TalentLens

RAVEN'S™ Advanced Progressive Matrices (APM)

Item-Bank

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RAVEN'S™ Advanced Progressive Matrices (APM).
Item-Banked Version

The item-banked version of Raven's APM delivers a set of 23 matrices randomly selected from a pool (item bank) of matrices. This protects the integrity of the items and ensures that questions are not over-exposed. This document provides answers to the most frequently asked questions concerning the features and administration of the RAVEN'S Advanced Progressive Matrices (APM) item-banked version.

What does RAVEN'S APM measure?

Answer: RAVEN'S is a nonverbal assessment tool designed to measure an individual's ability to perceive patterns and think clearly, make meaning out of confusion, and formulate new concepts when faced with novel information.

For which type or level of candidates can I use RAVEN'S APM?

Answer: APM can be used to evaluate a candidate's potential for success in higher-level positions, such as graduate, emerging leader, supervisory, executive, director, general manager, or equivalent high-level technical or professional positions in an organization. For entry-level and non-managerial positions, we recommend RAVEN'S Standard Progressive Matrices (SPM).

What are the most important features in the APM item-banked version?

Answer: The APM item-bank contains 23 items that are generated from a bank of items.

The APM item-banked can be administered as an **online screening tool** in **unsupervised (unproctored)** environments. The development of a bank of items ensures that no two applicants will receive the exact same set of questions. Sharing screenshots of items with others is of little benefit, protecting the integrity and difficulty level of the test.

How does the APM item-banked differ from the APM fixed form version?

Answer: The two tests are parallel in that they are the same in terms of **length** and **level of difficulty.** Both tests are 23 items long with 4 practice questions and both are timed (up to 40 minutes). For both tests, each question has a multiple-choice response format from 8 possible answers. The correlation of APM fixed form online vs. APM item-banked is 0.97, which is extremely high.

With APM fixed form every test-taker receives the same 23 questions. **APM fixed form was only designed for proctored/supervised completion.**

With APM fixed form each question is scored only for right or wrong.

With APM item-banked each test-taker receives a test of equivalent difficulty selected from a large bank of items. The chances of each test-taker receiving the same set of questions is miniscule, thus protecting the integrity of the test. Each question is scored against three parameters: right or wrong, the level of difficulty, and the differentiation of the item.

APM item-banked is a useful online assessment where test-takers can take the test either in their own homes **unsupervised/unproctored** at a time to suit them or in a supervised environment.

How do you ensure that the randomly generated tests presented to candidates are equivalent in terms of test difficulty and item content?

Answer: Items were specifically designed to be parallel equivalents of the original 23 Raven's APM items. Only the statistically most equivalent new items were chosen for inclusion in the final bank. Each item is coded in terms of item difficulty and item discrimination (whether the item discriminates between high/ low ability levels) and this allows us to control the statistical properties of the random tests produced. The overall tests may differ slightly in difficulty and discrimination despite this, but this is taken into account by the online scoring system. See below for further explanation.

What process did Pearson use to create the APM item-banked norms?

Answer: Percentiles for the new version of the APM are based on theta scores (an ability estimate) rather than the traditional 'number correct' approach. The new APM items were trialed alongside the original APM (fixed-form) items, allowing the Pearson Psychometrics team to treat both item sets as one large item bank. Data for the original four APM norms was then rescored to produce 'theta scores' for each group, enabling the development of theta to percentile norm tables for the original norm groups.

Can clients use their own APM fixed form norms for the new APM item-banked?

Norms for the original fixed-form APM assessment are based on traditional 'number correct' raw scores rather than theta scores. It is, therefore, not possible to directly use fixed-form norms with the new version. If item level data is available, it is possible to recalculate client norms for usage with the item-bank version.

Should I carry out a new validation study before using APM item-banked?

If you have never used RAVEN'S APM before, we recommend that you always carry out a validation study on existing staff. If you are currently or have previously used APM fixed form then we would recommend carrying out a new validation study even though the correlation between forms is 0.97.

Questions on Scores and General Scale Interpretation

Theta Scoring and Item-banks

An advanced scoring methodology is used to calculate a test-taker's 'theta' score, which is an estimate of someone's ability based on their responses to the items they completed. Each item has a difficulty and discrimination characteristic, based on research data, which is taken into account when scoring. For example, test-takers will receive higher scores if they successfully answer the more difficult and discriminating items in the test than those that respond correctly to only the easier and less discriminating items. This results in a more sophisticated scoring system to traditional 'number correct' raw scores and also allows for candidates to complete different test items and still be scored on the same scale, which is not possible with traditional scoring.

Theta scores for the Raven's APM test range from -4.000 to +4.000. Scores at the lower end of the scale (-4.000) signify very lower levels of ability, whilst scores at the top end of the scale (+4.000) indicate someone with very high levels of ability.

Theta scores run on a finely incremented decimal point scale, but are not easy to interpret. Therefore, scores are converted to percentiles for interpretation purposes.

Why aren't raw scores presented in the profile reports?

Answer: The raw score for the previous version of the APM fixed form, (APM-II) was generated from the total number of correct responses. As those completing the APM item-banked are presented with varying sets of items, differing slightly in terms of difficulty and discrimination, little can be inferred from traditional raw scores so these are not presented in the profile report. Instead, the scoring system takes into account the exact difficulty and discrimination level of the items each person completed to calculate an estimate of ability, a 'theta score', thus offering a more modern and sophisticated scoring system to the traditional approach. The theta scores are converted to percentiles for interpretation purposes and these are included in the profile reports.

Percentile Scores and Norms

A raw score is compared against a Norm Reference Group. For example, if you are using the test to recruit an engineer it makes sense to compare the individual's raw score (theta score) against the scores of other engineers who have taken the tests. These are contained in a norm group. There are a number of different norm groups to compare scores against.

Using the example above, if the candidate achieved a theta score of -1.500 (on the scale ranging from -4.000 to +4.000), if 80% of the people making up the norm group achieved scores of higher than -1.500, the person with the score of -1.500 is only at the 20th percentile, which is a low percentile score. The maximum score achievable is 99th percentile.

How should I transition from using the original APM fixed form norms to the APM item-banked norms?

Answer: If you are already making hiring or promotion decisions using a norm group in the original APM fixed form product, continue using the original APM until there is an appropriate time to make the transition to the APM item-banked product. An appropriate time would be after you have made a hiring decision for a specific position and will be testing a new group of applicants for another position.

What if I have already determined cut scores based on the original APM scales?

Answer: As stated previously, you may continue to use the APM fixed form until a more appropriate time to transition to the APM item-banked. Keep in mind that you will need to collect sufficient data with the APM item-banked to establish new cut scores; when using the APM item-banked, you should not use cut scores from the older APM. Percentile scores can be used for comparison.

What research and validation has been carried out on Raven's item-bank?

Answer: Descriptive statistics and reliability values for the new test are presented in the Technical Manual. Additionally, research suggests a strong degree of equivalence between the fixed-form Raven's APM and the new item-bank test. It would be justifiable to generalize research from the previous to current APM version.

What languages are available for APM item-banked?

Answer: At launch, the APM item-banked test will be available in English. Further languages are planned for 2016. APM fixed form is available in a number of languages.

Is APM item-banked available in paper format?

Answer: The item-banked version is only suitable for online use. The APM fixed form will continue in paper format and is equivalent in terms of difficulty.

Will licenses be offered for APM item-banked?

Answer: We are not planning to offer licenses for APM item-banked. Any existing licenses for online APM fixed form will continue but these tests should only be completed under supervision.

Unlike a fixed form test, the items in the bank have theta scores and the bank is scored using IRT technology. Many clients do not have experience of this technology. Also the bank of items will be updated by us regularly and some items retired; clients would need to reload the new bank every year.

What can be done if there is concern that an applicant has cheated on the unsupervised APM item-banked?

Answer: Job applicants should be re-tested when they come in for the interview or a later stage of assessment. This is the verification stage. We recommend informing test-takers that they may be retested later on, under supervision, to discourage cheating. Applicants can be verified using another online or paper version of APM. The additional tests will carry a cost but as verification takes place at the final stage of assessment, the numbers being tested are usually very low.

Should customers test all applicants with APM item-banked again under supervision?

Answer: This decision is up to the customer, but Pearson advises retesting (validation) as best-practice. Typically, only the final applicants are re-tested. Testing can be done online or using APM item-banked, or APM fixed form online or in paper form. As both APM fixed form and APM item-banked are almost identical in terms of psychometric properties and level of difficulty the percentile scores on both tests can be compared with confidence.

Can I transfer assessment inventory from the APM fixed form to APM item-banked?

Answer: Please contact your local Customer Support, or if in the US Customer Support at 888.298.6227 for more information.

Can a candidate's APM fixed form result be re-scored using a different norm group?

Answer: No. Because APM item-banked is theta scored it is not possible.

Is the APM fixed form still available online?

Answer: Yes, but the APM fixed form should only be used for proctored/supervised testing.

How long does APM item-banked take to complete?

Answer: The test contains 23 items and takes up to 40 minutes to complete

Can the APM item-banked be completed on a mobile phone?

Answer: We recommend that the APM item-banked be completed on a computer, laptop or a tablet with a dependable internet connection and an easy-to-view screen. Cell/mobile phones with small screens are not recommended.

Can APM item-banked be linked from the Pearson test platform for administration via an API/ATS?

Answer: Please contact Customer Support for further information.