

# MILLER ANALOGIES TEST (MAT)

Authored by  
**mohammad looti**

November 1, 2025

## RECOMMENDED CITATION

mohammad looti (2025). *MILLER ANALOGIES TEST (MAT)*. PSYCHOLOGICAL SCALES.  
Retrieved from <https://scales.arabpsychology.com/?p=63179>

## MILLER ANALOGIES TEST (MAT)

**Primary Disciplinary Field(s):** Educational Psychology, Graduate Admissions, Psychometrics

### 1. Core Definition and Purpose

The **Miller Analogies Test (MAT)** is a high-level standardized examination utilized primarily in the United States to assess the academic ability and analytical reasoning skills of candidates seeking admission to graduate-level programs. Unlike tests that emphasize quantitative skills or verbal comprehension in isolation, the MAT uniquely measures the capacity for recognition of relationships between concepts, demanding both sophisticated vocabulary and a broad fund of general knowledge across diverse academic domains. This relational reasoning, often termed analogical thinking, is considered a critical cognitive skill for success in advanced scholarly environments, enabling students to synthesize disparate pieces of information and apply complex logical patterns effectively.

The fundamental objective of the MAT is to evaluate an individual's scholastic aptitude at a level requisite for graduate studies, serving as one metric alongside undergraduate transcripts, letters of recommendation, and statements of purpose. The assessment operates on the premise that the ability to correctly identify and complete complex analogies--which often span various subjects from the humanities to the sciences--is highly correlated with the potential for critical thinking, rapid learning, and effective problem-solving essential in master's and doctoral programs. The structure of the analogies forces test-takers to move beyond simple recall, requiring them to discern subtle logical connections, such as synonyms, antonyms, cause-and-effect relationships, and functional classifications, thereby providing institutions with insight into a candidate's cognitive agility.

Historically, the MAT has served as a competitor or alternative to the Graduate Record Examinations (GRE), particularly favored by certain departments, including education, psychology, and liberal arts programs, due to its emphasis on verbal knowledge and relational reasoning over pure mathematical computation. It offers a relatively concise and focused measure of intellectual capacity, providing admissions committees with a reliable, standardized metric that helps predict performance during the rigorous demands of graduate coursework. The test is constructed to be difficult enough to differentiate among highly capable applicants, ensuring that the scores reflect subtle variations in cognitive preparedness across the pool of prospective graduate students.

### 2. Historical Background and Development

The Miller Analogies Test was originally developed by **George A. Miller**, a prominent American psychologist who later became one of the founders of cognitive psychology, during his tenure at the University of Pennsylvania in the 1920s. Miller conceived of the test as an efficient means of measuring intelligence through verbal analogy, believing that the capacity to grasp relationships

between seemingly unrelated concepts was a profound indicator of intellectual power and academic potential. Its development arose during a period of intense focus on psychometrics and the standardization of intelligence testing in the early 20th century, particularly in response to the growing need for objective measures in higher education admissions following World War I.

Throughout the mid-20th century, the MAT gained traction as a respected tool for assessing graduate-level aptitude, especially as American graduate schools expanded rapidly. It was intentionally designed to be shorter and more focused than other comprehensive standardized tests, relying on the inherent difficulty of the analogies themselves to provide sufficient differentiation among high-achieving candidates. The test ownership and administration have changed hands several times over the decades, most notably being managed for a significant period by The Psychological Corporation and later by Pearson Education, ensuring that the psychometric standards of reliability and validity were consistently updated and maintained according to contemporary testing norms.

The core philosophy guiding the test's construction has remained remarkably consistent since its inception: that success in complex academic endeavors relies heavily on the ability to perceive and manipulate abstract relationships. While the specific vocabulary and knowledge domains assessed have been periodically revised to reflect contemporary cultural and academic shifts, the underlying format--a series of four-part analogies with one missing component--remains the defining characteristic of the MAT, cementing its legacy as a unique instrument in the landscape of graduate admissions testing. The longevity of the test underscores the enduring acceptance among educational institutions that analogical reasoning is a potent proxy for general cognitive ability.

### 3. Test Structure and Format

The Miller Analogies Test consists of a total of **120 partial analogies** presented in a multiple-choice format. Each analogy is structured as a relationship between four terms, with one term missing. The candidate is required to select the best option from four choices that completes the established relationship. These analogies are often presented in the form (A:B :: C:D), where the relationship between A and B must be mirrored by the relationship between C and D, or sometimes in a linear sequence where the missing term establishes the correct logical connection. This concise structure demands swift cognitive processing and retrieval of relevant knowledge under strict time constraints.

Crucially, out of the 120 items administered during the examination, only **100 analogies are actually scored**. The remaining 20 items are experimental questions introduced by the test developers for field testing and potential inclusion in future editions. These unscored items are indistinguishable from the scored questions, meaning candidates must apply maximum effort and

attention to every item presented. This structure ensures that the test maintains its psychometric rigor and allows for continuous updating of the question pool without compromising the validity of the current examination results.

The test is timed, typically requiring participants to complete the 120 items within a specified period, often 60 minutes. This time pressure is an integral part of the assessment, intended to measure not just knowledge and reasoning ability, but also the speed and efficiency with which candidates can access and deploy that knowledge. Because the format is entirely multiple-choice, scoring is objective and standardized, minimizing the potential for bias often associated with subjective essay or verbal response sections. Candidates are penalized only for incorrect answers in the sense that they receive no credit; there is no penalty for guessing, encouraging test-takers to attempt all items within the allotted time.

The complexity of the analogies varies significantly, ranging from simple semantic relationships (e.g., synonym pairs) to complex thematic or functional relationships requiring deep cultural or academic insight. For instance, an analogy might require linking a historical figure to their most famous doctrine, or connecting a scientific principle to its practical application. The structure mandates that the candidate not only understands the individual terms but also accurately identifies the precise nature of the relationship that binds the known terms together, before replicating that relationship to complete the missing part.

#### 4. Content Domains Assessed

The scope of knowledge required to perform well on the MAT is exceptionally broad, spanning several core academic and cultural domains. The analogies require basic knowledge in the **sciences**, encompassing concepts from biology, chemistry, physics, and mathematics, often focusing on principles, laws, or famous scientists and their discoveries. Furthermore, proficiency in the **arts**, including knowledge of classical and contemporary music, visual arts, and architecture, is essential. The test assumes a strong foundation in Western intellectual tradition and general cultural literacy, ensuring the assessment reflects the cognitive depth expected of a potential graduate student.

Significant weight is placed on knowledge of **history** and **literature**. Historical analogies often test knowledge of key political events, philosophical movements, or the chronological relationship between historical figures. Literary analogies demand familiarity with major authors, their works, literary devices, and character-to-novel associations. Success on the MAT depends heavily on the integration of these knowledge bases; candidates who rely solely on pure reasoning ability without a robust vocabulary and cultural background will likely struggle with the test's content requirements, highlighting its function as a measure of crystallized intelligence refined through years of formal education.

Finally, a strong command of **vocabulary** is perhaps the most critical component, as all analogies are verbally mediated. Candidates must possess a high level of verbal fluency, understanding subtle nuances in meaning, connotation, and etymology. The MAT tests not only general vocabulary but also specialized jargon found across various disciplines. The goal is not merely to gauge rote memorization, but to assess the candidate's ability to manipulate this vast verbal and conceptual database quickly and accurately to solve the intricate problems presented by the analogies, making it a comprehensive test of applied verbal intelligence and intellectual synthesis.

## 5. Psychometric Properties and Scoring

The Miller Analogies Test is renowned for its robust **psychometric properties**, particularly its high measure of internal consistency and test-retest reliability, which affirm its status as a reliable measure of the construct it intends to assess. Reliability is crucial because it ensures that variations in scores primarily reflect true differences in candidate ability rather than random measurement error. The test developers rigorously calibrate the difficulty and discriminability of each item to ensure the overall test provides a stable and accurate assessment of graduate-level verbal reasoning.

The scoring of the MAT involves converting the raw score--the number of correctly answered, scored items (up to 100)--into a **scaled score** and a corresponding percentile rank. The scaled score typically ranges from 200 to 600, although the specific range may vary slightly depending on the test edition and norming group. This conversion process is essential because it accounts for minor variations in the difficulty of different test administrations and allows scores to be compared meaningfully across different testing dates and years. The scaled score is the official result reported to graduate institutions.

Furthermore, scores are interpreted using **norm-referenced data**, comparing the candidate's performance against a reference group, usually composed of recent graduates applying to graduate school. The percentile rank indicates the percentage of the norm group that scored lower than the candidate, providing admissions committees with a clear, comparative measure of the applicant's standing relative to their peers. High percentile ranks confirm that the candidate possesses superior relational reasoning skills compared to the general population of prospective graduate students.

The validity of the MAT, particularly its **predictive validity**, is continuously studied. The test aims to predict academic success in graduate programs, typically defined by metrics such as first-year GPA, overall program GPA, and timely degree completion. While the correlation between MAT scores and these outcomes varies by discipline and institution, studies consistently show that the MAT is a significant predictor of performance, particularly in verbal and conceptually intensive fields. This predictive power validates the test's use as a selective screening tool in the competitive

graduate admissions process.

## 6. Role in Graduate Admissions

The function of the MAT within the graduate admissions process is multifaceted. It serves as an objective, standardized screening mechanism, particularly for programs that value linguistic precision, cultural knowledge, and conceptual integration, such as those in the fields of education, counseling, theology, and sometimes business administration. For many institutions, the MAT offers a unified data point that can help compensate for inconsistencies in a candidate's undergraduate record, such as varying grading standards across different universities or degrees obtained many years prior. A strong MAT score can significantly bolster an application, demonstrating recent and relevant cognitive readiness.

Admissions committees utilize the MAT score as one component within a holistic review framework. While an exceptional score seldom guarantees admission, a score below the program's preferred threshold can be a significant impediment. Institutions often set internal "cut scores" based on the performance of previously successful students. The MAT, therefore, acts as a primary gatekeeper, ensuring that candidates possess the minimum intellectual capacity required to handle the academic rigor of the program, complementing the more subjective elements of the application, such as personal statements and interview performance.

Furthermore, in specific disciplines where verbal reasoning and analogical thinking are paramount--such as certain specialized psychology or history programs--the MAT may be preferred over or weighted more heavily than the GRE General Test, especially its quantitative section. This preference reflects the belief that the MAT's focus on complex verbal relationships is a more direct and relevant measure of the intellectual skills needed for successful scholarship and research in these fields, where synthesizing vast amounts of textual and conceptual data is routine.

## 7. Criticisms and Limitations

Despite its strong psychometric reputation, the MAT faces several persistent **criticisms** common to all high-stakes standardized tests. A primary concern revolves around potential **cultural bias**. Because the analogies rely heavily on a broad fund of general knowledge, literature, history, and specialized vocabulary, critics argue that the test inherently favors individuals from particular socioeconomic or educational backgrounds who have had greater exposure to the specific cultural artifacts and academic knowledge bases referenced in the questions. This dependency on crystallized knowledge, rather than purely fluid intelligence, may disadvantage highly capable candidates from diverse or non-traditional educational paths.

Another significant limitation centers on the issue of **predictive ceiling**. While the MAT reliably predicts initial academic performance (e.g., first-year GPA), its ability to predict long-term success

metrics--such as doctoral dissertation quality, tenure achievement, or professional impact decades after graduation--is less clearly established. Critics suggest that the test measures skill sets conducive to test-taking and introductory coursework, but fails to capture crucial qualities like creativity, resilience, self-motivation, or research aptitude, which are often more determinative of success in high-level scholarship.

Finally, the susceptibility of the test to coaching and preparation is often cited as a weakness. Although the MAT is designed to measure foundational, long-developed knowledge, intense study focusing on the specific types of analogy relationships (e.g., part-to-whole, function, agent-to-action) and extensive vocabulary review can significantly improve scores. This raises equity concerns, as access to high-quality preparation materials or expensive coaching services can skew results, potentially transforming the test from a measure of inherent ability into a reflection of economic resources and dedication to test preparation.

### Further Reading

[Miller Analogies Test \(MAT\) - Wikipedia](#)

[Official MAT Information and Administration Guidelines \(Pearson Assessments\)](#)

[Information on George A. Miller \(American Psychological Association\)](#)