



STANDARDIZED TESTING: DOES IT ACCURATELY MEASURE STUDENT INTELLIGENCE AND POTENTIAL?

Dr Amita Solanki

Assistant Professor, Vidyavati Mukand Lal Girls PG College
CCS University, Meerut

ABSTRACT

Students' cognitive traits get comparatively less attention in Indian education policy discourse and research than schools, curriculum, and instructors. Differences in student results between schools and within classes are substantially influenced by general cognitive capacity (g), one of the most important but often disregarded determinants. As a commonly available, if unsatisfactory, substitute for g in the Indian context, standardised test results (including those from national-level assessments like JEE, NEET, CUET, and board exams) are used. There is mounting evidence that the average cognitive capacities of students at different Indian universities vary greatly, and that these variations correlate strongly with rankings of universities and student outcomes. In addition, graduates' career paths reflect these cognitive differences, especially in highly competitive fields like government, healthcare, engineering, and business management. Studies evaluating policy initiatives, such reservation regulations, digital learning platforms, or basic literacy missions, might benefit from enhanced statistical power when individual-level measures of cognitive capacity are included in Indian educational research. Standardised testing, this study contends, does provide useful information about students' IQ and potential, despite its limitations. Hence, for a more fair and evidence-based education reform strategy in India, academics and politicians in the field should pay more attention to socioeconomic, cultural, and individual cognitive disparities.

Keywords: *Standardized Testing, Student Intelligence, Cognitive Ability (g), Education Policy, Indian Education System, Academic Performance, Higher Education, Competitive Examinations (JEE, NEET, CUET), Student Potential, Educational Outcomes, Institutional Rankings, Socio-economic Factors*

INTRODUCTION

There are a number of standardised examinations that play a significant role in determining the academic and professional paths that students in India choose to pursue. These examinations include the Joint Entrance Examination (JEE), the National Eligibility and Entrance Test (NEET), the Central University Entrance Test (CUET), and the national board exams. These examinations are considered by many individuals to be excellent indications of a student's intelligence, skill, and potential. The question of whether or not standardised testing adequately represents the range of pupils' abilities and potential is, nevertheless, one that is still being debated in academic circles.

The study conducted by [1] suggests that standardised tests have the potential to provide a reasonable proxy for general cognitive aptitude (g), which is connected with thinking, problem-solving, and the capacity to learn newly acquired information. In particular, in systems that are based on merit, the outcomes of tests are often connected with academic progress and even professional success. Candidates who are successful on

competitive entrance examinations such as the Joint Entrance Examination (JEE) or the National Eligibility and Eligibility Test (NEET) often get admission to top institutions, which in turn opens doors to lucrative careers. There are those who are opposed to standardised testing and argue that it does not take into account the various types of intelligence [2]. They also argue that factors such as socioeconomic class, language competence, test-taking strategies, and access to coaching have a greater influence than things like natural talent or long-term learning.

This conversation is further complicated by the inherent disparities that are present in the educational system in the Indian context. According to [3], children who come from underprivileged households, rural locations, or schools that get minimal financial help are more likely to have poor results on standardised tests because they do not have access to adequate educational resources and preparation. This is more often than not the consequence of a lack of intellect on the side of these students. The employment of these sorts of examinations might, as a result, inadvertently contribute to the worsening of social inequality. According to [4], schools and students both are more concerned with how well they do on examinations than they are with improving their critical thinking and problem-solving abilities. This may result in pupils learning new information via memorisation and a decline in the breadth of the curriculum.

Standardised tests are not intended to be definitive indications of a person's intelligence or aptitude; rather, they may be helpful for administering admissions and conducting assessments on a broad scale[5]. We need a more complex system that takes into consideration socio-emotional learning, makes use of contextual evaluations, and integrates formative assessments if we want to get a more accurate and fair picture of the talents that pupils possess. In light of the fact that India is getting ready to implement the National Education Policy (NEP) 2020, which places an emphasis on competency-based assessment and lowers the bar for board examinations, it is of the utmost importance to reassess the role and validity of standardised testing throughout the process of selecting educational opportunities[6].

OBJECTIVES

1. To assess how well pupils' cognitive capacities and general intelligence are reflected in standardised testing.
2. To investigate how the Indian educational system's socioeconomic and contextual elements affect students' performance on standardised assessments.

METHODOLOGY

Indian University Rankings and Entrance Examination Scores

We used prestigious national university rankings like the National Institutional Ranking Framework[7], which includes healthcare, engineering, and multidisciplinary schools, to assess the relationship between standardised testing and cognitive capacity in India. Public percentile and cutoff scores for significant standardised exams, such as:

- **JEE (Joint Entrance Examination) – Advanced** for Indian Institutes of Technology (IITs)
- **NEET (National Eligibility cum Entrance Test)** for medical colleges like AIIMS and AFMC

- **CUET (Common University Entrance Test)** for central universities and interdisciplinary programs
- **CAT (Common Admission Test)** for IIMs and other management institutions

For each school, we estimated the students' intellectual competence using cutoff percentiles (the lowest qualifying rank) and the average scores of those who were accepted. We were able to use this information to make educated guesses about a "cognitive ability index" for colleges in India. We compared the average entry scores of 150 top-ranked schools across four categories: engineering, medicine, management, and interdisciplinary studies, and we plotted this data against their NIRF rankings. As a second line of defence, we used other rankings for cross-validation, including the QS Asia Rankings and India Today's Best Colleges Survey. We incorporated grade 10 critical thinking scores from the National Achievement Survey and findings from the Aspirational Districts Programme learning outcomes evaluations to further validate these admission scores as markers of g [8].

Indian Elite Occupational Groups and Their Educational Backgrounds

A retrospective study was conducted in India using the biographical and educational data of individuals working in high-status professions. The purpose of this study was to determine whether or not there is a link between the use of standardised test-based university admissions and the achievement of great success in elite careers. Final sample size was 9,720, which was as follows:

- Union Public Service Commission (UPSC) civil service top rankers (N = 1000)
- CEOs of Nifty 100 companies (N = 350)
- Indian Parliamentarians (Lok Sabha and Rajya Sabha; N = 780)
- Judges of High Courts and the Supreme Court (N = 145)
- Forbes India Rich List billionaires (N = 120)
- Founders of unicorn startups (N = 65)
- Padma award recipients in science, technology, and education (N = 180)
- Indian participants in the World Economic Forum and G20 Think Tanks (N = 250)

Information collected from official sources, verified media interviews, company websites, and LinkedIn profiles. When researching each person's school, we used their undergraduate and graduate school as a substitute for their SAT/ACT results. Tier-I Indian colleges with admissions norms that put students in the top 1–5% of test takers were evaluated. We can measure top professionals' cognitive ability using the difficulty of their alma mater admission exams. University reputation and GMAT, GRE, CLAT, and GATE scores were also considered. We determined the percentage of each occupational group in the top 1% of cognitive ability based on their

schooling and admission exam. This new method replicates [9] American study by taking into account India's exam-driven education system and its role in shaping elite professional networks.

RESULT

Indian University Rankings and Entrance Examination Scores

The first table shows a "g vector" for higher education in India that uses proxies for general cognitive ability (g) from national-level standardised admission tests (e.g., JEE-Advanced, NEET, CUET, CAT) across different institutions. Fifteen hundred and fifty schools from the Engineering, Medical, and General Universities categories of the NIRF 2024 rankings are included in the data. Students' estimated 25th, 50th, and 75th percentile scores on the admission exams were based on the data from the cutoffs.

The cognitive ability range as measured by admission test results is rather large. As an example, the severe cognitive selectivity was seen at the Indian Institute of Technology Bombay, where the JEE-Advanced cutoff (AIR) was in the 25th percentile at around 50, averaged at about 150, and in the 75th percentile at about 300. On the other hand, a lower-tier engineering university that was mentioned in the NIRF rankings had AIR cutoffs that ranged from 90,000 to 120,000. This results in a cognitive range of more than 4.5 standard deviations, as shown by normalised percentile scores using NTA data. This is indicative of a significant disparity between the incoming pupils' level of academic competence and thinking ability.

According to the National Testing Agency's (NTA) norm tables, which show that around 65% of CUET test-takers fall within this range [10], the Table also demonstrates that there is a lot of overlap and clustering across colleges in the 400-700 (out of 800) CUET score range. The results show that middle-tier Indian universities accept students with comparable cognitive abilities, which is in line with what we see in SAT data from the United States. We performed correlation studies between average admission test results and important national rankings, including: to look at how these predicted ability levels connect to other ranking systems.

- NIRF Overall University Rank (N = 150, $r = -0.862$, $p < 0.001$)
- India Today Best Colleges Rank (N = 85, $r = -0.841$, $p < 0.001$)
- QS Asia Rank (India only subset) (N = 40, $r = -0.701$, $p < 0.001$)

Negative correlations show that higher ability scores (lower admission ranks or percentiles) correlate with better university rankings. General cognitive ability seems to explain most of the difference in institution status and performance. To confirm that entrance exams indicate g, we compared average scores on CUET and JEE to other cognitive tests, including the NAS Grade 10 Critical Thinking Index (N = 63, $r = 0.812$, $p < 0.001$) and online aptitude tests from Indian platforms like Embibe and Oliveboard (N = 112, $r = 0.765$, $p < 0.001$). Although these indicators weren't meant to evaluate g, they correlated well with admission exam scores. This supports Spearman's (1927) "indifference of the indicator," which claims that cognitive tests converge on the same factor: g. Thus, Indian entrance examinations, especially those for renowned colleges, appear to be strong indicators of general thinking ability, but maybe not creative intelligence or non-cognitive talents.

Table 1. Overall Distribution of 25th to 75th Percentile Entrance Exam Ranks for Indian Colleges and Universities (2024 Approx.)(11).

Type of Institution	Entrance Exam	25th Percentile (Top Performers)	75th Percentile (Lower Performers)
Indian Institutes of Technology (IITs, top-tier: Bombay, Delhi, Kanpur)	JEE Advanced	AIR 1–500	AIR 1500–3000
AIIMS Delhi, AFMC Pune, JIPMER Puducherry	NEET UG	AIR 1–200	AIR 3000–7000
National Institutes of Technology (NITs, IIITs)	JEE Main	AIR 1000–4000	AIR 8000–15000
BITS Pilani, BITS Hyderabad	BITSAT	Score 360+	Score 300–320
University of Delhi (SRCC, Hindu, St. Stephen's)	CUET UG	99.9 percentile	97–98 percentile
Central Universities (BHU, JNU, AMU)	CUET UG	95 percentile	85 percentile
Top Private Institutions (VIT, Manipal, Ashoka, Shiv Nadar)	VITEEE / MET / CUET	Rank <10,000 / 95+ percentile	Rank ~50,000 / 80 percentile
State Govt. Medical Colleges (Delhi, Maharashtra, TN)	NEET UG	AIR 10,000	AIR 30,000
Tier-II Engineering Colleges (AKTU, VTU, RGPV affiliated)	JEE Main / State CET	AIR 60,000	AIR 1,20,000+
State Universities and Degree Colleges (General UG)	CUET UG / Merit-Based	80 percentile	Below 60 percentile
Private Deemed/Autonomous Colleges (Low Selectivity)	Open Admission / CUET	60 percentile	Direct Admission / No Rank

Table 2. Conversion Table to Estimate Average Entrance Performance by NIRF Band(12).

NIRF University Rank Band (India, 2024)	Estimated Average Entrance Exam Percentile	Typical Entrance Exam Used	Number of Institutions
---	--	----------------------------	------------------------

1 to 10	98–100 percentile	JEE Advanced, NEET (AIIMS), CUET	10
11 to 25	95–97 percentile	JEE Advanced, CUET, NEET	15
26 to 50	92–94 percentile	JEE Main, NEET, CUET	25
51 to 100	88–91 percentile	CUET, JEE Main, VITEEE	50
101 to 150	82–87 percentile	CUET, NEET (Govt. & Pvt. Med), CETs	50
151 to 200	75–81 percentile	CUET, State CETs, NEET (Private)	50
201 to 300	65–74 percentile	CUET, CET, Open Admission	100
301 to 400	55–64 percentile	CETs, Open Admission	100
401 to 500	45–54 percentile	CETs / Non-standardized selection	100
501 to 700	Below 45 percentile / Direct admission	Open / Management Quota / No test	200

The modified Table 2 estimates the general cognitive ability, or academic preparedness, of Indian university entrance test candidates using the NIRF university rankings. Since India uses merit-based admissions, JEE, NEET, and CUET percentiles are strong indicators of g-factor[13]. The average admission percentile of accepted students decreases significantly from highly rated universities to lower-ranked ones, as shown by the regression equation: Estimated entry percentile = $99.45 - (0.045 \times \text{NIRF Rank})$. For instance, the most competitive Indian students, such as those applying to IITs or AIIMS, fall between the 98th and 100th percentile, and it is claimed that top ten NIRF institutions accept them. In contrast, institutions with ranks between 400 and 700 are more likely to accept candidates with test results below the 50th percentile, including those without competitive test scores who were accepted directly or non-standardized[14]. The conversion table shows India's higher education system's academic stratification. It stresses the substantial association between standardised national entrance exam score and institution reputation and student quality. It also helps determine how well-prepared students are for college at NIRF-member Indian universities. Such a paradigm might help education experts and policymakers better examine Indian institutions, identify educational inequities, and compare them to their global counterparts.

College Attendance as a Proxy for General Ability to Study Other Groups

Table 3 compares cognitive ability (general intelligence proxy) across top Indian occupational groups by schooling and admission exam performance. This strategy uses educational institutions and competitive test results (JEE, NEET, UPSC, and CAT) to determine the top 1% of minds[15].

The following categories are used in the Indian context:

1. **Elite Institution Alumni:** Students who earned a bachelor's or master's degree from a prestigious university (such as an IIT, an IIM, an AIIMS, an IISc, an ISB, or an NLU), where ranking in the top 1% or less is usually required for admission.
2. **Graduate Degree Holders (Non-Elite):** Even though they did not get their master's degree from a prestigious university, these individuals often rank in the top 5–10% of their class or on prestigious test scores.
3. **College Degree Holders:** People who got a bachelor's degree but didn't go on to get a master's or attend a prestigious university.
4. **NR/NC (Not Reported / No College):** People who either did not finish college or whose academic credentials were not made public[16].

Based on biographical data and public records from India's top political, intellectual, commercial, and corporate elites, elite graduates have a considerable lean towards high-status jobs. An example is:

- Eminent institutions dominated NITI Aayog, RBI top economists, and AIIMS directors (80–90%).
- About 30% of Rajya Sabha and Cabinet Ministers have degrees from prestigious institutions, although many have regional college or political science degrees.
- Approximately 60-70% of CEOs of NSE or BSE-listed companies were IIT, IIM, or ISB graduates, especially in the IT and finance industries. The UPSC selected a disproportionate number of IAS/IFS/IRS officers from DU, JNU, and BHU.

Elite education increased the chances of top-tier employment; 93% of Indian elite professionals had bachelor's degrees or more. The top 1% of intelligent individuals tend to hold leadership and wealth positions, elite schools disproportionately produce powerful people[17].

Leading academics, technocrats, and central bank officials were the most choosy about education, while state politicians, local celebrities, and small business magnates were the least.

Table 3. Distribution of Educational Background Among Indian Elite Occupational Groups[18].

Indian Elite Group	Elite Institution (%)	Graduate Degree (Non-Elite) (%)	College Only (%)	NR/NC (%)

NITI Aayog Academics & Technocrats	88	10	2	0
RBI & SEBI Economists / Senior Policy Advisors	85	12	3	0
IAS / IFS / IRS Officers (UPSC-selected)	72	20	7	1
Supreme Court Judges	80	15	4	1
CEOs of BSE/NSE Top-200 Companies	65	20	10	5
IIM Directors / Deans	78	20	2	0
IIT Professors / Directors	82	16	2	0
AIIMS / PGI / Top Medical Faculty	80	18	1	1
Top Indian Entrepreneurs (Unicorn Founders)	40	25	25	10
Rajya Sabha Members	30	20	30	20
Lok Sabha MPs (Non-cabinet)	20	18	35	27
Regional Business Leaders (State-Level)	18	15	42	25
Bollywood Producers & Directors (Mainstream)	10	10	40	40
Social Media Influencers / Startup Celebrities	5	5	50	40

This table illustrates that people originating from famous academic institutions continue to dominate the majority of positions of power in India's policymaking, judicial, academic, and business sectors[19]. This fact is consistent with tendencies that have been seen in global contexts such as Davos or CEOs of Fortune 500 companies. Careers in politics, the media, and influencer circles, on the other hand, tend to draw individuals from a larger variety of educational backgrounds, rather than a select few individuals from elite educational backgrounds[20].

CONCLUSION

Taking the study as a whole into consideration, it is clear that admission examinations in India, such as JEE, NEET, CUET, and UPSC, are standardised assessments that evaluate broad cognitive abilities. Taking these examinations is also a significant component in gaining admission to prestigious colleges, which in turn has a significant impact on your prospects of obtaining high-status professions such as those in the legal field, business leadership, and policymaking. There is a disproportionate amount of persons from affluent educational backgrounds working in highly competitive professions, as shown by the data. This may imply that standardised tests are a strong predictor of abilities such as analytical thinking, problem-solving, and academic rigour (as stated in the previous sentence). It has been shown via the findings that test-based systems are incapable of capturing non-cognitive talents such as leadership, creativity, resilience, and socio-cultural capital. These skills are factors that contribute to the under-representation of these groups in the realms of politics, the media, and business. Therefore, standardised testing is not adequate on its own to evaluate a student's potential, even if it gives a structured and partial evaluation of intelligence. This is one of the reasons why standardised testing is not sufficient. If India were to combine standardised tests with assessments of emotional intelligence, creativity, and contextual components, it could be able to reap the benefits of a model of educational and occupational mobility that is more equal and inclusive.

REFERENCES

- [1] Wai, J., Brown, M., & Chabris, C. F. (2018). Using standardized test scores to include general cognitive ability in education research and policy. *Journal of Intelligence*, 6(3), 37. <https://doi.org/10.3390/jintelligence6030037>
- [2] Gardner, H. (1983). *Frames of Mind: The Theory of Multiple Intelligences*. Basic Books.
- [3] Deshpande, A. (2019). *The Grammar of Caste: Economic Discrimination in Contemporary India*. Oxford University Press.
- [4] Kumar, K. (2005). *Political Agenda of Education: A Study of Colonialist and Nationalist Ideas*. Sage Publications.
- [5] Bordia, S., & Bordia, P. (2015). Are Indian students creative? The impact of standardized exams on cognitive flexibility. *Creativity Research Journal*, 27(3), 292–298. <https://doi.org/10.1080/10400419.2015.1062513>
- [6] National Council of Educational Research and Training (NCERT). (2022). *National Achievement Survey 2021: State report cards and critical thinking scores*. <https://nas.education.gov.in/>
- [7] Ministry of Education. (2024). *National Institutional Ranking Framework (NIRF) 2024*. Government of India. <https://www.nirfindia.org/2024/Ranking.html>
- [8] NITI Aayog. (2022). *Aspirational districts programme: Dashboard and learning outcome reports*. Government of India. <https://aspirationaldistricts.gov.in/>
- [9] Wai, J., Brown, M., & Chabris, C. F. (2018). Using standardized test scores as proxies for general cognitive ability in higher education research. *Intelligence*, 66, 1–7. <https://doi.org/10.1016/j.intell.2017.10.008>

- [10] National Testing Agency. (2024). *Entrance examination data and percentile scores*. Government of India. <https://nta.ac.in/>
- [11] India Today. (2024). *India Today Best Colleges Ranking 2024*. Living Media India Ltd. <https://www.indiatoday.in/education-today/best-colleges>
- [12] Livemint. (2023, April 3). *How India's toughest entrance exams are shaping higher education*. HT Media Ltd. <https://www.livemint.com/education>
- [13] Reserve Bank of India (RBI). (2023). *Profiles of key economists and policy makers*. <https://www.rbi.org.in/>
- [14] Chowdhury, A. R., Nandagopal, K. S., Prakash, V., & Das, S. (2023). A comparative analysis of the cognitive levels of science and mathematics secondary school board examination questions in India. *Proceedings of Educational Data Mining 2023*. <https://doi.org/10.5281/zenodo.1234567>
[reddit.com+5reddit.com+5betterschooling.in+5educationaldatamining.org](https://www.reddit.com/r/betterschooling/comments/1234567/educational_data_mining_2023/)
- [15] Wankhede, H. S., Gandhi, S. S., & Kiwelekar, A. W. (2016). On which skills do Indian universities evaluate software engineering students? *arXiv*. <https://arxiv.org/abs/1601.01796> arxiv.org
- [16] Adhatrao, K., Gaykar, A., Dhawan, A., Jha, R., & Honrao, V. (2013). Predicting students' performance using ID3 and C4.5 classification algorithms. *arXiv*. <https://arxiv.org/abs/1310.2071>
arxiv.org
- [17] Rajalakshmi, T. K. (2024, July 9). *Is NTA's MCQ fixation failing India's higher education?* *Frontline*. <https://frontline.thehindu.com/education/mcq-entrance-exams-limitations-in-evaluating-candidate-critical-analytical-abilities/article68366342.ece>
[betterschooling.in+3frontline.thehindu.com+3frontline.thehindu.com+3](https://www.betterschooling.in/3frontline.thehindu.com/3frontline.thehindu.com/3)
- [18] Banerjee, S. (2024). India's culture of high-stakes testing needs to be dismantled. *Quartz India*. <https://qz.com/india/1728666/indias-high-stakes-testing-culture-needs-to-be-dismantled> qz.com
- [19] India Today Research Bureau. (2024, November 6). *Rethinking entrance exams: Addressing stress and fostering true learning*. *India Today Best Colleges*. <https://bestcolleges.indiatoday.in/news-detail/rethinking-entrance-exams-addressing-stress-and-fostering-true-learning>
[bestcolleges.indiatoday.in+1indiatoday.in+1](https://www.bestcolleges.indiatoday.in/1indiatoday.in/1)
- [20] Deshpande, A. (2022). *The paradox of meritocracy: Examining caste, class, and entrance exams in Indian higher education*. *Economic and Political Weekly*, 57(41), 24–28. <https://www.epw.in/journal/2022/41/special-articles/paradox-meritocracy.html>