

# The Effects of Parental Support on Chinese High School Students' Self-Regulated Learning Ability--Chain Mediation of Sense of Meaning in Life and Psychological Resilience

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## Abstract

The purpose of this study was to investigate the effects of high parental support on Chinese high school students' self-regulated learning ability, as well as the mediating roles of meaning in life and psychological resilience between parental support and self-regulated learning ability. A questionnaire method was used to survey 39,953 sophomore high school students in a central Chinese province. Structural equation modeling was used to explore the relationship between parental support, sense of meaning in life, psychological resilience, and self-regulated learning ability. The results show that parental support directly affects the self-regulated learning ability of high school students. Meanwhile, parental support not only indirectly affects self-regulated learning ability through sense of meaning in life and psychological resilience, but also affects high school students' self-regulated learning ability through the chain mediating effect of sense of meaning in life and psychological resilience. The results of Bootstrap show that the mediating effect in the model is significant. By exploring the intrinsic mechanism of parental autonomy support affecting self-regulated learning ability, and at the same time revealing the importance of sense of meaning in life and psychological resilience in students' development, we provide empirical evidence for parents to guide and help their children to develop self-regulated learning ability.

**Keywords:** Parental Support; Sense of Meaning in Life; Psychological Resilience; Self - Regulated Learning Ability; Chain Mediation

## 1. Introduction

Self-regulated learning (SRL) ability constitutes a foundational construct in contemporary educational research, serving as a critical enabler of personalized developmental trajectories. The

dynamics of digital-era knowledge societies amplify the necessity for SRL as a cross-domain adaptive ability.

Self-regulated learning (SRL) functions as a critical educational mechanism that enables high school students to fulfill standard curriculum requirements while developing creative competencies (Lim et al., 2024 ; Richardson et al., 2012). Comparative analyses demonstrate that SRL proficient students exhibit greater proactive engagement in knowledge acquisition compared to peers reliant on teacher-directed instruction (Nota et al., 2004). Empirical evidence further establishes SRL's role in enhancing emotional resilience, with learners demonstrating improved confidence, reduced anxiety, and effective stress management during academic challenges (Rager and Kathleen, 2003). This competency framework not only supports academic achievement but also prepares students for successful transitions into higher education systems through sustained self-regulation practices.

China's examination-driven educational system maintains entrenched dependence on didactic instruction models, where three systemic constraints impede self-regulated learning (SRL) ability development: (a) underdeveloped meta-cognitive awareness among learners, (b) limited strategic diversity in autonomous learning practices, and insufficient institutional support infrastructures (Deslauriers et al., 2019). This operational reality directly conflicts with national educational reforms articulated through two policy instruments: the Core Competencies Framework (MOE, 2016) mandates cultivation of self-regulated learners capable of navigating complex environments, while the Revised Senior Secondary Curriculum (MOE, 2022) explicitly prioritizes SRL ability building as a graduation benchmark.

Self-regulated learning (SRL) ability refers to the ability of learners to independently carry out learning planning, monitoring, and evaluation during the learning process. Its core dimensions include learning motivation, learning strategies, and self-monitoring. These dimensions interact with each other and jointly form a complete system of self-regulated learning ability. However, the ability of self-regulated learning does not exist in isolation. It is comprehensively influenced by a variety of internal and external factors. From the perspective of internal factors, the cognitive style, sense of meaning in life and psychological resilience of learners play a key role. Specifically, Tinajero et al. (2010) research indicates that Cognitive style has a significant influence on the performance of self-regulated learning ability. Field-dependent students need to focus their attention more through self-guidance and anti-interference, while field-independent students have more advantages in the use of complex cognitive strategies. Students with a higher level of psychological resilience can help them better overcome difficulties in learning and promote the development of self-regulated learning ability (Yang et al., 2023) . The sense of meaning in life can not only enhance an individual's intrinsic learning motivation and clarify learning goals, but also maintain students' positive emotional attitudes during the process of autonomous learning (Gavarkovs et al., 2023). From the perspective of external factors, family environment, school education and social and cultural background also have significant influences on the development of self-regulated learning ability. A good family atmosphere and school support can provide students with a positive learning environment, thereby promoting the improvement of self-regulated learning ability. Emotional support from parents can make students

feel the warmth and security of the family (Xu et al., 2010). Effective communication between parents and students can regulate students' anxiety and stress emotions. This kind of emotional companionship and guidance is conducive to children's better autonomous learning (Li et al., 2025). At present, certain progress has been made in the research of self-regulated learning ability, but there are still many fields worthy of in-depth exploration.

Therefore, it is necessary to explore the effects of parental support, psychological resilience, and a sense of meaning in life on the self-regulated learning ability of high school students and the specific mechanisms of their action, which can help parents, teachers, and schools to cultivate the self-regulated learning ability of high school students.

## **2. Literature Review**

### **2.1. Self-Regulated Learning Ability**

The definition of self-regulated learning abilities adopted in this study is based on Zimmerman (2000) classic interpretation, that is, the thoughts, emotions, and behaviors of individuals who spontaneously go through planning and periodic adjustments in order to achieve their personal goals. On the basis of inheriting the kernel of this theory, this study further proposes that self-regulated learning is essentially the intrinsic stability and comprehensive quality of an individual who, based on intrinsic motivation, independently accomplishes the goal-setting, plan execution, process The study further proposes that self-regulated learning ability is essentially an inherent and stable comprehensive quality of an individual who independently accomplishes goal setting, planning and execution, process monitoring and reflection adjustment based on intrinsic motivation, in order to realize the acquisition of knowledge, the enhancement of skills, and the cultivation of affective attitudes and values, and then to adapt to the changing learning environment.

Zimmerman and Martinez-Pons (1988) examined the components of self-regulated learning ability through student interviews, teacher ratings, and achievement tests and found that the theoretical structure of 14 self-regulated learning strategies, including self-assessment, organizing and transforming, and goal-setting and planning, had good convergent and discriminant validity.

Extrinsic factors including instructional techniques, classroom climate, and teacher guidance were found to influence high school students' self-regulated learning ability. Modifications in teaching methodologies demonstrated measurable effects on self-regulated learning ability. Lee et al. (2024) implemented game-based competitions in classroom instruction, which effectively motivated students to experiment with diverse self-study approaches to complete assessments. Under the Interest-Driven Creator (IDC) teaching model emphasizing interest-creation-habit cycles, the experimental group demonstrated significantly higher self-regulated learning ability compared to the control group (Mohammadi, 2024). Experimental investigations revealed that the presence or absence of teacher guidance resulted in marked differences in students' demonstration of self-regulated learning ability. Teachers provided external feedback mechanisms, such as evaluation rubrics and formative assessments, which enhanced learning efficiency, enabled task

correction, and improved academic performance alongside self-regulated learning strategies (Karaman, 2024).

Students' personal characteristics, including motivation levels, learning strategy proficiency, and learning styles, were found to significantly influence the development of self-regulated learning ability. Research indicated that students exhibiting higher motivational levels and internal control learning styles demonstrated stronger self-regulated learning ability (Loeng, 2020). Furthermore, students demonstrating more advanced learning strategies exhibited enhanced self-regulated learning proficiency and superior academic performance (Gao et al., 2011).

The internal components of self-regulated learning ability were shown to interact dynamically. A study by Cai and Yu (2024) revealed that student self-assessment mechanisms influenced strategy selection, improved goal clarity, facilitated active monitoring of learning processes, and promoted reflective evaluation of learning outcomes. Additionally, Panadero et al. (2017) demonstrated that self-assessment practices strengthened self-efficacy by clarifying learning objectives and achievement pathways, thereby enhancing self-regulated learning ability.

Notably, interactions between internal and external factors were observed to impact self-regulated learning. Martin (2004) comparative analysis established that externally sourced feedback from teachers or peers produced more effective learning outcomes than isolated self-assessment practices, significantly optimizing student learning efficiency.

## **2.2. Parental Support and Self-Regulated Learning Ability**

Parental support was defined as the perceived emotional and material assistance, encouragement, and guidance provided by parents during an individual's developmental process (Pierce et al., 1996).

A study developed a child-reported Parental Autonomy Support Scale (PASS) with 12 questions such as “My parents let me make my own choices as much as possible” and “You feel supported and understood” (Wang et al., 2007). This scale measured parental behaviors as perceived by the child, including the employment of emotional manipulation tactics (e.g., guilt-inducing strategies) and undue interference with the child's internal emotional states or cognitive processes. This approach evaluated whether parents respected and encouraged their child's independence through supporting autonomous decision-making, providing emotional validation, and minimizing coercive behaviors.

From the perspective of ecosystem theory (Bronfenbrenner, 1979), the supportive parenting behavior of parents, as the most positive factor in the micro-system, constructed the key development environment for cultivating self-regulating learning ability. Attachment theory (Lee and Kwon, 2013) further explained how parental support met the psychological needs during the development of students' self-regulation ability. The stable attachment relationship formed during adolescence not only consoles the existing framework of self-awareness, but also provided the necessary emotional support and cognitive scaffold for the development of self-regulating learning ability by enhancing the ability of emotion regulation.

Social cognitive theory (Bandura, 1973) explained the positive effect of parental support on self-regulating behavior from two aspects: the construction of the learning environment and the consequence feedback of exemplary behavior. Parents provided their children with abundant learning resources, such as books, learning tools, online courses, etc. These resources not only supported children's learning but also stimulated students' intrinsic motivation for self-regulated learning. Parents demonstrated the positive consequences of autonomous learning behaviors, such as acquiring new knowledge and the ability to solve problems, which inspired children to imitate these behaviors. By observing their parents' learning achievements, children recognized the value of self-regulated learning. Accordingly, the hypothesis is proposed:

H1: Parental support positively and significantly predicts self-regulated learning ability of high school students.

### **2.3. The Mediating Role of Sense of Meaning in Life Between Parental Support and Self-Regulated Learning Ability**

A sense of meaning in life was conceptualized as the sense of acquisition that individuals developed by satisfying their needs for value, purpose, efficacy, and self-worth (Baumeister, 1991). By their very nature, human beings were inherently curious about existence and sought meaning in life by reflecting on experiences, understanding the purposes behind them, and assigning significance to life (Steger, 2009).

Crumbaugh and Maholick (1964) test of the sense of meaning in life consisted of a questionnaire, a complementary sentence completion task, and a supplementary essay. Participants completed these materials based on their subjective life experiences, though this methodology was later criticized for its susceptibility to social desirability bias (Reker and Fry, 2003). To address these limitations, Steger (2009) refined the scale by categorizing the sense of meaning in life into two dimensions: seeking and experiencing. The revised instrument comprised five items per dimension, measured on a 7-point Likert scale, where higher scores indicated stronger perceived meaning.

Heastie et al. (2022) conducted a study focusing on high school students and further found that students' self-regulated learning ability and academic achievement were also influenced by their behavioral patterns. Research demonstrated that the sense of meaning in life was strongly associated with family-related factors and exhibited positive correlations with components of self-regulated learning abilities, such as positive self-concept, problem-solving skills, self-management, and self-reflection (Yuen and Datu, 2020). Adolescents who developed a clear sense of life purpose and direction were more likely to actively seek problem-solving strategies when encountering difficulties and challenges. This suggested that the sense of meaning in life may have played a mediating role between parental support and self-regulated learning ability. Accordingly, the hypothesis is formulated:

H2: Sense of meaning in life mediates the relationship between parental support and self-regulated learning ability.

#### **2.4. The Mediating Role of Psychological Resilience Between Parental Support and Self-Regulated Learning Ability**

Psychological resilience was conceptualized as a psychological trait that encompassed an individual's capacity to maintain positive cognitive patterns and adaptive functioning when confronted with adversity, setbacks, and stressors (Connor and Davidson, 2003). The CD-RISC scale developed by Connor and Davidson (2003) includes five measures of the concepts of personal competence, high standards, and resilience, trust in competence, tolerance of negative deficits tolerance and reinforcing effects of stress, positive acceptance of change, control, and spirituality are five measures.

Psychological resilience was recognized as a multidimensional construct that extended beyond intra-individual processes to incorporate influences from familial, communal, and broader socio-environmental systems. Empirical studies demonstrated that familial support, community cohesion, and supportive school environments significantly enhanced children's resilience (Luthar, 2015). Parental emotional warmth and affirmative parenting practices were found to cultivate resilience, self-confidence, and optimistic dispositions in adolescents (Kovacs and Dan, 2022). Aligned with the social support stress-buffering theory (Cohen and Wills, 1985), parental provision of cognitive and emotional support enabled individuals to experience stress attenuation, which subsequently correlated with elevated levels of psychological resilience. Similarly, familial and social support systems facilitated the development of adaptive coping strategies and positive adjustment in adolescents facing academic or social challenges. A robust positive correlation was identified between psychological resilience and students' self-regulated learning preparedness (Din, 2015). Adolescents with heightened resilience exhibited superior performance in self-regulation, emotional governance, motivational engagement, adaptive coping, and self-efficacy ability that directly influenced their capacity for autonomous learning modulation (Lee and Kwon, 2013). Accordingly, the hypothesis is proposed:

H3: Psychological resilience mediates the relationship between parental support and self-regulated learning ability.

#### **2.5. Chain Mediation of a Sense of Meaning in Life and Psychological Resilience Between Parental Support and Self-Regulated Learning Ability**

Empirical studies find significant associations between individuals' psychological characteristics, family factors, and their sense of meaning in life (Brassai et al., 2013). As a protective factor for psychological resilience, a sustained sense of meaning in life enhances self-worth and enables individuals to confront life adversities constructively (Miao and Cao, 2024). Psychological resilience, when functioning as a protective mechanism against stressors and challenges, facilitates adolescents' ability to convert parental support into motivational energy for addressing academic and life difficulties.

Research demonstrates that a robust sense of meaning in life effectively buffers the psychological impact of negative life events (Krause, 2007) and mitigates psychological distress (Li et al., 2018). Furthermore, by fostering individuals' awareness of existential purpose and goal-

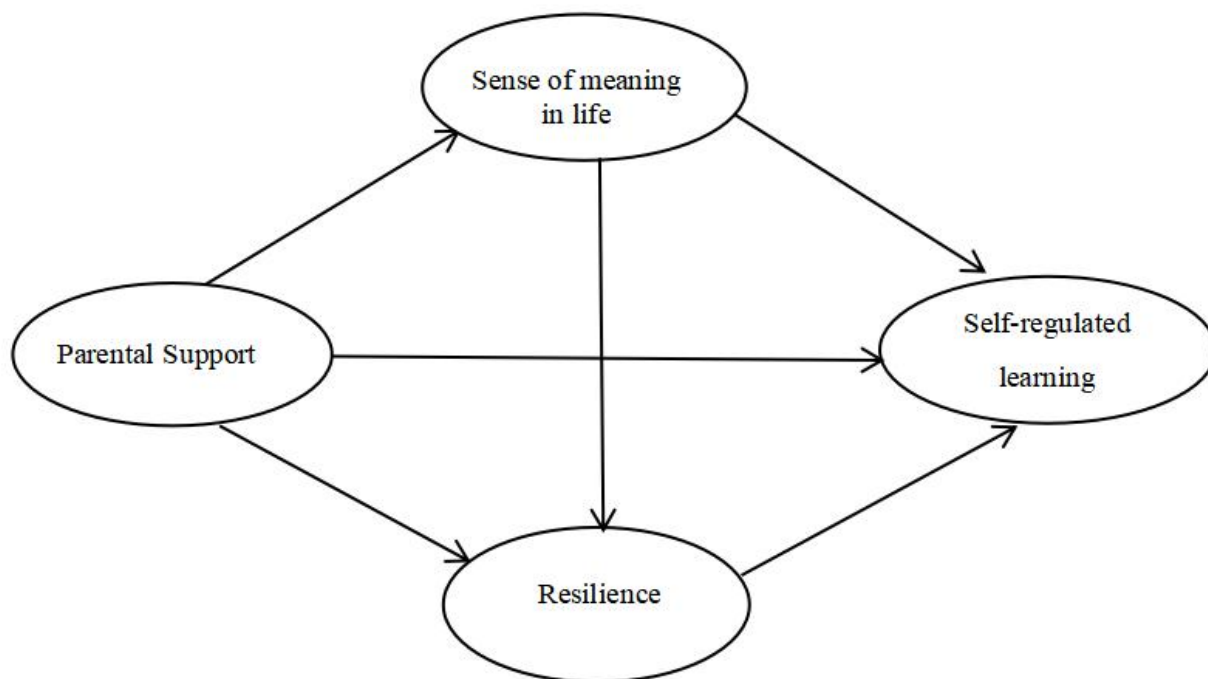


directedness, this sense of meaning activates intrinsic motivation in adolescents, thereby promoting the development of self-directed learning competencies.

Consequently, when investigating the influence of parental support on high school students' autonomous learning abilities, researchers must account not only for direct effects but also recognize the sequential mediating roles of psychological resilience and sense of meaning in life. Accordingly, the hypothesis is proposed:

H4: A sense of meaning in life and psychological resilience play a chain mediating role between parental support and self-regulated learning ability.

Based on Maslow's Hierarchy of Needs Theory, which states that an individual's lower level needs (e.g., belonging and love) are satisfied in order to pursue higher level needs (e.g., self-actualization), this provides theoretical support for parental support to promote the development of independent learning skills in high school students. Bandura's social learning theory suggests that children learn how to deal with emotions, solve problems, and interact with others by observing their parents' behaviors and attitudes. This provides a theoretical basis for the idea that parental emotional, attitudinal, and behavioral support for students' academics affects their internal psychological development, such as their sense of meaning and psychological resilience. Scholars have demonstrated that sense of meaning and psychological resilience play an important role as protective factors in individual development, but how they work together to influence self-regulated learning has yet to be demonstrated. Therefore, the present study adds two variables of sense of meaning and psychological resilience to explore the specific mechanism between parental support and independent learning ability, in an attempt to provide new ideas for family education and the development of students' self-regulated learning ability.



**Figure 1. Hypothetical Model**

### **3. Research design**

#### **3.1. Participants**

This study employs a research team to conduct questionnaire surveys among 39,953 second-year high school students in a central Chinese city, framed within an educational equity perspective. Samples are systematically collected from urban districts, counties, towns, townships, and rural areas based on students' family residential locations.

#### **3.2. Instruments**

##### **3.2.1. Self-regulated Learning Scale**

The self-regulated learning ability scale was borrowed from Erdogan and Senemoglu (2016) self-regulated learning ability scale. After translation, modification, and deletion, the self-regulated learning ability variable consisted of five questions that investigated the extent to which students agreed with thinking about the effectiveness of learning strategies, setting challenging learning goals, reviewing learning mistakes, adapting their learning methods, and deepening their understanding when they ask for help from others. A Likert scale was used (1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree), with higher scores indicating higher self-learning ability.

##### **3.2.2. Parental Support Scale**

The Parental Support Scale was adapted from the Parental Support Questionnaire developed by Furman and Buhrmester (1985). After translation, modification, and deletion, the parental support variable consisted of four questions that asked students about their perceived parental concern for how the student is doing in school, recognition for putting in effort, help in times of trouble, and encouragement for having self-confidence. A Likert scale was used (1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree), with higher scores indicating higher levels of parental support.

##### **3.2.3. Sense of Meaning in Life Scale**

The Sense of Meaning in Life Scale was constructed with reference to the Sense of Meaning in Life Scale developed by Ryff and Singer (1998). After translation, modification, and deletion, the Sense of Meaning in Life Scale consisted of three questions that provided an in-depth investigation of whether high school students possessed a sense of meaning in life, their level of satisfaction with the meaning of life, and their clarity about the meaning of life. A Likert scale was used (1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree), with higher scores indicating a higher level of students' sense of meaning in life.

##### **3.2.4. Psychological Resilience Scale**

The Psychological Resilience was adapted from the Psychological resilience Scale (CD-RISC) used in Connor and Davidson (2003) study. After translation, modification, and deletion, the psychological resilience variable consisted of three questions that asked students whether they were able to handle more than one thing at a time, were confident that they could get through a difficult situation, and were able to find a way out of a difficult situation. A Likert scale was used



(1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree), with higher scores indicating higher levels of psychological resilience among students.

### 3.3. Data Collection and Processing

The data for this study was collected using an online questionnaire. At the beginning of the questionnaire, the purpose and use of the study was spelled out and students were able to voluntarily decide whether or not to participate in the survey. In this study, omega ( $\omega$ ) and validated factor analysis (Nicol and Macfarlane-Dick, 2006) were used to test the reliability and construct validity of the items related to the parental support variable, the sense of meaning in life variable, the psychological resilience variable, the ability to learn on their own and the interaction variable. In this study, we used maximum likelihood estimation to run the CFA. In addition, this study used structural equation modeling to analyze the relationships among parental support, sense of meaning in life, psychological resilience, self-regulated learning ability, and interaction variables. According to Feng (2020), the model was considered to be a good fit when CFI and TLI  $> 0.9$ , RMSEA  $< 0.08$  and factor loading  $> 0.4$ . Based on Zakariya (2022), the criterion of omega( $\omega$ )  $>$  being 0.7 was used.

SPSS 26.0 and Mplus 7.0 were used for data processing in this study.

## 4. Results

### 4.1. Reliability and Validity

The results of omega ( $\omega$ ) and validated factor analysis (Nicol and Macfarlane-Dick, 2006) indicated that the questionnaire for high school students had good reliability and structural validity. The omega ( $\omega$ ) for parental support, sense of meaning in life, psychological resilience, and self-regulated learning ability were 0.89, 0.74, 0.86, and 0.89, respectively. The CFA results for the parental support variable were in good agreement, with  $\lambda^2=0.00$ ,  $df=0.00$ , RMSEA=0.04, CFI=0.99, and TLI=0.99, and the range of the factor loadings for each question was 0.81 ~The CFA results for the sense of life meaning variable were in good agreement,  $\lambda^2 = 0.00$ ,  $df = 0.00$ , RMSEA = 0.00, CFI = 1.00, TLI = 1.00, and the range of factor loadings for each topic was 0.82 to 0.87. The CFA results for the psychological resilience variable were in good agreement,  $\lambda^2 = 0.00$ ,  $df = 0.00$ , RMSEA = 0.00, CFI=1.00, TLI=1.00, and the range of factor loadings for each topic was 0.69 to 0.90. The CFA results for the self-regulated learning variable were in good agreement,  $\lambda^2=495.65$ ,  $df=5.00$ , RMSEA=0.05, CFI=0.99, TLI=0.99, and the range of factor loadings for each topic was 0.71 to 0.84.

### 4.2. Common Methodological Biases

In this study, Harman one-way test was used for common method bias test. The results showed that the Kaiser-Meyer-Olkin (KMO) value was 0.92 with a p-value of 0.001. Exploratory factor analysis (EFA) showed that there were three factors explaining 70.42% of the variance of the total variance. The largest factor explained 46.39% of the variance, which is below the criterion of 50% (Podsakoff et al., 2003). Therefore, there is no serious common method bias effect in this study.

### 4.3. Descriptive Statistics and Correlation Analysis

According to the theoretical requirements of Structural Equation Modeling (SEM), correlations between variables need to be tested for statistical significance in order to ensure the validity of path relationships (Hair et al., 2010). Table 1 shows that the two-by-two correlation coefficients of the variables of parental support, sense of meaning in life, psychological resilience and self-regulated learning ability are around 0.4, indicating that the moderate correlation strength not only ensures the theoretical relevance of the variables, but also provides a desirable statistical basis for the subsequent construction of mediation effect modeling, which makes it possible to explore the complex mechanism of action between the variables in depth.

**Table 1. Descriptive statistics and correlation analysis(N=39,953)**

Variable Name	1	2	3	4
1parental support	1			
2meaning in life	0.37**	1		
3Psychological Resilience	0.33**	0.56**	1	
4self-regulated learning ability	0.39**	0.54**	0.63**	1
M	3.25	2.77	2.79	3.05
SD	0.63	0.72	0.64	0.50

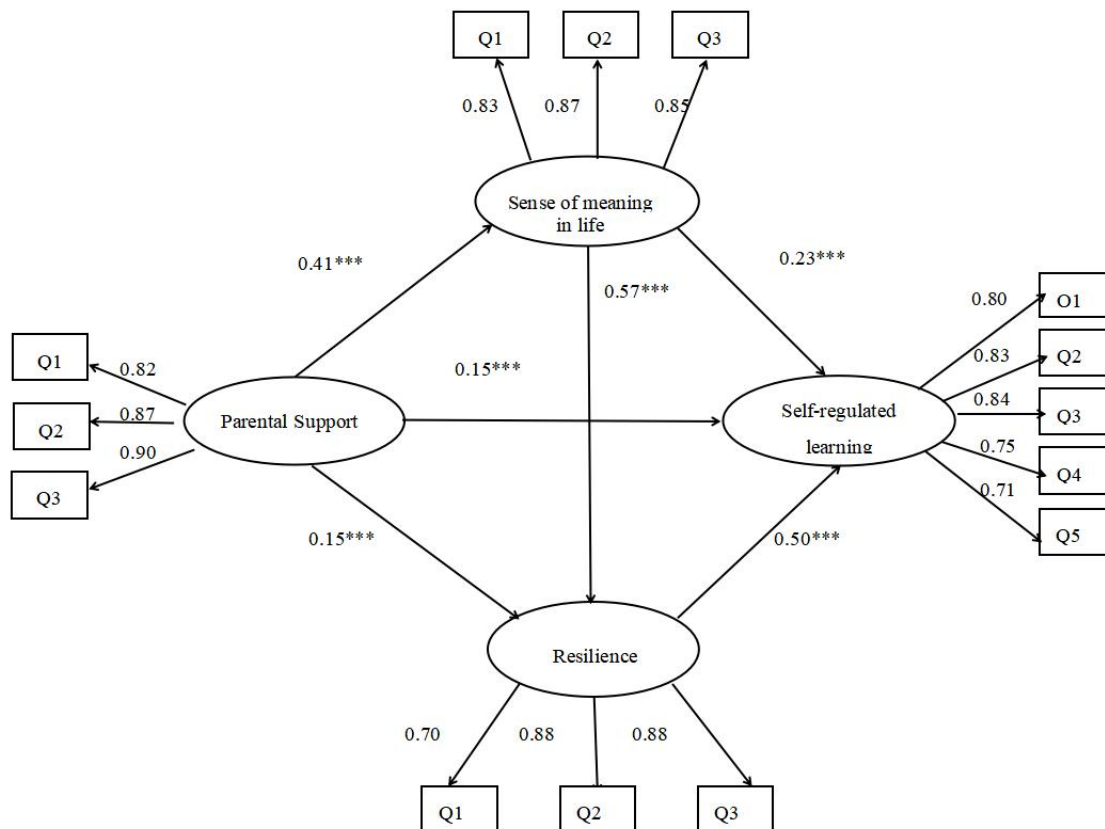
\* $P < 0.05$ , \*\* $P < 0.01$ , \*\*\* $P < 0.001$

### 4.4. Chain Mediator Model

Correlation analyses confirmed that there was a significant correlation between these variables in this study. Therefore, SEM was further utilized to test the mediation model of sense of meaning in life and psychological resilience in parental support and self-regulated learning. The results showed that the established model fit well,  $\lambda^2 = 4135.83$ ,  $df = 71$ , RMSEA = 0.04, CFI = 0.99, TLI = 0.99. The specific path coefficients are shown in Figure 2.

Parental support significantly predicted high school students' self-regulated learning ability ( $\beta = 0.15$ ,  $p < 0.001$ ), indicating that higher parental support is associated with substantially higher self-regulated learning, and Hypothesis 1 was confirmed. Sense of meaning in life ( $\beta = 0.23$ ,  $p < 0.001$ ) and psychological resilience ( $\beta = 0.50$ ,  $p < 0.001$ ) significantly predicted high school students' self-regulated learning ability, meaning that a high sense of meaning in life and high psychological resilience correspond to high self-regulating learning ability. In this study, the bootstrap method (Bootstrap method) was used to test the significance of self-regulated learning ability, and the confidence interval did not contain 0, indicating a significant mediating effect. The results of the mediation effect indicated a significant mediation effect of sense of meaning in life between parental support and self-regulated learning, (Indirect Effect = 20.45%, 95 % *Boot CI*

= [0.07, 0.08],  $p < 0.001$ ), and Hypothesis 2 was confirmed. The mediating effect of psychological resilience between parental support and self-regulated learning was significant, (indirect effect = 18.18%, 95 % *Boot CI* = [0.09, 0.10],  $p < 0.001$ ), and Hypothesis 3 was confirmed. The chain mediation effect of sense of meaning in life and psychological resilience between parental support and self-regulated learning was significant (indirect effect = 27.27%, 95 % *Boot CI* = [0.11, 0.12],  $p < 0.001$ ), and Hypothesis 4 was confirmed. The mediated effect analysis is shown in Table 2.



**Figure 2. Mediating Effects of Sense of Meaning in Life and Psychological resilience between Parental Support and self-regulated learning ability**

**Table 2. The Mediated Effect Analysis(N=39,953)**

Trails	Effect value	Effect size	95% confidence interval
Parental support-Meaning in life-self-regulated learning ability	0.09	20.45%	[0.07, 0.08]
Parental support-Psychological Resilience- self-regulated learning ability	0.08	18.18%	[0.09, 0.10]
Parental support - Meaning in life - Psychological Resilience – self-regulated learning ability	0.12	27.27%	[0.11, 0.12]
Total indirect effect	0.29	65.90%	

## 5. Discussion

High school education is regarded as a critical period for the cultivation of innovative talents. Self-regulated learning ability is a necessary skill for high school students to be able to smoothly transition to the university study stage. Based on social learning theory and self-determination theory, this study constructed a mediation model on parental support - sense of meaning in life - psychological resilience - self-regulated learning ability, and deeply investigated the internal and external influences on independent learning ability. The empirical results obtained in this study are expected to improve the effectiveness of parental support and enhance the level of students' sense of meaning in life, psychological resilience, and self-regulated learning ability, which will help high school students' mental health and academic development.

### 5.1. The Effect of Parental Support on Self-Regulated Learning

The results of this study indicate that parental support has a positive contribution to the independent learning skills of high school students. A three-year follow-up study conducted by Maltais et al. (2021) on 6th grade students similarly validated this finding. Parents, by providing learning resources, encouragement, and emotional support, not only increase students' level of self-control and enhance their control over their thinking, emotions, and behaviors, but also enhance their cognitive flexibility. Individuals are able to adjust their behaviors to achieve goals in novel and changing environments, which in turn enhances motivation and ability to learn independently.

It has been found that parents who are academically demanding and provide a lot of help to their children tend to encourage independent thinking and problem solving, which is usually associated with high self-regulated learning. On the contrary, parents who have high academic demands on their children but provide little help can limit children's autonomy and cause them to rely on their parents in the learning process, which reduces their ability to learn independently (Wang, 2012). This is consistent with the findings of this study that “my parents will provide help when I have difficulties” affects independent learning ability.

This study also found that the level of parental concern for students can help them become independent learners. At the same time, it has been shown that the degree of matching between parents' instruction needs and their children's level of understanding of the task affects the development of an individual's independent learning ability (Zhang and Whitebread, 2017). Parents who are able to achieve timely adjustment of instruction needs according to their children's performance, this can promote children's effective learning and use of self-regulated learning strategies in problem solving tasks, which can lead to improved task performance.

### 5.2. The Mediating Role of Meaning in Life Between Parental Support and Self-Regulated Learning Ability

The results of this study found that parental support significantly enhanced students' sense of meaning in life, which in turn further stimulated students' motivation and self-efficacy, thus indirectly contributing to the enhancement of self-regulated learning ability. Support from significant others such as parental support affects whether individuals perceive life as meaningful

or not, which is consistent with the findings of (Dunn and Obrien, 2009). The findings support the findings of Ha and Kim (2016).

In addition to the objective factors, the behavioral tendency of individuals to consciously enhance and improve themselves is also an important source of obtaining growth motivation. Individual growth initiative, as an internal driving force, can influence their perception and experience of the meaning of life. Individuals with a high level of personal growth initiative are able to realize their own development over time, search for and define life goals, and strive to find concrete manifestations of a sense of meaning in life, thus acquiring a sense of meaning in life. Parental concern and respect will allow children to be proactive in their learning and increase their personal growth initiative (Whittaker and Robitschek, 2001), which in turn promotes an increased level of sense of meaning in life.

Parental love and respect (e.g., listening to needs, allowing autonomy in decision-making) provides emotional security and promotes stable high self-esteem, an environment in which adolescents are more open to exploring learning goals and developing self-directed learning skills (e.g., making plans, actively seeking resources). Individuals with high self-esteem are more likely to tie their existence to a goal-oriented value system (e.g., “my efforts create value for society”), and thus actively construct meaning in their lives. For example, a student with a high level of self-esteem is more likely to view learning as a way to “realize one's potential” rather than as a way to simply take a test.

This result supports Maslow's hierarchy of needs theory (Maslow, 1943). Maslow suggested that the pursuit of higher needs is based on the fulfillment of lower needs. Parental support to satisfy high school students' needs for love and belonging, and an adequate sense of meaning in life satisfies the individual's need for respect, which provides the basis for the individual's need to pursue self-actualization and to enhance self-regulated learning.

We suggest that parents can enhance students' sense of meaning in life by increasing the number and quality of interactions, etc., providing the support needed for individual growth, helping high school students to continuously pursue higher levels of meaning in life on the basis of having a sense of meaning in life, improving individual intrinsic motivation to learn, and developing a concept of lifelong education.

### **5.3. The Mediating Role of Meaning in Life Between Parental Support and Self-Regulated Learning Ability**

The results of this study also confirmed that parental support not only directly enhanced students' self-regulated learning ability, but also indirectly contributed to the enhancement of self-regulated learning ability by improving students' psychological resilience. There is a partial mediating effect between parental support and independent learning ability of high school students. This result is consistent with Murakami (2021) results.

Key people and events can help individuals construct psychological resilience. Chinese adolescents experience excessive parental expectations for academics, a college entrance examination-centered education system, and a competitive school atmosphere where pressure builds up, making it difficult for adolescents to experience happiness, and frustration or despair

about the future. Adolescents with high psychological resilience have positive perceptions of their ability to cope with the situations around them, have more coping strategies, express emotions appropriately, are empathetic, and respond flexibly to the changing demands of the environment, and therefore have higher life satisfaction. When adolescents have higher life satisfaction, self-regulated learning skills of voluntary engagement in learning, planning and self-assessment, and implementation of effective learning strategies are also developed (Lee and Kwon, 2013).

The psychology of high school students is in the stage of seeking inward as well as outward, and they have both self-identification and questioning in their hearts, changeable moods, reversal of their views of themselves from time to time, and a higher sensitivity to frustrations from their families, academics, and so on. Therefore, the protective role of self-acceptance is particularly important. Self-acceptance refers to an individual's ability to view his or her strengths and imperfections in a positive light. Self-acceptance affects how well an individual interprets and accepts things from a subjective perspective. The love, respect, trust and support that parents give to their children help individuals to build a strong psychological sense of belonging and security. This psychological state in turn enhances the individual's self-confidence and self-acceptance, making him or her more determined and calm in the face of life's challenges, able to be more accepting of his or her own negative emotions, and more likely to ask for help from others (Plexico et al., 2019).

Therefore, we suggest that parents should not ignore the important role of family education in the growth of individuals, pay attention to the psychological changes of high school students in academic difficulties, and provide solutions and resources for high school students to get out of academic difficulties, in order to promote the improvement of the level of individual psychological resilience and thus develop their ability to learn independently.

#### **5.4. Chain Mediation of a Sense of Meaning in Life and Psychological Resilience Between Parental Support and Self-Regulated Learning Ability**

In the present study, the chain mediation model suggests that parental support contributed to the development of self-regulated learning skills by first enhancing the students' sense of meaning in life, which in turn enhanced their psychological resilience, and ultimately, their ability to learn on their own.

A sense of meaning in life serves as an intrinsic motivator that enables people to focus more on the achievement of learning goals (Steger, 2009). For example, when facing difficulties, the sense of meaning inspires them to adjust their strategies instead of giving up. Seon and Smith-Adcock (2023) This positive mindset helps enhance psychological resilience. A sense of meaning as a buffering factor for psychological resilience helps individuals recover quickly from adversity. The sense of meaning in life can increase the motivation for continuous coping by providing future-oriented goal incentives, which offer an explanatory framework for suffering (Çolak et al., 2021).

Ha and Kim (2016) expounded this path more directly through the social support - sense of meaning - psychological resilience chain model. Their research indicates that social support (for instance, emotional connections within the family) not only directly alleviates an individual's traumatic stress, but more importantly, by enhancing the sense of meaning in life, it indirectly



forms a more adaptive way of coping with trauma. Parental support is a key psychological resource for improving the overall level of psychological resilience.

Students with strong psychological resilience can better adjust their emotions and learning strategies when facing setbacks in their studies, thereby enhancing their ability to independently regulate their learning. Individuals mobilize strengths from external support systems such as parents and friends to try to solve problems directly (Kumpfer, 2002). Psychological resilience and sense of meaning in life also play key roles as core internal protective factors, psychological resilience helps individuals to sustain functioning when resources are limited, avoiding breakdown.

The Self-Determination Theory (SDT) provides a powerful framework for explaining how parental support can enhance students' sense of meaning in life and psychological resilience, and ultimately promote the development of self-regulated learning ability (Deci and Ryan, 1985). Self-determination theory emphasizes three basic psychological needs of individuals: autonomy, competence and a sense of belonging. Parental support allows individuals to feel connected to others, satisfying the need for relatedness; a sense of meaning in life allows individuals to participate in activities for their own enjoyment or personal value, satisfying the need for autonomy; and psychological resilience allows individuals to feel empowered to accomplish challenges, satisfying the need for competence. The fulfillment of the three basic needs stimulates intrinsic motivation in individuals, making them more willing to engage in learning in a more sustained and deeper way. Thus, there is a positive cycle between parental support, students' sense of meaning in life, and psychological resilience, which together contribute to the enhancement of self-regulated learning. This finding suggests that in educational practice, in addition to providing direct learning resources and emotional support, we should also pay attention to stimulating students' understanding of the meaning of learning, helping high school students to clarify their long-term development goals and short-term academic goals, and fostering their psychological resilience through various means, so that they can maintain a good state of mind in the face of academic dilemmas and problems, which is conducive to the performance of their independent learning ability.

## **6. Limitations and Possible Advances**

The limitations of this study are that, first, it is a cross-sectional study that cannot show how the effect of parental support on self-regulated learning changes at different developmental stages of individuals. Secondly, the measurement of self-regulated learning ability was adopted in this study by the questionnaire method, and the experimental results were easily influenced by the social approval effect, and the follow-up study can adopt the test method or other research methods to circumvent the above problems. Finally, this study adopts quantitative research method and lacks the collection of individual qualitative data, in the future research, supplement the qualitative research to verify the research results. Further research can be carried out to investigate whether there are differences in parental influence on high school students' self-regulated learning in different cultural contexts.

## 7. Conclusions

This study used structural equation modeling to explore the intrinsic mechanism of parental support and high school students' self-regulated learning ability, and the mediating roles of sense of meaning in life and psychological resilience in parental support and self-regulated learning ability. The findings indicate that parental support significantly predicts the level of self-regulated learning ability of high school students, and that a sense of meaning in life and psychological resilience play a chain mediating role between parental support and self-regulated learning ability. This study provides a new perspective of family education for the development of self-regulated learning ability of high school students, and explores a new path for the growth of self-regulated learning ability from the perspective of internal and external factors of individuals.

### Author Contributions:

Conceptualization, Y. W.; methodology, Y. W.; software, Y. W.; validation, Y. W.; formal analysis, Y. W.; investigation, Y. W.; resources, Y. W.; data curation, Y. W.; writing—original draft preparation, Y. W.; writing—review and editing, Y. W.; visualization, Y. W.; supervision, Y. W.; project administration, Y. W.; funding acquisition, Y. W. All authors have read and agreed to the published version of the manuscript.

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### Institutional Review Board Statement:

The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committee of Institute on Educational Policy and Evaluation of International Students at Beijing Language and Culture University.

### Informed Consent Statement:

Informed consent was obtained from all subjects involved in the study.

### Data Availability Statement:

The data was used for a purpose which falls within the remit of the original consent provided by subjects. The raw data supporting the conclusions of this article will be made available by the authors.

### Conflict of Interest

The authors declare no conflict of interest.

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