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## Exploring the Effect of Learning Motivation and Self-Regulated Learning Climate on Undergraduates' Self-Regulated Learning in Higher Education

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### To cite this article:

Ma, Y. & Guo, W. Y. (2023). Exploring the effect of learning motivation and self-regulated learning climate on undergraduates' self-regulated learning in higher education. *International Journal on Social and Education Sciences (IJONES)*, 5(2), 354-366. <https://doi.org/10.46328/ijoneses.512>

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## Exploring the Effect of Learning Motivation and Self-Regulated Learning Climate on Undergraduates' Self-Regulated Learning in Higher Education

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### Article Info

#### Article History

Received:

26 September 2022

Accepted:

18 March 2023

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#### Keywords

Self-regulated learning

Learning motivation

Self-regulated learning

climate

Higher education

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### Abstract

Self-regulated learning (SRL) has numerous benefits for students. For this reason, it is necessary to understand what factors can affect SRL. The literature has indicated that many factors can influence SRL as a whole. However, few studies have investigated the relationship between factors that can affect SRL and different phases of SRL. This research aims to investigate the influence of learning motivation and self-regulated learning climate on three phases of SRL (forethought, performance, and self-reflection) in higher education context. Thirteen Chinese undergraduates participated in semi-structured interviews. The results reveal that both learning motivation and self-regulated learning climate have significant impact on forethought, performance, and self-reflection. This study also demonstrates that personality may play a role of mediator in the effect of learning motivation on SRL. The influence of self-regulated learning climate on SRL is related to the level of interaction between teachers and students. These findings can help to further develop undergraduates' SRL ability.

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### Introduction

Self-regulated learning (SRL) has attracted much attention in the educational psychology field since SRL has been proven to play a positive role in academic achievements (Bai & Wang, 2020; Dent & Koenka, 2016; Mega et al., 2014; Zimmerman, 1990; Zheng & Zhang, 2020) and career development (Hsu et al., 2021). Therefore, it is necessary to investigate the factors that can influence SRL and further to foster SRL. Literature shows that various factors, such as learning motivation (Bai & Wang, 2020; Bonney et al., 2008; Durik et al., 2005; Kim et al., 2015; Liem et al., 2008; Littlejohn, 2017; Pintrich & De Groot, 1990) and self-regulated learning climate (Latipah et al., 2021; Lee et al., 2019; Lin et al., 2016; Jones et al., 2008; Jouhari et al., 2015; van den Boom et al., 2007; Whitebread et al., 2007), have a significant impact on SRL. However, little research focused on the effect of these factors on different stages of SRL. This study will explore the influence of learning motivation and self-regulated learning climate on three SRL phases: forethought, performance, and self-reflection (Zimmerman, 2000; Zimmerman & Moylan, 2009) by a qualitative research.

Self-regulated learning (SRL) is a fundamental concept to understand cognitive components in learning process. In general, SRL can be defined as an effective and positive learning process that the individuals set goals, learn,

and regulate the cognitive, behavioral, and motivational aspects of learning by themselves (Pintrich, 2004). As one of the outstanding SRL researchers, Zimmerman (2000, 2009) developed a model to explain the process of SRL at the individuals' level. In his theory (2000, 2009), SRL consists of three cyclical phases: forethought, performance, and self-reflection. During the forethought stage, the learners will evaluate the task, set aims, and select learning strategies under the influence of self-motivation beliefs. In the performance stage, the learners will actually execute the learning process, monitor their performance, and adopt various self-control strategies to help them concentrate on the task. In the self-reflection stage, the learners will access their learning performance and attribute their outcomes. These reflections can affect the next learning process (Zimmerman & Moylan, 2009). Over the same period, Pintrich (2000) proposed a four phases model:

- (1) forethought, planning, and activation;
- (2) monitoring;
- (3) control;
- (4) reaction and reflection.

Which makes Pintrich's model special is that he incorporated the idea that people can control their behavior into his theory (Panadero, 2017). Then, Efklides (2011) introduced the metacognition into SRL and developed the Metacognitive and Affective Model of Self-Regulated Learning, which contains two levels: the Person level and the Task × Person level. Since Zimmerman's (2000, 2009) cyclical phases model has a comprehensive content and is adopted by many scholars, this study investigates the factors that can impact three phrases of this model.

Previous research indicates that SRL plays an important role in individuals' development and achievements. Firstly, SRL are related to students' learning behavior and can be a positive predictor of academic achievement. Highly self-regulated students are more likely to spend more time on studying and read more materials than other students (Abar & Loken, 2010). Learners who have high abilities can use effective self-regulation strategies to support them to gain remarkable achievements (Dent & Koenka, 2016; Mega et al., 2014; Zimmerman, 1990). For example, SRL has a significant impact on English language learning achievement (Bai & Wang, 2020). In the flipped classroom environment, SRL positively affects students' performance and improve their achievement (Zheng & Zhang, 2020). Secondly, SRL is connected with the career development. Through SRL process, young people can build and develop their employability (Hsu et al., 2021) which can help individuals attain sustainable employment (Rothwell et al., 2008). Considering the huge influence of SRL on individual development and achievement, it is necessary to cultivate learners' SRL.

## **Learning Motivation and Self-regulated Learning**

Motivation is a power that can drive and maintain individuals moving towards the goals (Cook & Artino, 2016). When equipped with the drive, students have an internal or external intention to participate in learning activities and make efforts to achieve goals, which can be defined as 'learning motivation' (Lin et al., 2017). As a driver, motivation can foster students to pursue high academic achievement (Mega et al., 2014; Pintrich, 2003). Considerable studies try to explain students' motivation. Self-efficacy theory indicates that self-efficacy, individuals' belief about their abilities to finish the task, is related to achievement behaviors (Bandura, 1977, 1993). According to attribution theory, attributions have the impact on students' future behaviors and efforts

towards success (Weiner, 1985). Referring to self-worth theory, students tend to maintain and improve self-worth, which is a sense of worth and respect (Covington, 1984). Achievement goal theory states that students' performance reflects their desire to achieve goals and there are two kinds of learning (mastery-oriented and task-oriented) (Dweck & Leggett, 1988). Based on these theories, students' motivation can be constructed as five behavioral and emotional patterns: mastery, failure avoidance, learned helplessness, work meaning, and passive-aggressive patterns (Seifert, 2004). Learning motivation (i.e. self-efficacy, task strategies, and intrinsic value) has a clear connection with SRL. Self-efficacy can affect the use of SRL strategies (Bai & Wang, 2020; Liem et al., 2008; Pintrich & De Groot, 1990) and students with high self-efficacy are more likely to have a high SRL ability (Kim et al., 2015). Task strategies includes the ability to plan, monitor and adjust (Littlejohn, 2017), which can be seen as the process of SRL. Intrinsic value is highly related to the use of cognitive strategies (Pintrich & De Groot, 1990) and can be used to predict students' SRL ability (Bonney et al., 2008; Durik et al., 2005;). Considering the close relationship between learning motivation and SRL, it would be necessary to cultivate and keep students' motivation to develop SRL ability effectively.

### **Self-regulated Learning Climate and Self-regulated Learning**

Self-regulated learning climate originates from 'self-regulatory climate', which refers to three school norms: faculty trust, student trust, and academic emphasis (Adams, Forsyth, et al., 2015; Adams, Ware, et al., 2016). The definition of 'self-regulatory climate' only focused on the school, teachers and students themselves. Based on 'self-regulatory climate', the term 'self-regulated learning climate' can be defined as a kind of psychological atmosphere created by the teacher-student interaction and the student-student interaction. As an environmental factor, self-regulated learning climate can affect the students' use of SRL strategies. In the teacher-student interaction level, teachers' emphasis on learning, teachers' trust on students, and students' trust on teachers in the teaching process can have direct or indirect effects on SRL (Lee et al., 2019). Teachers' personal characteristics and educational characteristics have the impact on SRL (Jouhari et al., 2015). Also, teachers are important factors to improve students' SRL (Dignath & Büttner, 2018). Teachers' language and behavior related to SRL can foster children's SRL performance when they participate in the reading and writing activities (Perry et al., 2002). In the student-student level, the peers play an important on students' SRL. Peer discussion (Jones et al, 2008), peer feedback (van den Boom et al., 2007), peer support (Latipah et al., 2021), and peer assistance (Lin et al., 2016; Whitebread et al., 2007) have a positive influence on learners' SRL. Understanding the role of teachers and peers can further guide the establishment of a good learning environment and the cultivation of individuals' SRL ability.

#### **This Case Study**

To further understand the influence of different factors on SRL, this study investigated Chinese undergraduates adopting the Zimmerman's (2000, 2009) cyclical phases model and focused on two specific factors: learning motivation and self-regulated learning climate. This study was designed to answer two research questions:

- 1 How does learning motivation influence three phases of SRL?
- 2 How does self-regulation learning climate influence three phases of SRL?

## Method

### Participants

In this study, 13 undergraduates from different Chinese universities were selected. The participants consisted of 6 males and 7 females aged 18 to 22 and studies in Year One, Two, Three and Four in 13 universities in 8 provinces in China. The participants majored in Social Sciences such as Education, Sociology as well as in Sciences such as Computer, Psychology. Participants are labelled as S1 to S13 (see Table 1).

Table 1. Demographic Information

	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
<b>Gender</b>	female	male	male	female	female	male	male	female	female	male	male	female	female
<b>Year</b>	1	2	2	2	2	3	3	3	3	4	4	4	4
<b>Major</b>	Psychology	Accounting	Chemistry	Education	Psychology	Computer	Sociology	Education	Animation	Computer	Computer	Medicine	Law
<b>Region</b>	Sichuan	Henan	Liaoning	Guangdong	Henan	Hebei	Henan	Inner Mongolia	Tianjin	Shandong	Liaoning	Tianjin	Shandong

### Data Collection

Individual 30 to 40 minutes semi-structured interviews were conducted and audio-recorded by the first author with consent from each participant. The 13 individual interviews were conducted and transcribed in Chinese. Only participants' cited responses were translated into English for this paper.

The interview protocol consisted of 12 interview questions. The first three questions were used to deepen participants' understanding of relevant concepts (self-regulated learning, learning motivation, and self-regulated learning climate). The rest core interview questions were used to explore the impact of learning motivation and self-regulated learning climate on different stages of SRL. Since the participants were undergraduates, the learning context was set in higher education.

### Data Analysis

This study applied thematic analysis to organize and report themes within the data (Braun & Clarke, 2006). Before analyzing data from transcriptions, the accuracy of transcriptions was double checked by comparing the recordings with the transcribed texts by the first author. Then, the transcribed interview data were analyzed by a standard thematic coding process (Braun & Clarke, 2006). The thematic codes were mainly categorized into three themes: self-regulated learning, learning motivation, and self-regulated learning climate. The codes for self-regulated learning were further divided into three sub-themes: forethought, performance, and self-reflection. The codes for self-regulated learning climate were divided into two sub-themes: teacher-student interaction and student-student interaction.

## Findings and Discussion

According to Zimmerman's (2000, 2009) cyclical phases model, the process of self-regulated learning can be divided into three cyclical phases: forethought, performance, and self-reflection. The influences of learning motivation and self-regulated learning climate on each learning stage are as follows.

### The Influence of Learning Motivation on Self-regulated Learning

#### *The Influence of Learning Motivation on Forethought*

All participants (n = 13) reported that learning motivation had a clear impact on forethought. As S3 and S7 noted:

*I think learning motivation has a significant influence on goal setting. For example, if you are learning passively, like just to complete the teacher's task, the learning goal may not be set too high. However, if learning motivation is to improve yourself and make yourself a better person, maybe you set a higher goal. Thus, different learning motivations will lead to different learning goals. – S3*

*There are mainly two aspects. The first one is that if your motivation is high, you may set a high learning goal. However, if your learning motivation is low, your learning goals may also be low. – S7*

S3 thought that active learning and passive learning could lead to different goal setting. S7's statement demonstrates that different levels of motivation can influence the way students set goals. Participants' responses show that learning motivation can affect goal setting in forethought stage.

#### *The Influence of Learning Motivation on Performance*

Most of the participants (n = 12) believed that learning performance could be affected by motivation. Taking S5, S8, and S12 as examples:

*I think that motivation can influence my learning concentration and efficiency. For instance, when I was in high school, I needed to study mathematics. I hated it so my level of motivation wasn't high enough, which caused that my mind strayed during the lesson. However, when I do something I love, such as studying Photoshop, I will be completely absorbed in this matter. – S5*

*If your motivation is to find a decent job, you will study harder and try to get a top grade. However, if your aim is just to graduate, you may spend less time studying and feel satisfied easily. I think the major factor affecting performance is motivation. – S8*

*In my opinion, if my motivation is strong, it will push me forward and force me to finish the tasks in time. However, if the motivation is not strong, I may put off the work till tomorrow. – S12*

S5 believed that motivation could affect concentration. In S8's response, motivation could influence efforts devoted to learning. For S12, learning motivation was like a promoter. From participants' answers, motivation has powerful impact on learning performance.

Only one participant reported that motivation did not affect learning performance.

*I don't think that learning motivation can influence my performance. Although I want to study hard to get a nice job in the future, I still spend little time on it because I am lazy. – S1*

S1's statement demonstrates that her learning performance cannot be influenced by motivation because of her personality, such as laziness. It is reasonable to infer that personality may act as a moderator in the effect of learning motivation on performance.

#### *The Influence of Learning Motivation on Self-reflection*

All participants (n = 13) reported that motivation played an important role in self-reflection. S2, S7, and S10 reported that:

*If the motivation is strong and the goal is important for me, I would reflect carefully and think about what part is not good enough and how I can make it better. Nevertheless, if the motivation is not strong, maybe I would not reflect. – S2*

*I believe that if you are active in learning, you are more likely to have a self-reflection and you are willing to reflect. However, if you aim to finish the work that others like teachers tell you to do, you will not reflect. – S7*

*I think that motivation can influence reflection and conversely, reflection can affect motivation. For example, after the examination, I would consider whether I have achieved my goal and what I can learn from this process. Then I will change my motivation and goal based on reflection. – S10*

For S2, the strength of motivation will affect self-reflection. S7 thought that active learning was more conducive to reflection than passive learning. S10's statement demonstrates that motivation and reflection can influence each other. Participants' responses indicate that a clear connection exists between learning motivation and self-reflection.

Learning motivation has a significant impact on forethought, performance, and self-reflection. The results are consistent with previous studies (Bai & Wang, 2020; Bonney et al., 2008; Durik et al., 2005; Kim et al., 2015; Liem et al., 2008; Littlejohn, 2017; Pintrich & De Groot, 1990) that motivation can affect SRL. However, individuals' personality may affect the influence of learning motivation on SRL. Some personalities, such as laziness, may hinder the function of learning motivation, and affect learning performance at the same time.

#### **The Influence of Self-regulated Learning Climate on Self-regulated Learning**

##### *The Influence of Teacher-student Interaction on Forethought*

The majority (n = 10) of participants mentioned that the teacher-students interaction had an impact on forethought. Take S6, S10, and S11 as examples.

*An excellent teacher does not only teach students knowledge but also teaches students learning ideas and methods. Those ideas and methods can affect our goal setting. – S6*

*The influence of teachers is important. Teachers are like a guide and their knowledge and spirit may determine your horizon. Also, the materials and some ideas are mainly from teachers. Thus, I believe teachers have a huge influence. – S10*

*The personality of teachers may have an influence. For example, if I have a strict teacher, I would set a higher goal. – S11*

S6 thought that the value that teacher taught has an important role in students' goals. For S10, teachers' guides will have an impact on students' forethought stage. In S11's response, the teacher's personality will also have an influence. Participants' responses show that teacher-student interaction can affect forethought in SRL. However, 3 participants (S1, S9, and S13) believed that their forethought has no relationship with teachers. S1 and S9 reported that:

*I don't think teachers can influence my goal setting because they just read the books during the classes. They are like a machine and they can't change what I want to do. – S1*

*I can't think about the connection between teachers and forethought because there is little interaction between students and teachers. – S9*

They believed that their forethought could not be affected by their teachers because of the teachings' boring style and the limited teacher-student interaction.

#### *The Influence of Teacher-student Interaction on Performance*

Most participants (n = 11) reported that teachers had an impact on their learning performance. As S5 and S7 noted:

*If the teacher attaches great importance to the subject, I would be more careful and serious when I am studying. However, if the teacher emphasizes the importance of learning, I would not focus on studying. – S5*

*I think teachers can inspire students to learn. Teachers' encouragement can make students love studying. Conversely, excessive criticism will make students tired of learning. Therefore, the different performances of teachers have different influences on students' learning performance. – S7*

S5's statement indicates that the teacher's emphasis on learning will affect students' performance. S7 believed that encouragement or criticism from teachers could influence learning performance. Similar to S5 and S7, other participants reported that the interaction with the teacher can affect their performance.

#### *The Influence of Teacher-student Interaction on Self-reflection*

Many participants (n = 10) argued that teachers were one of the key factors that can affect self-reflection. S3, S7,

and S10 reported that:

*In fact, we students rarely reflect. However, if teachers can impart some ideas about the importance of reflection to students, we are more likely to have a self-reflection. – S3*

*I think a good teacher can make an appropriate comment to me. Based on the feedback, I can clearly find where I am and what I get. It's beneficial for my self-reflection. – S7*

*Teachers can give you some advice, which can help you reflect. – S10*

For S3, teachers' requirements influence students' self-reflection. S7's statement indicates that self-reflection can be promoted by teachers' feedback. S10 believed that teacher's advice was important to self-reflect. Many participants agreed that teacher-student interaction influences their self-reflection.

### **The Influence of Student-student Interaction on Self-regulated Learning**

#### *The Influence of Student-student Interaction on Forethought*

Almost all participants (n = 12) reported that other students can affect their forethought. Take S3, S7, and S9 as examples.

*It depends on the atmosphere and ability my classmates have. If your classmates and friends dislike learning and their grades are low, you may not set a high goal and just set a low goal and play with them all day. However, if you take one of your friends or classmates as a good example, you are more likely to set a higher goal and try your best to achieve this goal. – S3*

*I think there are two kinds of students. The first one is the partners. They can help you set a goal and help you when you are in trouble. The second kind is competitors. You may set a higher goal than theirs to surpass them. – S7*

*There is a word called like-minded. If your friends are crazy about studying, you may set a high goal under their influence. However, if your friends are lazy, you may become one of them. – S9*

S3 thought the atmosphere peers built and the ability peers had could influence goal setting. S7's statement shows that the kinds of classmates can cause different goals. For S9, friends who share the same value can affect forethought. Participants believed that the interaction and relationship between them and their friends or classmates have a clear impact on their forethought.

#### *The Influence of Student-student Interaction on Performance*

The majority of participants (n = 12) think that other students play a vital role in performance. As S2, S7, and S13 noted:

*When I was in class, I can be affected by other students' performance. For example, if they play mobile phones or sleep during classes, I would not focus on the lesson. – S2*

*I think that what friends can do is to encourage you to concentrate on studying. Competition among classmates will also inspire you to learn. Both of them can motivate you to achieve the goal. – S7*  
*For example, if my roommates all wake up late, I may do the same thing. But if others get up early and go to the library, I would join them. I feel guilty if I don't do this. – S13*

S2 thought that other students' performance could influence his own performance in SRL. S7 believed that cooperation and competition both had impact on performance. For S13, the atmosphere roommates build can affect performance. Participants reported that the interaction between students can affect learning performance.

One participant (S1) argued that performance can not be influenced by student-student interaction.

*They can not influence me. I am not a social person and the distance between me and them seems to be across the Pacific Ocean. How can they affect me? – S1*

S1's statement indicate that other students can not affect learning performance because of personality and the distant relationship with classmates.

#### *The Influence of Student-student Interaction on Self-reflection*

Most participants (n = 11) reported that the interaction between students had a clear impact on self-reflection. Take S5 and S8 as examples.

*If my friends pay attention to reflection and emphasis the importance of self-reflection, I would like to reflect under his influence. – S5*  
*For example, when you have a conversation with other students about their reflection, you may find something you neglected, which can help you promote reflection. – S8*

For S5, the attitude that other students had towards reflection played an important role on self-reflection. S8 thought self-reflection could be improved by communication with others. Participants' reports indicate that the interaction (e.g. attitude, communication) between peers can affect self-reflection.

Two parts (teacher-student interaction and student-student interaction) of the self-regulated learning climate can affect forethought, performance, and self-reflection. These findings were supported by the work of other researchers (Latipah et al., 2021; Lee et al., 2019; Lin et al., 2016; Jones et al, 2008; Jouhari et al., 2015; van den Boom et al., 2007; Whitebread et al., 2007). However, the reports also indicate that the influence of teacher-student interaction on SRL can be affected by the level of teacher-student interaction. Limited communication between teachers and students can hinder the influence of teacher-student interaction on forethought. Also, the relationship between students can affect the influence of student-student interaction on SRL. The limited communication with classmates may make it difficult for individuals to enjoy the positive SRL climate created by other students, which may limit the influence of student-student interaction on performance.

## **Conclusion**

This study investigated the influence of learning motivation and self-regulated learning climate on three cyclical SRL phases: forethought, performance, and self-reflection (Zimmerman, 2000; Zimmerman & Moylan, 2009). The results of qualitative data indicate that both learning motivation and self-regulated learning climate can significantly influence the forethought, performance, and self-reflection. This research also find that individuals' personality may impact how learning motivation influences performance and few teacher-student interactions and little student-student communication can limit the influence of self-regulated learning climate on SRL. These findings provide a deeper insight on SRL and how learning motivation and self-regulated learning climate affect SRL. However, this study has some limitations. The scope of this study was limited in terms of the small sample size. The participants only consist of 13 universities so it is not representative enough to show SRL among undergraduates. Therefore, future research is recommended to prove the findings of current study with larger samples and more studies can be conducted in different educational background.

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