A STUDY ON ACADEMIC SELF-EFFICACY AMONG STUDENTS MAJORING IN BIG DATA AND ACCOUNTING AT A UNIVERSITY IN HUBEI PROVINCE

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Abstract: This study aims to analyze the current state of academic self-efficacy among students majoring in Big Data and Accounting and to explore differences in academic self-efficacy across various demographic backgrounds. A total of 186 questionnaires were distributed, with 180 valid responses collected from students enrolled in Big Data and Accounting programs at a university in Hubei Province. The study employed statistical analyses, including descriptive statistics, independent sample *t*-tests, and one-way ANOVA, to analyze the data. Using the academic Self-Efficacy Scale as the primary measurement tool, the study found that students generally exhibited a high level of academic self-efficacy. Additionally, significant differences in academic self-efficacy were observed among students based on gender, academic year, source of origin, and family income.

The theoretical significance of this study lies in its comprehensive assessment of students' academic self-efficacy, providing valuable data to support educational malignment decisions. In practice, the findings offer a concrete framework for enhancing students' academic self-efficacy through data-driven strategies and targeted interventions.

Keywords: Academic Self-Efficacy, A University In Hubei Province, Students Majoring [n Big Data and Accounting.

Introduction

The university stage is pivotal for personal growth, with academic self-efficacy (ASE) significantly influencing academic performance, daily life, career prospects, relationships, and mental health (Liu, 2007). During this transition from dependence to autonomy, ASE directly impacts academic achievements and adaptability (Chemers et al., 2001). First conceptualized by Bandura (1977), ASE has become a central focus in psychology and sociology (Wei, 2004). Luszczynska & Schwarzer (2005) emphasized individuals' role in achieving ASE-driven goals, while Packer et al.

(2020) highlighted its role in goal attainment through sustained hope and behavioral capability. Bandura (1989) further noted that higher ASE correlates with improved work efficiency, and Caprara et al. (2014) underscored its role in enhancing learning outcomes in supportive environments. China's 2019 National Vocational Education Reform Implementation Plan (State Council, 2019) elevated vocational education's importance, emphasizing structural optimization. Liu (2017) found that science and engineering vocational students with high ASE demonstrate stronger comprehension, goal-setting, and self-monitoring. This study examines ASE among Big Data and Accounting students (science/engineering disciplines), linking it to teaching quality. Bai (2010) highlighted ASE's influence on learning behaviors, effort, and emotional regulation. Su (2012) defined ASE as perceived capability to complete academic tasks, closely tied to performance, motivation, and strategy selection. Zhou & Guo (2006) argued ASE shapes decision-making, motivation, cognition, and emotional responses, underscoring its role in enhancing academic performance and motivation.

Academic self-efficacy (ASE) significantly influences academic performance and motivation. Lew (2017) found strong positive correlations between independent learning ability, self-learning efficacy, and academic achievement in 197 students, with variables like self-confidence, task preference, and self-directed learning linked to higher performance. Tong & Miao (2019) confirmed these findings using structural equation modeling on 4,627 college students, showing optimism and ASE jointly predict academic success. Ferla (2009) highlighted ASE as a key predictor of academic performance, while Cai & Jia (2020) demonstrated its role in online learning engagement, mediated by motivation and flow experience. Liu (2024) noted that Big Data and Accounting students face unique challenges, including ASE development, though research in this area remains limited. Wang & Liu (2022) similarly emphasized self-discipline and adaptability in this field but did not deeply explore ASE. These studies underscore a critical gap in understanding ASE among Big Data and Accounting students, requiring further investigation.

Research Objectives

(1) To explore the current situation of academic self-efficacy of students majoring in big data and accounting in a university in Hubei Province.

(2) Analyze the difference of academic self-efficacy between big data and accounting students in a university in Hubei Province under the information of different demographic background variables.

Literature Review

Research on the connotation and characteristics of college students' academic self-efficacy

Academic self-efficacy (ASE) refers to individuals' belief in their ability to achieve academic

goals through internal motivation. Bandura (1977) proposed that ASE is central to behavior change and emphasized its role in education as a practical application of self-efficacy theory. Students with higher ASE demonstrate greater effort, persistence, and adaptability in academic challenges, reflecting their confidence in completing tasks and regulating academic emotions. Key factors influencing ASE include learning attitude, goal orientation, achievement motivation, willpower, parental expectations, and exam anxiety. Multon et al. (1991) and Schunk (1983) confirmed the strong relationship between ASE and academic performance. Schunk (1989) defined ASE as learners' confidence in using mastered skills to complete tasks, highlighting their subjective judgment and perceived control over learning outcomes. Zimmermale & Martinez-Pons (1990) noted that ASE influences goal-setting and strategy use, while Midgley et al. (1986) emphasized its role in self-perception. Hutchison et al. (2006) described ASE as a confidence-driven capacity to achieve academic success.

Chinese scholars Yin (2024) and Xie (2010) emphasize that ASE reflects learners' confidence in academic abilities and their capacity to control learning behaviors. Wang & Ding (2023) linked ASE to entrepreneurial motivation, while Zhao (2014) showed its impact on reducing academic procrastination. Zhao et al. (2011) found ASE negatively predicts burnout in nursing students, and Chen (2013) demonstrated its strong predictive effect on academic performance. Han et al. (2024) highlighted ASE's role in fostering active learning and self-challenge. Research by Lu & Chen (2017) and Zhu & Yao (2015) revealed ASE indirectly affects academic engagement through goal orientation and learning strategies. Wang et al. (2016) identified ASE and academic adaptability as mediators of personality traits on academic performance. Li (2015) noted ASE and achievement motivation as dual mediators of parental influence on academic ability. Zheng (2017) and Mao (2019) further defined ASE as confidence in completing academic tasks, aligning with Bandura's (1989) and Li's (2012) frameworks.

Academic self-efficacy (ASE), as defined by Bandura (1989), is a dynamic cognitive process reflecting an individual's belief in their ability to complete specific learning tasks, distinct from stable self-confidence. It is situational-specific, varying with task demands; for instance, a student may exhibit high ASE in art but low ASE in English due to differing skill requirements. ASE depends not on actual skill mastery but on perceived capability to apply learned skills effectively. It is closely linked to viability—the integration of cognition, behavior, and social skills into unified actions—rather than reliance on fixed behavioral strategies. Research highlights ASE disparities among student groups. Liu & Chen (2009) found higher vocational students scored lower in ASE than ordinary university students, likely due to post-exam self-doubt and poor learning environments. Vocational students also display unique ASE patterns (Chen & Li, 2007), while liberal arts students outperform science students in ASE (Wang, 2006). Gender and geographic factors further influence ASE, with male students and rural peers showing higher levels (Xiao, 2002; Liu & Chen, 2009). Zou et al.

(2023) emphasized that enhancing ASE and psychological resilience can improve mental health, underscoring its role in academic adaptation. Overall, ASE is a task-specific cognitive evaluation shaped by situational context, perceived skill application, and behavioral integration, making it critical for academic success.

A Study on Influencing Factors of Academic Self-Efficacy Among College Students

Academic self-efficacy is influenced by several key factors (Bandura, 1993), including personal practical experiences—where success boosts efficacy and repeated failures reduce it; indirect experiences or observational learning, where seeing others succeed can enhance one's belief in their own ability; verbal persuasion, which depends on the credibility of the speaker and the relevance of the message; and physiological and emotional states, with positive emotions enhancing confidence. Wen (2007) expanded on these sources, adding family atmosphere, school environment, peer influence, and emotional arousal as contributing factors. Research has also explored demographic influences on academic self-efficacy. While some scholars found gender differences—with males showing higher efficacy in science and sports, and females in liberal arts (Zimmermale et al., 1990)—others reported no significant difference between genders (Li, 2014; Wang & Hu, 2005). Han (2014) noted higher academic self-efficacy in male students, though societal changes may have reduced this gap (Yuan et al., 2008). Grade level also plays a role: Guo et al. (2016) found seniors exhibit stronger efficacy than juniors, while Geng & Li (2013) observed a decline in efficacy over time, likely due to increasing academic and career pressures.

Additionally, academic self-efficacy correlates with academic performance (Li, 2015), major satisfaction (Guo et al., 2016), and life satisfaction via daily flexibility (Han & Zhang, 2020). Zhao & Chen (2022) noted that higher efficacy is linked to lower negative emotions and better mental health, although it does not directly predict emotional changes. Overall, academic self-efficacy is shaped by a complex interplay of personal, situational, and environmental factors, offering valuable insights for educators aiming to support student motivation and resilience.

Psychometric Assessment of Academic Self-Efficacy in College students

Academic self-efficacy is primarily measured using standardized or self-developed scales. Internationally, the Academic Self-Efficacy Questionnaire (ASQ) by Pintrich & DeGroot (1990), consisting of 22 items, assesses two dimensions: self-efficacy for learning behavior and for learning ability. Higher scores reflect greater academic self-efficacy. In China, Zhou & Dong (1994) adapted this model to develop a version for primary and secondary students, based on Gibson & Dembo's (1984) Teacher Academic Self-Efficacy Scale. Liang (2000) later designed a college student version with similar dimensions. Bian (2004) localized the scale further, categorizing it into basic ability and control. For graduate students, Li (2010) created a three-dimensional scale covering curriculum,

research, and social practice efficacy.

There are various types of academic self-efficacy scales—some general, others specific to subjects like math or reading. Common tools include the Motivated Strategies for Learning Questionnaire, Morgan-Jinks Student Efficacy Scale, and children's academic self-efficacy scales. However, in China, no universally accepted measurement exists, leading researchers to often design customized instruments. Hu & Xu (2003) developed a 12-item scale with a Cronbach's α of 0.85, based on Gibson & Dembo (1984), measuring academic achievement and ability. Zhen (1999) also adapted the ASQ (Pintrich & De Groot, 1990), creating a 24-item questionnaire with a 6-point Likert scale (α = 0.87). Liang (2000) further refined this tool, dividing it into Academic Self-Efficacy and Academic Effectiveness scales for use across disciplines.

Methodology

The subjects of this study are students majoring in big data and accounting in a university in Hubei. The total group size is 376, and 186 students need to be selected as samples. The formula for determining the sample size proposed by Krejcie & Morgan (1970) meets the requirements of the sample size of the questionnaire survey in response to the size of this group. Accordingly, This survey adopts stratified sampling to ensure representative coverage of all student demographics. approach and complete the questionnaire collection and organization within the designated time frame, and distribute questionnaires to the students majoring in big data and accounting in a university in Hubei through WeChat working group. It is planned to distribute a total of 186 questionnaires, and the number of valid questionnaires is finally determined to be 180 after screening out the questionnaires with problems. The effective recovery rate is as high as 96.7%, which meets the analysis standard, and the subsequent statistical processing work can be carried out accordingly.

The survey instrument used in this study is the Academic Self-Efficacy Questionnaire designed by Liang (2000). This questionnaire assesses two dimensions of academic self-efficacy: learning ability self-efficacy and learning behavior self-efficacy. The questionnaire consists of 22 items, among which items 14, 16, and 17 are reverse scored.

Results

Demographic Analysis of the Respondents

In this study, students majoring in big data and accounting in a university in Hubei Province were selected as the research object. Starting with demographic background variables such as gender, grade, student origin and family income, 180 valid questionnaires were collected through investigation, and the sample distribution was analyzed.

The specific distribution of samples is shown in Table 4.1. As can be seen from the data, the number of boys is 100, accounting for 55.5% of the total sample. There are 80 respondents,

accounting for 44.5% of the total sample. There are 49 students in Grade 1, accounting for 27.2% of the total sample. There are 67 students in Grade Two, accounting for 37.2% of the total sample. There are 64 third-grade students, accounting for 35.6% of the total sample. According to the students' situation, there are 122 students with rural background, accounting for 67.7% of the total sample; There are 58 people with urban background, accounting for 32.3% of the total sample. In terms of income, there are 59 families with a monthly income of 5,000 yuan or less, accounting for 32.7% of all samples; There are 58 families with a monthly income of 5,000-to-8,000-yuan, accounting for 32.2% of the total sample; There are 35 families with a monthly income of 8,000-to-10,000-yuan, accounting for 19.4% of the total sample; There are 28 families with a monthly income of 10,000-to-15,000-yuan, accounting for 15.7% of the total sample.

Current situation of academic self-efficacy of students majoring in big data and accounting in a university in Hubei Province

Using descriptive statistical analysis, this study examines the current level of academic self-efficacy among students majoring in big data and accounting at a university in Hubei Province. The scores for academic self-efficacy were at a high level (M=3.93), while the scores for learning behaviors were at a moderate level (M=3.22), and the scores for learning ability were also at a high level (M=3.57).

Table 1: Descriptive Statistics on the Current Status of Students' Academic Self-efficacy (N=180)

Dimension	N	M	SD	Interpretation
Learning ability	180	3.93	0.70	High
Learning behavior	180	3.22	0.28	Medium
Academics elf-efficacy	180	3.57	0.43	High

Analysis of Differences in Self-Efficacy Across Demographic Variables

This study explored the academic self-efficacy of students majoring in big data and accounting, with a focus on how it varies across different demographic variables, including gender, grade level, place of origin, and family income. Four research hypotheses (H1–H4) were proposed to guide the investigation. Data were analyzed using independent samples t-tests and one-way ANOVA. The results revealed significant differences in academic self-efficacy based on these demographic factors. In terms of gender, male students demonstrated significantly higher scores in learning ability and overall academic self-efficacy compared to female students ($p < 0.001$), although no significant difference was found in the dimension of learning behavior. Regarding grade level, first-year students scored significantly higher in learning ability and overall self-efficacy than third-year students (p =

0.002), indicating a decline in self-efficacy as students' progress through their studies. With respect to place of origin, rural students exhibited significantly higher levels of learning ability and overall academic self-efficacy than urban students (p = 0.018), highlighting the influence of background environment on students' psychological development.

In addition, family income was found to have a significant impact on students' academic self-efficacy. Statistical results showed that students from families with a monthly income of RMB 5,000 or less had the highest scores in both learning ability and overall academic self-efficacy ($p < 0.001$), outperforming those from higher-income families. In the dimension of learning behavior, students from middle-income families (RMB 5,000–8,000) performed better than those from lower- and higher-income groups. Taken together, these findings confirm all four research hypotheses (H1–H4), demonstrating that students' academic self-efficacy is significantly influenced by demographic backgrounds. These empirical insights contribute to a deeper understanding of students' learning psychology and provide valuable references for educational institutions aiming to improve teaching strategies and enhance students' confidence in academic performance.

Discussion

Current Status of Academic Self-Efficacy Among Students Majoring in Big Data and Accounting

From the results of the aforementioned statistical analysis, it can be observed that the overall level of academic self-efficacy among students majoring in big data and accounting at a university in Hubei Province is relatively high, indicating a generally positive attitude toward learning. This finding is broadly consistent with the research conclusions of Chen (2013), which also reported strong self-efficacy among the majority of students. Several prominent characteristics across different dimensions of self-efficacy can be identified and further analyzed.

The mean score for the learning ability dimension is above 3.93, fully demonstrating students' strong desire for in-depth learning and skill development. Their passionate pursuit of knowledge and capability enhancement not only reflects a high level of learning enthusiasm but also indicates a significant investment in personal growth and progress. This intrinsic drive serves as a core force propelling continuous learning and development among college students. This perspective aligns with the findings of Han. et al. (2024), who emphasize students' active engagement, exploratory learning, and willingness to practice. It is precisely this kind of internal motivation that enables students to achieve continuous improvement, constantly challenge themselves, and realize personal value.

In terms of the learning behavior dimension, the average score reached 3.22, indicating that students' participation and engagement in the learning process are at a moderate level. This result is largely consistent with the observations of Zhao & Chen (2022), reflecting students' involvement and

behavioral habits in learning activities. With proper guidance and encouragement, students' motivation to learn can be further enhanced, thereby promoting comprehensive development.

Through in-depth statistical analysis, we found that the overall academic self-efficacy of students majoring in big data and accounting remains at a high level. Specifically, the average score of self-efficacy is as high as 3.57, with a standard deviation of 0.43. Based on the five-point Likert scale, this data clearly indicates that students generally possess strong confidence in their learning abilities and in completing academic tasks. This finding is largely consistent with the research conducted by Han & Zhang (2020), which also highlighted the positive impact of high self-efficacy on students' academic achievement and future development.

Analysis of Differences in Academic Self-Efficacy Across Demographic Variables

The research results indicate that among students majoring in big data and accounting, there is a significant difference in academic self-efficacy between genders. This finding differs somewhat from the conclusions of Gu (2023). In this study, male students reported higher levels of self-efficacy compared to female students, which may be associated with more positive learning attitudes and motivation among male students. It is worth noting that in this study's sample, there were more male students than female students, with males comprising 55.5% of the total sample.

Further data analysis revealed significant differences in academic self-efficacy among students of different grades within the big data and accounting disciplines. Specifically, students in the earlier grades (Grade 10 and Grade 11) demonstrated stronger self-efficacy beliefs compared to those in Grade 12. This result contradicts the findings of Zou et al. (2023). We speculate that this discrepancy may stem from variations in academic pressure, course difficulty, and future career planning across grade levels. These findings provide new insights and directions for further investigation into the factors influencing students' academic self-efficacy.

In addition, detailed data analysis showed a notable difference in academic self-efficacy among students from different places of origin. Specifically, rural students exhibited significantly higher levels of academic self-efficacy compared to their urban counterparts. This finding aligns with the perspectives of Wang & Ding (2023), further confirming the important impact of environmental background on students' academic self-efficacy. We hypothesize that rural students may have developed stronger self-challenging and adaptive abilities due to specific developmental environments and life experiences, thereby demonstrating an advantage in academic self-efficacy. This result contributes to a deeper understanding of students' psychological and learning dynamics and offers a novel perspective for future research.

Finally, data analysis also revealed significant differences in academic self-efficacy among big data and accounting students based on family income levels. Specifically, students whose families earned RMB 5,000 or less per month demonstrated higher average scores in academic self-efficacy

compared to those whose families earned between RMB 8,000–10,000 and RMB 10,000–15,000 per month. Moreover, students from families earning between RMB 5,000–8,000 per month scored higher than those from families earning RMB 10,000–15,000 per month. This outcome contrasts with the findings of Han (2014), offering new avenues for exploring how family background influences students' psychological development and learning attitudes.

Conclusion

This study investigates the academic self-efficacy of students majoring in big data and accounting in a university in Hubei Province. According to the analysis results of the collected questionnaire data, the conclusions are as follows:

Conclusion 1: The academic self-efficacy of students majoring in big data and accounting in a university in Hubei Province is at a high level.

Conclusion 2: There are significant differences in academic self-efficacy among students majoring in big data and accounting in a university in Hubei province with different gender, grade, student origin and family income.

References

Ashton, C. H., Webb, E., Kelly, P., & Kamali, F. (1996). Alcohol and drug use in uk college students. *Lancet, 348*(9032), 922.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(3), 191-215.

Bandura, A. (1989). Humale agency in social cognitive theory. *American psychologist, 44*(9), 1175.

Cai, L., & Jia, X. (2020). The relationship between academic self-efficacy and online learning engagement: The chain mediation of learning motivation and flow experience. *Psychological and Behavioral Research, 18*(6), 805.

Caprara, G. V., Schwartz, S., Capanna, C., Vecchione, M., Barbaranelli, C., & Li, W. (2014). Personality and politics. *Journal of Tianjin Academy of Socialism*, (1), 57-58.

Ding, T. (2023). Self-efficacy theory and its enlightenment to teaching. Higher Vocational Education: Journal of Tianjin Vocational University, 13(4), 47-49.

Eccles, J., Wigfield, A., Harold, R. D., & Blumenfeld, P. (1993). Age and gender differences in children's self- and task perceptions during elementary school. *Child Development, 64*(3), 830-847.

Ferla, J. (2009). Academic self-efficacy and academic self-concept: Reconsidering structural relationships. *Learning and Individual Differences, 73*(19), 499–505. 4.

Geng, Y., & Li, M. (2013). Study on the relationship between learning self-efficacy and learning motivation of private college students. *Education and Teaching Forum*, (21), 2.

Gibson, S., & Dembo, M. H. (1984). Teacher efficacy: A construct validation. *Journal of Educational Psychology, 76*(4), 569-582.

Gu, M. (2023). Investigation on the self-efficacy of physical education class teachers in higher vocational colleges. *Heilongjiang Science*, (05), 111-113.

Han, Q., & Zhang, C. (2020). The influence of college students' academic self-efficacy on life satisfaction: The mediating role of daily academic elasticity. *China Journal of Health Psychology, 28*(2), 270-273.

Hu, G., & Xu, B. (2003). The relationship between middle school students' learning self-efficacy, learning strategies and academic achievement. Journal of Zhejiang University: *Science Edition, 30*(4), 477-480.

Hutchison, M. A., Follmale, D. K., Sumpter, M., & Bodner, G. M. (2006). Factors influencing the self-efficacy beliefs of Grade one engineering students. *Journal of Engineering Education, 95*(1), 39-47.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and psychological measurement, 30*(3), 607-610.

Lew, K.-H. (2017). The relationship among self-directed learning ability, academic self-efficacy, and academic achievement. *Journal of the Korea Academia-Industrial Cooperation Society, 18*(10), 462–470.

Li, X. (2014). Research on the relationship between time male agreement disposition and academic self-efficacy of college students: Taking four universities in Guangxi as examples. *Journal of Fuyang Teachers College: Social Science Edition*, (2), 118-122.

Liang, Y. (2000). *Research on college students' achievement goals, attribution styles and academic self-efficacy* [Master's thesis]. Huazhong Normal University.

Lu, Z., & Chen, J. (2017). College students' critical thinking tendency and learning engagement: The mediating role of achievement goal orientation and academic self-efficacy. Higher Education Research, (7), 69-77.

Multon, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to academic outcomes: A meta-analytic investigation. *Journal of Counseling Psychology, 38*(1), 30-38.

Midgley, C., Feldlaufer, H., & Eccles, J. S. (1986). Perceived ability and achievement-related behaviors in mathematics: A longitudinal study. *Journal of Educational Psychology, 78*(4), 323–331.

Morgan, V., & Jinks, J. (1999). Children's perceived academic self-efficacy: An inventory scale. *The Clearing House, 72*(4), 224-230.

Nian, Q., & Liu, Y. (2012). Effects of time maleagement disposition and academic self-efficacy on learning engagement of nursing undergraduates. *China Journal of Practical Nursing, 28*(26), 1-4.

Packer, C., Ridgeway, K., Lenzi, R., Gonzalez-Calvo, L., Moon, T. D., Green, A. F., & Burke, H. M. (2020). Hope, self-efficacy, and crushed dreams: Exploring how adolescent girls' future aspirations relate to marriage and childbearing in rural Mozambique. *Journal of Adolescent Research, 35*(5), 579-604.

Tao, S., Long, C., Guo, L., Chen, Y., & Shen, Z. (2019). The relationship between achievement motivation, self-efficacy and self-regulated learning performance: A mediated moderating model. *Psychological Research, 12*(02), 76-83.

Wang, H., & Hu, H. (2005). Study on academic self-efficacy and mental health of normal college students in Guizhou Province. *Psychological Science, 28*(3), 675-677.

Wang, W., Lei, L., & Wang, X. (2016). The influence of college students' active personality on academic performance: The mediating role of academic self-efficacy and learning adaptation. *Psychological Development and Education, 32*(5), 579-586.

Wang, Y., & Ding, F. (2023). The influence of entrepreneurial self-efficacy on college students' entrepreneurial intention. Journal of Xinyang Normal University: *Philosophy and Social Sciences Edition, 43*(1), 77-82.

Wang, Z. (1999). Study on the relationship between academic self-efficacy and academic achievement of junior middle school students. *Psychological Development and Education, 15*(1), 39-43.

Wei, Y. (2004). Measurement and intervention of college students' learning self-efficacy. *Psychological Science, 27*(4), 905-908.

Wen, H. (2007). Factors influencing students' self-efficacy. *Shizhen Traditional Chinese Medicine, 18*(03), 558-559.

Xu, J. (2009). A Study on Middle School Students' Learning Self-efficacy and Its Influencing Factors. *Mental Health Education in Primary and Secondary Schools*, (07), 6-9.

Yuan, Q., Lei, X., Gao, J., & Fan, X. (2008). Relationship between academic self-efficacy, achievement motivation and autonomous learning ability of undergraduate nursing students. *Journal of Nursing Science: Comprehensive Edition, 23*(2), 4.

Zhang, M. (2006). Relationship between academic self-efficacy and achievement motivation of college students. *Journal of Taiyuan University, 7*(2), 61-63.

Zhao, L., Shen, J., & Tan, M. (2011). Study on the relationship between professional commitment, learning burnout and academic self-efficacy of undergraduate nursing students. *Chinese Journal of Behavioral Medicine and Brain Science, 20*(5), 453-455.

Zhao, S., & Chen, Z. (2022). Mediating effect of college students' self-efficacy on positive academic emotion and achievement goal orientation. *China Journal of Health Psychology, 30*(1), 156-160.

Zhou, Y., & Dong, Q. (1994). Study on the relationship between learning motivation, attribution, self-

efficacy, and students' self-monitoring learning behavior. *Psychological Development and Education, 10*(3), 30-33.

Zimmermale, B. J., & Martinez-Pons, M. (1990). Student differences in self-regulated learning: Relating grade, sex, and giftedness to self-efficacy and strategy use. *Journal of Educational Psychology, 82*(1), 51-59.

Zou, C., Xin, Z., Li, Y., & Su, P. (2023). The role of college students' emotional regulation self-efficacy and positive psychological capital in the relationship between psychological resilience and mental health. *China School Health, 44*(1), 94-98.