

A Systematic Literature Review of Regional Inequality on Students' Pressure in the Chinese Gaokao System

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Abstract: This systematic review evaluates the research on regional inequality relating to the Chinese Gaokao educational system and how this relates to the pressure felt by high school-aged students. Our essay is based on the situation that many students feel stressful not only because the academic pressure is huge, but also the regional inequalities make them feel nervous. So, we made this essay to discuss this problem. The entrance/selective exam serves as a crucial and critical point in the Chinese educational system for students hoping to enter university. Our study synthesizes findings from 29 studies, evaluating them through an ecological lens to understand trends and patterns. We find that a significant amount of research is related to the academic pressure on students, and we have also found an abundance of information about regional imbalance. We believe that regional inequality is a potential and crucial factor in students' pressure and has high research value.

Keywords: Gaokao, Systematic Literature Review, Mental Health, Ecological System theory, Academic Pressure.

1. Introduction

The Gaokao, or National College Entrance Examination, was established in China in 1952. Every June, students take the notoriously tough Gaokao exam, and the only factor determining whether they will attend college is their total test score, with a few notable exceptions [1]. Due to the intense preparation needed and the high-stakes nature of Gaokao, researchers have expressed many concerns regarding the pressure and stress experienced by students as they prepare for the test. Because of the exam's competitive nature, parents and instructors put a lot of pressure on their kids to do well in school, therefore exam preparation starts early [2]. The intense competition that Gaokao has imposed means that there exists immense pressure on Chinese high school students [3]. Although there is a wide variety of research on the pressures and stress associated with Gaokao, there has yet to be a systematic review describing the landscape of this research.

In East Asian nations like China, high-stakes testing (HST) plays a crucial role in the educational system. Students' disengagement from real learning is one way that HST has been accused of tainting the educational system [1]. The purpose of this research is to explore the trends and patterns in educational literature on the Chinese gaokao, focusing specifically on how the research characterizes

the pressure experienced by high school students. As we report in our findings section, our findings indicate that one characteristic of the existing research is a strong emphasis on region in the literature. A significant amount of scholarship discusses how, across regions in China, resources and opportunities are unequal. However, these changes are highly unevenly distributed within Chinese society. In comparison to families living in large cities, those in rural areas still primarily depend on farming, with significantly lower levels of wealth, education, and economic opportunities [4]. Although there is an abundance of research related to different types of pressure experienced by the students such as academic and social, there is a significant gap in systematically analyzing how regional differences and inequality may contribute to this pressure. By linking this research to broader themes, such as the displacement of resources and opportunities in different regions, we aim to address the underlying factors contributing to educational stress. The overall objective is to provide a comprehensive understanding of the pressures experienced by students relating to regional inequality and differences. Practically, the findings are intended to show the flaws of the current educational system in China and act as a guide to help educators, communities, and schools develop more supportive environments that mitigate the pressure on students and promote student well-being.

To this end, our research asks:

1. What trends and patterns emerge in the existing educational literature on the Chinese Gaokao and its influence on high school students' pressure?
2. How does the research engage with regional differences and inequalities and to what extent does the literature discuss how regional differences contribute to the pressure associated with the Chinese Gaokao?

2. Theoretical framework

We utilize Urie Bronfenbrenner's ecological systems theory in our analysis, offering a detailed structure for comprehending the intricate interplays between individuals and their surroundings [5,6]. Based on this theoretical basis, we comprehend the substantial variation in educational accessibility, chances, and criteria among various geographic regions, along with the deep effects of these variances on educational results [7]. The Chinese Gaokao is considered an important educational milestone, embedded in these ecological frameworks and shaped by the regional variances in educational structures. The goal of our review is to investigate if existing studies sufficiently tackle the impact of regional disparities in influencing student stress within the Gaokao system.

From an ecological perspective, an "ecological system" is the term used to describe the interrelated layers of environmental influences that form a person's development, spanning from proximate settings such as school and home to more general societal and cultural contexts [5]. According to Bronfenbrenner, there is a perpetual and reciprocal link created between all these systems and the new one [8].

Recent academics, Nichole Pinkard among them, have revised these concepts through an analysis of how digital media and technology can be incorporated into ecological systems to enhance education and fairness [9]. Pinkard enhances Bronfenbrenner's core theory through an exploration of how social networks and digital platforms are designed to link educational prospects at different ecological scales, ranging from the classroom's minute details to the broader societal demands and resources.

From this theoretical standpoint, we are interested in how many studies on Gaokao are relative to the pressures that students face because of regional inequality. After examining the ecological levels that have served as the foundation for earlier research, our goal is to provide a comprehensive conclusion about academic and psychological stress related to college entrance tests, caused by regional differences in the educational system. This review's purpose is to provide a comprehensive analysis of these complex effects and emphasize the necessity for a more equitable allocation of

educational opportunities and resources, for the sake of reducing the strain on students in various parts of China.

3. Method

Our team conducted a systematic review to ensure comprehensive and credible coverage of relevant studies. Our search was conducted in EBSCO databases due to their extensive collection of academic journals and articles across various social science disciplines. The search strategy was meticulously developed to identify relevant literature on the chosen topic. Initially, broad search terms related to the core topic were identified. These terms were then combined with more specific keywords to narrow down the search results to the most pertinent studies. The keywords were combined using Boolean operators (AND, OR) to create a comprehensive search query (see Table 1). The initial search yielded 130 results.

Table 1: Examples of search terms used in EBSCO database

Search Term Category (Joined with AND)	Search Terms in Abstract (Joined with OR)
Chinese Gaokao	“nationwide unified exam*” OR “selective exam*” OR “gaokao” OR “college entrance exam*”
Pressure	Anxiet* OR anxious* OR Neuros* OR Stress* OR pressur* OR competit* OR burnout* OR fatigue* OR "mental health*" OR “mental well*” OR “well being” OR “wellbeing” OR expectation* OR wellness
China	China OR Chinese

These results were then screened by two independent reviewers who reviewed titles and abstracts to identify potentially relevant studies. Conflicts between reviewers were resolved through discussion. This process resulted in 58 studies. This process was done by following the inclusion/exclusion criteria:

1. Focus on high school (elementary, middle, and higher education studies are excluded)
2. Must be about Chinese education
3. Must be focused on the experienced pressure of students (such as expectations of any kind)
4. Must be written in English and Chinese.
5. Must be focused on the nature of the Chinese Gaokao (such as the competitiveness of Gaokao)
6. Must be about the life condition of high school students.
7. Must be focused on regional inequality.
8. Must be focused on the trends and patterns in educational literature.
9. Must be focused on different education environments.

For all articles remaining after title and abstract screening, full texts were obtained and further evaluated for relevance by two independent reviewers. After full-text screening, there were a few conflicts in some of the articles. The conflicts were resolved by having discussions, re-reading the articles, and analyzing them together to make the final decision. At this point in the process, 29 studies remained (See Figure 1). After screening, we performed the extraction process by coding the data in

multiple steps to analyze how relevant literature discusses regional inequality relating to the Chinese Gaokao educational system. We first determined whether the research includes any context related to regional or geographical factors relating to the Chinese Gaokao. Then we analyze the article to find out more about the specific context relating to regional factors that are discussed in the writing.

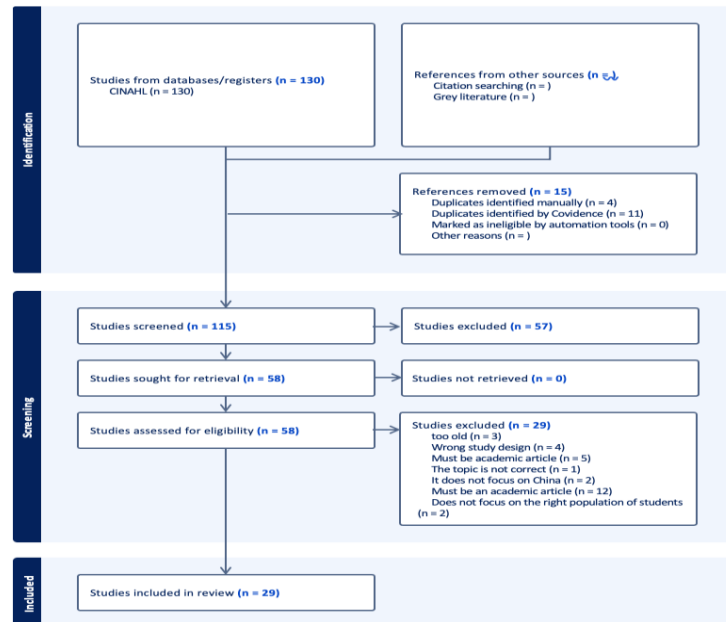


Figure 1: PRISMA diagram of the identification process through covidence

4. Results

Our findings reveal that the literature on Chinese Gaokao engages with a number of different elements of pressure that the high-stakes testing environment places on high school students in China. Almost all the literature engages with academic pressure, defined as the stress and strain students experience due to the demands and expectations of their educational pursuits, such as achieving high grades, performing well on standardized tests, and gaining admission to competitive educational institutions. Chinese students in the 12th grade, who devote the majority of their senior year of high school to studying for the College Entrance Exam, experience particularly high levels of academic stress. Every year, almost 10 million students vie for admission to the most prestigious universities [10]. The second pressure for students in mainland China was the high expectations from their parents. Special occasions refer to unexpected incidents that can influence the Chinese Gaokao such as the pandemic are counted as an important factor of pressure. In addition, there are pressures due to regional differences. This paper examines a specific form of regional inequality: the provision of and access to university education in China [7].

While all these findings help to paint a robust picture of the landscape of the existing literature on Gaokao, the most interesting finding emerging from our analysis is that close to half of the literature (44.8%) on Chinese Gaokao discusses pressures of regional differences experienced by students (See Figure 1). "Regional differences" in the context of China's Gaokao system refer to the disparities in educational access, opportunities, and standards across various geographical areas, which create pressure mechanisms due to the uneven distribution of resources, cultural expectations, and the competitive nature of university admissions based on regional quotas and household registration policies. Although the prevailing academic discourse on exams and stress does not typically consider regional contexts, in the case of China's Gaokao culture, the conversation about stress and exams is inherently regional and exhibits varied effects due to these regional differences.

This suggests that the region plays a significant role in the Chinese context when it comes to the pressure that students experience when preparing for Gaokao. After reading all the regional reviews, we found three kinds of regional inequalities: (1) Regional differences in necessary admissions scores and in regional quotas (2) unbalanced educational levels across regions, and (3) different degrees of economic development across regions.

Regional differences in admissions score lines and regional quotas. In the Chinese Gaokao system, under the development of complex social factors and historical and cultural factors, the difficulty of the examination paper, the admission score lines, and the regional quota are different. The uneven distribution of universities of different ranks in different provinces, the provincial quotas operated by universities, and the differential Gaokao scores required for entry to different universities mean that the chances of entry to a top university are very regionally unequal [7]. For instance, students in some provinces which have a huge number of students who attend the Chinese Gaokao such as Shandong and Henan are harder to get into university due to tremendous competitive pressure. It is much more difficult for students from agriculture-dominated rural regions with large populations, such as Shandong province, to be admitted to a university, as much higher enrollment CEE scores are required [11].

4.1. Unbalanced educational level

For an unbalanced educational level, the imbalance of cultural education has led to different levels of education, resources, methods, and the degree of social attention. The educational levels and resources in different regions can lead to different educational quality. In China, educational opportunities dramatically differ for students from different regions. For example, students from urban families enjoy numerous advantages, including higher quality schools, teachers, textbooks and educational equipment, and resources to obtain private tutoring and university preparation courses [12,13]. Rural children may also suffer from poor education and crowded classrooms [14]. and some rural and remote regions even regard Gaokao as an insignificant thing compared to their own agricultural development.

4.2. Different degrees of economic development across regions

The unbalanced economic development between regions has also caused differences in the quality of development of students. For students in Shanghai and Beijing, their familial backgrounds can give them powerful support in extra tutoring. To sum up, such differences between regions and areas play such an important role in students' pressure. Many students feel anxious about the huge competitive pressure. Many children of rural origin devote themselves to succeeding in the exam because, as they say, they fear becoming farmers. This fear can have fateful repercussions. When a girl in a rural locale committed suicide after failing the Gaokao, people remarked, "She could not be a farmer, and she did not know how to study, so suicide was her only way out." [15]. Such sorrowful incidents make us notice geographic factors and inequalities, and we call on other researchers to value these factors. Our findings show that regional inequalities can be significant in elements of pressure for students to take Gaokao, and we have a systematic discussion about the source of pressure on students who take Gaokao.

5. Conclusion

Our findings about research on Chinese Gaokao offer a significant contribution to the existing academic research. A lack of research on the relationship between regional differences and the effect of the students' pressure. We not only systematically study the impact of college entrance examinations on individuals, but carefully analyze the factors of regional inequality. Therefore, we

observe that the consensus in proposed solutions tends to focus on academic pressure and external expectations rather than considering the psychological impact of regional inequality on students. Further research should further study China's education and make use of the investigated theories to obtain empirical support. Before further research has been conducted, we are not completely sure about the regional inequality due to the influence of Gaokao. By broadening the existing research horizon, we can provide help and supplement this field.

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References

- [1] Wang, J., Li, Q., & Luo, Y. (2020). *Physics Identity of Chinese Students Before and After Gaokao: The Effect of High-Stake Testing*. *Research in Science Education*, 52, 675–689. <https://doi.org/10.1007/s11165-020-09978-y>
- [2] Davey, G., De Lian, C., & Higgins, L. (2007). *The university entrance examination system in China*. *Journal of Further and Higher Education*, 31(4), 385–396. <https://doi.org/10.1080/03098770701625761>
- [3] Zhao, Y., Zeng, H., Deng, X., & Morgan, T. L. (2024). *Chinese high school students' career development: Associations with academic self-efficacy and motivation*. *Journal of Applied Developmental Psychology*, 91, 101629. <https://doi.org/10.1016/j.appdev.2023.101629>
- [4] Liu, G. X. Y., & Helwig, C. C. (2022). *Autonomy, Social Inequality, and Support in Chinese Urban and Rural Adolescents' Reasoning About the Chinese College Entrance Examination (Gaokao)*. *Journal of Adolescent Research*, 37(5), 639–671. <https://doi.org/10.1177/0743558420914082>
- [5] Bronfenbrenner, U. (1979). *The Ecology of Human Development: Experiments by Nature and Design*. Cambridge, MA: Harvard University Press.
- [6] Chong, S. W., Isaacs, T., & McKinley, J. (2023). *Ecological systems theory and second language research*. *Language Teaching*, 56(3), 333–348.
- [7] Hamnett, C., Hua, S., & Bingjie, L. (2019). *The reproduction of regional inequality through university access: the Gaokao in China*. *Area Development and Policy*, 4(3), 252–270. DOI: 10.1080/23792949.2018.1559703
- [8] Bronfenbrenner, U. (1994). *Ecological models of human development*. In T. Husen & T. Postlethwaite (Eds.), *The International Encyclopedia of Education* (2nd ed., Vol. 3, pp. 1643–1647). Oxford, England: Pergamon Press.
- [9] Pinkard, N. (2019). *Freedom of movement: Defining, researching, and designing the components of a healthy learning ecosystem*. *Human Development*, 62(1–2), 40–65. <https://doi.org/10.1159/000496075>
- [10] Kang, L., Lei, Z., Song, Y., & Zhang, P. (2024). *Gender differences in reactions to failure in high-stakes competition: evidence from the national college entrance exam retakes*. *Journal of Political Economy Microeconomics*, 2(2), 355–397.
- [11] Wang, G., Jiang, Y., Zhang, Y., Liu, S., & Jiang, F. (2016). *Sacrificing sleep for scores: a cross-cultural perspective on the hidden costs of sleep loss in adolescents*. *Behavioral sleep medicine*, 14(5), 581–583.
- [12] Ericson, D. P. (2012, June). *Fairness and the cultivation of moral virtue in the educational system: the debilitating role of university entrance examinations in east asia*. In *Pacific Circle Consortium Meetings at Ewha University*, Seoul: Republic of Korea.
- [13] Wang, X., Liu, C., Zhang, L., Luo, R., Glauben, T., Shi, Y., Rozelle, S., & Sharbono, B. (2011). *College education and the poor in China: Documenting the hurdles to educational attainment and college matriculation*. *Asia Pacific Education Review*, 12(4), 533–546. <https://doi.org/10.1007/s12564-011-9155-z>
- [14] Wang, Y., & Ross, H. (2010). *Experiencing the Change and Continuity of the College Entrance Examination: A Case Study of Gaokao County, 1996–2010*. *Chinese Education & Society*, 43(4), 75–93. <https://doi.org/10.2753/CED1061-1932430407>
- [15] Howlett, Z. M. (2021). *Meritocracy and its discontents : Anxiety and the national college entrance exam in post-Mao China*. Cornell University Press.