

Development of Raven's Advanced Progressive Matrices (APM)

Overview of the APM

The *Advanced Progressive Matrices (APM)* is a nonverbal assessment tool designed to measure an individual's ability to perceive and think clearly, make meaning out of confusion, and formulate new concepts when faced with novel information. The APM score indicates a candidate's potential for success in such positions as executive, director, general manager, or equivalent high-level technical or professional positions in an organization. These categories of positions typically require high levels of clear and accurate thinking, problem identification, holistic situation assessment, and evaluation of tentative solutions for consistency with all available information. The nonverbal aspect of the APM minimizes the impact of language skills on performance on the assessment.

Each item in the APM comprises a pattern of diagrammatic puzzles with one piece missing. The candidate's task is to choose the correct missing piece from a series of possible answers. There is a 42-minute time limit for completing the APM.

More information on the APM is available by logging into eAssessTalent.com, accessing the tab that says "Purchasing and Product Inventory," double-clicking on the product name (that is, "*Raven's Advanced Matrices*"), and then clicking on "Additional Product Information." The APM documents available on eAssessTalent.com include:

- ✓ [Raven's APM Sample Report](#)
- ✓ [Development of Raven's APM](#)
- ✓ [Raven's APM—Administration Best Practices](#)
- ✓ [How to Use APM Results in Employment Selection](#)
- ✓ [Raven's APM—Evidence of Reliability and Validity](#)

Development of the APM

The APM has an extensive history of research, with more than 60 years of studies that support its usefulness as a measure of general mental ability. The current revision of the APM was undertaken to provide customers with a shorter version of the assessment that maintains the essential nature of the construct being measured and the psychometric features of the assessment. The APM is a *power* assessment rather than a *speeded* assessment, even though it has a time limit. Speeded assessments are typically composed of relatively easy items and rely on the number of correct responses within restrictive time limits to differentiate performance among candidates. The APM items have a wide range of difficulty which makes it a *power* assessment. The 42-minute administration time for the current APM (40 minutes for 23 items in Part 1; 2 minutes for 2 items in Part 2) maintains the APM as an assessment of cognitive reasoning *power* rather than *speed*.

The (i) Classical Test Theory (CTT) and (ii) Item Response Theory methodology were used in the analyses of the APM data. Specifically, for each of the 36 items in the previous APM *Set II* version, we examined the following indices to select items: item difficulty index (p value), corrected item-total correlation, IRT item discrimination (a) parameter, and IRT item difficulty (b) parameter. Because the APM was designed to differentiate among individuals with high mental ability, we dropped less discriminating items from the current version of the APM.

For the current APM revision, we used data from 929 applicants and employees in a number of positions across various occupations. These individuals took the APM within the period May 2006 through October 2007. Five hundred and nine of these individuals provided responses about their current position levels (e.g., “Executive,” “Director,” “Manager,” and “Professional/Individual Contributor”). See the Appendix for more details regarding the composition of the sample.

Converting Previous to Current APM Scores

Table 1 presents total raw score equivalents for the previous APM *Set II* and the current APM. This table can be used for the conversion of any total raw score on the current APM to the equivalent total raw score on the previous APM *Set II*, and vice versa. The conversion table is based on estimates of ability using the Rasch model.

Table 1. Conversion Table of Total Raw Scores on the Previous APM *Set II* and Current APM

Total Raw Score on Previous APM <i>Set II</i>	Total Raw Score on Current APM
36	23
35	22
34	21
33	20
32	19
31	18
29–30	17
28	16
27	15
26	14
25	13
24	12
22–23	11
21	10
20	9
18–19	8
17	7
15–16	6
13–14	5
10–12	4
8–9	3
5–7	2
1–4	1
0	0

Appendix

Description of the Sample

The information provided in the following tables is based on APM data collected during the period May 2006 through October 2007.

Appendix 1. Composition of the Sample by Occupation (N = 929)

Occupation**

Accountant; Auditor	1.0%
Admin Assistant; Secretary; Office Support	1.0%
Architect	0.1%
Attorney	0.2%
Bank Teller	0.1%
Consultant	4.5%
Customer Service Representative	0.5%
Engineer	4.8%
Financial Analyst	2.5%
Food Service	0.2%
Human Resources Occupations	3.0%
Information Technology Occupations	8.0%
Installation/Maintenance/Repair	0.2%
Loan Officer	0.1%
MD, DO, DDS, etc.	0.2%
Not Applicable	31.8%
Nurse	0.1%
Other	18.3%
Psychologist	0.4%
Sales Representative (Non-Retail)	3.8%
Sales Representative (Retail)	0.4%
Skilled Tradesperson	0.1%
Teaching Occupations	0.5%

** One hundred sixty-nine (169) individuals provided no response about their occupations.

Appendix 2. Composition of the Sample by Position Level (N = 929)

Position Level**	
Executive; Director	15.8%
Manager	18.0%
Supervisor	1.5%
Professional/Individual Contributor	15.4%
Hourly/Entry-Level	3.3%
Blue-Collar	0.5%
Self-Employed/Business Owner	0.2%
Not Applicable	27.0%

** One hundred sixty-nine (169) individuals provided no response about their position levels.

References

Raven, J., Raven, J.C., & Court, J.H. (1998a). *Raven manual: Section 1, general overview, 1998 edition*. Oxford, UK: Oxford Psychologists Press Ltd.

Raven, J., Raven, J.C., & Court, J.H. (1998b). *Raven manual: Section 4, advanced progressive matrices, 1998 edition*. Oxford, UK: Oxford Psychologists Press Ltd.