Teacher support and intrinsic motivation: The mediating roles of enjoyment, anxiety, and self-efficacy

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Little is known about the mechanisms underlying the relation between perceived teacher emotional support and intrinsic motivation to learn English. The primary purpose of this quantitative, cross-sectional correlation study was to examine the mediating effects of foreign language enjoyment, anxiety, and self-efficacy on the relationship between Chinese college students’ perceptions of teacher emotional caring and intrinsic motivation in EFL classrooms.

Undergraduates ($N = 1,464$) enrolled in six public four-year universities in mainland China completed five student self-report questionnaires. Data were analyzed using an ordinary least squares (OLS) regression-based path analysis with the PROCESS macros for SPSS and utilizing the Amos program version 26.0 for structural equation modeling (SEM) with maximum likelihood method. Five specific indirect effects of emotional support from teachers on intrinsic motivation to learn English were tested. Specifically, the five indirect effects (or mediating) pathways were hypothesized as: (1) teacher emotional support to enjoyment to intrinsic motivation, (2) teacher emotional support to anxiety to intrinsic motivation, (3) teacher emotional support to self-efficacy to intrinsic motivation, (4) teacher emotional support to
enjoyment to self-efficacy to intrinsic motivation, and (5) teacher emotional support to anxiety to self-efficacy to intrinsic motivation.

Results of mediation analyses revealed that foreign language enjoyment and anxiety independently mediated the relationship between teacher emotional support and intrinsic motivation to learn English. However, self-efficacy did not independently mediate the effect of teacher emotional caring on intrinsic motivation. Further, there was evidence of mediating pathways from teacher emotional support to intrinsic motivation through enjoyment then to self-efficacy as well as anxiety then to self-efficacy. Additionally, when estimating the mediation model, the results are the same whether SEM or an OLS regression is used. The findings of the present research make a contribution to the SLA motivation literature and add additional support for the Self-Determination Theory (SDT). I discuss implications and limitations as well as recommendations for future search.

*Keywords:* teacher emotional support, enjoyment, anxiety, self-efficacy, intrinsic motivation
DEDICATION

I want to take this opportunity to thank my whole family in Taiwan and dedicate this dissertation to them. My parents value education greatly and have always demonstrated tremendous faith in me in whatever I do. They love me unconditionally and have supported me both morally and financially whenever I needed anything. Likewise, my siblings have helped me in many ways, always letting me know that they will be ready to bolster me, regardless of the decision I make. Without their infinite support and encouragement, I could not have completed this work.
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It has been a long journey and now I want to take this opportunity to thank my dissertation chair and committees. They have all encouraged and supported me immeasurably, and it would be impossible to have a better committee members. My dissertation chair, Dr. Tianlan Wei, spent enormous hours reading the various drafts, always providing me invaluable feedback which let my research and writing to progress in quality. I especially want to thank her for her patience with me. Moreover, I want to thank Dr. Larry Abernathy (Ty), Dr. Jianzhong Xu, and Dr. Katarzyna Gallo (Kasia). Whenever I had a question or needed assistance, they were always willing to lend support. I really appreciate their help.
TABLE OF CONTENTS

DEDICATION ..................................................................................................................... ii

ACKNOWLEDGEMENTS ................................................................................................ iii

LIST OF TABLES ........................................................................................................... viii

LIST OF FIGURES ........................................................................................................ ix

CHAPTER

I. INTRODUCTION ........................................................................................................ 1

   Background of the Study ........................................................................................... 1
   Statement of the Problem ......................................................................................... 3
   Purpose of the Study ................................................................................................. 4
   Research Hypotheses ............................................................................................... 5
   Significance of the Study .......................................................................................... 6
   Rationale for Methodology ....................................................................................... 7
   Definition of Terms ................................................................................................... 7
   Summary ................................................................................................................... 9

II. LITERATURE REVIEW ............................................................................................. 10

   Introduction ............................................................................................................... 10
   Theoretical Framework ............................................................................................ 11
   Review of the Literature .......................................................................................... 16
       Teacher Emotional Support as Predictor of Motivation ....................................... 16
       Anxiety as Predictor of Motivation ...................................................................... 18
       Enjoyment as Predictor of Motivation .................................................................. 19
       Relations between Teacher Support and Anxiety ................................................. 21
       Relations between Teacher Support and Enjoyment ............................................ 22
       Relations between Enjoyment and Self-efficacy ............................................... 23
       Relations between Anxiety and Self-efficacy ....................................................... 24
       Self-efficacy as Mediator of Teacher Support in Motivation ............................... 25
       Control Variables ................................................................................................. 26
   Summary ................................................................................................................... 27

III. METHODOLOGY ...................................................................................................... 28
IV. RESULTS

Introduction .................................................................42
Demographics Findings .................................................43
Statistical Assumptions ..................................................49
  Linearity ..................................................................49
  Normality ..................................................................51
  Independent Errors .....................................................52
  Homoscedasticity .......................................................52
  Normally Distributed Errors .........................................53
  Multicollinearity .........................................................54
  Multivariate Outliers ..................................................56
  Items per Construct ....................................................57
Preliminary Analyses ......................................................58
  Measures of Reliability ...............................................58
  Descriptive Findings and Correlations among Measures ....59
Results ........................................................................61
  OLS Regression ........................................................61
    Hypothesis 1 ..........................................................62
    Hypothesis 2 ..........................................................63
    Hypothesis 3 ..........................................................63
    Hypothesis 4 ..........................................................64
Hypothesis 5. ...........................................................................................................65
Structural Equation Modeling (SEM) .................................................................69
Summary.............................................................................................................74

V. DISCUSSION ...................................................................................................75

Introduction and Summary of the Study .........................................................75
Summary of Findings and Conclusion .................................................................78
Hypothesis 1 (Indirect Effect 1) ........................................................................78
Hypothesis 2 (Indirect Effect 2) ..........................................................................80
Hypothesis 3 (Indirect Effect 3) ..........................................................................82
Hypothesis 4 (Indirect Effect 4) ..........................................................................84
Hypothesis 5 (Indirect Effect 5) ..........................................................................86
Implications for Practice ......................................................................................88
Limitations ..........................................................................................................89
Recommendations for Future Research .............................................................90

REFERENCES .....................................................................................................91

APPENDIX

A. THE ENGLISH VERSION OF DEMOGRAPHIC SURVEY INFORMATION ....117
B. THE CHINESE VERSION OF THE DEMOGRAPHIC SURVEY QUESTIONS .....119
C. THE ENGLISH VERSION OF THE CLASSROOM LIFE MEASURE INSTRUMENT OF TEACHER EMOTIONAL SUPPORT ..................................................121
D. THE CHINESE VERSION OF THE CLASSROOM LIFE MEASURE INSTRUMENT OF TEACHER EMOTIONAL SUPPORT ..................................................123
E. THE ENGLISH VERSION OF THE FOREIGN LANGUAGE ENJOYMENT SCALE (CFLES) ................................................................................................................125
F. THE CHINESE VERSION OF THE FOREIGN LANGUAGE ENJOYMENT SCALE (CFLES) ................................................................................................................127
G. THE ENGLISH VERSION OF THE FOREIGN LANGUAGE CLASSROOM ANXIETY SCALE (FLCAS) ..........................................................................................130
H. THE CHINESE VERSION OF THE FOREIGN LANGUAGE CLASSROOM ANXIETY SCALE (FLCAS) ..........................................................................................132
I. THE ENGLISH VERSION OF THE MOTIVATED STRATEGIES FOR LEARNING QUESTIONNAIRE OF SELF-EFFICACY SUBSCALE ................................135
J. THE CHINESE VERSION OF THE MOTIVATED STRATEGIES FOR LEARNING QUESTIONNAIRE OF SELF-EFFICACY SUBSCALE...........................................137

K. THE ENGLISH VERSION OF THE MOTIVATED STRATEGIES FOR LEARNING QUESTIONNAIRE OF INTRINSIC MOTIVATION SUBSCALE ............140

L. THE CHINESE VERSION OF THE MOTIVATED STRATEGIES FOR LEARNING QUESTIONNAIRE OF INTRINSIC MOTIVATION SUBSCALE ..........142

M. SELECTED TABLES OF CRITICAL VALUES FROM JOHNSON AND YOUNG (1988).....................................................................................................................144
LIST OF TABLES

1. Demographic Information of Participants (N = 1,464)..................................................45
2. Ethnicity for the Total Sample of the Present Study (N = 1,464)..............................48
3. Summary of Normality Statistics..................................................................................51
4. Summary of Multicollinearity Statistics (N = 1,464) ...........................................55
5. Descriptive Statistics and Intercorrelations for Study Variables (N = 1,464)..........60
6. Model Summary Information for the Proposed Mediation Model Portrayed in Figure 3(N = 1,464)..........................................................................................67
7. Summary of the Mediation Model Analysis................................................................68
8. Model Fit Summary: Goodness-of-fit Statistics for the Proposed Mediation Model Portrayed in Figure 3 .............................................................................................................71
9. Structural Equation Modeling versus OLS Regression: Model Summary Information for the Proposed Mediation Model Depicted in Figure 3(N = 1,464)......................72
LIST OF FIGURES

1. The conceptual model in which the effect of teacher support on intrinsic motivation is mediated by enjoyment, anxiety, and self-efficacy.................................................................4

2. The SDT continuum of relative autonomy, showing types of motivation, types of regulation, and the degree of relative autonomy (Ryan and Deci, 2016, p.102). ...............14

3. The statistical model in which the effect of teacher emotional support on intrinsic motivation is mediated by enjoyment, anxiety, and self-efficacy. ........................................36

4. Matrix scatterplot of the relationships between intrinsic motivation, teacher emotional support, enjoyment, and anxiety. ........................................................................50

5. Matrix scatterplot of the relationships between intrinsic motivation, self-efficacy, age of starting learning English, and English level.................................................................50

6. Scatterplot of ZRESID vs. ZPRED................................................................................53

7. Histogram of the standardized residuals to assess the assumption of normality. ........54

8. Model summary information for the hypothesized mediation model portrayed in figure 3 (N = 1,464). ........................................................................................................73
CHAPTER I
INTRODUCTION

Background of the Study

In the global society of the 21st Century, acquiring a foreign or second language (L2) has become an imperative for students to succeed in school and their future career. With the rise of the United States as the global economic superpower, English has become a world language (e.g., Crystal, 2012; Graddol, 2008). English is now taught as the primary foreign language in more than 100 countries (e.g., China, Germany, Japan, Spain, South Korea, Russia, and France). As a consequence, English is recognized and reported to be spoken and learned internationally by a larger population than any other language worldwide (Crystal, 2012).

According to Grosjean (2010), over half of the world population is bilingual. Mainland China has the highest second language acquisition (SLA) population, with over 200 million students. Among those, approximately 13 million L2 learners are college students (Pan & Block, 2011). The emergence of English as a global language is heavily influencing English language education policies and practices in mainland China. Courses in learning English as a foreign language (EFL) are mandatory for all school students in mainland China. Therefore, English proficiency has played an essential and critical role in the success of all Chinese students. However, SLA scholars have stated that in mainland China, many students are facing great challenges with learning English (Zheng, Liang, Li, & Tsai, 2018), and many teachers are struggling to motivate their students to learn and engage in EFL classrooms (Lamb, 2017).
The literature consistently shows that intrinsic motivation is one of the most powerful constructs of predicting students’ academic achievement in a wide range of domains, including SLA (e.g., de Burgh-Hirabe, 2019; Dörnyei & Kubanyiova, 2014; Froiland & Worrell, 2016; Gardner & Lambert, 1959; Taylor et al., 2014). According to self-determination theory (SDT; Deci & Ryan 1985; Ryan & Deci, 2000), intrinsic motivation is often linked with deep learning, creativity, and better performance on complex or difficult tasks requiring heuristics or high quality engagement. However, Ryan and Deci (2017) have claimed that students’ “intrinsic motivation declines over the school years” (p. 356). This raises questions regarding the kind of efforts that can be made in learning environments to facilitate students’ intrinsic motivation to learn and engage in the classrooms. In line with SDT’s assumptions, previous research in multiple fields such as education, psychology, and educational psychology has demonstrated that intrinsic motivation can be promoted by emotional support from teachers (Fan, 2011; Wang & Eccles, 2013; Wentzel, Muenks, McNeish, & Russell, 2017). In addition, past studies have shown that teacher support also has been positively related to students’ enjoyment of learning (King, McInerney, & Watkins, 2012; Skinner, Furrer, Marchand, & Kindermann, 2008) and academic self-efficacy (Wentzel et al., 2017; Yıldırım, 2012), but negatively associated with students’ academic emotion of anxiety (Huang, Eslami, & Hu, 2010; Piechurska-Kuciel, 2011; Weymouth & Buehler, 2018). In SLA motivation literature, however, little attention has been paid to examining how students’ perceptions of teacher emotional support affect intrinsic motivation in EFL classrooms (Henry & Thorsen, 2018).

Scholars have also investigated the link between positive and negative academic emotions and intrinsic motivation. It has been shown that intrinsic motivation influences the positive academic emotion of enjoyment and the negative academic emotion of anxiety.
Specifically, intrinsic motivation has been related positively to academic emotion of enjoyment but negatively to academic emotion of anxiety (MacIntyre & Vincze, 2017; Pekrun, 2006; Pekrun, Goetz, Titz, & Perry, 2002; Ryan & Deci, 2017). Empirical evidence suggests that intrinsically motivated L2 learners are more likely to experience lower anxiety (Horwitz, 2010; Gardner, 1985), greater academic self-efficacy (Busse, 2013; Joe, Hiver, & Al-Hoorie, 2017), and enjoyment of learning (Saito, Dewaele, Abe, & In’nami, 2018). Even though much is known regarding relationships between teacher emotional support, anxiety, enjoyment, self-efficacy, and intrinsic motivation, much less is known regarding the mechanisms underlying teacher emotional support in intrinsic motivation through potential multiple intervening variables (i.e., mediators) such as enjoyment, anxiety, and self-efficacy.

**Statement of the Problem**

Prior to the present study, it was not known if and to what extent Chinese college students’ perceptions of emotional support from teachers facilitated intrinsic motivation in English learning through the potential mediators of enjoyment, anxiety, and self-efficacy. The present study contributes to solving this research problem by proposing a parallel and serial mediation model as depicted in Figure 1. This mediation model was developed based on the results of the literature review. In this mediation model, it is posited that teacher emotional support has one total effect, one direct effect, and five indirect effects on intrinsic motivation. The main interest of the current research was the five specific indirect effects of emotional support from teachers on intrinsic motivation. More specifically, the five indirect effects (or mediating) pathways are hypothesized as: (1) teacher emotional support to enjoyment to intrinsic motivation, (2) teacher emotional support to anxiety to intrinsic motivation, (3) teacher emotional support to self-efficacy to intrinsic motivation, (4) teacher emotional support to...
enjoyment to self-efficacy to intrinsic motivation, and (5) teacher emotional support to anxiety to self-efficacy to intrinsic motivation. More details about how to quantify and estimate these five indirect effects of teacher emotional support on intrinsic motivation are discussed in Chapter 3.

Figure 1. The conceptual model in which the effect of teacher support on intrinsic motivation is mediated by enjoyment, anxiety, and self-efficacy.

Purpose of the Study

The primary purpose of this quantitative, cross-sectional correlation study was to examine whether, and to what degree, teacher emotional support promotes Chinese college students’ intrinsic motivation in English learning through the potential mediators of enjoyment, anxiety, and self-efficacy. Data were collected from six public four-year universities located in
mainland China. To test the research hypotheses, based on the research problem, data were analyzed using an ordinary least squares (OLS) regression-based path analysis with the PROCESS macros for SPSS (see Hayes, 2018; Preacher & Hayes, 2008) and using the Amos program version 26.0 (Arbuckle, 2017) for structural equation modeling (SEM) with maximum likelihood method to estimate and test the total, direct, and indirect effects.

**Research Hypotheses**

The research hypotheses were constructed to reflect the problem statement. In particular, there were five research hypotheses aligning with the proposed mediation model of the study (see Figure 1). In this study, the predictor variable is Chinese EFL learners’ perceived emotional support from teachers, and the outcome variable is intrinsic motivation to learn English. In addition, enjoyment, anxiety, and self-efficacy toward English learning are the potential intermediary variables (i.e., mediators). The following five hypotheses guided the current study:

**Hypothesis 1:** Chinese EFL learners’ perception that their teachers care about them contributes to increased enjoyment of English learning, which in turn promotes their intrinsic motivation to learn English.

**Hypothesis 2:** Chinese EFL learners’ perception that their teachers care about them alleviates learners’ anxiety toward English learning, which in turn facilitates their intrinsic motivation to learn English.

**Hypothesis 3:** Chinese EFL learners’ perception that their teachers care about them contributes to an increase in self-efficacy, which in turn promotes learners’ intrinsic motivation to learn English.
Hypothesis 4: Chinese EFL learners’ perception that their teachers care about them contributes to an increase in enjoyment and self-efficacy sequentially, with greater enjoyment helping to develop higher self-efficacy, which in turn increases intrinsic motivation to learn English.

Hypothesis 5: Chinese EFL learners’ perception that their teachers care about them contributes to decreased anxiety and increased self-efficacy sequentially, with lower anxiety helping to develop greater self-efficacy, which in turn fosters intrinsic motivation to learn English.

**Significance of the Study**

EFL courses are required in all undergraduate programs in mainland China. At the same time, EFL teachers and students are faced with many challenges in teaching and learning English in the classroom (Lamb, 2017; Zheng et al., 2018). Motivation theorists contend that intrinsic motivation is one of the most important factors to propel and motivate students to learn. There is also evidence suggesting that teacher emotional support can facilitate students’ intrinsic motivation development (Deci & Ryan 1985; Ryan & Deci, 2000). Further evidence also shows that enjoyment, anxiety, and self-efficacy have been related to teacher support and intrinsic motivation (Pekrun & Linnenbrink-Garcia, 2014; Ryan & Deci, 2017). However, to my best knowledge, in SLA motivation literature, no research has been conducted on the effect of teacher emotional support on intrinsic motivation through the potential mechanisms of enjoyment, anxiety, and self-efficacy.

The present study contributed to the understanding of the potential mediating roles of enjoyment, anxiety, and self-efficacy on the effect of teacher emotional support on Chinese college students’ intrinsic motivation in English classroom. The findings from the research will
help mainland China’s English education teachers, policy makers, and leaders to overcome the aforementioned problems existing in EFL acquisition. Finally, the implications of the potential results and practical applications from the research will also be added to the current SLA motivation literature.

**Rationale for Methodology**

A correlational research design utilizing a mediation model was employed in this quantitative study to investigate how teacher emotional support transmits its effect on intrinsic motivation through intervening variables or “mediators” (enjoyment, anxiety, and self-efficacy in this case). Correlational research is often conducted with the intention of predicting possible outcomes and explaining important human behaviors (Fraenkel, Wallen, & Hyun, 2014), thus it is an appropriate and legitimate research design for this study. It is worth noting that although correlation studies do not establish causal relations between variables (Pollack, Vanepps, & Hayes, 2012; Verhulst, Eaves, & Hatemi, 2012), mediation analysis is always used to test the connections between the antecedent, mediator, and consequent variables (e.g., Baron & Kenny, 1986; Hayes, 2018; Mathieu, DeShon, & Bergh, 2008; Stone-Romero & Rosopa, 2010). Therefore, mediation analysis is one of the best statistical methods to examine the research hypotheses of this study.

**Definition of Terms**

The following definitions provide a common understanding of the key terms that are used throughout this study:
**Enjoyment:** Enjoyment refers to an emotional state that is sensed when individuals’ needs both are satisfied and have exceeded their expectations to surprise them (Csikszentmihalyi, 2008).

**Foreign Language Classroom Anxiety (FLCA):** Horwitz et al. (1986) defined Foreign Language Classroom Anxiety (FLCA) as “a distinct complex of self-perceptions, beliefs, feelings and behaviours related to classroom learning arising from the uniqueness of the language learning process” (p. 128).

**Intrinsic Motivation:** Ryan and Deci (2016) defined intrinsic motivation as behaviors that are driven by people’s inner interest and pleasure of engagement. Intrinsically motivated behaviors are entirely volitional and done for people’s own sake.

**Self-Determination Theory (SDT):** The theoretical framework for the present research is Deci and Ryan’s Self-Determination Theory (SDT; Deci & Ryan 1985; Ryan & Deci, 2000), which is one of the most influential contemporary theories of motivation in psychology and educational context.

**Self-efficacy:** Self-efficacy is one of the most researched topics in education, psychology, and educational psychology and is widely considered as a pivotal factor in motivational behaviors (Bandura, 1977, 1989, 1997; Pajares, 1996; Ryan & Deci, 2017). Albert Bandura (1997) defined self-efficacy as “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (p. 3).

**Teacher Emotional Support:** Teacher emotional support is defined as a teacher’s provision of likes and cares about learners (Johnson, Johnson, Buckman, & Richards, 1985).
Summary

This chapter has presented the research problem that needs to be addressed in the SLA motivation literature. Based on the identified research gaps in the current literature, I carried out a quantitative correlational study with a proposed mediation model to test the mechanisms of multiple mediators underlying the relationship between Chinese college students’ perceptions of teacher emotional caring and intrinsic motivation in EFL classroom. The next chapter will focus on the review of the literature pertinent to the research.
CHAPTER II
LITERATURE REVIEW

Introduction

Learning a foreign or L2 can be very stressful and frustrating. There is a growing consensus that students’ motivational orientation plays an important role in academic performance and achievement (Ryan & Deci, 2017; Wentzel & Miele, 2016). Hence, one of the most critical and central issues in SLA field is to seek ways for engaging and motivating students to keep trying when they experience academic challenges and difficulties (Dörnyei, 2009; Gardner, 2010). Previous studies on motivation in SLA have identified a variety of factors such as anxiety (Horwitz, 2010; Gardner, 1985; Gregersen, MacIntyre, & Meza, 2014), enjoyment (Saito et al., 2018), and self-efficacy (Busse, 2013; Joe et al., 2017) that are significantly correlated with L2 motivation. Additionally, empirical evidence also suggests that perceived emotional support from teachers is a powerful predictor of students’ academic motivation and school success (e.g., Roorda, Koomen, Spilt, & Oort, 2011; Wentzel, Battle, Russell, & Looney, 2010; Wentzel et al., 2017). In SLA motivation literature, however, much less is known about how the teacher provision of social support exerts its effect on student motivational orientation (Henry & Thorsen, 2018).

The primary intent of this quantitative research is to address the aforementioned gap in the existing literature. Specifically, I investigated the mediating roles of enjoyment, anxiety, and self-efficacy in the effect of teacher emotional support on Chinese college students’ intrinsic
motivation in relation to EFL learning through a cross-sectional mediation model as schematically portrayed in Figure 1. Mediation analysis is one of the most common and appropriate statistical analytic methods when researchers conduct correlational research (Baron & Kenny, 1986; Hayes, 2018; MacKinnon, 2008). As Hayes nicely illustrated, mediation analyses are the statistical approaches utilized to investigate hypotheses regarding how a potential independent variable (X) exerts its effect on a dependent variable (Y). More detail about testing and quantifying this study’s mediation model, which is beyond the scope of this chapter, will be discussed in chapter three. In the next few sections, I will discuss the theoretical framework of the study, present a review of the literature pertinent to the study, and summarize this chapter.

**Theoretical Framework**

The theoretical framework for the present research is SDT (Deci & Ryan 1985; Ryan & Deci, 2000), which is one of the most influential contemporary theories of motivation in psychology and educational contexts. Although the initial research on SDT can be traced back to 1970s, Deci and Ryan first published a comprehensive discussion of the SDT in 1985. Over the past three decades, SDT has flourished and has been applied to a wide range of domains, including SLA, to investigate students’ motivational orientation (e.g., Noels, Clément, & Pelletier, 1999, 2001; Noels, Pelletier, Clément, & Vallerand, 2000), social community (Chou & Yuan, 2015), industrial workers (Ilardi, Leone, Kasser, & Ryan, 1993), and health care (Ryan, Huta, & Deci, 2008).

SDT is a leading macro-theory of human motivation, wellness, and development which is based on empirical evidence (Deci & Ryan, 2008). SDT posits that humans are built to learn and are endowed by nature with a robust propensity to actively explore the environments around
them. Deci and Ryan (1985) further argued that individuals have three basic psychological needs: (1) autonomy, (2) competence (or self-efficacy), and (3) relatedness. According to SDT, the need for (1) competence refers to equipping with essential capacities to actively probe one’s environment effectively and masterly, (2) autonomy refers to having the freedom to follow one’s own intention and interest, and (3) relatedness refers to having the close and secure interpersonal relationships with individuals around them.

SDT has described these needs as “innate psychological nutriments that are essential for ongoing psychological growth, integrity, and well-being” (Deci & Ryan, 2000, p. 229). People are more likely to be motivated intrinsically when they have experienced the satisfaction of these fundamental psychological needs. In contrast, a greater deterioration of intrinsic motivation often occurs when people perceive the thwarting of these needs. For example, as students receive positive feedback, they tend to maintain their feeling of competence, which, in turn, supports their intrinsic motivation. However, if teachers or parents provide negative feedback, children’s intrinsic motivation will be undermined because they perceive the thwarting of their competence. Similarly, when parents or instructors offer rewards to encourage doing tasks, students’ intrinsic motivation will be decreased due to the feeling of lack of autonomy. Moreover, students who feel relatedness (e.g., being cared for by others; feeling important among others) are apt to display more intrinsic motivation (Ryan & Deci, 2017).

A large number of studies have shown that students’ basic psychological needs for competence, relatedness, and autonomy are critically related to their learning outcomes and motivation in classrooms. For example, Benwar and Deci (1984) conducted an experiment with 40 first year college students who spent approximately three hours studying neurophysiology text materials. Half of participants in the experimental group were informed that they would have the
chance to teach other students what they have learned, and the other half in the control group were informed that they would be tested on what they learn. The results revealed that those in the former group (i.e., who learned in order to teach) earned higher conceptual knowledge scores than those in the latter group (i.e., who learned in order to be examined). The findings also indicated that students who learned in order to teach others have experienced more intrinsic motivation and perceived more autonomy and competence than their counterparts who learned in order to take the exam.

In another experimental study conducted by Grolnick and Ryan (1987), 91 fifth-grade students (48 females, 43 males) from three public elementary schools were asked to read a preliminary-grade-level text. While some children were informed that they would need to tell experimenters about the written material based on their opinions, other were informed that they would be examined by experimenters. While children in the experimental group were not informed that they would be examined on material they were about to read, others in the control group were told that they would be tested based on what they read. Results showed that students in the former group were more intrinsically motivated and the latter group of children felt more controlled. Additionally, this research has also shown that participants who read the material expecting to be examined found the material less interesting and later performed poorly on the conceptual questions than participants expecting not to be examined.

Although many motivation theories (e.g., social cognitive theory and expectancy-value theory) have primarily examined motivation as a concept which is varying in amount rather than type, SDT has devoted substantial attention to the different kind of motivation. According to SDT, there are three different categories of motivation (i.e., intrinsic motivation, extrinsic motivation, and amotivation) with six types of regulation (i.e., intrinsic regulation, integrated
regulation, identified regulation, introjected regulation, external regulation, and nonregulation), and each regulation has different degrees of its autonomy (See Figure 2, Ryan & Deci, 2016, p.102).

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<tr>
<th>Amotivation</th>
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*Figure 2.* The SDT continuum of relative autonomy, showing types of motivation, types of regulation, and the degree of relative autonomy (Ryan and Deci, 2016, p.102).

Intrinsic motivation consists of intrinsic regulation only. People with intrinsic regulation are motivated intrinsically and do activities for their own sake, for the satisfaction and pleasure derived from doing those activities (Ryan & Deci, 2017). People often want to engage in these tasks because they find them enjoyable and interesting. As Ryan and Deci claimed, the intrinsic motivation has the most autonomous regulation of all other types of motivation (Ryan, & Deci, 2016).

Whereas some behaviors are motivated intrinsically, others are motivated extrinsically. One difference between SDT and other theories of motivation is differentiation of extrinsic motivation from intrinsic motivation and categorization of extrinsic motivation into four types of
regulated motivation based on varying degrees of autonomy. In SDT, extrinsic motivation includes integrated regulation, identified regulation, introjected regulation, and external regulation. First, external regulation is the least autonomous type of extrinsic motivation. People for whom motivation is regulated externally often have experiences of being controlled by external contingencies (see Figure 2). Individuals simply perform tasks to receive the rewards or avoid the punishment. For example, students complete a homework assignment to avoid failing the course or to receive a better final grade. Second, introjected regulation is another type of extrinsic motivation and is also controlled. People in this category are extrinsically motivated by internal forces (e.g., anxiety, pride, self-esteem, shame, and guilt). For example, they want to be successful because of self-esteem and/or pride, or they try to avoid failure due to the guilt and/or shame. Because individuals’ behaviors are regulated by these internal forces, introjected motivation is also considered as relatively controlled compared to the following two types of extrinsic motivation: identified regulation and integrated regulation.

The next type of extrinsic motivation is referred to as identified regulation, which is the relatively autonomous type of regulation. In this case, individuals’ motivation is regulated by the value of the behaviors. If people believe that a target behavior is important, they are more likely to engage in it and, in turn, will experience self-endorsement and volition. Finally, integrated regulation is the most autonomous type of extrinsic motivation in SDT. Integrated motivation only happens when people are identifying the value of the activities and are fully self-engagement. Although intrinsic motivation shares the qualities of having full volition with integrated extrinsic motivation, people with intrinsic motivation are approaching the tasks by interest, and individuals with integrated regulation are valuing the outcome that they can yield instead (Ryan, & Deci, 2016).
As shown in Figure 2, the last category of motivation is amotivation which includes only one regulation, i.e., nonregulation. Amotivation refers to a total lack of motivation and intention. Individuals with amotivation have the lowest relative autonomy in SDT.

**Review of the Literature**

L2 learners’ motivation plays the most critical and central role in success in EFL classrooms. Although a plethora of studies focusing on L2 motivation has been conducted over the five past decades, scholars in SLA have considered L2 motivation as an extremely complex, multifaceted construct and have not reached a comprehensive and conclusive agreement (Dörnyei & Ryan, 2015). Thus, we can expect that research in terms of the topic of motivation in SLA will remain popular. Understanding the critical predictors of L2 motivation is both imperative and complex. After a thorough review of the literature, some key antecedents have been identified that significantly shape students’ internal motivation to learn. Based on the empirical evidence in the literature, I proposed a mediation model related to intrinsic motivation which is grounded in the theoretical foundation of SDT.

**Teacher Emotional Support as Predictor of Motivation**

In the classroom, teachers play the pivotal role in imparting knowledge to students and motivating students to learn. Effective teachers tend to develop positive relationships with their students by providing trusting, safe, and emotional close learning environments. Teacher emotional support is defined as the teacher provisions of liking and caring about learners (Johnson, Johnson, Buckman, & Richards, 1985). According to SDT (Deci & Ryan 1985; Ryan & Deci, 2000), individuals have a basic psychological need for relatedness—the feelings of connection with close others (e.g., family, teachers, or friends). Research shows that students’
intrinsic motivation can be maintained or promoted by support from close relatedness such as teachers, peers, and family. In line with SDT principles, teacher emotional caring is a powerful antecedent to predicting students’ intrinsic motivation. Intrinsic motivation is an important factor that can have a positive effect on academically-related outcomes. Ryan and Deci (2016) defined *intrinsic motivation* as behaviors driven by people’s inner interest and pleasure of engagement. Intrinsically motivated behaviors are entirely volitional and done for activities’ own sake. For example, L2 learners with intrinsic motivation tend to engage in challenging tasks because they find doing these tasks inherently enjoyable and interesting. In addition, substantial evidence shows that engaging in activities with intrinsic motivation often contributes to higher-quality of learning and performance (e.g., Benware & Deci, 1984; Skinner, Chi, et al., 2012).

Ample evidence suggests that teachers’ provision of emotional caring is related to increases in students’ motivation (DuBois, Felner, Brand, Adan, & Evans, 1992; Feldlaufer, Midgley, & Eccles, 1988; Midgley, Feldlaufer, & Eccles, 1989; Wentzel, 1994; Wentzel, 1998; Wentzel, 2002; Wentzel et al., 2017). For example, Wentzel, Battle, Russell, and Looney (2010) conducted a cross-sectional correlation study with 358 participants using a survey to examine the relationships between students’ social and academic motivation and students’ perceived multiple classroom supports from teachers and classmates. They learned that both teachers’ and classmates’ support can significantly predict students’ social and academic motivation. Additionally, Wentzel (1997) conducted a longitudinal study with a sample of 248 students to investigate the role of perceived pedagogical caring on motivation to achieve academic and social outcomes over time. Results indicated that students who perceived their teachers as more caring exhibited better motivational outcomes, even after controlling for their previous motivation, beliefs in personal control, and psychological distress. Henry and Thorsen (2018)
carried out an ethnographic study to explore the role of teacher-student relationships in L2 motivation. Results suggested that students who self-reported a positive and close relationship with their teachers displayed greater motivation and engagement in EFL classrooms in Sweden.

Anxiety as Predictor of Motivation

To date, anxiety toward language learning is the most extensively studied negative academic emotion and a continuously interesting research topic in SLA literature (MacIntyre, 2017). Generally speaking, anxiety undermines the intrinsic motivation for difficult and complex tasks such as language learning (Gardner, 1985, 2010; Koga, 2010), statistics achievement (González, Rodriguez, Failde, & Carrera, 2016; Onwuegbuzie & Seaman, 1995), and math performance (Ganley & Vasilyeva, 2014; Miller & Bichsel, 2004). Horwitz et al. (1986) defined Foreign Language Classroom Anxiety (FLCA) as “a distinct complex of self-perceptions, beliefs, feelings and behaviours related to classroom learning arising from the uniqueness of the language learning process” (p. 128). As MacIntyre claimed, the levels of anxiety are relevant to “internal physiological processes, cognitive and emotional states along with the demands of the situation and the presence of other people, among other things, considered over different timescales. Anxiety has both internal and social dimensions” (p. 28), indicating that both personal characteristics and social environment can affect anxiety.

Researchers have also demonstrated anxiety toward language learning is correlated with learner-intrinsic factors and learner-extrinsic factors. Learner-intrinsic factors include L2 motivation (Gardner, Day, & MacIntyre, 1992; Piniel & Csizér, 2013; Teimouri, 2017), self-esteem (Young, 1991), self-efficacy (Cheng, 2002; Woodrow, 2011), personality traits such as perfectionism (Dewaele, 2017; Gregersen & Horwitz, 2002), gender (Aida, 1994; Park & French, 2013), and self-evaluation (Liu, 2006; Mak, 2011). Learner-extrinsic factors, on the
other hand, include social support from teachers and classmates (Huang, Eslami, & Hu, 2010; Jin & Dewaele; 2018). These findings are consistent with self-determination theory principles (SDT; Deci & Ryan 1985; Ryan & Deci, 2000). SDT posits that when students’ basic psychological needs for relatedness, autonomy, and competence are met, they will be more likely to be intrinsically motivated to do complex or difficult tasks, resulting in a greater decrease in anxiety and increase in enjoyment.

**Enjoyment as Predictor of Motivation**

Research on positive emotion of enjoyment has become more and more popular after MacIntyre and Gregersen (2012) first applied the broaden-and-build theory (Fredrickson, 2001, 2003, 2006), which is one of the most influential theories in positive psychology, to SLA research. From broaden-and-build theory’s perspective, positive emotions have a tendency to “broaden people’s momentary thought-action repertoires and build their enduring personal resources, ranging from physical and intellectual resources to social and psychological resources” (Fredrickson, 2003, p. 219). Seligman (2011), the father of positive psychology, also stated that people can call on these aforesaid abiding resources later in their life. Further, MacIntyre and Gregersen (2012) have stressed the importance of positive emotions in language learning. Specifically, they asserted that positive emotions can help L2 learners to alleviate the detrimental effect of negative emotions and foster the development of resilience and perseverance in the face of academic challenges. Moreover, students in a positive emotional state are more curious, innovative, exploratory, and creative, which in turn would be beneficial to language acquisition (Dewaele & MacIntyre, 2016). Nevertheless, the effect of positive emotions on the foreign language classroom is still a relatively new research area in comparison
with research on negative emotions (Dewaele & MacIntyre, 2014; MacIntyre & Vincze, 2017; Oxford, 2015).

Both positive and negative emotions play a crucial role in language acquisition. It is widely accepted that negative academic emotion of anxiety debilitates learning, achievement, and motivation to pursue challenging goals, whereas positive academic emotion of enjoyment facilitates academic engagement, performance, and motivation (Pekrun & Linnenbrink, 2014). The importance of positive and negative emotions with respect to language acquisition has been documented within the SLA motivation literature (Clément, 1980, 1986; Dörnyei, 2005; Gardner, 1985, 2010). For instance, Gardner’s (1985, 2010) well-established integrative motive model of L2 motivation recognized and acknowledged that both positive and negative emotions are the key sources for developing L2 motivation. Over the past decades, however, SLA research on emotions has mainly focused on investigating L2 learners’ perceived negative emotions, mostly anxiety (Dewaele, 2012; Horwitz, 2010; MacIntyre, 2017). Dörnyei and Ryan (2015) strongly urged that this “emotional deficit” in positive emotions in the field of SLA ought to be eliminated. However, it is only recently that a growing body of research has been conducted to examine the role of students’ perceptions of enjoyment in SLA (e.g., Boudreau, MacIntyre, & Dewaele, 2018; Dewaele, MacIntyre, Boudreau, & Dewaele, 2016; Dewaele et al., 2019; Elahi Shirvan & Taherian, 2018; Imai, 2010; Jin & Dewaele, 2018; MacIntyre & Vincze, 2017; Saito et al., 2018).

Enjoyment refers to an emotional state in which individuals’ needs are both met and have exceeded their expectations to surprise them (Csikszentmihalyi, 2008). In SLA research, anxiety is the most commonly studied negative emotional construct, while enjoyment is by far the most important and studied positive emotional psychological construct (Jiang & Dewaele, 2019). In
contrast to anxiety, however, there is relatively little evidence supporting the impact of enjoyment on L2 motivation. The number of studies exploring both L2 enjoyment and anxiety in the same study has been increasing, and the results suggest both enjoyment and anxiety have a significant influence on L2 achievement (Dewaele & Li, 2018; Dewaele & MacIntyre, 2014; Jiang & Dewaele, 2019). Dewaele and MacIntyre (2014) conducted a survey with 1,746 foreign language learners to investigate the relationship between enjoyment and anxiety in L2 learning and found a modest correlation ($r = -.36$). They concluded that enjoyment and anxiety would be best considered as two separated and interrelated dimensions due to the distribution of two emotions’ scores. They also suggested that it is an advisable practice to carry out research including both anxiety and enjoyment. MacIntyre and Vincze (2017) investigated the effect of enjoyment and anxiety on L2 motivation. Results revealed that, relative to anxiety, enjoyment has exerted stronger and consistent effect on L2 motivation, although both variables are significantly correlated with L2 motivation.

**Relations between Teacher Support and Anxiety**

Past research has examined the relationship between perceived teacher support and anxiety with mixed results. Numerous studies have consistently found that anxiety is negatively associated with students’ perceptions of social support from teachers (Huang, Eslami, & Hu, 2010; Kim, Jee, Lee, An, & Lee, 2018; Piechurska-Kuciel, 2011; Weymouth & Buehler, 2018), whereas others have failed to find the relationship between the two variables (e.g., Jin, de Bot, & Keijzer, 2015; Jin & Dewaele, 2018; Palacios, 1998). For example, Huang et al. (2010) studied 158 adult Taiwanese freshmen of EFL learners recruited from four universities. Participants’ background information, perceived support from peers and teachers, and FLCA were measured. Results suggest that both teacher academic and emotional supports significantly predict students’
anxiety toward English learning. Specifically, when students received more support from their teachers, they reported less language leaning anxiety.

Similarly, Jin and Dewaele (2018) investigated the effect of EFL learners’ perceived emotional support from teachers and peers and positive orientation on their foreign language classroom anxiety. Data were analyzed with hierarchical regression for 144 Year 2 Chinese English major participants. The authors uncovered that, at each stage of regression analysis, Chinese EFL learners’ anxiety cannot be predicted and explained by students’ perceptions of teacher emotional support. In contrast, classmates’ provision of emotional support in EFL classrooms is a significant negative predictor of anxiety in language learning only before the positive orientation variable is entered into the regression model. In other words, when students’ positive orientation is taken into account, both teachers and classmates emotional supports fail to predict English learning anxiety.

**Relations between Teacher Support and Enjoyment**

Extensive research shows that having a supportive teacher is a critical determinant of not only avoiding negative academic emotions (e.g., anxiety and hopeless) but also experiencing positive academic emotions including enjoyment (Ahmed, Minnaert, van der Werf, & Kuyper, 2010; Fraser & Fisher 1982; King, McInerney, & Watkins, 2012; Pekrun, Goetz, Titz, & Perry, 2002; Skinner, Furrer, Marchand, & Kindermann, 2008). In general, these studies’ results suggest that teacher support contributes significantly to an increase in enjoyment. To illustrate, Aldridge, Afari, and Fraser (2013) examined the role of personal relevance and teacher support in enjoyment and self-efficacy in 352 college students in the United Arab Emirates. Results suggest that enjoyment is predicted by teacher support, and self-efficacy is predicted by personal
relevance. This means that students experience more enjoyment in the classrooms when they perceive greater support from their teachers.

Lei, Cui, and Chiu (2018) conducted a meta-analysis of 121 effect sizes from 65 recent studies on 58,368 students to investigate the relations between students’ perceived teacher support and negative and positive academic emotions. Findings revealed that students’ perceived teacher support is strongly correlated with their academic emotions. More specifically, negative academic emotions have been related negatively to social support from teachers, whereas positive academic emotions have been associated positively with teacher support. Moreover, the correlation between negative academic emotions and teacher support is weaker for males, relative to their female counterparts. Although a large body of research has provided an abundance of evidence that teacher support can have pronounced effects on students’ enjoyment, research on teacher support in enjoyment is scarce in existing SLA motivation literature.

**Relations between Enjoyment and Self-efficacy**

An enormous amount of research has investigated the relationship between enjoyment and self-efficacy and has documented that enjoyment is positively related to self-efficacy (e.g., Chen, Sun, & Dai, 2017; Haciomeroglu, 2019; Hagenauer & Hascher, 2010; Lewis, Williams, Frayeh, & Marcus, 2016; Puente-Díaz & Cavazos-Arroyo, 2017; Sakiz, Pape, & Hoy, 2012; Schukajlow et al., 2012). For example, Puente-Díaz and Cavazos-Arroyo (2017) examined the effect of a growth and a fixed creative mindsets on enjoyment, achievement goals, academic performance, and creative self-efficacy among 478 Mexico college business students. They learned that students with a growth mindset tended to exhibit greater enjoyment, which, in turn, promoted positive creative self-efficacy beliefs.
In addition, Lewis et al. (2016) investigated the influence of enjoyment and self-efficacy on physical activity behavior. Results of mediation analyses indicated that self-efficacy mediates the effect of enjoyment on physical activity behavior; however, enjoyment did not mediate the effect of self-efficacy on physical activity. This finding implied that the relationship between enjoyment and self-efficacy is not a reciprocal causation, but it is serial, with enjoyment affecting self-efficacy. Likewise, Chen et al. (2017) explored the mediating roles of enjoyment and self-efficacy in the effect of peer support on Chinese adolescents’ physical activity. Similarly, their results supported the serial mediating pathway from enjoyment to self-efficacy. Based on the empirical evidence, it is shown that enjoyment is an essential and important contributor to self-efficacy. Increasing enjoyment will raise self-efficacy. Conversely, undermining enjoyment will lower self-efficacy. Consequently, it is rational to propose that there is a mediating chain from enjoyment to self-efficacy in the current study.

**Relations between Anxiety and Self-efficacy**

As Bandura (1991) claimed, individuals’ self-efficacy beliefs serve as “a central role in the exercise of personal agency by its strong impact on thought, affect, motivation, and action” (p. 248). A considerable body of research has demonstrated that anxious learners are more apt to suffer from a lack of self-efficacy, which in turn is associated with greater failures on difficult or complex tasks, and this threat of failures in the ongoing and upcoming tasks yields lower levels of motivation (Eysenck, 2014; Hembree, 1988; Jameson & Fusco, 2014; Owen, Stevenson, Hadwin, & Norgate, 2012; Pajares, 1996; Wine, 1971; Zeidner, 2014). For instance, Aydin (2019) examined the relationship between the writing anxiety and self-efficacy beliefs among 113 Turkish language teacher candidates. Results implied that self-efficacy was negatively related to anxiety. In another study, Jameson and Fusco (2014) collected data from 226
American undergraduate students from multiple disciplines in developmental mathematics courses. They, too, observed a negative relationship between anxiety and self-efficacy in learning mathematics.

Additionally, empirical evidence suggests that anxiety is mediated by self-efficacy (e.g., Pajares, 2003; Shih, 2019; Woodrow, 2011). For instance, using a structural equation modeling method, Shih investigated a series of influential contributors to EFL learning achievement with a sample of 356 Taiwanese senior high school students. Results revealed that both L2 anxiety and self-efficacy significantly predicted Taiwanese students’ English performance. A further finding also confirmed self-efficacy functioned as a mediator of the effect of L2 anxiety on English learning achievement. Using path analysis, Woodrow (2011) also learned that self-efficacy served as a mediator of the effect of anxiety on Chinese college students’ English performance.

Moreover, Pekrun (2016) argued that the relationships between the anxiety, self-efficacy, and motivation are reciprocal causation: anxiety contributes to a lack of self-efficacy, low competence can decrease motivation, and undermining motivation can trigger anxiety of failure. These results are in line with Bandura’s argument (1977, 1986, and 1997), that anxiety is mediated by self-efficacy. Therefore, it seems reasonable to posit that self-efficacy will mediate the effect of anxiety on intrinsic motivation in the present study.

**Self-efficacy as Mediator of Teacher Support in Motivation**

Considerable evidence suggests that self-efficacy plays a role in teacher emotional support in motivation (Carreira, Ozaki, & Maeda, 2013; Fan, 2011; Wang & Eccles, 2013; Wentzel et al., 2017). For instance, Wentzel et al. investigated high school (n = 71) and middle school (n = 169) students’ perceptions of social support from teachers and peers in relation to motivation and effort through mediators of academic self-efficacy and internalized values at
individual and classroom level. Results based on the mediated pathways showed that both internalized values and academic self-efficacy significantly mediated the relations between peer and teacher supports and mastery and performance orientations and effort. In line with SDT perspectives, Carreira et al. tested a purposed motivational model of EFL learning with a sample of 239 Japanese elementary school students. They also found evidence for mediation. More specifically, results corroborated that the effect of perceived teacher support on intrinsic motion was mediated by students’ perceptions of competence (or self-efficacy), relatedness and autonomy.

**Control Variables**

It is a well-known fact in statistics that no cross-sectional correlation study such as this establishes causation, and its results could be the spurious correlations (Gardner, 2000; Gravetter & Wallnau, 2016; Hayes, 2013). A spurious relationship indicates factors are correlated but not casually associated. As students are taught even in an introductory statistics course, correlation cannot be used as the valid inference with respect to cause-and-effect relations between variables. Indeed, as Gravetter and Wallnau (2016) stated so precisely, “Correlation simply describes a relationship between two variables. It does not explain why the two variables are related.” (p. 497). Therefore, in order to test the vulnerability of the present research’s findings to “spuriousness”, I added some potential confounding variables into this study. Consistent with past studies, these included gender (Al Harthy, 2017; Calafato & Tang, 2019; Carreira, 2011; Henry, 2009; Henry & Cliffordson, 2013; Lasagabaster, 2016), age of starting learning English (Carreira, 2006; Cenoz, 2004; Garrett, 2010; Larson-Hall, 2008; Milla & Gutierrez-Mangado, 2019), English proficiency (Csizér & Tankó, 2017; Kim & Cha, 2017; Milla & Gutierrez-
Mangado, 2019; Shaaban & Ghaith, 2000; Teng, Yuan, & Sun, 2019) and ethnic background (Curtis & Romney, 2010; Kapai, 2015; Kubota & Lin, 2006; Lai, 2019).

**Summary**

It is widely acknowledged that social support from teachers plays an important and central role in facilitating students’ motivational orientations for academic and social outcomes. However, the mechanism underlying teacher support in motivation in EFL classrooms remains unclear in the extant SLA motivation literature. Given the evidence by the empirical works cited in this chapter, I proposed a casual model to test whether the effect of teacher support on intrinsic motivation is mediated by anxiety, enjoyment, and self-efficacy mechanisms.
CHAPTER III

METHODOLOGY

Introduction

The intention of this study is to investigate the effect of teacher emotional support on Chinese EFL learners’ intrinsic motivation through the potential mediators of enjoyment, anxiety, and self-efficacy. This chapter will discuss the research design of the study, the population and sample selection, instrumentation, data collection, and data analysis.

Research Design

The nature of the research design for the study is quantitative. Specifically, a correlational research design utilizing the cross-sectional mediation model was employed in this quantitative study to investigate relationships among variables of emotional support from teachers, enjoyment, anxiety, self-efficacy, and intrinsic motivational orientation in English learning. Correlational research is often conducted with the aim of predicting possible outcomes and explaining important human behaviors (Fraenkel et al., 2014), which is an appropriate and legitimate research design for this study. It is also worth indicating that although correlation studies do not establish causation (Pollack, Vanepps, & Hayes, 2012; Verhulst, Eaves, & Hatemi, 2012), empirical studies of proposed mediation models are always used primarily for testing the assumed causal relations between the causal antecedent, mediator, and consequent variables (e.g., Baron & Kenny, 1986; Hayes, 2018; Mathieu et al., 2008; Preacher & Hayes, 2008; Stone-Romero & Rosopa, 2010).
Population and Sample Selection

It is not possible to conduct a census of the mainland China population of EFL students because this study has been constrained by limited time and budget. As a result, the target population of interest in the current study was the university-level EFL students throughout mainland China. Although the target population of the research is more refined relative to the entire population, it is still too difficult to study the target population of interest due to the extremely large geographic area of mainland China. In fact, to collect the data from this target population was time-consuming and expensive. Therefore, the sample of this research was limited to participants from six public four-year universities in mainland China: the University of Heilongjiang, Hebei University, Zhejiang Sci-Tech University, Hubei University, Chongqing University of Arts And Science, and Xinjiang University of Finance and Economics. Participants were recruited through a snowballing sampling procedure, which is a nonprobability sampling method (Fraenkel et al., 2014).

Instrumentation

Research variables were measured by five student self-report questionnaires: the demographic information, the Classroom Life Measure (CLM; Johnson, Johnson, Buckman, & Richards, 1985), the Chinese Version of the Foreign Language Enjoyment Scale (CFLES; Li, Jiang, & Dewaele, 2018), the Chinese Version of the Foreign Language Classroom Anxiety Scale (CFLCAS; Jiang & Dewaele, 2019), and the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich, Smith, Garcia, & McKeachie, 1991).
Demographic Information

There were several demographic questions including age, gender, grade levels, ethnic/racial identification, English level, and age of starting learning English (see Appendix A for English version and Appendix B for Chinese version).

Classroom Life Measure

Study variable of students’ perceptions of teacher emotional support was assessed with four items from the CLM instrument’s subscale of Teacher Social Support (Johnson & Johnson, 1983; Johnson et al., 1985; see Appendix C for English version and Appendix D for Chinese version). Participants rated each item on a 5-point Likert-type scale ranging from 1 (Strongly disagree) to 5 (Strongly agree), with higher scores corresponding to a higher degree of perceived social support from teachers. Sample items were “My teacher really cares about me” and “My teacher likes me as much as he/she likes other students.” Item scores were averaged to create an index of teacher support. The CLM instrument’s subscale of Teacher Social Support has good reliability. For example, In Wentzel, Battle, Russell, and Looney’s (2010) study, the internal consistency of the scale was \( \alpha = .86 \), and \( \alpha = .85 \) in the study of Johnson and Johnson (1983). In addition to good reliability, previous research has established the evidence of adequate divergent and convergent validity (e.g., Huang et al., 2010; Johnson et al., 1985; Wentzel et al., 2010; Wentzel, Muenks, McNeish, & Russell, 2018; Wentzel, Russell, & Baker, 2016) and predictive validity (e.g., Bertucci, Johnson, Johnson, & Conte, 2011; Fast et al., 2010; Johnson et al., 1985; Shim & Finch, 2014).
Chinese Version of the Foreign Language Enjoyment Scale

Participants’ perception of enjoyment of English learning was measured with 11 items from the CFLES (Li et al., 2018; see Appendix E for English version and Appendix F for Chinese version). Sample items were “I enjoy it” and “I've learnt interesting things.” Students responded to each item using a 5-point Likert-type scale ranging from 1 (Strongly disagree) to 5 (Strongly agree), with higher scores representing greater enjoyment. Item scores were averaged to create an index of enjoyment. The CFLES has good reliability. For instance, of the original CFLES, the Cronbach alpha for internal consistency is .826, and the internal reliability is .878 (Li et al., 2018). Additionally, Jiang and Dewaele (2019) reported the internal consistency for the CFLES (α = .889). In addition to the established good reliability, evidence of adequate construct validity, convergent validity, and discriminant validity of the original CFLES has been reported (see Li et al., 2018).

Chinese Version of the Foreign Language Classroom Anxiety Scale

Students’ anxiety toward English learning was assessed with eight items from the CFLCAS (Jiang & Dewaele, 2019; see Appendix G for English version and Appendix H for Chinese version). For each item, response was made on a 5-point Likert-type scale ranging from 1 (Strongly disagree) to 5 (Strongly agree), with higher values corresponding to a higher level of perceived anxiety in relation to English acquisition. To be congruent with the original FLCAS (Horwitz et al., 1986), six items were phrased to indicate high degree of anxiety and two items were phrased to reflect low degree of anxiety. Sample items of high level of anxiety were “Even if I am well prepared for English class, I feel anxious about it” and “I can feel my heart pounding when I'm going to be called on in English class.” The two low level of anxiety items were “I don't worry about making mistakes in English class (reverse-coded)” and “I feel confident when
I speak in English class (reverse-coded).” Item scores were averaged to create an index of anxiety. Jiang and Dewaele (2019) had established the evidence of good reliability for the original CFLCAS. They reported the internal consistency for the CFLCAS ($\alpha = .867$).

**Motivated Strategies for Learning Questionnaire**

**Self-efficacy.**

Participants’ self-efficacy for learning English was measured with eight items from the Self-Efficacy for Learning and Performance subscale of the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich et al., 1991; see Appendix I for English version and Appendix J for Chinese version). Students responded to all items using a 7-point Likert-type scale ranging from 1 (Strongly disagree) to 7 (Strongly agree), with higher scores indicating stronger self-efficacy beliefs in English learning. Sample items were “I believe I will receive an excellent grade in this class”, “I’m certain I can understand the most difficult material presented in the readings for this course”, “Considering the difficulty of this course, the teacher, and my skills, I think I will do well in this class” and “I’m certain I can master the skills being taught in this class.” Item scores were averaged to create an index of self-efficacy. The MSLQ has been utilized extensively with demonstrated evidence for reliability and validity (Duncan & McKeachie, 2005; Jackson, 2018; Pintrich et al., 1991; Pintrich, Smith, Garcia, & McKeachie, 1993; Turan & Koç, 2019; Vaculíková, 2016; Zepeda, Richey, Ronevich, & Nokes-Malach, 2015). The MSLQ’s subscale of Self-Efficacy has high reliability. For example, as the original MSLQ’s subscale of Self-Efficacy, the Cronbach alpha for internal consistency is .93 (Pintrich et al., 1991). Similarly, in a recent study, the internal consistency of the MSLQ’s subscale of Self-Efficacy as assessed by Cronbach alpha was .92 (Jackson, 2018). Evidence of adequate
Construct validity for the MSLQ’s subscale of Self-Efficacy has been established in past studies (e.g., Jackson, 2018; Pintrich et al., 1993; Turan & Koç, 2019).

**Intrinsic motivation.**

Students’ intrinsic motivational orientation to English learning was assessed with four items from the Intrinsic Goal Orientation subscale of the MSLQ (Pintrich et al., 1991; see Appendix K for English version and Appendix L for Chinese version). Respondents rated all measures on a 7-point Likert-type scale ranging from 1 (Strongly disagree) to 7 (Strongly agree), with higher values reflecting a higher degree of intrinsic motivation in relation to learning English. Sample items were “In a class like this, I prefer course material that really challenges me so I can learn new things”, “When I have the opportunity in this class, I choose course assignments that I can learn from even if they don’t guarantee a good grade”, and “When I have the opportunity in this class, I choose course assignments that I can learn from even if they don’t guarantee a good grade.” Item scores were averaged to create an index of intrinsic motivation. The MSLQ’s subscale of Intrinsic Goal Orientation has adequate reliability. For instance, the internal consistency of the original MSLQ’s subscale of Intrinsic Goal Orientation as computed by Cronbach alpha was .74 (Pintrich et al., 1991). Likewise, Jackson (2018) reported exactly the same reliability coefficient of internal consistency for the MSLQ’s subscale of Intrinsic Goal Orientation (α = .74). Previous studies have established the evidence of adequate construct validity for the MSLQ’s subscale of Intrinsic Goal Orientation (e.g., Duncan & McKeachie, 2005; Pintrich et al., 1991; Vaculíková, 2016).
Data Collection

The present study uses existing data which were collected in mainland China. The existing data did not involve any identifiable information, including direct identifiers (e.g., name, student ID number, Net ID, etc.) or indirect identifiers (e.g., demographics sufficient to identify individuals considering the study population). Additionally, all the selected participants were informed that their participations in this study were completely voluntary, and if they should feel free to withdraw from this study, they could do so at any time without any consequence.

All questionnaires were administered to participants via a professional Chinese online survey software. The hyperlink (http://www.sojump.com) to the survey was first sent to Chinese colleagues who were working in the target six universities. Later, I contacted my colleagues to ask them to forward the hyperlink to their students and colleagues. It took each respondent approximately 20 minutes to complete the survey. Before the data collection, the original English versions of the CLM and MSLQ instruments were adapted and translated into Chinese. Based on the guidelines of the International Test Commission (ITC, 2017) for adapting and translating instruments, forward and backward translation methods were implemented in this research to ensure the translated Chinese versions of the CLM and MSLQ instruments to be culturally, linguistically, and psychologically invariant to the original English versions.

First, with the forward translation design, the original English versions of the CLM and MSLQ scales were translated into Chinese by two independent bilingual (Chinese–English) EFL scholars. Both of the two translators have (a) the experience of working and living in China and the United States, (b) sufficient background knowledge of American and Chinese cultures, and (c) expertise in terms of test construction. Next, the two translators worked together to compare and combine their translations to generate the best represented Chinese versions of the CLM and
MSLQ scales based on their mutual agreement. Subsequently, with the backward translation design, the forward-translated Chinese versions of the CLM and MSLQ instruments were translated back to the English by a third bilingual (Chinese–English) EFL scholar. Then, the aforementioned three translators compared the original English versions with the back-translated version of the CLM and MSLQ instruments and judged whether the translation process resulted in a different meaning for the two versions’ items. The results indicated that the two compared English versions were very similar and acceptable, and thus no further modification to the Chinese version of the CLM and MSLQ scales was needed. Finally, a small sample of Chinese students (\(N = 7\)) completed the final Chinese versions of the CLM and MSLQ and reported no concerns.

**Data Analysis Procedures**

Data analyses were performed using the Statistical Package for the Social Sciences (SPSS; version 26.0). First, descriptive statistics for age, gender, grade levels, ethnic/racial identification, English level, and age of starting learning English were used to portray the characteristics of this research sample. Bivariate correlations between the study variables were subsequently conducted using Pearson correlation analysis. Finally, to test the proposed mediation model as diagrammed in Figure 3, I utilized both an ordinary least squares (OLS) regression-based path analysis with the PROCESS macro for SPSS (Hayes, 2013, 2018; Preacher & Hayes, 2008) and the Amos program version 26.0 (Arbuckle, 2017) for SEM with maximum likelihood approach for estimating and probing the mediation analysis. The PROCESS macro for SPSS can be freely downloaded from Andrew Hayes’s home page at https://afhayes.com/index.html. The following provided the analytic procedures for mediation analysis based on the research hypotheses.
Figure 3. The statistical model in which the effect of teacher emotional support on intrinsic motivation is mediated by enjoyment, anxiety, and self-efficacy. Control variables of gender, starting age of learning English, English level, and ethnicity were included as the covariates but are not shown here.
Analytic Procedures for Quantifying and Testing Mediation Analysis

To quantify and test mediation analysis, I performed a series of OLS regression analyses and the SEM. The first three regression analyses examined whether the antecedent variable of teacher emotional support was associated with the consequent variable of intrinsic motivation (Equation 1), enjoyment, i.e., the first potential mediator (Equation 2), and anxiety, i.e., the second mediator (Equation 3). The fourth regression model included anxiety, enjoyment, and emotional support from teachers as predictors of self-efficacy (Equation 4). The last regression analysis probed whether intrinsic motivation can be predicted by teacher emotional support, enjoyment, anxiety, and self-efficacy together (Equation 5). The following five equations representing the estimation of the above statistical diagram of parallel and serial mediation model (see Figure 3):

\[
\text{Intrinsic Motivation} = \text{intercept} + (c \times \text{Teacher Support}) + (f \times \text{Gender}) + (g \times \text{Starting Age}) + (h \times \text{English level}) + (j \times \text{Ethnicity}) + e_0 \\
\text{Enjoyment} = \text{intercept} + (a_1 \times \text{Teacher Support}) + (f_1 \times \text{Gender}) + (g_1 \times \text{Starting Age}) + (h_1 \times \text{English level}) + (j_1 \times \text{Ethnicity}) + e_1 \\
\text{Anxiety} = \text{intercept} + (a_2 \times \text{Teacher Support}) + (f_2 \times \text{Gender}) + (g_2 \times \text{Starting Age}) + (h_2 \times \text{English level}) + (j_2 \times \text{Ethnicity}) + e_2 \\
\text{Self-efficacy} = \text{intercept} + (a_3 \times \text{Teacher Support}) + (d_{31} \times \text{Enjoyment}) + (d_{32} \times \text{Anxiety}) + (f_3 \times \text{Gender}) + (g_3 \times \text{Starting Age}) + (h_3 \times \text{English level}) + (j_3 \times \text{Ethnicity}) + e_3 \\
\text{Intrinsic Motivation} = \text{intercept} + (c' \times \text{Teacher Support}) + (b_1 \times \text{Enjoyment}) + (b_2 \times \text{Anxiety}) + (b_3 \times \text{Self-efficacy}) + (f_4 \times \text{Gender}) + (g_4 \times \text{Starting Age}) + (h_4 \times \text{English level}) + (j_4 \times \text{Ethnicity}) + e_4
\]

where \(a_1, a_2, a_3, b_1, b_2, b_3, c, c', d_{31}, d_{32}, f, f_1, f_2, f_3, f_4, g, g_1, g_2, g_3, g_4, h, h_1, h_2, h_3, h_4, j, j_1, j_2, j_3, j_4\), and \(j_4\) are the unstandardized regression coefficients given to the predictors in the proposed mediation model in the estimation of the outcomes, and \(e_0, e_1, e_2, e_3, \text{and } e_4\) denote the errors in
estimation. The above five regression analyses yield one total effect, one direct effect, and five indirect effects of teacher emotional support on intrinsic motivation.

**The total effect of teacher support on intrinsic motivation.**

The total effect of teacher emotional support on intrinsic motivation is simply quantified and estimated with the regression coefficient $c$ in the proposed mediation model shown in Equation 1. The interpretation of the total effect is that two cases that differ by one unit on emotional support from teachers are estimated to differ by $c$ units on intrinsic motivation.

**The direct effect of teacher support on intrinsic motivation.**

In equation 5, the direct effect of teacher emotional support on intrinsic motivation is quantified as $c'$ and is interpreted as how much two cases that differ by one unit on teacher emotional support but are equal on enjoyment, anxiety, and self-efficacy are estimated to differ by $c'$ unit on intrinsic motivation.

**The indirect effect of teacher support on intrinsic motivation.**

The effect of teacher emotional support on intrinsic motivation has yielded five indirect effects in the proposed mediation model (see Figure 2). They are the indirect effect of teacher emotional support on intrinsic motivation through the potential mediators of enjoyment only (Indirect effect 1 = $a_1 \times b_1$), anxiety only (Indirect effect 2 = $a_2 \times b_2$), self-efficacy only (Indirect effect 3 = $a_3 \times b_3$), enjoyment to self-efficacy (Indirect effect 4 = $a_1 \times d_{31} \times b_3$), and anxiety to self-efficacy (Indirect effect 5 = $a_2 \times d_{32} \times b_3$). Each indirect effect is for testing one research question/hypothesis.

**Indirect effect 1.** The first indirect effect is used to answer the first research question:
Hypothesis 1: Chinese EFL learners’ perception that their teachers care about them contributes to increased enjoyment of English learning, which in turn promotes their intrinsic motivation to learn English.

The first indirect effect is quantified as the product of the effect of Chinese EFL learners’ perception of emotional support from teachers \((a_1)\) and the regression coefficient for students’ perception of enjoyment in English learning \((b_1)\). In other words, the first indirect effect of teacher emotional support on intrinsic motivation is estimated as \(a_1 \times b_1\). That is, two cases that differ by one unit on teacher emotional support are estimated to differ by \(a_1b_1\) unit on intrinsic motivation as a result of the effect of teacher emotional support on enjoyment, which, in turn, influences intrinsic motivation.

**Indirect effect 2.** The second indirect effect is used to answer the second research question:

Hypothesis 2: Chinese EFL learners’ perception that their teachers care about them alleviates learners’ anxiety toward English learning, which in turn facilitates their intrinsic motivation to learn English.

The second indirect effect is quantified as the product of the effect of Chinese EFL learners’ perception of emotional support from teachers \((a_2)\) and the regression coefficient for students’ perception of anxiety in English learning \((b_2)\). Thus, the second indirect effect of teacher emotional support on intrinsic motivation is estimated as \(a_2 \times b_2\). The indirect effect \(a_2b_2\) quantifies how much two cases that differ by one unit on teacher emotional support are expected to differ on intrinsic motivation as a result of teacher emotional support that causes anxiety, which, in turn, affects intrinsic motivation.
**Indirect effect 3.** The third indirect effect is used to answer the third research question:

*Hypothesis 3:* Chinese EFL learners’ perception that their teachers care about them contributes to an increase in self-efficacy, which in turn promotes learners’ intrinsic motivation to learn English.

The third indirect effect is defined as the product of the effect of Chinese EFL learners’ perception of emotional support from teachers (a3) and the regression coefficient for students’ perception of self-efficacy in English learning (b3). Therefore, the estimated indirect effect of teacher emotional support on intrinsic motivation through self-efficacy is $a_3 \times b_3$. It quantifies that two cases that differ by one unit on teacher emotional support are estimated to differ by $a_3b_3$ unit on intrinsic motivation as a result of teacher emotional support that increases self-efficacy, which, in turn, fosters intrinsic motivation.

**Indirect effect 4.** The fourth indirect effect is used to answer the fourth research question:

*Hypothesis 4:* Chinese EFL learners’ perception that their teachers care about them contributes to an increase in enjoyment and self-efficacy sequentially, with greater enjoyment helping to develop higher self-efficacy, which in turn increases intrinsic motivation to learn English.

The fourth indirect effect of teacher emotional support on intrinsic motivation through both enjoyment and self-efficacy sequentially is $a_1 \times d_3 \times b_3$. That is, two cases that differ by one unit on teacher emotional support are estimated to differ by $a_1d_3b_3$ unit on intrinsic motivation as a result of a mediating chain from teacher emotional support to enjoyment to self-efficacy to intrinsic motivation.
**Indirect effect 5.** The fifth indirect effect is used to answer the fifth research question:

*Hypothesis 5:* Chinese EFL learners’ perception that their teachers care about them contributes to decreased anxiety and increased self-efficacy sequentially, with lower anxiety helping to develop greater self-efficacy, which in turn fosters intrinsic motivation to learn English.

The fifth indirect effect of teacher emotional support on intrinsic motivation through both anxiety and self-efficacy in serial is $a_2 \times d_{32} \times b_3$. It quantifies that two cases that differ by one unit on teacher emotional support are estimated to differ by $a_2d_{32}b_3$ unit on intrinsic motivation as a result of a mediating chain from teacher emotional support to anxiety to self-efficacy to intrinsic motivation.

**Summary**

This chapter has discussed the research design, sample and population selection, measures of the study, data collection, data analysis procedures. The methodology is aligned with the research questions which are based on the problem statement. The next chapter will discuss the results and findings of the study.
CHAPTER IV

RESULTS

Introduction

Coursework in learning EFL is a core requirement for all school students in mainland China. Yet, many EFL teachers encounter great difficulties in motivating students to learn and engage in English classrooms (Lamb, 2017; Zheng et al., 2018). The purpose of this quantitative, cross-sectional correlation study was to investigate whether and to what extent teacher emotional support facilitates Chinese college students’ intrinsic motivation in EFL classrooms through the potential mediators of enjoyment, anxiety, and self-efficacy. The results from the current research are intended to help mainland China’s English teachers, policy makers, and educational leaders to improve EFL students’ English achievement. Quantitative data were collected to test the following five hypotheses:

Hypothesis 1: Chinese EFL learners’ perception that their teachers care about them contributes to increased enjoyment of English learning, which in turn promotes their intrinsic motivation to learn English.

Hypothesis 2: Chinese EFL learners’ perception that their teachers care about them alleviates learners’ anxiety toward English learning, which in turn facilitates their intrinsic motivation to learn English.
Hypothesis 3: Chinese EFL learners’ perception that their teachers care about them contributes to an increase in self-efficacy, which in turn promotes learners’ intrinsic motivation to learn English.

Hypothesis 4: Chinese EFL learners’ perception that their teachers care about them contributes to an increase in enjoyment and self-efficacy sequentially, with greater enjoyment helping to develop higher self-efficacy, which in turn increases intrinsic motivation to learn English.

Hypothesis 5: Chinese EFL learners’ perception that their teachers care about them contributes to decreased anxiety and increased self-efficacy sequentially, with lower anxiety helping to develop greater self-efficacy, which in turn fosters intrinsic motivation to learn English.

This chapter presents the narrative summary of the descriptive data findings, data analysis and procedure, results, and summary.

Demographics Findings

I received 1,520 surveys and removed 56 surveys because of the high level (above 10%) of missing data (Hair, Black, Babin, & Anderson, 2010). After excluding these respondents, the data analyzed in the present study were drawn from a valid sample of N = 1,464 participants.

Table 1 shows the demographic characteristics for the sample. Participants’ ages ranged from 17 to 50 years (M = 19.81, SD = 1.649). Thirty-four (2.3%) of the respondents were seniors, 148 (10.1%) were juniors, 454 (31.0%) were sophomores, 810 (55.3%) were freshmen, 10 (0.7%) were graduate students, and 8 (0.5%) self-reported as “Other.” As also shown in Table 1, students came from 67 different majors. The top three majors were Forestry (n =281; 19.2%), Animal Science (n = 163; 11.1%), and Wood Science and Engineering (n = 129; 8.8%),
respectively. In the sample, 38.1% were male (n = 558) and 61.9% were female (n = 906), 83% were Han Chinese (n = 1,215) and 17% were ethnic minorities (n = 249). The gender sample of the present study is representative of the EEL population in mainland China (see Jiang & Dewaele, 2020). The ethnic minority groups represented the non-Han Chinese populations in mainland China. Table 2 presents the ethnicity of the total sample of this research.
Table 1

*Demographic Information of Participants (N = 1,464)*

<table>
<thead>
<tr>
<th>Demographic Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
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</tr>
<tr>
<td>Female</td>
<td>906</td>
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</tr>
<tr>
<td>Male</td>
<td>558</td>
<td>38.1%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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<td>100.0%</td>
</tr>
<tr>
<td><strong>Age</strong></td>
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<td></td>
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<tr>
<td>17</td>
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<td>18</td>
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<tr>
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<tr>
<td>22</td>
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<td>24</td>
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<td>25</td>
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<tr>
<td>26</td>
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</tr>
<tr>
<td>27</td>
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<tr>
<td>Sophomore</td>
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<tr>
<td>Junior</td>
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<td>Senior</td>
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<td>Other</td>
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<tr>
<td><strong>Total</strong></td>
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<td>100.0%</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
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<td></td>
</tr>
<tr>
<td>Han</td>
<td>1,215</td>
<td>83.0%</td>
</tr>
<tr>
<td>Minority</td>
<td>249</td>
<td>17%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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</tr>
</tbody>
</table>

*Note.* Ethnic minority participants are the non-Han Chinese.
Table 1 (continued)

Demographic Information of Participants ($N = 1,464$)

<table>
<thead>
<tr>
<th>Demographic Category</th>
<th>Frequency</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Accounting</td>
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<tr>
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<tr>
<td>Aquaculture</td>
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<td>Architecture</td>
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<td>0.1%</td>
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<tr>
<td>Art &amp; Design</td>
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<td>1.1%</td>
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<tr>
<td>Atmospheric Sciences</td>
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</tr>
<tr>
<td>Biology</td>
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<tr>
<td>Biomedical Engineering</td>
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<tr>
<td>Biopharmaceutical Sciences</td>
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<tr>
<td>Botany</td>
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<tr>
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</tr>
<tr>
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<tr>
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<tr>
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<tr>
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<tr>
<td>Economics &amp; Management</td>
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<tr>
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<tr>
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<tr>
<td>Geochemistry</td>
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</tr>
</tbody>
</table>

Note. Ethnic minority participants are the non-Han Chinese.
Table 1 (continued)

Demographic Information of Participants \((N = 1,464)\)

<table>
<thead>
<tr>
<th>Demographic Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major</td>
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<tr>
<td>Geographical Sciences</td>
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<tr>
<td>Geology</td>
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<td>0.1%</td>
</tr>
<tr>
<td>Groundwater Science &amp; Engineering</td>
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<td>0.1%</td>
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<tr>
<td>Health Care Management</td>
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<tr>
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<tr>
<td>Industrial Design</td>
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<tr>
<td>Industrial Engineering</td>
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<td>0.2%</td>
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<tr>
<td>International Economics &amp; Trade</td>
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<tr>
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<tr>
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<tr>
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<td>1.0%</td>
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<tr>
<td>Law</td>
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<td>0.4%</td>
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<tr>
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<td>0.1%</td>
</tr>
<tr>
<td>Linguistics</td>
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<tr>
<td>Management Information Systems</td>
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<td>0.4%</td>
</tr>
<tr>
<td>Mathematics</td>
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<td>0.2%</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
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<tr>
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<tr>
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<td>Nursing</td>
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<tr>
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<tr>
<td>Pharmacy</td>
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<tr>
<td>Pratacultural Science</td>
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<tr>
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<tr>
<td>Radio &amp; Television</td>
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</tr>
<tr>
<td>Remote Sensing</td>
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<tr>
<td>Surveying &amp; Mapping</td>
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<tr>
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</tr>
<tr>
<td>Wood Science &amp; Engineering</td>
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<td>8.8%</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>0.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1,464</td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

*Note.* Ethnic minority participants are the non-Han Chinese.
Table 2

Ethnicity for the Total Sample of the Present Study (N = 1,464)

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>Bouyei</td>
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</tr>
<tr>
<td>Chuanqin</td>
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<td>0.1%</td>
</tr>
<tr>
<td>Dong</td>
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</tr>
<tr>
<td>Gaoshan</td>
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<td>0.1%</td>
</tr>
<tr>
<td>Gelao</td>
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<td>0.2%</td>
</tr>
<tr>
<td>Han</td>
<td>1,215</td>
<td>83.0%</td>
</tr>
<tr>
<td>Hani</td>
<td>5</td>
<td>0.3%</td>
</tr>
<tr>
<td>Hezhen</td>
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</tr>
<tr>
<td>Hui</td>
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</tr>
<tr>
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<td>Korean</td>
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<tr>
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<tr>
<td>Manchu</td>
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<td>Maonan</td>
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<tr>
<td>Miao</td>
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<td>Mongol</td>
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<td>Nakhi</td>
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<td>0.1%</td>
</tr>
<tr>
<td>Tujia</td>
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</tr>
<tr>
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<td>6.6%</td>
</tr>
<tr>
<td>Uzbek</td>
<td>1</td>
<td>0.1%</td>
</tr>
<tr>
<td>Yi</td>
<td>8</td>
<td>0.5%</td>
</tr>
<tr>
<td>Zhuang</td>
<td>4</td>
<td>0.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,464</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>
Statistical Assumptions

Prior to performing an OLS regression-based path analysis and SEM, I tested numerous important statistical assumptions including linearity, normality, independent errors, homoscedasticity, and normally distributed errors. Additionally, I also examined the critical issues of multicollinearity, multivariate outliers, and items per construct.

Linearity

The linearity assumption is one of the most fundamental assumptions in multivariate analysis methods, including path analysis, logistic regression, structural equation modeling, multiple regression, and factor analysis. According to Field (2013), in reality, any predictors should be linearly related to the outcome variable. Two matrix scatterplots were produced to check the assumption of linearity. The resulting scatterplots for each predictor variable in the analysis are all exhibited with a linear pattern to the outcome variable. Therefore, I conclude the relationships between predictors and the outcome (intrinsic motivation) are linear, indicating the linearity assumption is met (see Figure 4 and Figure 5).
Figure 4. Matrix scatterplot of the relationships between intrinsic motivation, teacher emotional support, enjoyment, and anxiety.

Figure 5. Matrix scatterplot of the relationships between intrinsic motivation, self-efficacy, age of starting learning English, and English level.
Normality

All the study variables were investigated for the assumption of normality by assessing the skewness and kurtosis values. Table 3 displays the result of normality testing. The range for kurtosis values was .268 to 2.275 and for skewness was -.609 to .926. Both values of skewness and kurtosis demonstrated that the shape of the data distribution for each variable in the research is acceptable (Kline, 2011; Tabachnick & Fidell, 2013). As Kline states, the normality assumption is met when the absolute value of kurtosis less than 10 and skewness value less than 3. In addition, Tabachnick and Fidell (2013) further argue that if the sample size exceeds 200, the issues of kurtosis and skewness do not contribute to a notable difference in the analyzed results. As can be seen from Table 3, both aforementioned rules of thumb for normality test have been met.

Table 3

Summary of Normality Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Missing</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starting Age</td>
<td>1,464</td>
<td>0</td>
<td>.926</td>
<td>2.275</td>
</tr>
<tr>
<td>English level</td>
<td>1,464</td>
<td>0</td>
<td>-.609</td>
<td>1.245</td>
</tr>
<tr>
<td>Enjoyment</td>
<td>1,464</td>
<td>0</td>
<td>-.067</td>
<td>.648</td>
</tr>
<tr>
<td>Anxiety</td>
<td>1,464</td>
<td>0</td>
<td>-.142</td>
<td>.542</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>1,464</td>
<td>0</td>
<td>.035</td>
<td>.454</td>
</tr>
<tr>
<td>Teacher Support</td>
<td>1,464</td>
<td>0</td>
<td>-.152</td>
<td>.403</td>
</tr>
<tr>
<td>Intrinsic Motivation</td>
<td>1,464</td>
<td>0</td>
<td>-.069</td>
<td>.268</td>
</tr>
</tbody>
</table>
**Independent Errors**

The independent errors assumption states that any two observations’ errors must be independent (i.e., not correlated to each other). The Durbin-Watson test was utilized to explore the assumption of independent errors. The Durbin-Watson statistic can vary from 0 to 4, with a value of 2 indicating that the errors are independent. According to Field (2013), the conservative criterion of assumption of independent errors is that the Durbin-Watson values “less than 1 or greater than 3 should definitely raise alarm bells” (p. 337). Additionally, Neter, Kutner, Nachtsheim and Wasserman (1996) state that a Durbin-Watson value within the range of 1.50 and 2.50 indicates the independent errors assumption is tenable. In the data of this research, the Durbin-Watson statistic was computed to be 1.982, which is extremely close to 2 and within the acceptable range of 1 and 3 (Field, 2013). Therefore, the assumption of independent errors has certainly been met.

**Homoscedasticity**

In terms of the assumption of homoscedasticity, it is assumed that the outcome variable should exhibit the same levels of variance at each level of each predictor (Hair et al., 2010). Violating this assumption is said to indicate heteroscedasticity. Homoscedasticity was investigated graphically by plotting the Standardized Predicted values (ZPRED) against Standardized Residuals (ZRESID). If the graph looks like a random array of dots, it is indicative of a situation in which the homoscedasticity assumption has been met. Based on the scatterplot of ZPRED vs. ZRESID (see Figure 6), the assumption of homoscedasticity is not violated because it presents a random pattern. The scatterplot seems to be roughly closer to the shape of a circle, although it is not perfect. Consequently, the variance of the intrinsic motivation values is
relatively equal across the range of predictor(s), indicating homoscedasticity (Field, 2013; Hair, Black, Babin, Anderson, & Tatham, 2006).

Figure 6. Scatterplot of ZRESID vs. ZPRED.

**Normally Distributed Errors**

This main idea of this assumption is to test whether the residuals in the model are normally distributed. Statistically, it is assumed that there are not any differences between the observed data and the model. To test the assumption of normally distributed errors, I examined the histogram (see Figure 7). By looking at the histogram, the residual distribution of the data for the present research is approximately bell-shape and roughly symmetrical. Additionally, Field (2013) suggests that this assumption can be ignored if using a bootstrap technique for constructing the confidence intervals, which is exactly the approach I have applied to the current study.
Figure 7. Histogram of the standardized residuals to assess the assumption of normality.

Multicollinearity

Multicollinearity testing is one of the most important procedures in any regression-based model. In statistics, it is assumed that there must be no perfect multicollinearity between (i.e., two predictors) or among predictors (i.e., more than two predictors). Ideally, the predictor variables in the model should be highly correlated with the outcome variable, but with zero or little correlation between or among themselves. The multicollinearity indicates that the predictor variables actually have shared variance with each other, which in turn undermines the ability to predict and explain the outcome as well as discover the relative importance of each predictor in the model. SPSS provided the two most commonly direct measures of probing multicollinearity:
tolerance and variance inflation factor (VIF). Tolerance and VIF are the inverse of each other, so I only used the VIF to assess the multicollinearity. I applied the guideline provided by Field (2013): VIF values up to 5 are acceptable levels of multicollinearity. For checking this assumption, I ran a multiple linear regression with the intrinsic motivation as outcome variable and gender, starting age of learning English, English level, ethnicity, enjoyment, anxiety, self-efficacy, and teacher emotional support as predictor variables. Table 4 shows the summary of multicollinearity statistics for this research. The VIF’s values ranged from 1.110 (gender) to 3.026 (teacher emotional support). Given that none of the VIF values have exceeded the safety threshold of 5, I can conclude that multicollinearity is not a concern for the research model.

Table 4

*Summary of Multicollinearity Statistics (N = 1,464)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Variance Inflation Factor (VIF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>1.110</td>
</tr>
<tr>
<td>Starting Age of learning English</td>
<td>1.204</td>
</tr>
<tr>
<td>English level</td>
<td>1.159</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>1.206</td>
</tr>
<tr>
<td>Enjoyment</td>
<td>2.456</td>
</tr>
<tr>
<td>Anxiety</td>
<td>2.932</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>2.091</td>
</tr>
<tr>
<td>Teacher Emotional Support</td>
<td>3.026</td>
</tr>
</tbody>
</table>

55
Multivariate Outliers

In regression-based analyses, multivariate outliers are cases with large residual values that are different from the other cases based on the predictors’ values. The Mahalanobis distance measure ($D^2$) is probably the most commonly used data screening approach in identifying bivariate, univariate, and multivariate outliers. Barnett and Lewis (1978, 1994) provided the following steps for outlier probing:

1. Calculate the $D^2$ values for each observation in the batch of data.
2. Find the cut-off value from an appropriate table (Note: the cut-off value is a function of desired alpha ($\alpha$) level, sample size, and number of independent or predictor variables).
3. Locate the largest $D^2$ value from the batch of data, with a greater than cut-off value declaring as an outlier.

Note that the cut-off value is a function of desired alpha ($\alpha$) level, sample size, and number of independent or predictor variables. Barnett and Lewis (1994, p. 517) have developed tables of critical values for the multivariate extreme deviate test, and the tables have been extended by Jennings and Young (1988; see Appendix M). Therefore I utilized the Mahalanobis distance measure ($D^2$) to test whether the multivariate outliers existed in the data of this study. The null hypothesis ($H_0$) and alternative hypothesis ($H_a$) are:

\begin{align*}
H_0 & : \text{There are no outliers in the dataset based on the Mahalanobis distance ($D^2$) observed.} \\
H_a & : \text{The largest Mahalanobis distance ($D^2$) observed is an outlier.}
\end{align*}

I performed a multiple regression by saving the Mahalanobis distance ($D^2$) and referred the $D^2$ to the appropriate critical values. In this case, the critical value in the table is 36.547 (using sample size equal or above 500, dimension = 8, and $\alpha = 0.005$). After looking at the MAH_1 column in
the SPSS data file, no outlier existed because the largest $D^2$ was 35.212 (case number 386). As a result, I reject $H_0$ and conclude there are no outliers identified in this dataset.

**Items per Construct**

Last but not least, scholars are often faced with a catch-22 situation of determining how many items are required per construct. Some scholars like to include numerous items in an attempt to increase reliability and fully represent a factor. Although more indicators can contribute to higher reliability, more indicators require larger sample size to produce truly unidimensional constructs (Hair et al., 2010). In contrast, others prefer smallest number of items to adequately represent a construct due to the parsimony principle. For instance, in SEM, sometimes researchers only use a single indicator representing some constructs. However, Hair et al. (2010) contended that using too few items is problematic because it cannot provide adequate identification for the factor. To address this dilemma in deciding the optimal number of indicators per construct, Hair et al. (2010) have provided the following rules of thumb:

In summary, when specifying the number of indicators per construct, the following is recommended:

- Use four indicators whenever possible.
- Having three indicators per construct is acceptable, particularly when other constructs have more than three.
- Constructs with fewer than three indicators should be avoided. (p.678)

Based on these criteria, all the factors in the present study are all met the preferable four items.
Preliminary Analyses

Prior to performing the central analysis of interest, I conducted multiple sets of preliminary analyses. These included scale reliability analysis, descriptive statistics, and correlation analysis.

Measures of Reliability

A series of reliability analyses were performed to check the scale reliabilities of the current study’s key variables. Specifically, Cronbach’s alpha (α) and McDonald’s omega (ω) coefficients were used as the measures of scale reliability in this research. The Cronbach’s alpha (α) coefficient has been most popularly selected as the index of scale reliability (Field, 2013). According to Kline, a cut-off point of .7 is the recommended value for interpreting Cronbach’s α, when any value greater than or equal to .7 is considered as an acceptable scale reliability. Kaplan and Saccuzzo (2017) also noted that Cronbach’s α reliability estimates of .7 to .8 are appropriate for most purposes in basic research. In addition, more and more methodologists suggest that it is useful to report the more sensible and reliable McDonald’s omega (ω) coefficient as an alternative index of reliability estimate (e.g., Deng & Chan, 2017; DeVellis, 2016; Dunn, Baguley, & Brunsden, 2014; Graham, 2006; McDonald, 1999; Revelle & Zinbarg, 2009; Zinbarg, Revelle, Yovel, & Li, 2005). Therefore, in this study, I also reported the McDonald’s omega (ω) coefficients as the alternative estimate of scale reliability to Cronbach’s alpha (α) coefficients. According to Reise (2012), a minimum value of .75 is preferable for McDonald’s ω. As shown in Table 5, the results of reliability analyses were extremely similar to both measurements of the Cronbach’s α and the McDonald’s ω. More specifically, the Cronbach’s alpha (α) coefficients ranged from .857 to .946 and the McDonald’s omega (ω)
coefficients ranged from .859 to .946, which revealed good reliability for each scale in the present study.

**Descriptive Findings and Correlations among Measures**

Table 5 also displays the descriptive statistics of means and standard deviations and Pearson product-moment correlation coefficients (r) of the research variables, with the control variables of gender, age of starting learning English, English level, and ethnicity. Results of bivariate correlations showed that teacher emotional support was significantly positive related to enjoyment (r = .678, p < .001) and self-efficacy (r = .592, p < .001), but negatively related to anxiety (r = -.406, p < .001). As expected, intrinsic motivation was significantly positively correlated with enjoyment (r = .662, p < .001), self-efficacy (r = .873, p < .001), and teacher emotional support (r = .594, p < .001), but negatively correlated with anxiety (r = -.393, p < .001). Furthermore, the correlation between self-efficacy and enjoyment was strongly positive (r = .677, p < .001) and stronger than the correlation between self-efficacy and anxiety (r = -.385, p < .001). A significant negative correlation was found between enjoyment and anxiety (r = -.299, p < .001).
Table 5

Descriptive Statistics and Intercorrelations for Study Variables (N = 1,464)

<table>
<thead>
<tr>
<th>Measure</th>
<th>M</th>
<th>SD</th>
<th>α (ω)</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Gender</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) Starting Age</td>
<td>9.05</td>
<td>3.22</td>
<td>.02</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) English level</td>
<td>75.63</td>
<td>10.28</td>
<td>−.26**</td>
<td>−.05*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4) Ethnicity</td>
<td></td>
<td></td>
<td>−.12**</td>
<td>.39**</td>
<td>.01</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(5) Enjoyment</td>
<td>3.33</td>
<td>0.76</td>
<td>.903 (.905)</td>
<td>−.09**</td>
<td>−.07**</td>
<td>.22**</td>
<td>.05*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(6) Anxiety</td>
<td>3.70</td>
<td>1.22</td>
<td>.857 (.859)</td>
<td>−.06*</td>
<td>−.05</td>
<td>.08**</td>
<td>−.07**</td>
<td>−.30**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(7) Self-efficacy</td>
<td>4.66</td>
<td>1.19</td>
<td>.946 (.946)</td>
<td>−.01</td>
<td>−.08**</td>
<td>.20**</td>
<td>.03</td>
<td>.68**</td>
<td>−.39**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(8) Teacher Support</td>
<td>3.52</td>
<td>0.85</td>
<td>.918 (.920)</td>
<td>.01</td>
<td>−.11**</td>
<td>.07**</td>
<td>.03</td>
<td>.68**</td>
<td>−.41**</td>
<td>.59**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>(9) Intrinsic Motivation</td>
<td>4.85</td>
<td>1.19</td>
<td>.875 (.880)</td>
<td>−.03</td>
<td>−.09**</td>
<td>.18**</td>
<td>.02</td>
<td>.66**</td>
<td>−.39**</td>
<td>.87**</td>
<td>.59**</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. **p < .01; *p < .05. α = Cronbach’s alpha (α) coefficient; ω = McDonald’s omega (ω) coefficient. Gender was coded such that 0 = female and 1 = male; ethnicity was coded such that 0 = Han Chinese and 1 = non-Han Chinese.
Results

This section reports the results of assessing the proposed mediation model in the current study. This hypothesized model was estimated using an ordinary least squares (OLS) regression-based path analysis with the PROCESS macro for SPSS (Hayes, 2013, 2018; Preacher & Hayes, 2008) as well as utilizing Amos program (Arbuckle, 2017) for structural equation modeling (SEM) statistical methodology. Thus, results are organized below by the two analytic methods that relate to the five research hypotheses.

OLS Regression

The proposed mediation model in Figure 3 from Chapter 3 has one total effect, one direct effect, and five indirect effects of teacher emotional support on intrinsic motivation. The main focus of this research is the five specific indirect effects of teacher emotional support on intrinsic motivation, three passing through only one mediator and two passing through two mediators. Specifically, the indirect effect of teacher emotional support on intrinsic motivation passes through the potential mediators of: (a) enjoyment only (Hypothesis 1 = $a_1 \times b_1$), (b) anxiety only (Hypothesis 2 = $a_2 \times b_2$), (c) self-efficacy only (Hypothesis 3 = $a_3 \times b_3$), (d) enjoyment to self-efficacy (Hypothesis 4 = $a_1 \times d_{31} \times b_3$), and (e) anxiety to self-efficacy (Hypothesis 5 = $a_2 \times d_{32} \times b_3$). Each indirect effect is for testing one research hypothesis. In addition to the estimation of the five indirect effects, the parameters of $c$ and $c'$ estimate the total effect and direct effect of teacher emotional support on intrinsic motivation, respectively. These model parameters $a_1, a_2, a_3, b_1, b_2, b_3, c, c', d_{31}$, and $d_{32}$ are known as the unstandardized regression coefficients that are quantified and estimated using PROCESS version 3.4 with the 95% bootstrap confidence intervals as resampling methods implemented for the indexes of mediation inference (Hayes,
Hypothesis 1.

The first research hypothesis for the present study was: Chinese EFL learners’ perception that their teachers care about them contributes to a greater increase in enjoyment toward English learning, which in turn promotes their intrinsic motivation to learn English. The primary intention of this hypothesis was to test whether enjoyment served as a potential mediator of the relation between teacher emotional support and intrinsic motivation. The first hypothesis was examined by indirect effect 1, which was quantified as the product of the effect of teacher emotional support on enjoyment ($a_1$) and the effect of enjoyment on intrinsic motivation ($b_1$). Results of the mediation model analysis for Hypothesis 1 are presented in Table 6 and 7. As shown in Table 6, teacher emotional support was related positively to enjoyment ($\beta = .655$, $SE = 0.016$, $t(1458) = 34.250$, $p < .001$), and enjoyment was positively associated with intrinsic motivation ($\beta = .080$, $SE = 0.031$, $t(1455) = 4.103$, $p < .001$). As can be seen in Table 6, $a_1 = 0.563$, and $b_1 = 0.125$. Therefore, multiplying $a_1$ and $b_1$ yielded the indirect effect, $a_1b_1 = 0.563(0.125) = 0.070$ (see Table 7). A resampling method using 10,000 bootstrap samples was applied to generate a 95% bias-corrected bootstrap confidence interval as the inferential test for indirect effect 1 ($a_1b_1 = 0.070$), and this was found to be entirely above zero (0.034 to 0.108). The first indirect effect is statistically significant because the confidence interval does not include zero (Preacher & Hayes, 2008), therefore corroborating the first research hypothesis that enjoyment functioned as a mediator of the effect of teacher emotional support on intrinsic motivation.
Hypothesis 2.

The second research hypothesis for this study was: Chinese EFL learners’ perception that their teachers care about them alleviates the anxiety toward English learning, which in turn facilitates their intrinsic motivation to learn English. The primary purpose of this hypothesis was to test whether anxiety served as a potential mediator of the relation between teacher emotional support and intrinsic motivation. The second hypothesis was investigated by indirect effect 2, which was quantified as the product of the effect of teacher emotional support on anxiety ($a_2$) and the effect of anxiety on intrinsic motivation ($b_2$). Results of the mediation model analysis for Hypothesis 2 are displayed in Table 6 and 7. As seen in Table 6, teacher emotional support was related negatively to anxiety ($\beta = -0.787, SE = 0.015, t(1458) = -48.110, p < .001$), and anxiety was negatively associated with intrinsic motivation ($\beta = -0.067, SE = 0.031, t(1455) = -3.178, p = .002$). As can be found in Table 6, $a_2 = -0.726$, and $b_2 = -0.099$. Thus, multiplying $a_2$ and $b_2$ yielded the indirect effect, $a_2b_2 = -0.726(-0.099) = 0.072$ (see Table 7). A resampling method using 10,000 bootstrap samples was utilized to produce a 95% bias-corrected bootstrap confidence interval as the inferential test for indirect effect 2 ($a_2b_2 = 0.072$), and this was found to be totally above zero (0.011 to 0.137). The second indirect effect is statistically significant because the confidence interval does not overlap with zero (Preacher & Hayes, 2008), thus supporting the second research hypothesis that anxiety functioned as a mediator of the effect of teacher emotional support on intrinsic motivation. 

Hypothesis 3.

The third research hypothesis for the study was: Chinese EFL learners’ perception that their teachers care about them contributes to a greater increase in self-efficacy, which in turn
promotes their intrinsic motivation to learn English. The primary goal of this hypothesis was to examine whether self-efficacy served as a potential mediator of the relation between teacher emotional support and intrinsic motivation. The third hypothesis was tested by indirect effect 3, which was quantified as the product of the effect of teacher emotional support on self-efficacy ($a_3$) and the effect of self-efficacy on intrinsic motivation ($b_3$). Results of the mediation model analysis for Hypothesis 3 are presented in Table 6 and 7. As shown in Table 6, teacher emotional support was associated positively with self-efficacy ($\beta = .073$, $SE = 0.042$, $t(1456) = 2.323$, $p = .020$), and self-efficacy was positively related to intrinsic motivation ($\beta = .753$, $SE = 0.018$, $t(1455) = 42.054$, $p < .001$). As can be seen in Table 6, $a_3 = 0.098$, and $b_3 = 0.754$. Therefore, multiplying $a_3$ and $b_3$ yielded the indirect effect, $a_3b_3 = 0.098(0.754) = 0.074$ (see Table 7). A resampling method using 10,000 bootstrap samples was implemented to generate a 95% bias-corrected bootstrap confidence interval as the inferential test for indirect effect 3 ($a_3b_3 = 0.074$), and this was found to fall between $-0.012$ and $0.161$. The third indirect effect is non-significant statistically because the confidence interval straddled zero (Preacher & Hayes, 2008), hence I rejected the third research hypothesis. In other words, self-efficacy could not be construed as a mediator of the effect of teacher emotional support on intrinsic motivation.

**Hypothesis 4.**

The fourth research hypothesis for the present study was: Chinese EFL learners’ perception that their teachers care about them contributes to a greater increase in enjoyment and self-efficacy sequentially, with greater enjoyment helping to develop higher self-efficacy, which in turn increases intrinsic motivation to learn English. The main intention of this hypothesis was to test whether enjoyment and self-efficacy created a mediating pathway between teacher
emotional support and intrinsic motivation. The fourth hypothesis was examined by indirect effect 4, which was quantified as the product of the effect of the teacher emotional support on enjoyment \((a_1)\), the effect of enjoyment on self-efficacy \((d_{31})\), and the effect of self-efficacy on intrinsic motivation \((b_3)\). Results of the mediation model analysis for Hypothesis 4 are displayed in Table 6 and 7. As shown in Table 6, teacher emotional support positively predicted enjoyment \((\beta = .655, SE = 0.016, t(1458) = 34.250, p < .001)\), enjoyment positively predicted self-efficacy \((\beta = .444, SE = 0.041, t(1456) = 17.155, p < .001)\), and self-efficacy positively predicted intrinsic motivation \((\beta = .753, SE = 0.018, t(1455) = 42.054, p < .001)\). As can be seen in Table 6, \(a_1 = 0.563, d_{31} = 0.696, \) and \(b_3 = 0.754\). Thus, multiplying \(a_1\), \(d_{31}\), and \(b_3\) yielded the indirect effect, \(a_1 d_{31} b_3 = 0.563 \times 0.696 \times 0.754 = 0.296\) (see Table 7). A resampling method using 10,000 bootstrap samples was applied to produce a 95% bias-corrected bootstrap confidence interval as the inferential test for indirect effect 4 \((a_1 d_{31} b_3 = 0.296)\), and this was found to be entirely above zero \((0.630 \text{ to } 0.806)\). The fourth indirect effect is statistically significant because the confidence interval does not contain zero (Preacher & Hayes, 2008), therefore corroborating the fourth research hypothesis that there was a mediating pathway from teacher emotional support to enjoyment to self-efficacy to intrinsic motivation.

**Hypothesis 5.**

The fifth research hypothesis for the current study was: Chinese EFL learners’ perception that their teachers care about them contributes to a greater decrease in anxiety and a greater increase in self-efficacy sequentially, with lower anxiety helping to develop greater self-efficacy, which in turn fosters intrinsic motivation to learn English. The main purpose of this hypothesis was to investigate whether anxiety and self-efficacy created a mediating pathway between
teacher emotional support and intrinsic motivation. The fifth hypothesis was tested by indirect
effect 5, which was quantified as the product of the effect of the teacher emotional support on
anxiety ($a_2$), the effect of anxiety on self-efficacy ($d_{32}$), and the effect of self-efficacy on intrinsic
motivation ($b_3$). Results of the mediation model analysis for Hypothesis 5 are presented in Table
6 and 7. As seen in Table 6, teacher emotional support negatively predicted anxiety ($\beta = - .787,$
$SE = 0.015, t(1458) = -48.110, p < .001$), anxiety negatively predicted self-efficacy ($\beta = - .259,$
$SE = 0.044, t(1456) = - .8.557, p < .001$), and self-efficacy positively predicted intrinsic
motivation  ($\beta = .753, SE = 0.018, t(1455) = 42.054, p < .001$). As can be found in Table 6, $a_2 =$
$-0.726, d_{32} = -0.378, and b_3 = 0.754. Therefore, multiplying $a_1, d_{31},$ and $b_3$ yielded the indirect
effect, $a_2d_{32}b_3 = -0.726 \times (-0.378) \times 0.754 = 0.207$ (see Table 7). A resampling method
using 10,000 bootstrap samples was used to generate a 95% bias-corrected bootstrap confidence
interval as the inferential test for indirect effect 5 ($a_2d_{32}b_3 = 0.207$), and this was found to be
entirely above zero (0.139 to 0.278). The fifth indirect effect is statistically significant as the
confidence interval does not include zero (Preacher & Hayes, 2008), thus supporting the fifth
research hypothesis that there was a mediating pathway from teacher emotional support to
intrinsic motivation through anxiety and then self-efficacy.
Table 6

Model Summary Information for the Proposed Mediation Model Portrayed in Figure 3 (N = 1,464)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictor</th>
<th>Enjoyment (Mediator 1)</th>
<th>Anxiety (Mediator 2)</th>
<th>Self-efficacy (Mediator 3)</th>
<th>Intrinsic Motivation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$B(\beta)$</td>
<td>$SE$</td>
<td>$p$</td>
<td>$B(\beta)$</td>
</tr>
<tr>
<td>Teacher Support</td>
<td>$a_1$</td>
<td>0.563</td>
<td>0.016</td>
<td>&lt;.001</td>
<td>$a_2$</td>
</tr>
<tr>
<td>Enjoyment</td>
<td></td>
<td>(0.655)</td>
<td></td>
<td></td>
<td>d$_{11}$</td>
</tr>
<tr>
<td>Anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>d$_{12}$</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td>-0.082</td>
<td>0.031</td>
<td>.008</td>
<td></td>
</tr>
<tr>
<td>Starting Age</td>
<td></td>
<td>(-.052)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English level</td>
<td></td>
<td>0.012</td>
<td>0.002</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td>(.157)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td>0.07</td>
<td>0.042</td>
<td>.095</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.035)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$R^2 = .478$, Adjusted $R^2 = .476$

$F(5, 1458) = 267.197$

$p < .001$

$R^2 = .618$, Adjusted $R^2 = .617$

$F(5, 1458) = 471.902$

$p < .001$

$R^2 = .522$, Adjusted $R^2 = .519$

$F(7, 1456) = 226.918$

$p < .001$

$R^2 = .777$, Adjusted $R^2 = .776$

$F(8, 1455) = 632.907$

$p < .001$

Note. $B$ = Unstandardized regression coefficient; $\beta$ = Standardized regression coefficient. Gender was coded as 0 = female and 1 = male; ethnicity was coded as 0 = Han Chinese and 1 = non-Han Chinese.
Table 7

Summary of the Mediation Model Analysis

<table>
<thead>
<tr>
<th>Effect type</th>
<th>Mediator</th>
<th>Equation</th>
<th>Point Estimate</th>
<th>SE</th>
<th>LL</th>
<th>UL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect effect 1</td>
<td>Enjoyment</td>
<td>$a_1 \times b_1$</td>
<td>0.070</td>
<td>0.019</td>
<td>0.034</td>
<td>0.108</td>
</tr>
<tr>
<td>Indirect effect 2</td>
<td>Anxiety</td>
<td>$a_2 \times b_2$</td>
<td>0.072</td>
<td>0.032</td>
<td>0.011</td>
<td>0.137</td>
</tr>
<tr>
<td>Indirect effect 3</td>
<td>Self-efficacy</td>
<td>$a_3 \times b_3$</td>
<td>0.074</td>
<td>0.044</td>
<td>-0.012</td>
<td>0.161</td>
</tr>
<tr>
<td>Indirect effect 4</td>
<td>Enjoyment + Self-efficacy</td>
<td>$a_1 \times d_{31} \times b_3$</td>
<td>0.296</td>
<td>0.029</td>
<td>0.242</td>
<td>0.353</td>
</tr>
<tr>
<td>Indirect effect 5</td>
<td>Anxiety + Self-efficacy</td>
<td>$a_2 \times d_{32} \times b_3$</td>
<td>0.207</td>
<td>0.036</td>
<td>0.139</td>
<td>0.278</td>
</tr>
<tr>
<td>Total indirect effect</td>
<td></td>
<td>$a_1b_1 + a_2b_2 + a_3b_3 + a_1d_{31}b_3 + a_2d_{32}b_3$</td>
<td>0.719</td>
<td>0.045</td>
<td>0.630</td>
<td>0.806</td>
</tr>
<tr>
<td>Direct effect</td>
<td></td>
<td>$c'$</td>
<td>0.055</td>
<td>0.043</td>
<td>-0.029</td>
<td>0.138</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>95% bootstrap CI</th>
<th>SE</th>
<th>LL</th>
<th>UL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>SE</td>
<td>LL</td>
<td>UL</td>
</tr>
</tbody>
</table>

|                             |                               | Total effect           | 0.774          | 0.028 | 0.718 | 0.829 |

Note. CI = confidence interval; LL = lower limit; UL = upper limit. If the confidence interval does not include zero, it reveals a significant effect.
Structural Equation Modeling (SEM)

In addition to estimating the present study’s mediation model utilizing the OLS regression, the hypothesized mediation model was also estimated using the Amos program version 26.0 (Arbuckle, 2017) for SEM with maximum likelihood method. According to suggestions from numerous methodologists (see e.g., Byrne, 2016; Hu & Bentler, 1999; Kline, 2016; Marsh, Hau, & Wen, 2004; Schweizer, 2010), the model fit of the SEM to the data should be evaluated by multiple criteria. Given that chi-square ($\chi^2$) is extremely sensitive to sample size, multiple model evaluation indices of fit were taken into account including: (1) a chi-square ($\chi^2$) statistic, (2) standardized root mean square residual (SRMR), (3) comparative fit index (CFI), (4) the root mean square error of approximation (RMSEA), and (5) the Tucker-Lewis index (TLI). The TLI and CFI values range from zero to 1.00, with values greater than .90 and .95 indicating acceptable fit and superior fit, respectively. Additionally, the SRMR and RMSEA values lower than .08 and .06 indicate mediocre fit and good fit, respectively (Hu & Bentler, 1999). The hypothesized mediation model fit is presented in Table 8. As shown in the table, tests of the hypothesized mediation model exhibited a good fit with the sample data, $\chi^2 (1, N = 1464) = 1.835, p = .175, CFI = 1, TLI = .998, SRMR = .007, RMSEA = .024,$ with 90% confidence interval $=.000$ to $.078.$

The results of the hypothesized mediation model analysis are displayed in Figure 8. I compared the results of mediation analysis from the SEM to the OLS regression-based mediation analysis from the PROCESS output in Table 9, and I found them to be very close to each other. Specifically, as shown in Table 9, there are tiny discrepancies in some of the standardized regression coefficients ($\beta$) and standard errors between Amos and PROCESS. However, it made no difference in unstandardized regression coefficients ($a_1, a_2, a_3, b_1, b_2, b_3, c, c', d_{31},$ and $d_{32}$)
between PROCESS and Amos (see Table 9). As mentioned earlier, the primary interest of this research is the five specific indirect effects: (1) teacher emotional support to enjoyment to intrinsic motivation (indirect effect 1 = \( a_1 \times b_1 \)); (2) teacher emotional support to anxiety to intrinsic motivation (indirect effect 2 = \( a_2 \times b_2 \)); (3) teacher emotional support to self-efficacy to intrinsic motivation (indirect effect 3 = \( a_3 \times b_3 \)); (4) teacher emotional support to enjoyment to self-efficacy to intrinsic motivation (indirect effect 4 = \( a_1 \times d_{31} \times b_3 \)); and (5) teacher emotional support to anxiety to self-efficacy to intrinsic motivation (indirect effect 5 = \( a_2 \times d_{32} \times b_3 \)). The five indirect effects are for testing five research hypotheses. Given that using the PROCESS or Amos yielded exactly the same unstandardized regression coefficients (\( a_1, a_2, a_3, b_1, b_2, b_3, c, c', d_{31}, \) and \( d_{32} \)), the results of the mediation analysis between PROCESS and Amos were equal.
Table 8

Model Fit Summary: Goodness-of-fit Statistics for the Proposed Mediation Model Portrayed in Figure 3

<p>| | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RMSEA 90% CI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>χ²</td>
<td>df</td>
<td>TLI</td>
<td>CFI</td>
<td>SRMR</td>
<td>RMSEA</td>
<td>LL</td>
<td>UL</td>
<td>Pclose</td>
</tr>
<tr>
<td>1464</td>
<td>1.835</td>
<td>1</td>
<td>.998</td>
<td>1</td>
<td>.007</td>
<td>.024</td>
<td>.000</td>
<td>.078</td>
<td>.712</td>
</tr>
</tbody>
</table>

Note. χ² = chi-square; df = degree of freedom; TLI = Tucker-Lewis index; CFI = comparative fit index; SRMR, standardized root mean square residual; RMSEA, root mean square error of approximation. CI = confidence interval. LL = lower limit; UL = upper limit.
Table 9

Structural Equation Modeling versus OLS Regression: Model Summary Information for the Proposed Mediation Model Depicted in Figure 3 (N = 1,464)

<table>
<thead>
<tr>
<th>Predictor</th>
<th>PROCESS</th>
<th>Amos</th>
<th>PROCESS</th>
<th>Amos</th>
<th>PROCESS</th>
<th>Amos</th>
<th>PROCESS</th>
<th>Amos</th>
<th>PROCESS</th>
<th>Amos</th>
<th>PROCESS</th>
<th>Amos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher Support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enjoyment</td>
<td>$a_1 \rightarrow 0.563$ (.655)</td>
<td>0.016</td>
<td>0.563 (.655)</td>
<td>0.016</td>
<td>$a_2 \rightarrow -0.726$ (-.787)</td>
<td>0.015</td>
<td>$-0.726$ (-.787)</td>
<td>0.015</td>
<td>$a_3 \rightarrow 0.098$ (.073)</td>
<td>0.042</td>
<td>0.098 (.074)</td>
<td>0.045</td>
</tr>
<tr>
<td>Anxiety</td>
<td>$d_{31} \rightarrow 0.696$ (.444)</td>
<td>0.041</td>
<td>0.696 (.450)</td>
<td>0.039</td>
<td>$b_1 \rightarrow -0.099$ (−.080)</td>
<td>0.031</td>
<td>$-0.099$ (−.081)</td>
<td>0.030</td>
<td>$b_2 \rightarrow -0.378$ (−.259)</td>
<td>0.044</td>
<td>$-0.378$ (−.263)</td>
<td>0.043</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>$d_{32} \rightarrow -0.067$ (−.753)</td>
<td>0.018</td>
<td>$-0.067$ (−.753)</td>
<td>0.018</td>
<td>$b_3 \rightarrow 0.754$ (.753)</td>
<td>0.018</td>
<td>$0.754$ (.753)</td>
<td>0.018</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$R^2 = .478$ $R^2 = .48$ $R^2 = .618$ $R^2 = .62$ $R^2 = .522$ $R^2 = .51$ $R^2 = .777$ $R^2 = .77$

Note. $B = $ Unstandardized regression coefficient; $\beta = $ Standardized regression coefficient. The discrepancies in standardized regression coefficients and standard errors between Amos and PROCESS are in boldface type. Control variables of gender, starting age of learning English, English level, and ethnicity were included as the covariates but are not shown here.
Study variables of gender, starting age of learning English, English level, and ethnicity were included in the mediation model as the covariates but are not represented here. Standardized coefficients ($\beta$) and unstandardized regression coefficients $a_1, a_2, a_3, b_1, b_2, b_3, c, c', d_{31}$, and $d_{32}$ are presented along with their standard errors (shown in parentheses). *$p < .05$. **$p < .01$. ***$p < .001$. 

*Figure 8.* Model summary information for the hypothesized mediation model portrayed in figure 3 (N = 1,464).
Summary

The primary focus of this quantitative, cross-sectional correlation study was to investigate whether, and to what extent, teacher emotional support has an impact on fostering Chinese college students’ intrinsic motivation in English learning through the potential mediators of enjoyment, anxiety, and self-efficacy. The present study was conducted by analyzing the data collected from six public four-year universities located in mainland China. To answer the five research hypotheses based on the research problem, data were analyzed using OLS regression as well as SEM to estimate the hypothesized mediation model. In this model, the key interest is the five indirect effects, which are representative of the five research hypotheses tested: teacher emotional support on intrinsic motivation through the potential mediators of enjoyment only (hypothesis 1 = Indirect effect 1 = $a_1 \times b_1$), anxiety only (hypothesis 2 = Indirect effect 2 = $a_2 \times b_2$), self-efficacy only (hypothesis 3 = Indirect effect 3 = $a_3 \times b_3$), enjoyment to self-efficacy (hypothesis 4 = Indirect effect 4 = $a_1 \times d_{31} \times b_3$), and anxiety to self-efficacy (hypothesis 5 = Indirect effect 5 = $a_2 \times d_{32} \times b_3$).

This chapter provided the findings of the mediation model analyses. Results corroborated the research hypotheses 1, 2, 4, and 5, thus suggesting that there was evidence of mediating pathways from teacher emotional support to intrinsic motivation through: (1) enjoyment only, (2) anxiety only, (3) enjoyment then to self-efficacy, and (4) anxiety then to self-efficacy. Additionally, when estimating the mediation model, the results were the same whether SEM or an OLS regression is used. In Chapter 5, I will provide a comprehensive summary of the entire study and conclusions and implications as well as recommendations based on the findings of the mediation analysis of this study.
CHAPTER V
DISCUSSION

Introduction and Summary of the Study

EFL courses are mandatory for all undergraduate programs in mainland China on account of the position of English as an international language. Meanwhile, many EFL learners have encountered great difficulties in learning English (Zheng et al., 2018), and many EFL instructors have experienced profound challenges to motivate their students to learn and engage in English classrooms (Lamb, 2017). Deci and Ryan’s (1985; Ryan & Deci, 2000) SDT is the theoretical foundation for the present study. Motivation theorists have demonstrated that students’ intrinsic motivation plays a most important role in sustaining engagement and fostering academic achievement (Ryan & Deci, 2017; Wentzel & Miele, 2016). However, it has been argued that students’ intrinsic motivation shows a tendency to decrease over the school years (Ryan & Deci, 2017). Previous studies have shown that teacher emotional support can have a positive impact on students’ intrinsic motivation (see e.g., Fan, 2011; Wang & Eccles, 2013; Wentzel et al., 2017). Additionally, research has documented that emotional support from teachers has been positively associated with enjoyment (King et al., 2012; Skinner et al., 2008) and self-efficacy (Wentzel et al., 2017; Yıldırım, 2012), but negatively related to anxiety (Huang et al., 2010; Piechurska-Kuciel, 2011; Weymouth & Buehler, 2018). In SLA motivation literature, however, little research has examined whether students’ perceptions of emotional support from teachers influence their intrinsic motivation to learn English (Henry & Thorsen, 2018).
Empirical evidence also suggests that enjoyment (Saito et al., 2018) and self-efficacy (Busse, 2013; Joe et al., 2017) are positive predictors of intrinsic motivation, and anxiety is a negative predictor of intrinsic motivation (Horwitz, 2010; Gardner, 1985). Despite much is known about relationships between teacher emotional support, anxiety, enjoyment, self-efficacy, and intrinsic motivation, much less is known about the mechanisms underlying teacher emotional support in intrinsic motivation through the potential multiple intervening variables (i.e., mediators) such as enjoyment, anxiety, and self-efficacy.

Prior to the present research, it was not known if and to what degree Chinese college students’ perceptions of emotional support from teachers impact facilitating intrinsic motivation in English learning through the potential mediators of enjoyment, anxiety, and self-efficacy. The major goal of this quantitative, cross-sectional correlation study was to address this research gap by proposing a combination of parallel and serial mediation model as depicted in Figure 1 (conceptual mediation model) and Figure 3 (statistical mediation model). This proposed mediation model was developed based on the results of the literature review. In this mediation model, it is hypothesized that enjoyment, anxiety, and self-efficacy were important mediators of the relation between teacher emotional support and students’ intrinsic motivation. Specifically, the following five research hypotheses guided the present study:

Hypothesis 1: Chinese EFL learners’ perception that their teachers care about them contributes to increased enjoyment of English learning, which in turn promotes their intrinsic motivation to learn English.
Hypothesis 2: Chinese EFL learners’ perception that their teachers care about them alleviates learners’ anxiety toward English learning, which in turn facilitates their intrinsic motivation to learn English.

Hypothesis 3: Chinese EFL learners’ perception that their teachers care about them contributes to an increase in self-efficacy, which in turn promotes learners’ intrinsic motivation to learn English.

Hypothesis 4: Chinese EFL learners’ perception that their teachers care about them contributes to an increase in enjoyment and self-efficacy sequentially, with greater enjoyment helping to develop higher self-efficacy, which in turn increases intrinsic motivation to learn English.

Hypothesis 5: Chinese EFL learners’ perception that their teachers care about them contributes to decreased anxiety and increased self-efficacy sequentially, with lower anxiety helping to develop greater self-efficacy, which in turn fosters intrinsic motivation to learn English.

Data were collected from six public four-year universities in mainland China: the University of Heilongjiang, Hebei University, Zhejiang Sci-Tech University, Hubei University, Chongqing University of Arts And Science, and Xinjiang University of Finance and Economics. Participants were recruited through a snowballing sampling procedure, which is a nonrandom sampling technique (Fraenkel et al., 2014). Data were analyzed using SPSS and Amos version 26.0. The study’s findings have contributed to the extant SLA motivation literature. The remainder of this chapter presents a summary of the findings and conclusions for each research
hypothesis based on the results of data analysis. Then I discuss implications and limitations as well as recommendations for future search.

**Summary of Findings and Conclusion**

The current study aimed to fill the gap in the extant literature by testing the five specific indirect effects, which represented the five research hypotheses tested, of teacher emotional caring on intrinsic motivation in EFL classrooms through (1) enjoyment only (Hypothesis 1 = $a_1 \times b_1$), (2) anxiety only (Hypothesis 2 = $a_2 \times b_2$), (3) self-efficacy only (Hypothesis 3 = $a_3 \times b_3$), (4) enjoyment to self-efficacy (Hypothesis 4 = $a_1 \times d_{31} \times b_3$), and (5) anxiety to self-efficacy (Hypothesis 5 = $a_2 \times d_{32} \times b_3$). To test these five research hypotheses, the proposed mediation model (see Figure 3) was estimated using an OLS regression-based path analysis with the PROCESS macro for SPSS (Hayes, 2013, 2018; Preacher & Hayes, 2008) and utilizing the Amos program (Arbuckle, 2017) for SEM with the maximum likelihood approach. Given that OLS regression or SEM had yielded exactly the same results of mediation analysis, I only provided the findings of the study from the OLS regression in this chapter. This section summarizes the current study’s findings organized by five research hypotheses. Additionally, I present conclusions along with the findings of the study based on the data analyses.

**Hypothesis 1 (Indirect Effect 1)**

The first hypothesis sought to examine the mediating effect of enjoyment on the relationship between teacher emotional support and intrinsic motivation. The first research hypothesis predicted that the association between Chinese college students’ perceptions of teacher emotional support and intrinsic motivation in English learning is mediated by enjoyment in EFL classroom. To test this predication, I estimated and tested the significance of the product
of OLS regression path $a_1$ and OLS regression path $b_1$ as shown in Table 6, with a 95% bias-corrected bootstrap confidence interval (CI), based on 10,000 bootstrap samples, used as the inference for Hypothesis 1. The $a_1$ is the OLS regression coefficient estimating enjoyment from teacher emotional support controlling for variables of gender, starting age of learning English, English level, and ethnicity (henceforth referred to as covariates to avoid repetition in the text), and $b_1$ is the OLS regression coefficient estimating intrinsic motivation from enjoyment controlling for teacher emotional support, anxiety, self-efficacy and covariates. Results of the mediation analysis are displayed in Table 6 and Table 7. As can be found in Table 6, students who reported perceived greater emotional caring from their EFL teachers reported greater enjoyment in their EFL classroom ($a_1 = 0.563$, $\beta = .655$, $SE = 0.016$, $t(1458) = 34.250$, $p < .001$), and this greater enjoyment in the EFL classroom in turn was associated with an increased intrinsic motivation to learn English ($b_1 = 0.125$, $\beta = .080$, $SE = 0.031$, $t(1455) = 4.103$, $p < .001$). The results also showed that the indirect effect of teacher emotional support on intrinsic motivation through enjoyment was significant with a point estimate ($= a_1 \times b_1$) of 0.070, 95% percentile CI = 0.034 to 0.108 (see Table 7). As a consequence, there was evidence of a mediating pathway from perceived teacher emotional caring to enjoyment in EFL classrooms to intrinsic motivation in English learning.

The findings supported the first hypotheses of the present study. With respect to Hypothesis 1, the results confirm previous empirical research relating students’ perceptions of teacher emotional caring to enjoyment (e.g., Ahmed et al., 2010; Aldridge et al., 2013; Fraser & Fisher, 1982; King et al., 2012; Pekrun et al., 2002; Skinner, Furrer, et al., 2008). Similarly, a meta-analysis by Lei et al. (2018) of 65 primary studies with 58,368 students examined the effect of teacher support on students’ academic emotions. Results strongly indicated that teacher
support is a significant positive predictor of students’ enjoyment. Further, findings are also consistent with prior research relating enjoyment to intrinsic motivation (e.g., MacIntyre & Vincze, 2017; Pekrun, 2016; Pekrun & Linnenbrink, 2014). An important finding related to this hypothesis is that enjoyment functions as a mediator of the effect of teacher emotional support on intrinsic motivation. These findings extend our knowledge of how enjoyment operates in the relation between ELF students’ perceptions of teacher emotional caring and intrinsic motivation to learn English.

**Hypothesis 2 (Indirect Effect 2)**

The second hypothesis sought to investigate the mediating effect of anxiety on the relationship between teacher emotional support and intrinsic motivation. The second research hypothesis predicted that the relation between Chinese college students’ perceptions of teacher emotional caring and intrinsic motivation to learn English is mediated by anxiety in EFL classrooms. To test this prediction, I estimated and tested the significance of the product of OLS regression path \(a_2\) and OLS regression path \(b_2\) as shown in Table 6, with a 95% bias-corrected bootstrap CI, based on 10,000 bootstrap samples, used as the inference for Hypothesis 2. The \(a_2\) is the OLS regression coefficient estimating anxiety from teacher emotional caring controlling for covariates, and \(b_2\) is the OLS regression coefficient estimating intrinsic motivation from anxiety controlling for teacher emotional support, enjoyment, self-efficacy and covariates. Results of the mediation analysis are displayed in Table 6 and Table 7. As can be seen in Table 6, students who reported perceived greater emotional caring from their EFL teachers reported less anxiety in their EFL classroom \((a_2 = -0.726, \beta = -0.787, SE = 0.015, t(1458) = -48.110, p < .001)\), and less anxiety in EFL classrooms in turn was related to an increased intrinsic motivation in English learning \((b_2 = -0.099, \beta = -0.067, SE = 0.031, t(1455) = -3.178, p\)
=.002). The results also revealed that the indirect effect of teacher emotional caring on intrinsic motivation through anxiety was significant with a point estimate ($= a_2 \times b_2$) of $0.072$, 95% percentile CI = 0.011 to 0.137 (see Table 7). Consequently, there was evidence of a mediating pathway from perceived teacher emotional support to anxiety in EFL classrooms to intrinsic motivation in English learning.

The findings corroborated the second hypotheses of the current study. In terms of Hypothesis 2, the results are consistent with prior empirical work associating perceived teacher emotional support with lowered anxiety (Huang et al., 2010; Kim et al., 2018; Piechurska-Kuciel, 2011; Weymouth & Buehler, 2018), but are inconsistent with others (e.g., Jin et al., 2015; Jin & Dewaele, 2018; Palacios, 1998). The discrepancy between these studies and the present research might be attributed to significant factors such as age, culture, and gender. For example, while the current sample consisted of university students, several empirical studies have demonstrated that the relation between teacher support and negative emotions including anxiety was strongest among middle school students (e.g., Huang et al., 2010; Martínez, Aricak, Graves, Peters-Myszak, & Nellis, 2011; Taylor, 2003). Additionally, previous empirical research highlighted the evidence of a cultural differences in the relationship between teacher support and anxiety (e.g., Karagiannidis, Barkoukis, Gourgoulis, Kosta, & Antoniou, 2015; King et al., 2012). Likewise, numerous studies have confirmed the gender difference in the association between anxiety and teacher support (e.g., Nilsen, Karevold, Røysamb, Gustavson, & Mathiesen, 2013; Sylva et al., 2012; Van Ryzin, Gravel, & Roseth, 2009). More specifically, researchers have identified that, relative to male students, females are apt to perceive more teacher support (e.g., Lutz, 1996; Baumeister & Sommer, 1997) and self-report higher levels of anxiety (e.g., Gargalianou, Muehlfeld, Urbig, & van Witteloostuijn, 2016; Koul, Roy, Kaewkuekool, &
Moreover, current findings also confirm results of previous studies associating anxiety toward English learning with intrinsic motivation of learning English (e.g., Gardner, 1985, 2010; Koga, 2010; MacIntyre, 2017). Most importantly, current findings further suggested that anxiety mediated the effect of perceived teacher emotional caring on intrinsic motivation. These findings advance the existing body of knowledge by documenting the mediating role of anxiety on Chinese EFL learners’ intrinsic motivation in response to teacher support.

**Hypothesis 3 (Indirect Effect 3)**

The third hypothesis sought to explore the mediating effect of self-efficacy on the relationship between teacher emotional support and intrinsic motivation. The first research hypothesis predicted that the association between Chinese college students’ perceptions of teacher emotional support and intrinsic motivation in English learning is mediated by self-efficacy in EFL classroom. To test this prediction, I estimated and tested the significance of the product of OLS regression path $a_3$ and OLS regression path $b_3$ as shown in Table 6, with a 95% bias-corrected bootstrap CI, based on 10,000 bootstrap samples, used as the inference for Hypothesis 3. The $a_3$ is the OLS regression coefficient estimating self-efficacy from teacher emotional support controlling for enjoyment, anxiety and covariates, and $b_3$ is the OLS regression coefficient estimating intrinsic motivation from self-efficacy controlling for teacher emotional support, enjoyment, anxiety, and covariates. Results of the mediation analysis are displayed in Table 6 and Table 7. As can be seen in Table 6, students who reported perceived greater emotional caring from their EFL teachers reported greater self-efficacy in their EFL classroom ($a_3 = 0.098, \beta = .073, SE = 0.042, t(1456) = 2.323, p = .020$), and this greater self-efficacy in EFL classroom in turn was associated with an increased intrinsic motivation to learn.
English ($b_3 = 0.754$, $\beta = .753$, $SE = 0.018$, $t(1455) = 42.054$, $p < .001$). However, the results showed that the indirect effect of teacher emotional support on intrinsic motivation through self-efficacy was not significant with a point estimate ($= a_3 \times b_3$) of 0.074, 95% percentile CI = $-0.012$ to $0.161$ (see Table 7). As a consequence, the mediating pathway from perceived teacher emotional caring to self-efficacy in EFL classroom to intrinsic motivation in English learning was not established.

The findings did not lend support to the third hypotheses of the present study. In regard to Hypothesis 3, the results are aligned with past research relating students’ perceptions of teacher support to their self-efficacy beliefs (e.g., Aldridge et al., 2013; Alivernini & Lucidi, 2011; Mitchell & DellaMattera, 2011; Yıldırım, 2012). Findings are also in line with previous work associating self-efficacy to intrinsic motivation (e.g., Bandura, 1977, 1986, 1997; Pajares, 2003; Pan, 2014). In addition, self-efficacy was found not to function as a mediator of the effect of teacher emotional support on intrinsic motivation, which is contradictory to prior empirical research (Carreira et al., 2013; Fan, 2011; Wang & Eccles, 2013; Wentzel et al., 2017). Perhaps this inconsistent result of the mediating role of self-efficacy arose because, in contrast with the current effort, previous studies did not include other potential mediators such as enjoyment and anxiety. Importantly, this discrepant finding can be considered as an alternative reason to test the following two hypothesized serial mediating mechanisms: from enjoyment to self-efficacy and from anxiety to self-efficacy. These findings extend our knowledge of how self-efficacy operates in the relation between EFL students’ perceptions of teacher emotional caring and intrinsic motional to learn English. Specifically, this finding implies that self-efficacy on English learning is domain-specific (e.g., Bong, 2001, 2002) instead of domain-free (e.g., You, Dang, & Lim, 2016). Indeed, EFL learners’ perceptions of their English teachers’ provisions of emotional
support did not significantly raise their self-efficacious beliefs in learning English, which is contradictory to self-efficacy in other domains such as mathematics (Fast et al. 2010; Klassen, 2004; Stevens, Wang, Oliva´rez, & Hamman, 2007) and reading (Schunk 2003; Usher & Pajares, 2006a, 2006b). Therefore, this finding suggests that the quality of teacher-student relationships may not have an impact on students’ self-efficacy beliefs and intrinsic motivation in EFL classrooms.

**Hypothesis 4 (Indirect Effect 4)**

The fourth hypothesis sought to determine whether enjoyment and self-efficacy create a mediating pathway between teacher emotional support and intrinsic motivation. The fourth research hypothesis predicted that the relationship between Chinese college students’ perceptions of teacher emotional caring and intrinsic motivation to learn English is mediated by enjoyment and self-efficacy sequentially. To test this predication, I estimated and tested the significance of the product of OLS regression path $a_1$, OLS regression path $b_3$, and OLS regression path $d_{31}$ as shown in Table 6, with a 95% bias-corrected bootstrap CI, based on 10,000 bootstrap samples, used as the inference for Hypothesis 4. The $a_1$ is the OLS regression coefficient estimating enjoyment from teacher emotional support controlling for covariates, $d_{31}$ is the OLS regression coefficient estimating self-efficacy from enjoyment controlling for teacher emotional support, anxiety, and covariates, and $b_3$ is the OLS regression coefficient estimating intrinsic motivation from self-efficacy controlling for teacher emotional support, enjoyment, anxiety, and covariates. Results of the mediation analysis are displayed in Table 6 and Table 7. As can be found in Table 6, students who reported perceived greater emotional caring from their EFL teachers reported greater enjoyment ($a_1 = 0.563$, $\beta = .655$, $SE = 0.016$, $t(1458) = 34.250$, $p < .001$), and this greater enjoyment in the EFL classroom then contributed to an increased self-efficacy ($d_{31} = 0.696$, $\beta$}
This greater self-efficacy in EFL classrooms in turn was related to an increased intrinsic motivation in English learning ($b_3 = 0.754$, $\beta = .753$, $SE = 0.018$, $t(1455) = 42.054$, $p < .001$). The results also indicated that the indirect effect of teacher emotional support on intrinsic motivation through enjoyment and self-efficacy sequentially was significant with a point estimate ($= a_1 \times d_{31} \times b_3$) of 0.296, 95% percentile CI = 0.242 to 0.353 (see Table 7). Therefore, there was evidence of a mediating pathway from perceived teacher emotional caring to enjoyment of learning English to self-efficacy in EFL classrooms to intrinsic motivation in English learning.

The findings corroborated the fourth hypotheses of the current study. With respect to Hypothesis 4, the results are consistent with prior empirical research which has established that enjoyment is positively associated with self-efficacy (e.g., Haciomeroglu, 2019; Hagenauer & Hascher, 2010; Puente-Díaz & Cavazos-Arroyo, 2017; Sakiz et al., 2012; Schukajlow et al., 2012). Further, findings also confirm previous empirical work which has uncovered that enjoyment and self-efficacy together function as significant mediators sequentially, with enjoyment affecting self-efficacy (e.g., Chen et al., 2017). In line with this hypothesis, Lewis et al. (2016) examined the influence of enjoyment and self-efficacy on physical activity behavior. Results of the mediation analyses suggested that self-efficacy mediate the effect of enjoyment on physical activity behavior; however, enjoyment did not mediate the effect of self-efficacy on physical activity. This finding implied that the relation between enjoyment and self-efficacy is not a reciprocal causation, but it is serial, with enjoyment impacting self-efficacy, which is consistent with the present study. However, the current study provides the first empirical examination in SLA motivation literature of estimating the mediating pathway from perceived teacher emotional support to intrinsic motivation to learn English created by enjoyment and self-
efficacy in EFL classrooms. These findings extend the current knowledge of how students’ perceptions of emotional support from teachers can have an effect on facilitating intrinsic motivation in English learning through the mediators of enjoyment and self-efficacy in sequence.

**Hypothesis 5 (Indirect Effect 5)**

The fifth hypothesis sought to determine whether anxiety and self-efficacy create a mediating pathway between teacher emotional caring and intrinsic motivation. The fifth research hypothesis predicted that the relationship between Chinese college students’ perceptions of teacher emotional support and intrinsic motivation to learn English is mediated by anxiety and self-efficacy sequentially. To test this prediction, I estimated and tested the significance of the product of OLS regression path \(a_2\), OLS regression path \(b_3\), and OLS regression path \(d_{32}\) as shown in Table 6, with a 95% bias-corrected bootstrap CI, based on 10,000 bootstrap samples, used as the inference for Hypothesis 4. The \(a_2\) is the OLS regression coefficient estimating anxiety from teacher emotional caring controlling for covariates, and \(d_{32}\) is the OLS regression coefficient estimating self-efficacy from anxiety controlling for teacher emotional support, enjoyment, and covariates. The \(b_3\) is the OLS regression coefficient estimating intrinsic motivation from self-efficacy controlling for teacher emotional support, enjoyment, anxiety, and covariates. Results of the mediation analysis are displayed in Table 6 and Table 7. As can be seen in Table 6, students who reported perceived greater emotional support from their EFL teachers reported less anxiety in their EFL classroom \((a_2 = -0.726, \beta = -.787, SE = 0.015, t(1458) = -48.110, p < .001)\), and this reduced anxiety in EFL classrooms then contributed to an increased self-efficacy \((d_{32} = -0.378, \beta = -.259, SE = 0.044, t(1456) = -.8.557, p < .001)\). This greater self-efficacy in EFL classrooms in turn was related to an increased intrinsic motivation in English learning \((b_3 = 0.754, \beta = .753, SE = 0.018, t(1455) = 42.054, p < .001)\). The results also
showed that the indirect effect of teacher emotional support on intrinsic motivation through anxiety and self-efficacy sequentially was significant with a point estimate ($= a_2 \times d_{32} \times b_3$) of 0.207, 95% percentile CI = 0.139 to 0.278 (see Table 7). Thus, there was evidence of a mediating pathway from perceived teacher emotional caring to anxiety in EFL classroom to self-efficacy in EFL classroom to intrinsic motivation in English learning.

The findings supported the fifth hypotheses of the present study. In terms of Hypothesis 5, the results are consistent with prior empirical studies which have shown that anxious learners are more likely to suffer from a lack of self-efficacy, which in turn is related to greater failures on difficult and complex tasks performance, and this threat of failures in the ongoing and upcoming tasks yields lower levels of motivation (Eysenck, 2014; Hembree, 1988; Jameson & Fusco, 2014); Owen, et al., 2012; Pajares, 1996; Wine, 1971; Zeidner, 2014). In line with this hypothesis, many researchers have contended that anxiety is mediated by self-efficacy (e.g., Pajares, 2003; Shih, 2019; Woodrow, 2011). These findings implied that the relationship between anxiety and self-efficacy is not a reciprocal causation, but it is serial, with anxiety influencing self-efficacy, which is consistent with the present study and arguments by Bandura (1977, 1986, and 1997). In SLA motivation literature, however, the current study provides the first empirical examination of estimating the mediating pathway from perceived teacher emotional support to intrinsic motivation to learn English created by anxiety and self-efficacy in EFL classrooms. These findings extend the knowledge of how students’ perceptions of emotional support from teachers can have an effect on promoting intrinsic motivation to learn English through the mediators of anxiety and self-efficacy in sequence.
Implications for Practice

The findings of the present research make a contribution to the SLA motivation literature and add additional support for the SDT. Based on the SDT’s tenet (Deci & Ryan 1985; Ryan & Deci, 2000) that teacher emotional caring plays a key role in student’s motivation and engagement in classrooms, I examined Chinese college students’ perceptions of emotional support from teachers in relation to their foreign language enjoyment, anxiety, and self-efficacy, and intrinsic motivation in EFL classrooms. The present findings extend the understanding of teacher emotional support at EFL classrooms. Results of mediation analysis showed that foreign language enjoyment and anxiety independently mediated the relationship between teacher emotional support and intrinsic motivation to learn English. These findings imply that teachers’ provisions of emotional caring can promote students’ enjoyment of learning English and alleviate anxiety toward English learning, which in turn fosters Chinese college students’ intrinsic motivation in EFL classrooms. Additionally, the results also imply that the effect of teacher emotional support on intrinsic motivation is mediated by two separate significant serial mediators: from enjoyment to self-efficacy and from anxiety to self-efficacy. These results further imply that when students feel cared for by their teachers, they experience more enjoyment and this increased enjoyment will raise their self-efficacy beliefs for English learning, which in turn will promote intrinsic motivation in EFL classrooms. Similarly, when students perceive emotional caring from their teachers, they experience less foreign language anxiety and this decreased anxiety will help to raise their English efficacy beliefs. Students who experience emotional caring from others may perceive the satisfaction of relatedness. This close relationship might let students more willing to seek and rely on the support from the important others around them such as teachers, classmates and/or parents.
Based on these findings, mainland China’s EFL educators should motivate their students by providing emotional caring instead of utilizing traditional “carrot and stick” pedagogies. As Ryan and Deci (2017) cogently state, although external rewards and punishments can increase extrinsic motivation, they also undermines students’ intrinsic motivation. Consequently, EFL educators should avoid implementing these traditional teaching techniques in their classrooms for maintaining students’ sustained engagement with learning activities.

**Limitations**

The present study had several limitations which should be noted. First, one of the limitations of the study is the representation of the samples utilized. Although I have obtained 24 different ethnic groups (see Table 2) in the study, there are 55 officially recognized ethnic groups in mainland China (Maurer-Fazio & Hasmath, 2015). As a consequence, the generalizability of the present study's results is limited because the sample is not representative of mainland China’s population. The nonprobability sampling procedure is another important limitation in the current research. Because the participants are not randomly selected, they cannot represent the general population (Fraenkel et al., 2014) and thus I cannot generalize the results to all Chinese EFL learners. Third, despite the fact that volunteers seem to provide better feedback compared to those who are forced to participate in a study, they are more likely to complete the questionnaires with positive bias (Wilson & Dewaele, 2010). This should be considered a strength as well as weakness of the present study. Finally, since the present study was correlational cross-sectional design, I cannot establish causality based on the results (Gravetter & Wallnau, 2016; Verhulst et al., 2012). However, others have established the causal relation between teacher emotional support and students’ motivation (e.g., Barry & Wentzel, 2006; Wentzel, 1998). It is also widely known that mediation analyses are replete with alternative explanations such as spurious
correlations (Pollack et al., 2012). Although I have tried to reduce this spuriousness by including several potential confounding variables as the covariates in my hypothesized mediation model, it is impossible to include all the control variables.

**Recommendations for Future Research**

I provide some recommendations for future research based on the current study’s findings and limitations. First, one of my findings points to the need for future research in this area on samples with different age groups and cultures. For example, future studies including both Chinese and international samples can provide the cross-cultural evidence to extend the present work. Similarly, future work with multiple age groups can generate additional evidence across developmental stages. Second, in addition to including diverse samples, future research should also seek to apply random sampling procedure. As Fraenkel et al. (2014) state, researchers should always try to conduct research with a random sampling method to collect their data. Data obtained with random sampling are considered the best representation of target population and the results are most likely to generalize. Third, as aforementioned, the present study only included 24 ethnic groups out of China’s 55 ethnic groups, so future work should seek to replicate this study’s findings by recruiting participants from as many ethnic groups as possible. Therefore, the results would be able to generalize to the Chinese college population. Finally, to establish causality, future research should include longitudinal or experimental studies. Longitudinal research may demonstrate the effect of teach emotional support might persist over time. On the other hand, although experimental research on teacher emotional support is rare, it may let researchers make causal claims based on their findings.
REFERENCES


APPENDIX A

THE ENGLISH VERSION OF DEMOGRAPHIC SURVEY INFORMATION
Demographic Information

1. What is your age? ____________________

2. What is your gender?: □ Female ; □ Male

3. What is your race? _______________________________

4. How old do you start to learn English? ________________

5. What is your Major? _________________________________

6. What is your current grade?
   □ Freshman ; □ Sophomore ; □ Junior ; □ Senior ; □ Graduates ; □ Other____

7. What is your final grade for the latest English course? __________________________/100
APPENDIX B
THE CHINESE VERSION OF THE DEMOGRAPHIC SURVEY QUESTIONS
第一部分：个人基本资料

请您勾选(请在□中打)或填写有关于您的个人基本资料，谢谢。

1. 年龄: ____________________ 岁

2. 性別: □女 ； □男

3. 民族: _____________________________ 族

4. 你几岁开始学习英语(不论校内或校外)?: ____________ 岁

5. 你的专业: ______________________________

6. 你目前就读几年级: □大一；□大二；□大三；□大四；□研究生；□其他____

7. 你最近的一門英语课期末成绩: (______________________________分)
APPENDIX C

THE ENGLISH VERSION OF THE CLASSROOM LIFE MEASURE INSTRUMENT OF TEACHER EMOTIONAL SUPPORT
Please read all the items carefully and respond to each of the item by selecting a number that can best describe your feeling right now. Using the following scale to indicate the degree to which each statement is true for you at this moment.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Uncertain</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

1. My teacher really cares about me.  
2. My teacher thinks it is important to be my friend.  
3. My teacher likes me as much as he/she likes other students.  
4. My teacher cares about my feelings.
APPENDIX D

THE CHINESE VERSION OF THE CLASSROOM LIFE MEASURE INSTRUMENT OF
TEACHER EMOTIONAL SUPPORT
在接下来的每题中之“非常不同意”、“不同意”、“无意见”、“同意”及“非常同意”选项，所代表之意义分别如下：

非常不同意(1)：是指这个句子的描述非常不符合你的情形。

不同意(2)：是指这个句子的描述不符合你的情形。

无意见(3)：是指没有想过或是没有意见。

同意(4)：是指这个句子的描述符合你的情形。

非常同意(5)：是指这个句子的描述非常符合你的情形。

第二部分：老师课堂支持度 (以下的问题是有关于老师在这门课堂上对你学习英语的支持度) 每一题共有五个测量尺度，请你仔细阅读以下的叙述，并在每题勾选(✓)一项最符合你的实际情况。谢谢你的耐心与回答。

<table>
<thead>
<tr>
<th>第二部分：老师课堂支持度</th>
<th>非常不同意1</th>
<th>不同意2</th>
<th>无意见3</th>
<th>同意4</th>
<th>非常同意5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 我的英语老师非常在乎我。</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. 我的英语老师认为与我做朋友很重要。</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>3. 我的英语老师对我和其他同学一视同仁。</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4. 我的英语老师在乎我的感受。</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
APPENDIX E

THE ENGLISH VERSION OF THE FOREIGN LANGUAGE ENJOYMENT SCALE (CFLES)
Please read all the items carefully and respond to each of the item by selecting a number that can best describe your feeling right now. Using the following scale to indicate the degree to which each statement is true for you at this moment.

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Uncertain</td>
<td>Agree</td>
<td>Strongly Agree</td>
<td></td>
</tr>
</tbody>
</table>

1. I don't get bored. | 1 2 3 4 5 |
2. I enjoy it. | 1 2 3 4 5 |
3. I've learnt interesting things. | 1 2 3 4 5 |
4. In class, I feel proud of my accomplishments. | 1 2 3 4 5 |
5. It's a positive environment. | 1 2 3 4 5 |
6. It's fun. | 1 2 3 4 5 |
7. The teacher is encouraging. | 1 2 3 4 5 |
8. The teacher is friendly. | 1 2 3 4 5 |
9. The teacher is supportive. | 1 2 3 4 5 |
10. There is a good atmosphere. | 1 2 3 4 5 |
11. We form a tight group. | 1 2 3 4 5 |
APPENDIX F

THE CHINESE VERSION OF THE FOREIGN LANGUAGE ENJOYMENT SCALE (CFLES)
在接下来的每题中之“非常不同意”、“不同意”、“无意见”、“同意”及“非常同意”选项，所代表之意义分别如下：

非常不同意(1)：是指这个句子的描述非常不符合你的情形。
不同意(2)：是指这个句子的描述不符合你的情形。
无意见(3)：是指没有想过或是没有意见。
同意(4)：是指这个句子的描述符合你的情形。
非常同意(5)：是指这个句子的描述非常符合你的情形。

### 第三部分：英语学习愉悦感
(以下的问题是有关于你对学习这门英语课的愉悦情绪) 每一题共有五个测量尺度，请你仔细阅读以下的叙述，并在每题勾选(✔)一项最符合你的实际情况。谢谢你

<table>
<thead>
<tr>
<th>非常不同意(1)</th>
<th>不同意(2)</th>
<th>无意见(3)</th>
<th>同意(4)</th>
<th>非常同意(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 我不厌倦英语学习。</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. 我享受英语学习。</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. 学习学英语的过程中，我学了很多有趣的事情。</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. 在班里，我为自己的英语成绩感到自豪。</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. 周围英语学习的氛围很好。</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. 学英语很有趣。</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. 英语老师总是鼓励我们。</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. 英语老师很友善。</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
9. 英语老师总是支持我们。

10. 我身边有很好的英语学习氛围。

11. 我们有紧密的学习小组。
APPENDIX G

THE ENGLISH VERSION OF THE FOREIGN LANGUAGE CLASSROOM ANXIETY SCALE (FLCAS)
Please read all the items carefully and respond to each of the item by selecting a number that can best describe your feeling right now. Using the following scale to indicate the degree to which each statement is true for you at this moment.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Even if I am well prepared for English class, I feel anxious about it.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I always think that the other students speak English better than I do.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I can feel nervous when I'm going to be called on in English class.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I don't worry about making mistakes in English class.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I feel confident when I speak English in English class.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I get nervous and confused when I am speaking in my English class.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>I start to panic when I have to speak without preparation in English class.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>It embarrasses me to volunteer answers in my English class.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX H

THE CHINESE VERSION OF THE FOREIGN LANGUAGE CLASSROOM ANXIETY SCALE (FLCAS)
在接下来的每题中之“非常不同意”、“不同意”、“无意见”、“同意”及“非常同意”选项，所代表之意义分别如下：

非常不同意(1)：是指这个句子的描述非常不符合你的情形。
不同意(2)：是指这个句子的描述不符合你的情形。
无意见(3)：是指没有想过或是没有意见。
同意(4)：是指这个句子的描述符合你的情形。
非常同意(5)：是指这个句子的描述非常符合你的情形。

### 第四部分：英语学习焦虑感

(以下的问题是有关于你对这门英语课的愉悦情绪) 每一题共有五个测量尺度，请你仔细阅读以下的叙述，并在每题勾选(✓)一项最符合你的实际情况。谢谢你的耐心与回答。

<table>
<thead>
<tr>
<th>非常不同意</th>
<th>不同意</th>
<th>无意见</th>
<th>同意</th>
<th>非常同意</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
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<td>5</td>
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<td></td>
</tr>
</tbody>
</table>

1. 即使已经为英语课做好充分的准备, 我还会感到焦虑。
2. 我总觉得其他同学的英语说得比我好。
3. 英语课上老师点到我的名字让我回答问题时, 我会感到紧张。
4. 英语课上我不担心犯错误
5. 英语课上, 我讲英语时感到自信。
6. 英语课上发言时, 我感到紧张和困惑
7. 英语课上,在没有准备而又不得不发言的情况下,我开始恐慌。

8. 英语课上,主动回答问题让我觉得很尴尬。
APPENDIX I

THE ENGLISH VERSION OF THE MOTIVATED STRATEGIES FOR LEARNING

QUESTIONNAIRE OF SELF-EFFICACY SUBSCALE
Please read all the items carefully and respond to each of the item by selecting a number that can best describe your feeling right now. Using the following scale to indicate the degree to which each statement is true for you at this moment.

<p>| | | | | | | | |</p>
<table>
<thead>
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<td>7</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Not at all true of me</th>
<th></th>
<th></th>
<th>Very true of me</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I believe I will receive an excellent grade in this class.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>I’m certain I can understand the most difficult material presented in the readings for this course.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>I’m confident I can learn the basic concepts taught in this course.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>I’m confident I can understand the most complex material presented by the instructor in this course.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>I’m confident I can do an excellent job on the assignments and tests in this course.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>I expect to do well in this class.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>I’m certain I can master the skills being taught in this class.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>Considering the difficulty of this course, the teacher, and my skills, I think I will do well in this class.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
APPENDIX J

THE CHINESE VERSION OF THE MOTIVATED STRATEGIES FOR LEARNING

QUESTIONNAIRE OF SELF-EFFICACY SUBSCALE
在接下来的每题中之”非常不同意”、”不同意”、”有点不同意”、”无意见”、”有点同意”、”同意” 及”非常同意”选项，所代表之意义分别如下:
非常不同意(1)：是指这个句子的描述非常不符合你的情形。
不同意(2)：是指这个句子的描述不符合你的情形。
有点不同意(3)：是指这个句子的描述有点不符合你的情形。
无意见(4)：是指没有想过或是没有意见。
有点同意(5)：是指这个句子的描述有点符合你的情形。
同意(6)：是指这个句子的描述符合你的情形。
非常同意(7)：是指这个句子的描述非常符合你的情形。

第五部分：学习动机之自我效能(以下的问题是有关于你对这门英语课的学习动机和态度) 每一题共有七个测量尺度，请你仔细阅读以下的叙述，并在每题勾选( )一项最符合你的实际情况。谢谢你的耐心与回答。

<table>
<thead>
<tr>
<th></th>
<th>非常不同意</th>
<th>不同意</th>
<th>有点不同意</th>
<th>无意见</th>
<th>有点同意</th>
<th>同意</th>
<th>非常同意</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
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<td>6.</td>
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</tbody>
</table>

1. 我相信，我将会在英语课上得到优异的成绩。
2. 我有把握能理解英语课文中最困难的内容。
3. 我有信心可以学到英语课中所教授的基本概念。
4. 我有信心能理解英语课上老师所教授最复杂的内容。
5. 我有信心能把英语课的作业和考试完成得非常好。
6. 我期望在英语课上表现得很好。
<p>| | |</p>
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<thead>
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</thead>
<tbody>
<tr>
<td>7.</td>
<td>我确定我能精通英语课上所教授的技能或技巧。</td>
</tr>
<tr>
<td>8.</td>
<td>在考虑到英语课程的难度、任课老师和我本身的技能之后，我认为我将会表现得不错。</td>
</tr>
</tbody>
</table>
APPENDIX K

THE ENGLISH VERSION OF THE MOTIVATED STRATEGIES FOR LEARNING QUESTIONNAIRE OF INTRINSIC MOTIVATION SUBSCALE
Please read all the items carefully and respond to each of the item by selecting a number that can best describe your feeling right now. Using the following scale to indicate the degree to which each statement is true for you at this moment.

<p>| | | | | | | | |</p>
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<thead>
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<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

*Not at all true of me*  *Very true of me*

1. In a class like this, I prefer course material that really challenges me so I can learn new things.  
2. In a class like this, I prefer course material that arouses my curiosity, even if it is difficult to learn.  
3. The most satisfying thing for me in this course is trying to understand the content as thoroughly as possible.  
4. When I have the opportunity in this class, I choose course assignments that I can learn from even if they don’t guarantee a good grade.
APPENDIX L

THE CHINESE VERSION OF THE MOTIVATED STRATEGIES FOR LEARNING
QUESTIONNAIRE OF INTRINSIC MOTIVATION SUBSCALE
在接下来的每题中之”非常不同意” 、”不同意” 、”有点不同意” 、”无意见” 、”有点同意” 、”同意” 及”非常同意” 选项，所代表之意义分别如下:
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有点不同意(3): 是指这个句子的描述有点不符合你的情形。
无意见(4): 是指没有想过或是没有意见。
有点同意(5): 是指这个句子的描述有点符合你的情形。
同意(6): 是指这个句子的描述符合你的情形。
非常同意(7): 是指这个句子的描述非常符合你的情形。

第六部分: 学习动机之内部动机(以下的问题是有关于你对这门英语课的学习动机和态度) 每一题共有七个测量尺度，请你仔细阅读以下的叙述，并在每题勾选(✓)一项最符合你的实际情况。 谢谢你的耐心与回答。

<table>
<thead>
<tr>
<th></th>
<th>非常不同意</th>
<th>不同意</th>
<th>有点不同意</th>
<th>无意见</th>
<th>有点同意</th>
<th>同意</th>
<th>非常同意</th>
</tr>
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<tbody>
<tr>
<td>1.</td>
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</table>

1. 我喜欢较具有挑战性的英语课程内容，借此我可以学到新事物。
2. 我比较喜欢能引起我好奇的英语课程内容，哪怕是它很困难。
3. 英语课上最让我满意的事情是，我会去尽量试着完全理解课程内容。
4. 如果有机会选择的话，我会挑选去做能让我学到东西的作业，即使那并不保证这样就会有好的成绩。
APPENDIX M

SELECTED TABLES OF CRITICAL VALUES FROM JOHNSON AND YOUNG (1988)
### Table 3. Critical values for the multivariate extreme covariate test.

\( \alpha = 0.10 \)

<table>
<thead>
<tr>
<th>Sample Size</th>
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<th>8</th>
<th>9</th>
<th>10</th>
<th>12</th>
<th>15</th>
<th>20</th>
</tr>
</thead>
</table>

### Table 4. Critical values for the multivariate extreme covariate test.

\( \alpha = 0.05 \)

<table>
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<th>9</th>
<th>10</th>
<th>12</th>
<th>15</th>
<th>20</th>
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### Table 6. Critical values for the multivariate extreme deviate test, $a = 0.01$

<table>
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<th>Sample Size</th>
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<td>6</td>
<td>4.110</td>
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<td>7</td>
<td>4.951</td>
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### Table 7. Critical values for the multivariate extreme deviate test, $a = 0.005$

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