

## RAVEN'S PROGRESSIVE MATRICES AND VOCABULARY SCALES: A LIST OF THE TESTS AND MANUALS

### Tests

**Raven's Progressive Matrices and Vocabulary Scales** measure two complementary components of Spearman's *g*.

The *Progressive Matrices* measure **eductive** ability. The term comes from the Latin *educere*, meaning "to draw out". It thus refers to the ability to make sense of complex situations, to draw meaning out of confusion, to perceive and think clearly.

The *Vocabulary* Scales measure **reproductive** ability – the ability to store and reproduce information.

These two components are reasonably distinct, have different genetic and environmental origins, and predict different types of contribution to workplaces and the community.

Used together, the two tests provide almost all the useful information that can be obtained from full-length "intelligence" tests.

Because the test booklets are re-usable, the Raven Progressive Matrices and Vocabulary Scales are the most cost-effective measures of general cognitive ability available.

### THE PROGRESSIVE MATRICES TESTS

The *classic* versions of the *Progressive Matrices* tests are the *Coloured*, *Standard*, and *Advanced* versions.

The *Standard Progressive Matrices* sequence yields the basic form of the test. It is derived from the original 1938 series of matrices, although some were slightly modified in the early 1960s. The test is suitable for testing all ages from 5 to 90. The booklet comprises five Sets (A to E) of 12 items each (e.g., A1 through A12), with items within each Set becoming increasingly difficult - but then reverting to easy items at the beginning of the next Set. This cyclical presentation provides training in the method of thinking required to solve the problems. All items are printed in black ink on a white background.

The *Coloured Progressive Matrices*: Designed to spread the sores of the less able, this test is suitable for children aged 5 to 11, the elderly, and mentally and physically impaired individuals. This test contains Sets A and B from the *Standard* matrices, with a further set of 12 items inserted between the two, as Set Ab. Most items are presented on a coloured background to make the test more visually engaging. However the last few items in Set B are printed in black-on-white so that, if the person taking the test exceeds the tester's expectations, it is possible to transition to Sets C, D, and E of the *Standard* Progressive Matrices.

The *Advanced Progressive Matrices* are designed to spread the sores of more able adolescents and adults. The test comprises two booklets: Set I, consisting of 12 items, and Set II of 36 items. Set I is intended as a training booklet which participants can take home to familiarise themselves with the test at their leisure. It contains items of all levels of difficulty and is sometimes used as a short version of the test. In both Sets, the items are presented in a single order of difficulty.

### More recent variants of the tests

1. The ***Parallel***, *Coloured*, and *Standard* versions.

Because the tests have become so well known, users have requested *Parallel* versions to use when the normal procedures to detect those who have memorised the answers cannot be applied. In these, both the logic and difficulty of the individual items and the distribution of total scores match those of the *Classic* series. All the existing normative and other reference data can therefore be used with confidence.

## 2. The *Standard Progressive Matrices "Plus"*

Because increasing numbers of adolescents and young adults score near the ceiling on the *Classic* version of the *Standard Progressive Matrices*, it has been necessary to restore its discriminative power at the upper end by incorporating more difficult items. This version is the *Standard Progressive Matrices Plus*.

The **SPM Plus** maintains the 60-item, cyclical, format of the *Classic* SPM. By retaining the parallel versions of all the easier items, it has been possible to capitalise on the SPM's enhanced ability to discriminate among those with lower scores. However, by building on developments in Item Response Theory, it has simultaneously been possible to develop a more efficient test offering a more linear relationship between raw score and latent ability. This facilitates the interpretation of fundamental research.

# THE VOCABULARY TESTS

## Forms of the Test

The *Mill Hill Vocabulary* test consists of 88 words, divided into two parallel series of 44 words, known as Set A and Set B.

These words are arranged in different combinations of open-ended and multiple choice formats in the various varieties of the test.

### (A) The Definitions, or All-Open-Ended, Form

The scale has its widest usefulness when a person is asked to explain the meanings of the words in each Set, and the replies are recorded by an administrator on an answer sheet. This is known as the Definitions, or All-Open-Ended, Form of the test. It is particularly useful when working with dyslexics and others who have difficulty reading or writing, but it also yields qualitative information not available in responses to multiple-choice items. This last advantage is further capitalised upon in the "Short Form" of the test discussed below.

### (B) Combined Open-Ended and Multiple-Choice Forms

The most widely used versions of the MHV are derivatives of the Open-Ended Form. Each of these has half the words in open-ended format and half in multiple-choice format. In the latter, respondents are asked, for each word in the test, to select a synonym from a group of six options.

These Forms of the test are only suitable for children and adults who are able to read and write easily.

There are two Forms of these versions. In Form 1, the words in Set A are in open-ended format and the words in Set B in multiple-choice format. In Form 2, this is reversed.

Forms 1 and 2 can be alternated between people sitting next to each other in group testing sessions in order to prevent copying and, on retest, people can be given the parallel Form to that on which they were first tested.

**Each Form is available at two Levels: Junior and Senior.**

In the Junior versions, suitable for children aged 11 to 13, the eleven most difficult words in each Set have been omitted. In this way those taking the test are not discouraged by the number of difficult words

they are asked to read and the number of purely chance successes in the Multiple-Choice half of the scale is reduced.

In the Senior versions, the ten easiest words in each Set have been omitted and the eleventh printed as a worked example. Most people aged 14 and over know the meanings of the first 10 to 15 words in each Set and, if a person can give the meaning of, or select synonyms for, the first five or six words in the Senior forms of the test, it can be assumed that the correct meanings of all the ten words omitted could have been given. If, therefore, the worked example is counted as a pass and the constant 10 added to a person's score on each Set, the results are the same as would have been obtained had the whole scale been administered.

**The two Forms of the combined Open-Ended and Multiple-Choice forms, taken together with the two levels, yield four formats of the test.** These are:

- *Form 1 Junior* (Set A in Open-Ended format, Set B in Multiple-Choice format, the eleven most difficult words omitted).
- *Form 1 Senior* (as Form 1 Junior, but the ten easiest [rather than the eleven most difficult] words omitted).
- *Form 2 Junior* (Set A in Multiple-Choice format, Set B in Open-Ended format, the eleven most difficult words omitted).
- *Form 2 Senior* (as Form 2 Junior, but the ten easiest [rather than the eleven most difficult] words omitted).

MHV Forms 1 and 2, Junior and Senior, are only suitable for use with people who can read and write easily. For such people, the multiple-choice forms of the test tend to give similar results to the open-ended form administered individually. The written test has the advantage over the oral test that people are able to work quietly by themselves, either individually or in groups, and the results are less open to influence by the person administering the test.

### **(C) All-Multiple-Choice and Easy-Score versions**

The MHV is also available in All-Multiple-Choice format. This is most suitable when only an estimate of people's fund of acquired information and intellectual skills is required, or when either the All-Open-Ended or Short Forms of the test, with their fund of qualitative information and more accurate differential scoring, can be given later. In some countries the Senior All-Multiple-Choice version is available in "easy-score" format.

### **(D) The Crichton Vocabulary Scale**

To provide a wider dispersion of scores for children and people with verbal impairment, the *Crichton Vocabulary Scale* (CVS) has been prepared.

It consists of 80 words arranged in two approximately parallel sets of 40 words each.

Set One consists of the first 20 words from each Set of the original version of the MHV Scale, arranged as a single list.

Set Two consists of 40 additional words selected in much the same way as those in the MHV and arranged in the same order of difficulty as the words in Set One (which were drawn from the MHV). *The Crichton Vocabulary Scale therefore stands in much the same relationship to the MHV as the Coloured Progressive Matrices stands to the Standard Progressive Matrices.*

To compare CVS results with those for the MHV, it is only necessary to use a person's score on Set One by itself.

### **(E) The Short Form of the Scale**

A "Short Form" of the MHV Scale is also available. This is intended for use when the investigator is interested in studying the respondent's language usage as well as language knowledge. It is made up of a selection of 17 words from the MHV Scale. Respondents are asked to define the meanings of these words in more detail and to use each word in a sentence. Qualitative criteria to use when examining normal responses and a framework for classifying unusual responses are available in the Manual.

## **Manuals**

The *Manual for the Raven Progressive Matrices and Vocabulary Scales* has 7 sections and 3 research supplements.

The 1998 edition of the **General Section** (updated 2003) describes the full range of tests currently available. An updated overview of the theory on which Raven's Progressive Matrices and Vocabulary Scales are based and an account of their development and background is also included. There is a discussion of the range of audiences – test "users" – to whom the *Sections* of the Manual are addressed.

The 2004 update of Year 2000 edition of the **Standard Progressive Matrices Section** describes the procedures used to develop the *Parallel* and *Plus* versions of the tests, a cross-validation of the item analysis, and additional norms for, the SPM+. Procedures for measuring change (eg in response to drug treatments or education) in a meaningful way and detecting the faking of low scores (eg in connection with insurance claims) are also included. The discussion of the test's contributions to our understanding of cognitive ability, its consequences, and its development has also been extended.

The **Coloured Progressive Matrices Section** contains data on the comparability between the *Parallel* and *Classic* versions of the test as well as additional normative data.

The 1998 edition of the **Advanced Progressive Matrices Section** of the Manual contains an extended discussion of the construct validity of the RPM, situating that discussion in the context of wider models of intelligence and competence. This understanding of what is being measured greatly facilitates the appropriate use of the test in occupational settings.

The **Mill Hill Vocabulary Scale Section** of the Manual was radically revised for 1998 and contains a discussion of the use of the *Short Form* of the test. It reviews the extensive evidence supporting the theoretical framework in which both educative and reproductive abilities (but especially the latter) are based and presents an illuminating discussion of the multiple uses and limitations of vocabulary tests in general. The sections dealing with the clinical applications of the Vocabulary Scales have been extended to incorporate a framework for classifying abnormal responses.

The Y2K edition of **Research Supplement No. 3: American Norms and Neuropsychological Applications** contains a compendium of U.S. School District and ethnic norms (and the detailed overall U.S. norms for young people derived from them), a chapter reviewing the extensive literature on the applications of the RPM in neuropsychological assessment, a chapter on the methodology employed to construct the CPM/SPM/APM/SPM+ conversion tables, and chapters on the environmental effects on RPM scores and the policy implications of the data.

Short **Manuals** containing 2008 United Kingdom norms for the *Coloured Progressive Matrices*, *Standard Progressive Matrices Plus* and the *Crichton* and *Mill Hill* vocabulary were published by NCS Pearson, London, in 2008.

## Uses and Abuses of Intelligence: Studies Advancing Spearman and Raven's Quest for Non-Arbitrary Metrics

This 26-chapter volume edited by John and Jean Raven and published by, among others, Royal Fireworks Press, Unionville, New York opens with a discussion of the theoretical basis of Raven's Progressive Matrices. This is followed by a report on a replication of the Item-Research-Theory-based item analysis of the *Standard Progressive Matrices plus*, a discussion of important, but generally overlooked, problems involved in the measurement of change, and a series of 10 national norming studies relating to the stability and change in RPM scores (and the replicability of the test properties) across time and culture. The book also contains an important chapter on the misuses of the concept of "intelligence" and the (severe) limitations of the most widely adopted psychometric model in the assessment of "abilities". Besides being available from Royal Fireworks Press, the text is available at <http://eyeonsociety.co.uk/resources/Uses-and-Abuses-of-Intelligence.pdf>