Raven's Standard Progressive Matrices (SPM)

Development

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Overview of the SPM

The *Standard Progressive Matrices* (SPM) 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 SPM score indicates a candidate's potential for success in such positions as supervisor, mid-level manager, or equivalent technical or professional positions in an organization. These categories of positions typically require 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 SPM minimizes the impact of language skills on performance on the assessment.

Each item in the SPM 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 47-minute time limit for completing the SPM.

More information on the SPM is available by logging on to TalentLens.com. The SPM documents available on TalentLens.com include:

- ✓ *Raven's* SPM *Sample Report*
- ✓ *Development of Raven's* SPM
- ✓ *Raven's* SPM—*Administration Best Practices*
- ✓ *Raven's* SPM—*How to Use Results in Employment Selection*
- ✓ *Raven's* SPM—*Evidence of Reliability and Validity*

Development of the SPM

The SPM 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 SPM 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 47-minute administration time for the current SPM (45 minutes for 28 items in Part 1; 2 minutes for 2 items in Part 2) maintains the SPM as an assessment of cognitive reasoning *power* rather than *speed*. 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 SPM items have a wide range of difficulty which makes it a *power* assessment.

Classical Test Theory (CTT) and Item Response Theory methodologies were used in analyses of the SPM data. Specifically, for each of the 60 items in the previous SPM version, we examined the following indices to select items: item difficulty index (*p* value), item-total correlation, and IRT item difficulty parameter. Because the SPM was designed to assess mental ability in the general population, we selected a range of low- through high-difficulty items that had high item-total correlations.

For the current SPM revision, we used data from 793 applicants and employees in a number of positions across various occupations. These individuals took the SPM within the period May, 2006 through May, 2007. Four hundred and forty of these individuals provided responses about their current position levels. In the sample, the single most indicated current position was that of “Manager.” See the Appendix for more details regarding the composition of the sample.

Converting Previous to Current SPM Scores

Table 1 presents total raw score equivalents for the previous SPM and the current SPM. This table can be used for the conversion of any total raw score on the current SPM to the equivalent total raw score on the previous SPM, and vice versa. The conversion table is based on estimates of ability using the Rasch model (Rasch, 1980).

Table 1. Conversion Table of Total Raw Scores on the Previous SPM and Current SPM

Total Raw Score on Previous SPM	Total Raw Score on Current SPM
59–60	28
58	27
57	26
56	25
55	24
54	23
53	22
52	21
51	20
49–50	19
48	18
47	17
46	16
45	15
43–44	14
42	13
41	12
40	11
38–39	10
36–37	9
35	8
33–34	7
31–32	6
28–30	5
25–27	4
21–24	3
17–20	2
1–16	1
0	0

Appendix

Description of the Sample

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

Appendix 1. Composition of the Sample by Occupation (*n* = 793)

Occupation*	
Accountant; Auditor	0.9%
Admin Assistant; Secretary; Office Support	0.3%
Airline Pilot/Navigator	0.1%
Architect	0.1%
Assistant Manager	0.1%
Assistant Store Manager	0.1%
Attorney	0.4%
CEO	0.1%
Consultant	1.8%
Customer Service Representative	0.8%
Department Manager	0.1%
Engineer	0.3%
Farm Worker	0.1%
Financial Analyst	0.5%
Food Service	0.1%
Human Resources Occupations	1.0%
Information Technology Occupations	4.0%
Installation/Maintenance/Repair	0.3%
MD, DO, DDS, etc.	0.1%
Not Applicable	30.5%
Nurse	0.1%
Other	4.3%
Paralegal	0.3%
Psychologist	0.4%
Sales Representative (Non-Retail)	1.3%
Sales Representative (Retail)	7.1%
Store Manager	0.3%
Teaching Occupations	0.1%

* Three hundred and fifty-three individuals did not provide a response about their occupation.

Appendix 2. Composition of the Sample by Position Level (*n* = 793)

Position Level*	
Executive; Director	4.8%
Manager	18.8%
Supervisor	0.9%
Professional/Individual Contributor	4.8%
Hourly/Entry-Level	0.8%
Blue-Collar	0.4%
Self-Employed/Business Owner	0.4%
Not Applicable	24.7%

* Three hundred and fifty-three individuals did not provide a response about their position level.

References

Rasch, G. (1980). *Probabilistic models for some intelligence and attainment tests*. Chicago: University of Chicago Press.

Raven, J., Raven, J. C., & Court, J. H. (2000). *Raven manual: Section 3, standard progressive matrices, including the parallel and plus versions, 2000 edition.* Oxford, UK: Oxford Psychologists Press Ltd.

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