

**THE RELATIONSHIP BETWEEN MOBILE DEPENDENCE BEHAVIOR  
AND INDEPENDENT LEARNING ABILITY OF SENIOR HIGH STUDENTS  
IN JINAN LICHENG NO.2 HIGH SCHOOL, SHANDONG PROVINCE,  
CHINA**

**Xinqi Jiang**<sup>1\*</sup>

**Xu Zheng**<sup>2</sup>

<sup>1</sup> Master Candidate in Educational Administration, Stamford International University of Thailand

<sup>2</sup> Lecturer, Stamford International University of Thailand, xu.zheng@stamford.edu

\* Corresponding Author, E-mail: 1518929359@qq.com

**Abstract:** In this study, a convenient sampling method was used to investigate the mobile dependence behavior and independent learning ability of senior high school students in Licheng No. 2 High School, Jinan City, Shandong Province, China. Under different demographic backgrounds, the differences in mobile dependence behavior and independent learning ability, to verify the relationship between mobile dependence behavior and independent learning ability of senior high school students. Descriptive statistics, independent sample t-test, one-way ANOVA analysis, and Pearson correlation analysis were used. The results were as follows: The mobile dependence behavior and independent learning ability of senior high school students in Licheng No. 2 High School of Jinan City, Shandong Province were generally at a moderate level. Among them, the prominence of mobile dependence behavior was the highest, and abstinence was the lowest. The intrinsic e of independent learning ability was the highest, while the self-regulation was the lowest. There were significant differences in demographic backgrounds (gender, age, family structure) between senior high school students' mobile dependence behavior and independent learning ability: in mobile dependence behavior, males, senior three students, single parents or reorganized family students was higher. In independent learning ability, the females, senior three and senior two students and family of origin students were higher. There was a significant negative correlation between mobile dependence behavior and the independent learning ability of senior high school students in Licheng No .2 High School, Jinan City, Shandong Province, China.

**Keywords:** Mobile Dependency Behavior, Independent Learning Ability, Senior High Students.

### **Introduction**

At present, in the reform of basic education abroad, improving students' independent learning ability has also been given attention. Curriculum reform began in the UK as early as 1999, with the aim

of cultivating students' self-development and self-learning abilities as important training directions and goals. Similarly, the Japanese teaching reform also put forward a similar statement, which holds that it was very necessary to give students more space and opportunities for free development in order to cultivate students' learning and creative ability (Wu, 2020).

At the same time, with the improvement of living standards, mobiles have gradually entered thousands of households. As a fast communication tool, mobiles have penetrated all social strata in recent ten years, and negative emotions, such as anxiety, depression and depression, would appear if they cannot use mobiles or use some functions of mobiles normally. In this way, leaving the mobile would affect the mood and then rely on the mobile, which is called "mobile dependence behavior" and also called mobile dependence behavior (Bianchi & Phillips, 2005).

Senior high school students' independent learning ability showed when they controlled and guided themselves to learn. It was essentially a kind of self-control behavior and self-control ability of students in the learning process (Jiang, 2015). However, the formation of this ability was suppressed under the influence of the increasingly severed dependence on mobiles during senior high school birthdays. The compulsion of mobile dependence behavior would make senior high school students have a strong and impulsive willingness to use mobiles and gradually become unable to control themselves, which would inevitably weaken students' responsibility for learning and reduce students' autonomy and self-efficacy in the learning process. Its users were also rapidly shifting to a younger age.

A survey of vocational school students by Liao et al. (2016) showed that the mobile holding rate among students reached 92%. Mei & Chai (2013) found that mobile owners accounted for 99.3% of the surveyed senior high school students. Wang (2016) showed that almost everyone in senior high school students had a mobile, and even those who had just entered senior high school without a mobile, their parents promised to buy a mobile. It could be seen that the popularity of mobiles in senior high school campuses has shown rapid growth in recent years. Teenagers mainly used mobiles to construct emotional communication and social relations, and teenagers used mobiles to connect with their peers.

As early as Hu & Chen (2010) and other research centers pointed out that mobile dependence behavior was becoming increasingly serious, even spreading to the classroom, and its influence was still increasing, the scope was wide, and duration was still increasing. Therefore, young students had a strong and continuous sense of demand and dependence on mobiles, which was worthy of education, and even society vigorously followed. With the increasing degree of mobile dependence, it even had a certain impact on their studies. Good self-control and independent learning ability were the qualities and abilities that senior high school students must possess (Pang, 2001). Independent learning was actually a kind of teenager's self-control behavior, and self-control was very important in people's lives and studies. Low self-control was the inducement of individual bad behavior (Duan et al., 2018). In the natural environment, it was difficult to avoid and resist the over-overloaded information and the

attraction of various needs and purposes met at the same time, especially in the general environment of the network (Lan, 2019). Therefore, this study aimed to study and analyze the corresponding targeted solutions and methods, alleviate the impact of mobile dependence on senior high school students' independent learning, and effectively improve senior high school students' independent learning ability.

### **Research Objectives**

(1) To identify the current mobile dependency behavior and independent learning ability among senior high school students at Licheng No.2 High School in Jinan, Shandong Province, China.

(2) To analyze the differences in mobile dependency behavior and independent learning ability among senior high school students from Licheng No.2 High School in Jinan, Shandong Province, China, under different demographic backgrounds (including gender, grade, and family structure).

(3) To determine the relationship between mobile dependency behavior and independent learning ability among senior high school students at Licheng No.2 High School in Jinan, Shandong Province, China.

### **Literature Review**

#### ***Research on Students' Mobile Dependence Behavior***

Liu (2022) set the research object as teenagers. They thought that mobile dependence behavior was a mental and behavioral disorder caused by repeated and past use of mobiles, and the damage phenomenon could be clearly seen in cognition, physiology and behavior.

While, Yang (2022) defined senior high school students' mobile dependence behavior as mobile dependence behavior, mobile anxiety disorder or mobile syndrome, which was a description of the phenomenon of excessive use of mobiles, and refers to the obsession state in which individuals' psychological, physiological and social functions were obviously damaged due to out-of-control use of mobiles. After a survey, they believed that mobile dependence would have the following manifestations: If you forget to bring your mobile when you go out, you will be confused. If you lose something, you want to go back and get your mobile (Shen, 2016).

When measuring the degree of mobile dependence behavior, Xu et al. (2015) sorted out the empirical research results of the American Manual of Diagnosis and Statistics of Mental Disorders, 5th Edition, and distinguished the symptoms of mobile dependence behavior, mainly relying on six criteria. These six criteria were saliency, conflict, excitability, tolerance, abstinence, and recurrence.

Chen (2015) noticed that there was no obvious relationship between mobile dependence and personality differences among college students, but compared with males, female college students were more likely to have mobile dependence.

According to Wang's (2016) survey of middle school students, about 75% of the students felt

anxious when their mobiles were not around, and the mobile ownership rate was very high. Wan et al. (2020) found that during the COVID-19 pandemic in China, about 20% of middle school students relied on mobiles for online teaching, and the degree of dependence was still increasing. Xiao (2016) conducted an in-depth study on college students, which also showed that there was a phenomenon of mobile dependence, and the rates of mobile dependence were 24.9% and 75.6%, respectively. However, there was no evidence to support the relationship between dependence and personal personality in the study.

In addition, Liang (2015) analyzed the data and found that 40% of college students had mobile dependence behavior. Among this 40% of students, surveys and observations also found that mobile dependence behavior had a significant negative predictive effect on their learning quality, learning habits, and learning behavior. Based on this, it was inferred that the independent learning ability of college students would also be negatively affected by mobile dependence behavior. According to surveys, the same phenomenon also appeared in Taiwan Province, China, and 70% of students were inseparable from mobiles. Jiang et al. (2022) confirmed that the demand for online socializing was one of the important internal factors for college students' dependence on mobiles, and this phenomenon had significant differences in age variables. In order to analyze the degree of mobile dependence behavior of adolescents in detail, the related investigation and data statistics of paroxetine combined with psychological intervention treatment were carried out.

### ***Research on Students' Independent Learning Ability***

Since the 1960s, foreign educators have attempted to combine the perspectives of various schools of thought on self-directed learning and establish a unified standard definition. After that, the comprehensive viewpoint of American educational psychologist Zimmerman (1989) was the most prominent. In his research, he set up six dimensions to study three aspects of students' independent learning. According to Zimmerman's description of the psychological characteristics of students' independent learning ability, it could be summarized into six aspects: having clear learning objectives, formulating correct learning strategies, arranging time reasonably, self-discipline and self-control, requiring a good learning environment, and the ability of self-reinforcement learning evaluation (Tynke et al., 2012).

Then, Lan (2019) proposed that ability refers to the ability of independent learning, that is, intrinsic motivation, such as the choice of methods for individuals to carry out independent learning, and the condition refers to the overall grasp of the learning process by individuals. For the mechanism of self-directed learning, both independent learning ability and self-directed learning conditions were part of it. Shu (2018) believed that self-directed learning was an active learning behavior that included setting goals, selecting methods, self-monitoring, self-evaluation, and other processes.

This study combined the research directions of scholars and adopted the Learning Motivation

Strategy Questionnaire (MSLQ) as the survey scale. MSLQ had high authority in the education industry and was still widely used by scholars to measure the independent learning ability of senior high school and students. This research adopted the MSLQ revised again by Wu & Cheng (1992), Taiwan, China scholars, with two main factors of motivational beliefs and independent learning strategies. Motivational beliefs included self-efficacy, intrinsic value and exam anxiety; Independent learning strategies included cognitive learning strategies and self-regulation.

In addition, Cheng (1999) pointed out that independent learning was not completely separated from teachers, and students still needed teachers' guidance and guidance. Only after class did students arranged study plans according to their wishes and completed their learning goals, which was the simplest independent learning. He believed that self-directed learning consists of three parts: ability, conditions, and mechanisms. When measuring student learning autonomy, according to the characteristics and influencing factors of independent learning of senior high school students, he explored the influence coefficient of influencing factors on independent learning and obtained relatively stable consistency coefficient results. After summarizing previous research theories, Wang (2020) summarized independent learning ability into three aspects: learning goals and plans, self-monitoring and evaluation, and self-regulation. She also developed a survey questionnaire on college students' independent learning ability, which was used as a research tool in this study.

Most studies used independent learning ability as the dependent variable for correlation analysis. Chen (2015) studied the correlation between college students' independent learning ability and mental health. The results showed that there were statistically significant differences in independent learning ability among college students of different grades, and independent learning ability was significantly related to mental health. The stronger students' independent learning ability, the better their mental health.

In addition, Lv (2020) conducted related research on the relationship between English learning motivation regulation strategies and independent learning ability. The research found that the English independent learning ability of non-English major postgraduates was at a moderate level, and there was a positive correlation between English learning motivation regulation strategies and independent learning ability.

### ***Research on the Relationship between Mobile Dependence Behavior and Independent Learning Ability of Students***

The above results showed that there was an obvious negative correlation between academic procrastination and independent learning ability, so independent learning ability and mobile dependence behavior also maintain a negative correlation. Ji et al. (2014) investigated the relationship among mobile dependence, subjective well-being and academic procrastination. The results showed that academic procrastination and mobile dependence were positively correlated, and they were closely related.

However, Wang (2020) suggested that there was a significant negative correlation between independent learning ability and academic procrastination, with independent learning ability and academic procrastination maintaining a negative correlation. Therefore, in the study of the relationship between mobile dependence behavior and independent learning ability, the needed to carry out next detailed research, respectively analyze the current level of the two and the differences under different demographic backgrounds. Through the analysis and discussion of the research results, explore the correlation between the two, and then put forward effective strategies and suggestions to improve senior high school students' independent learning ability and improve their mobile dependence behavior.

To sum up, the definition, composition and influencing factors of mobile dependence behavior and independent learning were combed by scholars at home and abroad, and the widely recognized and representative measurement tools in the research of mobile dependence behavior and independent learning were analyzed. Combined with the integration of research results, it was feasible to establish the related research on mobile dependence behavior and independent learning ability level of senior high school students. However, most of the research was focused on their respective fields, and the results were relatively old, with some shortcomings in theoretical research. To sum up, it could be seen that the research on the relationship between independent learning ability and mobile dependence behavior was not complete, and a large number of theoretical studies had been carried out only for the univariate variables of independent learning ability and mobile dependence behavior.

## **Methodology**

According to Krejcie & Morgan (1970), to investigate 302 students. The questionnaire survey was conducted by a convenient sampling method. After screening valid questionnaires, the number of students was finally determined to be 288, and the effective return rate reached 95.36%. Divide according to the basic situation of different genders, grades, and family structures.

Mobile Dependency Behavior Questionnaire. This study drew on the questionnaire on mobile dependence behavior among middle school students compiled by Wang (2011). The items of this scale were aimed at and suitable for senior high school students. There were 16 questions in total, including obsessive-compulsive, abstinence and prominence.

Independent Learning Ability Questionnaire. This study used the self-regulated learning ability of senior high school students revised by Wu & Cheng (1992), scholars from Taiwan, China, to measure the self-regulated learning ability of senior high school students by combining self-efficacy, intrinsic value, exam anxiety, cognitive learning strategies and self-regulation, with a total of 44 items.

The reliability and validity were good, and many researchers have repeatedly tested it, and the results were stable.

## Results

### *Demographic Analysis of Questionnaire Participants*

In this study, senior high school students from Licheng No.2 High School in Jinan City, Shandong Province, China were investigated by questionnaire, and 288 valid questionnaires were finally collected and sorted out. The survey consisted of 180 electronic channels and 108 paper questionnaires. In the valid questionnaire, in terms of gender, the number of males was 141, accounting for 49.0%, and the number of females was 147, accounting for 51.0%, which showed that the gender sample was relatively balanced. In terms of grades, the number of senior one students was 99, accounting for 34.4%; the number of senior two students was 102, accounting for 35.4%, and the number of senior three students was 87, accounting for 30.2%. The number of senior three students surveyed was slightly less, which might be due to the pressure of further studies. In terms of family structure, there were 252 students in family of origin, accounting for 87.5%, 6 single-parent families and 30 reorganized students. Therefore, single-parent and reorganized families were merged into single-parent or reorganized families, accounting for 12.5% in total. It could be seen that there were not a few students in single-parent or reorganized families in terms of family structure.

### *The Levels of Mobile Dependency Behavior and Independent Learning Ability*

1) According to the descriptive statistical results in Table 1, the senior high school students' mobile dependence behavior was 3.063, which was at a moderate level. The means of obsessive compulsion, abstinence and prominence were 3.028, 2.988 and 3.172 in turn, among which prominence was the highest and abstinence was the lowest. Therefore, the overall level of mobile dependence behavior of senior high school students in Licheng No.2 High School of Jinan City, Shandong Province, China was at a moderate level, among which prominence was the highest and abstinence was the lowest.

**Table 1:** Overall Mobile Dependency Behavior among Senior High School Students

Dimension	N	M	SD	Interpretation
Obsessive compulsive	288	3.028	0.886	Moderate
Abstinence	288	2.988	0.865	Moderate
Prominence	288	3.172	0.966	Moderate
Overall mobile dependence behavior	288	3.063	0.732	Moderate

2) According to the descriptive statistical results in Table 2, the senior high school students' independent learning ability was 3.378, which was at a moderate level. The means of self-efficacy, intrinsic value, exam anxiety, cognitive learning strategies and self-regulation were 3.455, 3.766, 3.293, 3.318 and 3.056, in turn, among which intrinsic value was the highest, followed by self-efficacy and cognitive learning strategies, while self-regulation was the lowest.



**Table 2:** Overall Independent Learning Ability of Senior High School Students

Dimension	N	M	SD	Interpretation
Self-efficacy	288	3.455	0.584	Moderate
Intrinsic value	288	3.766	0.685	High
Exam anxiety	288	3.293	0.718	Moderate
Cognitive learning strategies	288	3.318	0.692	Moderate
Self-regulation	288	3.056	0.581	Moderate
Overall independent learning ability	288	3.378	0.514	Moderate

### *Differences Analysis on the Levels of Mobile Dependency Behavior and Independent Learning Ability*

There were significant differences in demographic backgrounds (gender, age, family structure) between mobile dependence behavior and independent learning ability of senior high school students in Licheng No.2 High School, Jinan City, Shandong Province, China: in mobile dependence behavior, males, senior three students, students from single parents or reorganized families were higher. In independent learning ability, the females, senior three and senior two students and family of origin students were higher.

### *Correlation Analysis among Mobile Dependency Behavior and Independent Learning Ability*

**Table 3:** Correlation Analysis between Mobile Dependence Behavior and Independent Learning Ability of Senior High School Students

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1	1									
2	.516***	1								
3	.491***	.436***	1							
4	.822***	.793***	.809***	1						
5	-.291***	-.202**	-.207***	-.288***	1					
6	-.273***	-.177**	-.171**	-.255***	.497***	1				
7	-.245***	-.228***	-.171**	-.264***	.520***	.561***	1			
8	-.273***	-.212***	-.196**	-.280***	.482***	.553***	.519***	1		
9	-.309***	-.241***	-.241***	-.325***	.524***	.523***	.527***	.557***	1	
10	-.351***	-.268***	-.247***	-.356***	.752***	.803***	.805***	.796***	.781***	1

Note: \*\* p< .01, \*\*\* p< .001

1. Obsessive compulsive, 2. Abstinence, 3. Prominence, 4. Overall mobile dependence behavior, 5. Self-efficacy, 6. Intrinsic value, 7. Exam anxiety, 8. Cognitive learning strategies, 9. Self-regulation  
 10. Overall independent learning ability

Pearson correlation analysis was used to investigate the relationship between mobile dependence behavior and the independent learning ability of senior high school students. According to the correlation analysis results in Table 4, the correlation coefficient r between the overall mean of senior high school students' mobile dependence behavior and independent learning ability was -0.356,



and it reached a significant level at the .001 level. In the mobile dependence behavior of senior high school students, the correlation coefficient between each dimension and independent learning ability was between 0.247 and -0.351 and reached a significant level. .001 level. In the independent learning ability of senior high school students, the correlation coefficient between each dimension and mobile dependence behavior was between 0.255 and 0.325 and reached a significant level. .001 level. It indicated a significant negative correlation between senior high school students' mobile dependency behavior and their independent learning ability.

## **Discussion**

### ***Current Mobile Dependence Behavior and Independent Learning Ability of Senior High School Students in Licheng No.2 High School, Jinan City, Shandong Province, China***

The overall level of mobile dependence behavior of senior high school students was at a moderate level, among which the prominence mean was the highest and the abstinence mean was the lowest. This result was basically consistent with the results of (Zhang & Yao, 2018) and (Li, 2023), both showing the dependence of senior high school students on mobiles.

The overall level of independent learning ability among senior high school students was at a moderate level, with the highest mean of intrinsic value and the lowest mean of self-regulation. In this study, the intrinsic value cognition of senior high school students played an important role in their independent learning ability.

### ***Demographic Differences in Mobile Dependence Behavior and Independent Learning Ability among Senior High School Students***

The discussion on gender differences showed that the total score of mobile dependence behavior in males was significantly higher than that in females, which was consistent with Qiu et al. (2021). It might be related to male characteristics. For example, males preferred to use mobiles to play games, so they used mobiles for longer. In addition, it was more convenient to chat online on mobiles, and male students might prefer to chat on mobiles, which led to males' stronger dependence on mobiles. The mean mobile dependence behavior of senior three students was higher. Students from single-parent or reorganized families had higher mean cell phone dependency behavior. It might be related to family culture, logical relationships, and the communication characteristics of birds of a feather.

In the discussion of gender differences, females' self-efficacy and self-regulation were higher in the related dimensions of independent learning ability. The research results of Lv (2020) were completely consistent with this study. It might be related to females' personality characteristics. The cognitive learning strategies were higher in the related dimensions of independent learning ability of senior three and senior two students. Discussing differences in family structure, students from native families have higher mean self-regulation in dimensions related to their independent learning abilities.

The conclusion of Song (2020) was completely consistent with this study.

***Correlation between Mobile Dependence Behavior and Independent Learning Ability of Senior High School Students***

The results showed that there was a significant negative correlation between mobile dependence behavior (compulsion, abstinence and prominence) and independent learning ability (self-efficacy, intrinsic value, exam anxiety, cognitive learning strategies and self-regulation) of senior high school students. Jiang (2022), and Ji et al. (2014) found that students' mobile dependence behavior has increased under the online course education mode, and many students couldn't clearly control the learning and entertainment mode, showing a fragmented learning situation, which affects students' learning effectiveness.

**Conclusions**

1) The mobile dependence behavior and independent learning ability of senior high school students in Licheng No.2 High School of Jinan City, Shandong Province, China, were generally at a moderate level. Among them, the prominence of mobile dependence behavior was the highest, and abstinence behavior was the lowest. The intrinsic of independent learning ability was the highest, while the self-regulation was the lowest.

2) There were significant differences in demographic backgrounds (gender, age, family structure) between mobile dependence behavior and independent learning ability of senior high school students in Licheng No.2 High School, Jinan City, Shandong Province, China: in mobile dependence behavior, males, senior three students, students from single parents or reorganized families were higher. In independent learning ability, the females, senior three and senior two students and family of origin students were higher.

3) There was a significant negative correlation between mobile dependence behavior and the independent learning ability of senior high school students in Licheng No.2 High School, Jinan City, Shandong Province, China.

**References**

- Bianchi, A., & Phillips, J. G. (2005). Psychological predictors of problem mobile use. *Psychology Behavior*, 8(1), 39-51.
- Chen, X.F. (2015). Research on the correlation between college students' independent learning ability and mental health. *Campus Psychology*, 13 (2), 79-82.
- Chen, X.L. (2015). Research on the current situation and intervention countermeasures of college students' mobile use and mobile dependence behavior. *Human Resources Development*, 6 (6), 216-218.

- Cheng, X.T. (1999). On self-directed learning. *Subject Education*, 30 (9), 32-35
- Duan, Y., Ni, C., & Wu, T.G. (2018). Design and implementation of an independent learning environment for physics experiments that integrates virtual and real elements. *China Education Informatization*, 11 (3), 37-41
- Hu, Y.H., & Chen, Y. et al. (2010). Relationship between SMS use and mental health status of college students in Guangdong Province. *Chinese School Hygiene*, 10 (6), 667-668.
- Ji, J.J., Wu, Y., & Tian, X.H. (2014). The relationship between college students' mobile dependence behavior, academic procrastination and subjective well-being. *Journal of Hangzhou Normal University (Natural Science Edition)*, 10 (5), 482-487.
- Jiang, J.F. (2015). Exploration of Students' Independent Learning Ability in High School Physics Teaching. *Jiangxi Normal University*, 63-65.
- Jiang, L., Yuan, H., & Meng, F.B. (2022). Clinical efficacy of paroxetine combined with psychological intervention in the treatment of adolescent social anxiety disorder. *Psychological Monthly*, 21 (8), 100-101.
- Krejcie, R., & Morgan, D. (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement*, 30, 607-610.
- Lan, Y. (2019). Investigation on the present situation of English independent learning of senior high school students in Guangxi minority areas. *Master thesis of Guangxi Normal University*.
- Li, X.C. (2023). The application of peer group psychological counseling in psychological education in colleges and universities from the intervention of mobile dependence behavior. *Chinese Sci-tech Periodical Database (full-text version) Educational Science*, 22 (3), 3-9.
- Liang, Y. (2013). The impact of mobile dependency behavior on college students' learning and its intervention strategies. *Master's thesis from Fujian Normal University*.
- Liao, Y. et al. (2016). The impact of mobile dependence behavior on sleep disorders among college students in a certain university. *Chinese School Health*, 17 (02), 303-305.
- Liu, Y.F. (2022). The influencing factors of mobile dependency behavior among senior high school students: from an individual centered perspective. *Psychological Health Education in Primary and Secondary Schools*, 36 (32), 4-9.
- Lv, Y. (2020). Research on the correlation between English learning motivation regulation strategies and independent learning ability. *Master's thesis from Harbin Normal University*.
- Mei, S.L., & Chai, J.X. (2013). Study on the relationship between adolescents' use of mobile Internet and subjective well-being and self-control. *Special Education in China*, 4 (9), 78-83.
- Pang, W.G. (2001). A Study on the Teaching Guidance Model for Autonomous Learning of Primary and Secondary School Students. *Doctoral Dissertation from East China Normal University*.
- Qiu, H., Yang, H.Y., & Zuo, X. (2021). A Study on Mobile Dependence Behavior and Educational

- Strategies of High School Students. *Advances in Psychology*, 11 (1), 114-125.
- Shen, Z. (2016). Overcoming the psychological dependence on mobiles. *Green apples*, 11 (7X), 2-6.
- Shu, T.T. (2018). The construction and empirical research of a questionnaire on independent learning ability for middle school students. *Master's thesis from East China Normal University*.
- Song, S.Q. (2020). The Current Situation of Independent Learning Ability of College Students and Exploration of Social Work Intervention. *Master's Thesis from Huazhong Agricultural University*.
- Tynke, T., Marije, T., Elferink, G., Laura, J., Marieke, J.G. Van, H., & Chris, V. (2012). Measuring self-regulation in a learning context: reliability and validity of the self-regulation of learning self-report scale. *International Journal of Sport & Exercise Psychology*, 10(1), 24-38.
- Wan, C., Li, X., & Xiao, W.H. (2020). Research on the willingness, effect and problems of teachers and students to participate in the online teaching of "stopping classes and learning" during the epidemic period. *Journal of Hebei University of Engineering (Social Science Edition)*, 37 (01), 122-128.
- Wang, M. (2020). Research on the relationship and intervention between achievement goal orientation, independent learning ability and academic procrastination of junior-senior high school students. *Master thesis of Hangzhou Normal University*.
- Wang, X.H. (2011). A study on the current situation of mobile dependence behavior among middle school students and its relationship with social support and adaptability. *Fujian Normal University*.
- Wang, X.L. (2016). Behavioral manifestation of mobile dependence and analysis of countermeasures for relieving dependence based on the survey of college students. *Asia Pacific Education*, 19 (2), 219-220.
- Wu, J. J., & Cheng, B. L. (1992). Revision of the Motivational Learning Strategy Scale. *Annual Journal of the Chinese Testing Society*, 24 (3), 59-78.
- Wu, J.S. (2020). Cultivate students' independent learning ability in primary school Chinese language teaching. *A Hundred Prose Schools*, 10 (32), 116-117.
- Xiao, W. Z. (2016). Research on the Impact and Countermeasures of Mobile Dependence Behavior among College Students in the Classroom. *Journal of Handan Vocational and Technical College*, 28 (2), 83-85.
- Xu, S., Huang, R.Y., & Ma, L.S. (2015). What was the difference between the diagnostic criteria of obsessive-compulsive disorder in the 5th edition of American Diagnostic and Statistical Manual of Mental Disorders and other diagnostic systems? Letters from Readers. *Journal of Clinical Psychiatry*, 25 (3), 2-3.
- Yang, R.Y. (2022). Mobile dependency behavior among senior high school students: current situation,

influencing factors, and countermeasures *Psychological Health Education in Primary and Secondary Schools*, (36), 68-70.

Zhang, G.J., & Yao, Z.Q. (2018). The relationship between positive psychological capital and mobile dependence behavior among college students. *Journal of Gannan Normal University*, 39 (2), 4-5.

Zimmerman, B.J. (1989). A social cognitive view of self-regulated academic learning. *Journal of Educational Psychology*, 81(3), 329-339.