key to success, even if initial ability is not high.					
.....					

3.3.2 Grit Scale

In this study, I designed to measure two components of grit: persistence of effort and consistency of interest. This consists of nine items, each rated on a 5-point Likert scale.

TABLE 4 Grit Scale

Statement	1	2	3	4	5
1. Setbacks do not discourage me.					
2. I'm a hard worker who always strives to do my best.					
.....					

3.3.3 Optimism Scale

In this study, I designed to measure assesses a person's level of optimism tendency. This consists of eight items, each rated on a 5-point Likert scale.

TABLE 5: Optimism Scale

Statement	1	2	3	4	5
1. In uncertain times, I usually expect the best.					
2. I can easily relax even in stressful situations.					
.....					

3.3.4 School Climate Scale

In this study, I designed to measure the School Climate Scale. including: Teacher support aspect, student support aspect and independent opportunity aspect, the scale has a total of 23 items each rated on a 5-point Likert scale.

TABLE 6: School Climate Scale

Statement	1	2	3	4	5
1. I can talk to my teachers about my problems.					
2. My teachers care about me.					
.....					

3.3.5 Peer influence Scale

In this study, I designed to measure the Peer influence Scale. The Peer influence Scale contains 8 items and uses a five-point Likert scale.

TABLE 7: Peer influence Scale

Statement	1	2	3	4	5
1. My friends motivate me to study hard.					
2. I pay more attention to my own studies because of my classmates.					
.....					

3.3.6 Student Perceptions of Teachers' Mindset Beliefs Scale

In this study, I designed to measure the Student Perceived Teacher Mindset Scale to assess students' perceptions of teachers' mindset beliefs. The scale contains eight items and uses a five-point Likert scale.

TABLE 8: Student Perceptions of Teachers' Mindset Beliefs Scale

Statement	1	2	3	4	5
1. Some teachers believe that a student's abilities are fixed and cannot change.					
2. Teachers believe that failure is part of the learning process, and it's a chance to try again.					
.....					

3.4 Data Collection

A total of 350 students were invited to complete the questionnaire through an online survey. All responses were submitted electronically, and the collected data were subsequently exported from the platform and subjected to statistical analysis.

3.5 Data Analysis

The project plans to use computer systems, for data processing and statistical analysis. All data will be processed and analyzed using software tools. The analysis to be conducted includes:

1. Descriptive statistics such as means and standard deviations were calculated.
2. This study used correlation analysis to investigate the relationship between grit, optimism, school climate, peer influence, teacher mindset belief and the growth mindset.
3. The study through a stepwise multiple regression analysis to investigate the influence of grit, optimism, school climate, peer influence, teacher mindset belief on the growth mindset of adolescent in china

CHAPTER 4

RESEARCH RESULT

Combining previous literature research, this study identified five factors influencing growth mindset. To comprehensively analyze the impact of these five factors, the following research methods will be employed based on the results of the questionnaire survey using SPSS program:

1) Descriptive Statistic Analysis: Basic statistics will be conducted on the core variables, including minimum, maximum, mean, and standard deviation.

2) Correlation Analysis: The relationship between the research independent variables: grit, optimism, school climate, peer influence, teacher mindset belief and the dependent variable growth mindset will be examined. The correlation coefficient's sign and magnitude will be used to determine the strength and direction of the relationship between each factor and growth mindset.

3) Multiple Linear Regression Analysis: The impact of independent variables: grit, optimism, school climate, peer influence, teacher mindset belief on the dependent variable growth mindset will be examined.

In the analyses mentioned above, various statistical indicators will be used. To better understand the meanings of these indicators, the following explanations are provided:

N is the number of samples;

Min represents the minimum value;

Max represents the maximum value;

M denotes the mean;

SD stands for standard deviation;

R is the coefficient of determination;

R^2 stands for coefficient of determination;

Y stands for Growth Mindset.

X1 stands for Grit;

X2 stands for Optimism;

X3 stands for School Climate;

X4 stands for Peer Influence;

X5 stands for Teachers Mindset Belief;

4.1 Descriptive Analysis

Each variable in the questionnaire utilized a 5-point Likert scale, with scores representing the average of each item under the corresponding variable, ranging from 1.00 to 5.00. The mean scores were categorized as follows: 1.00–1.80 indicates a low level, 1.81–2.60 indicates a moderately low level, 2.61–3.40 indicates a moderate level, 3.41–4.20 indicates a moderately high level, and 4.21–5.00 indicates a high level. The descriptive statistics for each variable are presented in Table 10.

TABLE 9 Variable Description

	N	Min	Max	M	SD	Level
Growth mindset (Y)	350	1.33	5.00	3.47	0.67	Moderately High
Grit (X_1)	350	1.00	5.00	3.10	0.62	Moderate
Optimism (X_2)	350	1.50	5.00	3.37	0.64	Moderate
School climate (X_3)	350	1.65	4.78	3.43	0.59	Moderately High

Peer Influence (X_4)	350	1.38	5.00	3.33	0.56	Moderate
Teacher mindset beliefs (X_5)	350	1.25	5.00	3.46	0.62	Moderately High

Y Growth Mindset: Minimum value is 1.33, maximum value is 5.00, mean is 3.47, standard deviation is 0.67, indicating students' growth mindset levels are moderately high.

X1 Grit: The minimum value is 1.00, the maximum value is 5.00, the mean is 3.10, and the standard deviation is 0.62, indicating that students' grit levels are at a moderate.

X2 Optimism: The minimum value is 1.50, the maximum value is 5.00, the mean is 3.37, and the standard deviation is 0.64, showing that students' optimism levels are moderate.

X3 School Climate: The minimum value is 1.65, the maximum value is 4.78, the mean is 3.43, and the standard deviation is 0.59, suggesting that students' perceptions of the school climate are moderately high.

X4 Peer Influence: The minimum value is 1.38, the maximum value is 5.00, the mean is 3.33, and the standard deviation is 0.56, indicating that peer influence among students is moderate.

X5 Teacher Mindset Beliefs: The minimum value is 1.25, the maximum value is 5.00, the mean is 3.46, and the standard deviation is 0.62, suggesting that students perceived their teachers to hold moderately high growth mindset beliefs.

From the analysis above, it is evident that the mean values of each variable range from 1.00 as the minimum to 5.00 as the maximum, indicating different levels of magnitude across variables. The standard deviations of all variables range from 0.56 to 0.67, indicating a relatively low level of dispersion and a general concentration of data across the sample.

4.2 Correlation Analysis

Pearson correlation analysis was employed to examine the correlation between the five influencing factors and Growth Mindset. The degree of correlation between two variables is represented by the correlation coefficient, which ranges from -1 to 1. A negative correlation coefficient indicates a negative relationship between the two variables, and the larger the absolute value of the correlation coefficient, the stronger the correlation between the two variables.

TABLE 10 Pearson Correlation Analysis

	Y	X ₁	X ₂	X ₃	X ₄	X ₅
Y	1					
X ₁	.661**	1				
X ₂	.604**	.523**	1			
X ₃	.639**	.585**	.574**	1		
X ₄	.619**	.589**	.568**	.731**	1	
X ₅	.705**	.551**	.507**	.729**	.642**	1

** Correlation is significant at the 0.01 level.

In Table 10, degree of correlation between two variables is represented by the correlation coefficient. The correlation coefficients between the five independent variables and Growth Mindset (Y) ranged from .604 to .705. Among them, Grit (X1) showed a significant positive correlation with Growth Mindset ($r = .661$, $p < .01$), indicating a moderate to strong relationship. Optimism (X2) exhibited a significant positive correlation with Growth Mindset ($r = .604$, $p < .01$). School Climate (X3) demonstrated a significant positive correlation with Growth Mindset ($r = .639$, $p < .01$). Peer Influence (X4) was similarly positively correlated with Growth Mindset ($r = .619$, $p < .01$). Teachers' Mindset Belief (X5) had the strongest correlation with Growth Mindset among the five factors ($r = .705$, $p < .01$), suggesting it may be a particularly influential

predictor. All significant correlations are reported at the 0.01 level (two-tailed), indicating statistically meaningful associations between the variables

4.3 Regression Analysis

Based on the correlation analysis above, significant correlations between the five influencing factors and Growth Mindset were observed. X1 to X5, as independent variables, and Y as the dependent variable, were implied to establish a multiple linear regression model.

TABLE 11 Model Summary^b

<i>Model</i>	<i>R</i>	<i>R Square</i>	<i>Adjusted R Square</i>	<i>Std. Error of the Estimate</i>
1	0.801 ^a	0.642	0.637	0.40446

As shown in Table 11, the overall R value of the regression model is 0.801, indicating a strong correlation between the independent variables and the dependent variable. The coefficient of determination (R^2) is 0.642, suggesting that the independent variables collectively explain 64.2% of the variance in growth mindset. The adjusted R^2 value is 0.637, providing a more conservative estimate of the model's explanatory power by adjusting for the number of predictors included in the model. The standard error of the estimate is 0.40446, which reflects the average distance between the predicted and observed values of the dependent variable.

TABLE 12 Regression Coefficients

		Unstandardized		Standardized		
		Coefficients		Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	0.152	1.313		0.115	0.908
	X1	0.308	0.046	0.289	6.691	< .001***
	X2	0.243	0.049	0.208	4.944	< .001***
	X3	0.009	0.024	0.022	0.389	0.698
	X4	0.095	0.068	0.072	1.407	0.160
	X5	0.455	0.059	0.379	7.689	< .001***

*** p<.001

Table 12 presents the significance test of the regression coefficients of the model's independent variables. From the results, it was observed that there are three factors with p-values corresponding to the t-values of the regression coefficients that were less than the significance level of 0.001. These factors, ranked from most to least

influential, are as follows: Teachers' Mindset Belief ($\beta = 0.379$), Grit ($\beta = 0.289$), and Optimism ($\beta = 0.208$). Based on these findings, the following regression equations can be formulated:

The unstandardized regression equation can be formulated as:

$$\hat{Y} = 0.152 + 0.308X_1 + 0.243X_2 + 0.455X_5$$

The standardized regression equation is as follows:

$$Z = 0.289X_1 + 0.208X_2 + 0.379X_5$$



CHAPTER 5

CONCLUSION AND DISCUSSION

5.1 Objectives of the Study

1) To Investigate the relationships between grit, optimism, school climate, peer influence, teacher mindset belief and the growth mindset.

2) To investigate the influence of grit, optimism, school climate, peer influence, teacher mindset belief on the growth mindset of adolescent in china

5.2 Research Hypothesis

1) The grit, optimism, school climate, peer influence and teacher mindset belief, will correlate the growth mindset of adolescents in China.

2) The grit, optimism, school climate, peer influence and teacher mindset belief will influence the growth mindset of adolescents in China.

5.3 Research Methods

The quantitative research method was adopted to explore the determinants impacting the Growth mindset of adolescent in China. Based on the data from a questionnaire survey that clarified various students' Growth mindset conditions in certain educational settings, the students' perception of Growth mindset and the influencing factors were quantified and assessed.

5.4 Conclusion and Discussion

5.4.1 The Relationships between the Predictors and Growth Mindset

The correlation analysis revealed that all five influencing factors pertaining to the Growth mindset of students are significantly associated at 0.01 level. These factors include 1) grit, 2) optimism, 3) school climate, 4) peer influence, 5) teacher mindset beliefs

1) Grit is significantly positively correlated with growth mindset, with a correlation coefficient of 0.661 ($p < 0.01$). This result suggests that students with higher

levels of grit are more likely to believe that their abilities can be developed and improved through effort. This finding is consistent with the research by Duckworth et al. (2011). Grit generally refers to an individual's passion and perseverance for long-term goals, including resilience in the face of setbacks and sustained effort over time (Duckworth & Quinn, 2009). In educational settings, students with high levels of grit tend to persist in completing academic tasks even when facing difficulties, making them more likely to adopt a growth mindset — the belief that abilities can change through hard work. Moreover, gritty students often have a clear sense of purpose and the ability to delay gratification. They are accustomed to connecting present efforts with future achievements. Educators can foster grit by helping students set medium- to long-term goals, encouraging them to reflect on failure, and supporting them in maintaining consistent effort. This not only enhances self-efficacy but also builds endurance for learning. Students who believe that effort leads to progress are naturally more motivated to persevere. This internal belief system enables gritty individuals to remain hopeful and resilient even in adversity. As Dweck (2006) emphasized, challenges are not setbacks but steppingstones to success. Gritty individuals are hopeful about achieving their goals, no matter how daunting the task. They are unlikely to give up in the face of hardship, driven by a mindset — the growth mindset — that encourages them to embrace adversity. These challenges are seen as essential parts of the journey toward achieving their goals.

2) Optimism is significantly positively correlated with growth mindset, with a correlation coefficient of 0.604 ($p < 0.01$). This result is consistent with the findings of Dardick (2019), indicating that individuals with higher levels of optimism tend to adopt more adaptive beliefs regarding learning and self-improvement. Optimism is an attitude that reflects a belief or hope that future outcomes will develop in the best possible direction. As a trait, it fosters resilience when facing stress. Optimism has been shown to promote the development of both a growth mindset and grit (Tuckwiller et al., 2017). Students' positive expectations for the future strengthen their beliefs, enabling them to demonstrate greater resilience, maintain motivation in the face of challenges,

and continue striving toward their goals — all of which enhance their belief in personal development. Conversely, students with lower levels of optimism may interpret challenges as signs of personal inadequacy, leading to avoidance behaviors and the adoption of a fixed mindset. To foster optimism and a growth mindset, educators can encourage students to reframe challenges positively and to focus on progress rather than merely on outcomes. When individuals doubt their ability to achieve goals, they may give up or never act in the first place. In contrast, those who are confident in ultimately achieving their goals will persist even in the face of significant adversity (Carver & Scheier, 2024).

3) School climate is significantly positively correlated with growth mindset, with a correlation coefficient of 0.639 ($p < 0.01$). This finding supports previous research by Wang and Degol (2016) as well as Chen and Zhang (2024), which highlights the crucial role a positive school climate plays in shaping students' academic attitudes and beliefs. School climate refers to students' overall perception of the school environment, including teacher support, peer relationships, safety, and a sense of belonging. Individual behavior and belief systems are shaped through the dynamic interaction between personal factors—such as cognitive and emotional processes—and environmental influences, including social contexts and physical surroundings. Within this context, school climate is a key environmental factor influencing students' cognitive processes, such as their beliefs about the nature of intelligence and learning — beliefs that lie at the heart of the growth mindset. Like other motivational constructs, students' mindsets are susceptible to environmental influences (Yu et al., 2022). A supportive and inclusive school climate fosters a learning environment in which students feel valued, respected, and encouraged to take academic risks. In such settings, students are more likely to view challenges as opportunities for growth rather than as threats to be avoided. Likewise, when students feel emotionally safe and socially supported, they are more likely to engage in learning tasks, demonstrate resilience in the face of setbacks, and see effort as a pathway to mastery. In contrast, a negative school climate — characterized by punitive discipline, low teacher expectations, or peer exclusion — may

lead students to disengage or develop fixed beliefs about their abilities. They may interpret failure as evidence of inherent limitations rather than as part of the learning process, thus undermining the development of a growth mindset. Students who hold a more positive attitude toward their academic potential also tend to have a more favorable perception of school. Those who believe in the malleability of intelligence and the potential for change through effort and persistence typically hold more positive attitudes toward learning and school. In other words, school climate can influence students' growth mindsets by providing an environment that supports autonomous development (Chen et al., 2024).

4) Peer influence is significantly positively correlated with growth mindset, with a correlation coefficient of 0.619 ($p < 0.01$). This finding is consistent with prior research by Limeri (2020), which emphasized the important role of peer interactions in shaping students' motivation and cognitive development. Peer influence refers to the impact that individuals of similar age or status have on each other's attitudes, behaviors, and beliefs. During adolescence, peer influence is particularly significant as it shapes many aspects of young people's lives, including social norms, academic achievement, and personal values (Laursen & Veenstra, 2021). However, this influence is dual in nature. When peers demonstrate behaviors such as effort, perseverance, and a willingness to embrace challenges, they exert a positive influence. Being surrounded by peers who value hard work, take on challenges, and view learning as a process contributes to the development of a growth mindset. Observing peers succeed through effort and persistence reinforces students' belief that abilities can be developed and that success can be achieved through dedication (Bandura & Wessels, 1997). Peer encouragement and academic collaboration further boost students' confidence in overcoming obstacles and help foster a shared sense of academic purpose. In contrast, when peers display negative attitudes toward learning, avoid difficult tasks, or mock failure, they exert a negative influence—one that promotes the belief that failure stems from a lack of innate intelligence. Being ridiculed for trying, facing low academic expectations, or experiencing peer indifference toward learning

can undermine students' motivation and reinforce a fixed mindset. Mindset interventions can leverage this social dynamic by encouraging students or near-peer classmates to share stories of how they overcame academic challenges through greater effort, seeking help, or adjusting their strategies. These stories can inspire students to believe they, too, can overcome their own difficulties. Moreover, students tend to interpret differences among peers through the lens of either a growth or fixed mindset, depending on whether they attribute those differences to stable traits or to effort. When students witness their peers giving up easily or endorsing the belief that intelligence is fixed, they may internalize similar beliefs, reducing their own motivation to grow. In extreme cases, such influence may lead to challenge avoidance or the adoption of self-handicapping strategies (Zimmerman, 2003).

5) Teacher mindset beliefs is significantly positively correlated with growth mindset, with a correlation coefficient of 0.705 ($p < 0.01$). This result aligns with previous studies by Butler (2000) and Dweck (2012), which emphasize the critical role teachers play in shaping students' beliefs about their own abilities. Teacher mindset beliefs refer to teachers' fundamental beliefs and attitudes about the potential for students' abilities and intelligence to develop. Teachers with a growth mindset are more likely to adopt diverse instructional strategies to meet students' varying needs. They foster positive learning environments, encourage exploration and experimentation, and cultivate students' problem-solving skills. In educational settings, teacher beliefs have a dual nature—they can either promote or hinder the development of students' mindsets. Growth-minded teachers focus more on effort, strategies, and progress rather than innate ability. They provide constructive feedback, set high but attainable expectations, and encourage students to see mistakes as opportunities for learning. In contrast, teachers with a fixed mindset may unintentionally convey the belief that intelligence is static and that only certain students are "naturally gifted." This can discourage effort, especially when students feel their abilities are being judged rather than developed. Such negative teacher influences may lead students to avoid challenges, fear failure, and internalize limiting beliefs, ultimately impeding the development of a growth

mindset. Creating a classroom culture that values effort and believes in the potential for all learners to grow is essential for fostering a growth mindset. Growth-minded teachers believe that all students can improve their academic performance and personal abilities through effort and learning. They see potential in every student, regardless of their starting point, and believe that with appropriate guidance and support, significant progress can be achieved (Dweck, 2016).

5.4.2 The regression between the Predictors and Growth Mindset

The regression analysis revealed that three factors influenced students' growth mindset. These factors include 1) teacher mindset beliefs, 2) grit, 3) optimism, exhibiting statistical significance at the 0.001 level.

1) The factor of teacher mindset beliefs significantly influenced the growth mindset of adolescents, with a standardized beta value of 0.379 ($p < 0.001$), ranking as the most influential predictor among the five significant variables. In this study, more than half of the surveyed students reported that when teachers explicitly conveyed beliefs about the malleability of intelligence and ability, students were more likely to internalize those beliefs. In classrooms where teachers emphasized the learning process, students tended to view academic setbacks as a natural part of the learning journey rather than as indications of personal inadequacy. Furthermore, when teachers adopted guided inquiry strategies—where students participate in discussions, express ideas, and debate viewpoints under the teacher's guidance, students often demonstrated stronger growth mindset characteristics. A supportive and encouraging teacher can foster a psychologically safe learning environment in which students feel free to make mistakes or ask questions without fear. When students perceive that their teacher believes in their capacity to grow, they are more likely to believe in their own potential, which enhances their motivation and engagement in learning. Over time, repeated exposure to such beliefs and affirming feedback can help students reconstruct their understanding of intelligence and reinforce a growth mindset (Zhang & He, 2024). Teachers can develop truly personalized learning approaches based on their motivational strategies and the types of feedback they provide, as these reflect their

understanding of students' mindset orientations. Previous research suggests that students who lean toward a growth mindset are more likely to believe that their teachers hold growth-oriented beliefs—and the same applies to students with a fixed mindset (Kroeper et al., 2022). Teachers who communicate fixed mindset beliefs—whether intentionally or unintentionally, such as by attributing success mainly to innate talent or showing preference for high-achieving students—may inadvertently discourage struggling students. These students may begin to believe that their abilities are limited and unchangeable, which reduces their motivation to persist and hinders the development of a growth mindset. Dweck's theory is grounded in the belief that mindsets can be learned. Teaching students about brain plasticity, alongside strategies like cooperative learning and positive education, enables teachers to meaningfully foster growth mindset development (Yeager et al., 2016). As the strongest predictor in the model, this finding suggests that interventions targeting teachers' beliefs and instructional messages may be among the most effective ways to promote the growth mindset development of adolescents.

2) The factor of grit significantly influenced adolescents' growth mindset, with a standardized beta value of 0.289 ($p < 0.001$), which was the second most influential predictor in the regression model. In this study, more than half of the surveyed students reported that they were able to persevere in the face of challenges, overcome difficulties, and remain committed to achieving their long-term academic goals. Grit refers to an individual's passion and sustained effort toward long-term goals, especially their resilience when facing setbacks and adversity. Students with higher levels of grit are more likely to view obstacles as opportunities for learning rather than as fixed indicators of ability. They tend to reflect on failures, adjust their strategies, and continue to work hard, which fosters the belief that abilities can grow through effort. Gritty individuals are more likely to engage in deliberate practice, which helps them improve their skills. Over time, they accumulate mastery experiences that "prove" to themselves that hard work and embracing challenges will ultimately pay off (Duckworth et al., 2011). Moreover, grit is closely associated with strong self-regulation, long-term motivation, and

emotional resilience. These qualities help students stay focused on the learning process, respond positively to feedback, and maintain confidence in their capacity for growth. By repeatedly overcoming challenges and making continuous progress, students with high levels of grit gradually develop a growth mindset. In contrast, students with lower levels of grit are more likely to give up when faced with difficulties. They may interpret failure as a sign of innate deficiency, which reinforces a fixed mindset and hinders their potential for growth. Educators must create learning environments that support students in persisting through challenges and thriving over time (Hochanadel & Finamore, 2015).

3) The factor of optimism significantly influenced the growth mindset of adolescents, with a standardized beta value of 0.208 ($p < 0.001$), ranking as the third most influential predictor among the five significant variables in the regression model. In this study, more than half of the surveyed students expressed confidence in their ability to overcome difficulties and believed in positive outcomes for the future. Optimism is an attitude that reflects a belief or hope that future outcomes will develop in the best possible direction. Optimistic students are more likely to persevere when faced with academic challenges, believing that their efforts will eventually lead to improvement and success. In addition, optimism fosters emotional resilience and adaptive coping strategies. Optimistic students are often better at managing stress and maintaining motivation during demanding learning tasks. This emotional stability helps them stay focused on their studies and reduces the likelihood of giving up when facing setbacks. Students' positive expectations for the future strengthen their beliefs in their capacity to grow, enabling them to demonstrate greater resilience, stay motivated in the face of challenges, and continue working toward their goals (Dardick & Tuckwillber, 2019). In contrast, pessimistic students may believe that challenges are insurmountable or that failure is inevitable, viewing failure as a reflection of their inherent limitations. This rigid interpretation undermines their willingness to try again and contributes to the development of a fixed mindset. In other words, one's expectation of a positive future

can increase the belief in which intelligence can grow and improve through their effort. (Pyo et al., 2024).

5.5 Suggestions for Educators

The research aimed to provide some advice for the improving the growth mindset among Chinese adolescents. The relevant suggestions are as follows.

5.5.1 Improve Students' Growth Mindset

Fostering a growth mindset in students is essential for their long-term academic success and personal development. Teachers can support this by guiding students to set specific and achievable learning goals that emphasize progress and growth rather than perfection or immediate results. These goals should focus on the learning process and the effort invested rather than solely on outcomes. In addition to goal setting, teachers should design moderately challenging tasks that slightly exceed students' current abilities but remain attainable through effort. Such tasks allow students to experience small successes, boosting their confidence. Constructive feedback should consistently highlight the importance of effort, effective strategies, and learning from mistakes, rather than attributing success to innate talent or intelligence. When students face difficulties, teachers need to help them understand that setbacks are a normal part of learning, and perseverance is key to making progress. Creating a collaborative and supportive classroom environment where students work together on challenging tasks and share learning strategies helps them realize that others encounter similar struggles and overcome them through effort, promoting the internalization of a growth mindset. Furthermore, teachers can inspire students by sharing real-life stories of individuals who have succeeded through dedication and resilience, helping students understand that growth and improvement stem from sustained effort and determination.

5.5.2 Fostering Grit to Enhance Growth Mindset in Adolescents

Grit, as the quality of sustained effort and perseverance in the face of long-term challenges, plays a crucial role in fostering students' growth mindset. Unlike short-term motivation, grit emphasizes continuous commitment and endurance toward goals, enabling students to maintain their drive and avoid giving up when encountering

difficulties. Teachers can support the gradual development of grit by creating a supportive learning environment. Teachers can guide students to set clear and challenging long-term goals and encourage them to break these goals down into manageable steps for continuous tracking and achievement. During the learning process, teachers should attentively monitor students' efforts and provide specific, constructive feedback that acknowledges their persistence and progress. Creating a classroom atmosphere that encourages risk-taking and tolerates mistakes helps students face difficulties and failures with confidence, viewing setbacks as opportunities for learning and growth. By sharing real-life examples of overcoming challenges, teachers can enhance students' self-motivation and inspire sustained engagement. Moreover, teachers should proactively support students who are prone to giving up or lacking confidence, offering patience and assistance to help them gradually improve problem-solving skills and emotional regulation. Implementing cooperative learning and team projects at appropriate times also fosters grit through collective support. The cultivation of grit not only strengthens students' perseverance in academic challenges but also further promotes the development of a growth mindset. Students with grit are more likely to believe that abilities can be developed through effort, thus facing difficulties more positively and continually striving for improvement.

5.5.3 Foster Teachers' Growth Mindset Beliefs to Influence Students Positively

Teachers' own mindset beliefs play a key role in shaping students' learning attitudes and psychological development. Teachers who embody a growth mindset are more inclined to implement instructional strategies that foster students' perseverance, adaptability, and intrinsic motivation to learn. Teachers should model a growth mindset through their daily classroom practices. For example, when facing teaching setbacks or classroom challenges, teachers can openly share how they reflected on the experience, learned from it, and adjusted their strategies. This demonstrates to students that even adults are continually learning and growing, providing a powerful model for lifelong learning. In classroom feedback, emphasis should be placed on effort, strategies, and progress rather than solely on outcomes. For instance, instead of saying, "You're so

smart," it is more effective to say, "You worked really hard on this problem, and your effort paid off." Such feedback helps students associate success with controllable factors and encourages them to view challenges as opportunities for growth. Avoid using fixed-mindset language, such as "You're naturally good at this" or "Math just isn't your thing." Instead, use process-oriented feedback like, "Your improvement in solving complex problems shows that you've effectively applied the strategies we practiced." Collaboration among teachers can also reinforce the internalization of growth mindset beliefs. When teachers observe each other's lessons and share effective teaching strategies, they build a culture of mutual learning and collective efficacy, which positively influences both their teaching practices and students' learning experiences.

5.5.4 Enhancing Optimism to Foster a Growth Mindset in Students

Enhancing students' optimism can strengthen their growth mindset. Optimistic students are more likely to believe that their abilities can be improved through effort, making them more willing to accept challenges and persist in overcoming difficulties. Compared to negative expectations, an optimistic attitude helps students view failures and setbacks as opportunities for learning and growth rather than as limitations of their personal abilities. Schools can foster a positive and supportive learning environment that encourages students to face academic pressures with optimism. By providing positive feedback that reinforces students' efforts and progress, schools promote their positive self-perception. For students who are prone to frustration or lack confidence, teachers need to show patience and understanding, offering more encouragement and support to help them adjust their mindset and gradually develop a positive and optimistic outlook. Through these efforts, students' psychological resilience and coping abilities are enhanced, effectively promoting the development of a growth mindset.

5.6 Suggestions for Further Research

This study explored five variables influencing adolescents' growth mindset: grit, optimism, school climate, peer influence, and teachers' mindset beliefs. The results indicated that grit and teachers' mindset beliefs had significant positive predictive effects on growth mindset, while school climate and peer influence showed non-

significant correlations. It is important to note the limitations of this study. The sample was drawn solely from a single university in China, which may limit the generalizability of the findings. Future research should include students from diverse regions, grade levels, and school types to enhance the representativeness and universality of the results. Although gender differences were not examined in this study, existing research suggests potential variations in the development of growth mindset across genders. Therefore, future studies could incorporate gender as a control variable to explore differences between males and females in the formation of growth mindset and their underlying psychological mechanisms.

This study primarily relied on self-reported questionnaire data, which may introduce bias. To improve data accuracy and reliability, future research should adopt mixed-methods approaches, such as combining questionnaires with interviews, classroom observations, or evaluations from teachers and parents to cross-validate results from multiple perspectives. Although this study examined multiple variables, it focused on their direct effects on growth mindset and did not thoroughly investigate interactive relationships among variables. Future research could employ advanced statistical methods, such as structural equation modeling (SEM) or path analysis, to explore potential mediating or moderating mechanisms. For instance, investigating whether school climate indirectly influences students' growth mindset through peer influence or teachers' mindset beliefs.

Regarding measurement tools, the non-significant effects of certain variables (e.g., school climate) might be attributed to limited sensitivity or applicability of the scales used. Future studies could refine and localize existing scales to better capture multidimensional features of these variables. Additionally, researchers should expand the scope of variables to include factors not addressed in this study but potentially relevant to growth mindset, such as family background, parental mindset, academic self-concept, classroom goal structures, emotion regulation strategies, and social media usage. This would provide a comprehensive understanding of key factors influencing adolescents' growth mindset from individual, social, and cultural

perspectives. Future research should deepen both theoretical and practical insights into the mechanisms of adolescents' growth mindset, offering targeted strategies for educational interventions and psychological support.



REFERENCES

- Banda, L. O. L., & Liu, J. (2025). *Understanding International Students' Academic Performance in Top Chinese Universities*. Taylor & Francis.
- Bandura, A. (1986). Social foundations of thought and action. *Englewood Cliffs, NJ*, 1986(23-28), 2.
- Bandura, A., & Wessels, S. (1997). *Self-efficacy*. Cambridge University Press Cambridge.
- Bazelaïs, P., Lemay, D. J., & Doleck, T. (2016). How Does Grit Impact College Students' Academic Achievement in Science? *European Journal of Science and Mathematics Education*, 4(1), 33-43.
- Blackwell, L. S., Trzesniewski, K. H., & Dweck, C. S. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Child development*, 78(1), 246-263.
- Boman, P., & Yates, G. C. (2001). Optimism, hostility, and adjustment in the first year of high school. *British Journal of Educational Psychology*, 71(3), 401-411.
- Borsari, B., & Carey, K. B. (2001). Peer influences on college drinking: A review of the research. *Journal of substance abuse*, 13(4), 391-424.
- Brock, A., & Hundley, H. (2016). *The growth mindset coach: a teacher's month-by-month handbook for empowering students to achieve*. Simon and Schuster.
- Brown, B. B., Clasen, D. R., & Eicher, S. A. (1986). Perceptions of peer pressure, peer conformity dispositions, and self-reported behavior among adolescents. *Developmental psychology*, 22(4), 521.
- Burnette, J. L., O'boyle, E. H., VanEpps, E. M., Pollack, J. M., & Finkel, E. J. (2013). Mind-sets matter: a meta-analytic review of implicit theories and self-regulation. *Psychological bulletin*, 139(3), 655.
- Cameron, J. (2001). Negative effects of reward on intrinsic motivation—A limited phenomenon: Comment on Deci, Koestner, and Ryan (2001). *Review of educational research*, 71(1), 29-42.
- Carver, C. S., & Scheier, M. F. (2014). Dispositional optimism. *Trends in cognitive*

- sciences*, 18(6), 293-299.
- Carver, C. S., & Scheier, M. F. (2024). Optimism. *Encyclopedia of quality of life and well-being research*, 4849-4854.
- Cavanagh, A. J., Chen, X., Bathgate, M., Frederick, J., Hanauer, D. I., & Graham, M. J. (2018). Trust, growth mindset, and student commitment to active learning in a college science course. *CBE—Life Sciences Education*, 17(1), ar10.
- Chang, S., Zhang, Y., Wang, C., Xu, F., Huang, Y., & Xin, S. (2024). Could a Growth Mindset Attenuate the Link Between Family Socioeconomic Status and Depressive Symptoms? Evidence from Chinese Adolescents. *Psychology Research and Behavior Management*, 3313-3326.
- Chen, L., Zhang, Y., & Tang, Y. (2024). The relationship between school climate and growth mindset of junior middle school students: a mediating model of perceived social support and positive personality. *Current Psychology*, 43(5), 4142-4154. <https://doi.org/10.1007/s12144-023-04570-9>
- Chusna, D. S. A., & Kismiantini. (2023). The role of student's perseverance, mathematics work ethic, and modern school qualification towards mathematics achievement in PISA 2018 Indonesia. *AIP Conference Proceedings*,
- Cohen, J., McCabe, E. M., Michelli, N. M., & Pickeral, T. (2009). School climate: Research, policy, practice, and teacher education. *Teachers College Record*, 111(1), 180-213.
- Conversano, C., Rotondo, A., Lensi, E., Della Vista, O., Arpone, F., & Reda, M. A. (2010). Optimism and its impact on mental and physical well-being. *Clinical practice and epidemiology in mental health: CP & EMH*, 6, 25.
- Dai, D. Y., Yun, D., Dai, X., & Sun, Q. (2023). *Talent Development from the Perspective of Developmental Science*. Springer.
- Dardick, W. R., & Tuckwillber, E. D. (2019). Optimism shapes mindset: Understanding the association of optimism and pessimism. *Journal of Interdisciplinary Studies in Education*, 8(2), 21-56.
- DeBacker, T. K., Heddy, B. C., Kershen, J. L., Crowson, H. M., Looney, K., & Goldman, J.

- A. (2018). Effects of a one-shot growth mindset intervention on beliefs about intelligence and achievement goals. *Educational Psychology*, 38(6), 711-733.
- Disabato, D. J., Goodman, F. R., & Kashdan, T. B. (2019). Is grit relevant to well-being and strengths? Evidence across the globe for separating perseverance of effort and consistency of interests. *Journal of personality*, 87(2), 194-211.
- Duckworth, A., & Gross, J. J. (2014). Self-control and grit: Related but separable determinants of success. *Current directions in psychological science*, 23(5), 319-325.
- Duckworth, A. L., Kirby, T. A., Tsukayama, E., Berstein, H., & Ericsson, K. A. (2011). Deliberate practice spells success: Why grittier competitors triumph at the National Spelling Bee. *Social psychological and personality science*, 2(2), 174-181.
- Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: perseverance and passion for long-term goals. *Journal of personality and social psychology*, 92(6), 1087.
- Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: perseverance and passion for long-term goals. *J Pers Soc Psychol*, 92(6), 1087-1101.
<https://doi.org/10.1037/0022-3514.92.6.1087>
- Duckworth, A. L., & Quinn, P. D. (2009). Development and validation of the Short Grit Scale (GRIT-S). *Journal of personality assessment*, 91(2), 166-174.
- Dweck, C. (2016). What having a “growth mindset” actually means. *Harvard business review*, 13(2), 2-5.
- Dweck, C. S. (2006). *Mindset: The new psychology of success*. Random house.
- Dweck, C. S. (2009). Mindsets: Developing talent through a growth mindset. *Olympic Coach*, 21(1), 4-7.
- Dweck, C. S. (2017). From needs to goals and representations: Foundations for a unified theory of motivation, personality, and development. *Psychological review*, 124(6), 689.
- Dweck, C. S., & Yeager, D. S. (2019). Mindsets: A view from two eras. *Perspectives on Psychological science*, 14(3), 481-496.

- Eccles, J. S., & Roeser, R. W. (2011). Schools as developmental contexts during adolescence. *Journal of Research on Adolescence*, 21(1), 225-241.
- Festinger, L. (1954). A theory of social comparison processes. *Human relations*, 7(2), 117-140.
- Flanigan, A. E., Peteranetz, M. S., Shell, D. F., & Soh, L.-K. (2023). Relationship Between Implicit Intelligence Beliefs and Maladaptive Self-Regulation of Learning. *ACM Transactions on Computing Education*, 23(3), 1-23.
- Gillham, J. E., Shatté, A. J., Reivich, K. J., & Seligman, M. E. (2001). Optimism, pessimism, and explanatory style.
- Good, C., Rattan, A., & Dweck, C. S. (2012). Why do women opt out? Sense of belonging and women's representation in mathematics. *Journal of personality and social psychology*, 102(4), 700.
- Grazia, V. (2022). A longitudinal study of school climate: Reciprocal effects with student engagement and burnout. *Psychology in the Schools*, 59(8), 1521-1537.
- Haimovitz, K., Wormington, S. V., & Corpus, J. H. (2011). Dangerous mindsets: How beliefs about intelligence predict motivational change. *Learning and Individual Differences*, 21(6), 747-752.
- Hargreaves, E., Quick, L., & Buchanan, D. (2021). Systemic threats to the growth mindset: Classroom experiences of agency among children designated as 'lower-attaining'. *Cambridge Journal of Education*, 51(3), 283-299.
- Higgins, M., Dobrow, S. R., & Roloff, K. S. (2010). Optimism and the boundaryless career: The role of developmental relationships. *Journal of Organizational Behavior*, 31(5), 749-769.
- Hochanadel, A., & Finamore, D. (2015). Fixed and growth mindset in education and how grit helps students persist in the face of adversity. *Journal of International Education Research*, 11(1), 47-50.
- Huang, T., Hochbein, C., & Simons, J. (2020). The relationship among school contexts, principal time use, school climate, and student achievement. *Educational Management Administration & Leadership*, 48(2), 305-323.

- Jennings, C., & Cuevas, J. A. (2021). Teacher impact on student growth mindset. *Perspectives In Learning*, 19(1), 4.
- Jia, Y., Way, N., Ling, G., Yoshikawa, H., Chen, X., Hughes, D., Ke, X., & Lu, Z. (2009). The influence of student perceptions of school climate on socioemotional and academic adjustment: A comparison of Chinese and American adolescents. *Child development*, 80(5), 1514-1530.
- Kandel, D. B. (1986). Processes of peer influences in adolescence. In *Development as action in context: Problem behavior and normal youth development* (pp. 203-227). Springer.
- Kim, J. J., Fung, J., Wu, Q., Fang, C., & Lau, A. S. (2017). Parenting variables associated with growth mindset: An examination of three Chinese-heritage samples [Article]. *Asian American Journal of Psychology*, 8(2), 115-125. <https://doi.org/10.1037/aap0000064>
- Kim, K. T. (2020). A structural relationship among growth mindset, academic grit, and academic burnout as perceived by Korean high school students. *Universal Journal of Educational Research*, 8(9), 4009-4018.
- Kroeper, K. M., Fried, A. C., & Murphy, M. C. (2022). Towards fostering growth mindset classrooms: identifying teaching behaviors that signal instructors' fixed and growth mindsets beliefs to students [Article]. *Social Psychology of Education*, 25(2-3), 371-398. <https://doi.org/10.1007/s11218-022-09689-4>
- Kuh, G. D., Kinzie, J. L., Buckley, J. A., Bridges, B. K., & Hayek, J. C. (2006). *What matters to student success: A review of the literature* (Vol. 8). National Postsecondary Education Cooperative Washington, DC.
- Laursen, B., & Veenstra, R. (2021). Toward understanding the functions of peer influence: A summary and synthesis of recent empirical research [Review]. *Journal of Research on Adolescence*, 31(4), 889-907. <https://doi.org/10.1111/jora.12606>
- Limeri, L. B., Carter, N. T., Choe, J., Harper, H. G., Martin, H. R., Benton, A., & Dolan, E. L. (2020). Growing a growth mindset: characterizing how and why undergraduate students' mindsets change. *International Journal of STEM Education*, 7(1), 35.

<https://doi.org/10.1186/s40594-020-00227-2>

- Mesler, R. M., Corbin, C. M., & Martin, B. H. (2021). Teacher mindset is associated with development of students' growth mindset. *Journal of applied developmental psychology*, 76, 101299.
- Mueller, C. M., & Dweck, C. S. (1998). Praise for intelligence can undermine children's motivation and performance. *Journal of personality and social psychology*, 75(1), 33.
- Muenks, K., Canning, E. A., LaCosse, J., Green, D. J., Zirkel, S., Garcia, J. A., & Murphy, M. C. (2020). Does my professor think my ability can change? Students' perceptions of their STEM professors' mindset beliefs predict their psychological vulnerability, engagement, and performance in class. *Journal of Experimental Psychology: General*, 149(11), 2119.
- Pajares, F., & Schunk, D. H. (2001). Self-beliefs and school success: Self-efficacy, self-concept, and school achievement. *Perception*, 11(2), 239-266.
- Park, D., Tsukayama, E., Yu, A., & Duckworth, A. L. (2020). The development of grit and growth mindset during adolescence. *Journal of Experimental Child Psychology*, 198, 104889.
- Peters, M. L., Flink, I. K., Boersma, K., & Linton, S. J. (2010). Manipulating optimism: Can imagining a best possible self be used to increase positive future expectancies? *The Journal of Positive Psychology*, 5(3), 204-211.
- Pyo, D., Kwak, K., & Kim, Y. (2024). The mediating effect of growth mindset in the relationship between adolescents' optimism and grit. *Current Psychology*, 43(21), 19153-19161.
- Rammstedt, B., Grüning, D. J., & Lechner, C. M. (2022). Measuring growth mindset. *European Journal of Psychological Assessment*.
- Rattan, A., & Dweck, C. S. (2018). What happens after prejudice is confronted in the workplace? How mindsets affect minorities' and women's outlook on future social relations. *Journal of Applied Psychology*, 103(6), 676.
- Requena, C., Vairez, M., Guerra, M., & Requena, E. (2024). Effects of school leadership,

- climate, and growth mindset on teacher efficacy in Southern Belize. *Journal of Belizean Research*, 2(1).
- Reyes, M. R., Brackett, M. A., Rivers, S. E., White, M., & Salovey, P. (2012). Classroom emotional climate, student engagement, and academic achievement. *Journal of educational psychology*, 104(3), 700.
- Ricci, M. C. (2024). *Mindsets in the classroom: Building a growth mindset learning community*. Routledge.
- Rissanen, I., Kuusisto, E., Hanhimäki, E., & Tirri, K. (2018). Teachers' implicit meaning systems and their implications for pedagogical thinking and practice: A case study from Finland. *Scandinavian Journal of Educational Research*, 62(4), 487-500.
- Rubie-Davies, C. (2014). Teachers' instructional beliefs and the classroom climate: Connections and conundrums. *International handbook of research on teachers' beliefs*, 266–283.
- Sallee, M. W., & Tierney, W. G. (2007). The influence of peer groups on academic success. *College and University*, 82(2), 7.
- Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: assessment and implications of generalized outcome expectancies. *Health psychology*, 4(3), 219.
- Schimschal, S. E., Visentin, D., Kornhaber, R., & Cleary, M. (2021). Grit: A concept analysis. *Issues in Mental Health Nursing*, 42(5), 495-505.
- Schneider, S. H., & Duran, L. (2010). School climate in middle schools: A cultural perspective. *Journal of Character Education*, 8(2), 25.
- Schunk, D. H. (1987). Peer models and children's behavioral change. *Review of educational research*, 57(2), 149-174.
- Sethi, D., & Shashwati, S. (2019). Say no to setbacks: grit & growth mindset have got your back. *Int. J. Innov. Stud. Sochiol. Hum*, 4, 18-26.
- Sheffler, P. C., & Cheung, C. S. (2020). The role of peer mindsets in students' learning: An experimental study. *British Journal of Educational Psychology*, 90, 17-34.
- Shindler, J., Jones, A., Williams, A. D., Taylor, C., & Cardenas, H. (2016). The school climate-student achievement connection: If we want achievement gains, we need

- to begin by improving the climate. *Journal of School Administration Research and Development*, 1(1), 9-16.
- Singh, S. (2017). Peer pressure among adolescents in relation to family climate. *Indian Journal of Health & Wellbeing*, 8(3).
- Smith, T. F., & Capuzzi, G. (2019). Using a mindset intervention to reduce anxiety in the statistics classroom. *Psychology Learning & Teaching*, 18(3), 326-336.
- Subotnik, R. F., Olszewski-Kubilius, P., & Worrell, F. C. (2018). Talent development as the most promising focus of giftedness and gifted education.
- Swann, W. B., & Snyder, M. (1980). On translating beliefs into action: Theories of ability and their application in an instructional setting. *Journal of personality and social psychology*, 38(6), 879.
- Taylor, D. (2017). Using a personal learning framework to transform middle grades teaching practice. *Middle Grades Research Journal: Volume 11# 1*, 85.
- Thapa, A., Cohen, J., Guffey, S., & Higgins-D'Alessandro, A. (2013). A review of school climate research. *Review of educational research*, 83(3), 357-385.
- Thapa, A., Cohen, J., Higgins-D'Alessandro, A., & Guffey, S. (2012). School Climate Research Summary: August 2012. School Climate Brief, Number 3. *National School Climate Center*.
- Thomas, A. E., & Grimes, J. E. (2002). *Best practices in school psychology IV, Vols. 1-2*. National Association of School Psychologists.
- Thomas, K. J., Moreira de Cunha, J., Americo de Souza, D., & Santo, J. (2019). Fairness, trust, and school climate as foundational to growth mindset: A study among Brazilian children and adolescents. *Educational Psychology*, 39(4), 510-529.
- Tuckwiller, B. D., Dardick, W. R., & Kutscher, E. L. (2017). Profiles of and correlations among mindset, grit, and optimism in adolescents with learning disabilities: A pilot study. *Journal of Interdisciplinary Studies in Education*, 6(1), 43.
- Wang, M.-T., & Degol, J. L. (2016). School climate: A review of the construct, measurement, and impact on student outcomes. *Educational psychology review*, 28(2), 315-352.

- Wang, Y., Derakhshan, A., & Zhang, L. J. (2021). Researching and practicing positive psychology in second/foreign language learning and teaching: the past, current status and future directions. *Frontiers in psychology*, 12, 731721.
- Waters, S. D., & Riordan, B. G. (2022). *The coaching shift: How a coaching mindset and skills can change you, your interactions, and the world around you*. Routledge.
- Wentzel, K. R., & Muenks, K. (2016). Peer influence on students' motivation, academic achievement, and social behavior. In *Handbook of social influences in school contexts* (pp. 13-30). Routledge.
- Xia, H. (2025). *Learning Assessment and Accountability for Higher Education in China*. Taylor & Francis.
- Xiao, F., Zhang, Z., Zhou, J., Wu, H., Zhang, L., Lin, M., & Hu, L. (2023). The relationship between a growth mindset and the learning engagement of nursing students: A structural equation modeling approach. *Nurse Education in Practice*, 73, 103796.
- Yang, Z. (2020). *Examining college students' epistemological beliefs and mindset of intelligence and their association with learning motivations*
- Yeager, D. S., & Dweck, C. S. (2012). Mindsets That Promote Resilience: When Students Believe That Personal Characteristics Can Be Developed [Review]. *Educational Psychologist*, 47(4), 302-314. <https://doi.org/10.1080/00461520.2012.722805>
- Yeager, D. S., Romero, C., Paunesku, D., Hulleman, C. S., Schneider, B., Hinojosa, C., Lee, H. Y., O'Brien, J., Flint, K., & Roberts, A. (2016). Using design thinking to improve psychological interventions: The case of the growth mindset during the transition to high school. *Journal of educational psychology*, 108(3), 374.
- Yogi, F., Jain, D., & Parewa, D. (2021). OPTIMISM IN RELATION TO ATTRIBUTION OF SUCCESS AND FAILURE AMONG RAILWAY EMPLOYEES.
- Yu, J., Kreijkes, P., & Salmela-Aro, K. (2022). Students' growth mindset: Relation to teacher beliefs, teaching practices, and school climate. *Learning and Instruction*, 80, 101616. <https://doi.org/https://doi.org/10.1016/j.learninstruc.2022.101616>
- Zhang, K., & He, W.-j. (2024). The predictive effect of cultural orientation and perceived school climate on the formation of teachers' growth mindsets [Original Research].

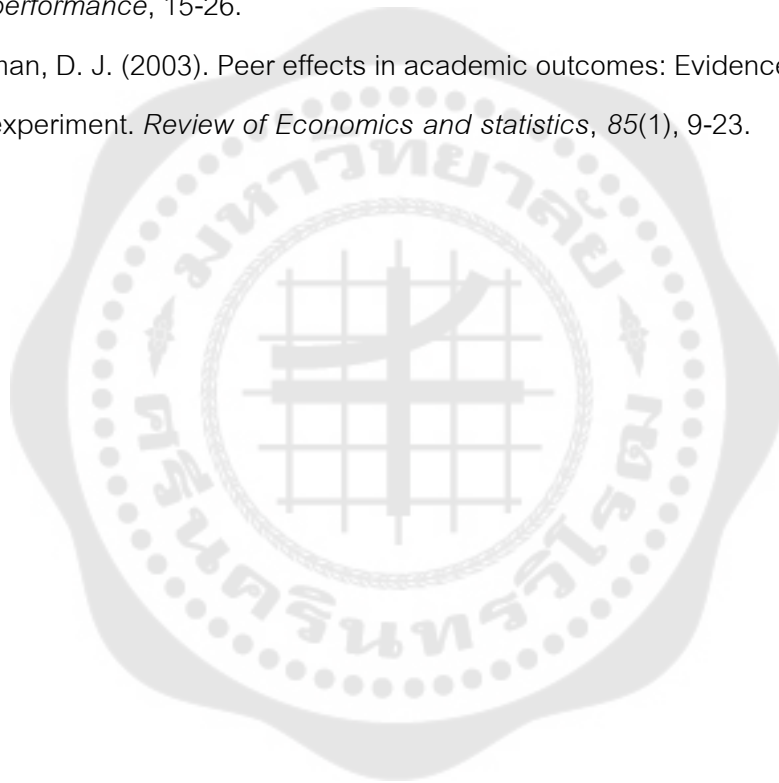
Frontiers in Education, Volume 9 - 2024.

<https://doi.org/10.3389/feduc.2024.1428890>

Zhang, T., Park, D., Ungar, L. H., Tsukayama, E., Luo, L., & Duckworth, A. L. (2022). The development of grit and growth mindset in Chinese children. *Journal of Experimental Child Psychology*, 221, 105450.

Zimmerman, B. J., & Schunk, D. H. (2011). Self-regulated learning and performance: An introduction and an overview. *Handbook of self-regulation of learning and performance*, 15-26.

Zimmerman, D. J. (2003). Peer effects in academic outcomes: Evidence from a natural experiment. *Review of Economics and statistics*, 85(1), 9-23.



APPENDIX



SECTION 1 Growth Mindset

This section aims to understand your perception of your own growth mindset. For the following descriptions, please choose the option according to your actual situation, and use "✓" in the corresponding box to choose the option that meets your opinion. "Strongly Agree" means you very much agree with the description; "Agree" means you generally agree with the description, but you may reserve some other opinions of your own; "Neutral" I neither agree nor disagree with this statement. "Disagree" means you disagree with the description; "Strongly Disagree" means you strongly disagree with the description and you have your other own related thoughts and opinions.

Topic	1	2	3	4	5
1. I believe my abilities are mostly innate and unchangeable.					
2. I believe that effort is the key to success, even if initial ability is not high.					
3. I don't think I can perform better than others on difficult tasks.					
4. Even if the task is challenging, I believe I can succeed.					
5. I believe I can improve my ability through hard work and study.					

6. I don't believe that people can change their talents through hard work.

7. I usually get angry when I receive feedback on my performance.

8. I love learning new things.

9. Really smart people don't need to work hard.

SECTION 2 Grit

This section aims to understand your Grit level. For the following descriptions, please choose the option according to your actual situation, and use "✓" in the corresponding box to choose the option that meets your opinion. "Strongly Agree" means you very much agree with the description; "Agree" means you generally agree with the description, but you may reserve some other opinions of your own; "Neutral" I neither agree nor disagree with this statement. "Disagree" means you disagree with the description; "Strongly Disagree" means you strongly disagree with the description and you have your other own related thoughts and opinions.

Topic	1	2	3	4	5
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1. Setbacks do not discourage me.

2. I'm a hard worker who always strives to do my

best.

3. Whatever I start, I finish it.

4. I believe setbacks are learning opportunities.

5. I have achieved a goal that took years of work.

6. When I'm obsessed with a project for a while, I eventually lose interest.

7. I often set a goal, but after a while I move on to something else.

8. It's hard for me to focus my attention on projects.

9. My interests change from year to year.

SECTION 3 Optimism

This section aims to understand your perception of your own Optimism. For the following descriptions, please choose the option according to your actual situation, and use "✓" in the corresponding box to choose the option that meets your opinion. "Strongly Agree" means you very much agree with the description; "Agree" means you generally agree with the description, but you may reserve some other opinions of your own; "Neutral" I neither agree nor disagree with this statement. "Disagree" means you

disagree with the description; “Strongly Disagree” means you strongly disagree with the description and you have your other own related thoughts and opinions.

Topic	1	2	3	4	5
1. In uncertain times, I usually expect the best.					
2. I can easily relax even in stressful situations.					
3. I'm always optimistic about my future.					
4. I enjoy spending time with my friends a lot.					
5. I hardly ever expect things to go my way.					
6. I don't get upset too easily.					
7. I rarely count on good things happening to me.					
8. I expect more good things to happen to me than bad.					

SECTION 4 School Climate Scale

This section aims to understand your perception of your school climate. For the following descriptions, please choose the option according to your actual situation, and use "✓" in the corresponding box to choose the option that meets your opinion. “Strongly Agree” means you very much agree with the description; “Agree” means you generally agree with the description, but you may reserve some other opinions of your own; “Neutral” I neither agree nor disagree with this statement. “Disagree” means you disagree with the description; “Strongly Disagree” means you strongly disagree with the description and you have your other own related thoughts and opinions.

Topic	1	2	3	4	5
1. I can talk to my teachers about my problems.					
2. My teachers care about me.					
3. Teachers help a struggling student.					
4. Teachers treat students from different backgrounds with the same respect.					
5. Teachers believe in my abilities.					
6. Teachers work hard to get me to do well on tests.					
7. My teachers make me feel good about myself.					
8. Students would yell at each other.					
9. Students are mean to each other.					
10. Students will respect each other.					
11. Students help each other.					
12. Most students (in learning, activities, etc.) try their best.					
13. Students will like each other.					
14. There are students who pick on other students.					

15. Students are caring people.
 16. Students have trouble getting along with each other.
 17. Students at school behave well.
 18. Students fight frequently.
 19. Students trust each other.
 20. Students get to help decide some of the rules.
 21. Students are given the chance to help make decisions.
 22. Teachers ask students what they want to learn about.
 23. Students have a say in how things work.
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SECTION 5 Peer Influence Scale

This section aims to understand your perception of your peers. For the following descriptions, please choose the option according to your actual situation, and use "✓" in the corresponding box to choose the option that meets your opinion. "Strongly Agree" means you very much agree with the description; "Agree" means you generally agree with the description, but you may reserve some other opinions of your own; "Neutral" I neither agree nor disagree with this statement. "Disagree" means you disagree with the

description; “Strongly Disagree” means you strongly disagree with the description and you have your own related thoughts and opinions.

Topic	1	2	3	4	5
1. My friends motivate me to study hard.					
2. I pay more attention to my own studies because of my classmates.					
3. I am often inspired by my friends' study habits and methods.					
4. My friends encourage me to follow school rules and regulations.					
5. I follow my friend's positive behavior.					
6. My friends sometimes distract me from my academic goals.					
7. I often feel pressured by my peers to act in certain ways.					
8. I sometimes make decisions that go against my principles by trying to please my friends.					

SECTION 6 Teachers mindset belief Scale

This section aims to understand your perception of your Teachers mindset belief. For the following descriptions, please choose the option according to your actual situation, and use "✓" in the corresponding box to choose the option that meets your opinion. “Strongly Agree” means you very much agree with the description; “Agree” means you generally agree with the description, but you may reserve some other opinions of your own; “Neutral” I neither agree nor disagree with this statement. “Disagree” means you disagree with the description; “Strongly Disagree” means you

strongly disagree with the description and you have your other own related thoughts and opinions.

Topic	1	2	3	4	5
1. Some teachers believe that a student's abilities are fixed and cannot change.					
2. Teachers believe that failure is part of the learning process, and it's a chance to try again.					
3. Most teachers at school believe that students can learn new things.					
4. Most teachers believe that working hard will not make students learn better.					
5. Most teachers believe that with effort, any student can improve in any subject.					
6. My teachers often encourage me to take on challenges and learn from my mistakes.					
7. Most teachers believe that students cannot change their intelligence.					
8. My teachers believe that putting in a lot of effort doesn't guarantee better learning for students.					

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