



Raven's Standard Progressive Matrices (SPM)

How to Use Results in Employment Selection





Copyright © 2007 by NCS Pearson, Inc.

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

Pearson and **TalentLens** logos are trademarks, in the U.S. and/or other countries, of Pearson Education, Inc. or its affiliate(s).

Portions of this work were previously published.

Printed in the United States of America.

Raven's Standard Progressive Matrices (SPM)

How to Use the SPM Results in Employment Selection

Understanding the Scores Reported

The interpretive report includes a total raw score as well as a percentile score corresponding to the total raw score. The percentile score is a standardized score that indicates the standing of the candidate relative to individuals in the norm group. The percentile score indicates the proportion of the norm group who possess less of the ability than the candidate. For example, if a candidate's SPM score is at the 75th percentile of a given norm group, it means that the candidate scored higher than or equal to 75% of the people in the norm group. A score above the 50th percentile is considered above average in comparison to the norm group.

Using Local Norms Developed with the Previous SPM

Table 1 presents total raw score equivalents for the previous SPM (Raven, Raven, & Court, 2000) and the current SPM (Pearson, 2007). 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

Making Selection Decisions

A key consideration in using the SPM as part of a selection process involves establishing how to combine the results from the assessment with other information obtained throughout the selection process. Many organizations use a holistic approach in which the interview, résumé review, assessment results, and other information are considered, collectively, to generate a comprehensive profile of each candidate. This approach recognizes that multiple predictors typically produce the most reliable and accurate prediction of job performance.

Another popular alternative is to use the SPM as a screener to determine which candidates are best qualified to advance to the next step in the selection process. The advantage of this is that it can increase efficiency and reduce the cost and time spent using more expensive selection procedures (e.g., behavior-based interviews conducted by hiring managers) to differentiate unqualified candidates from appropriate ones.

We do not establish or recommend a passing score (cut score) for the SPM. Your organization should set appropriate cut scores after careful consideration of factors unique to the organization (e.g., the supply of talent in the local labor market, and the emphasis and urgency for keeping jobs filled). In general, the higher a cut score, the higher the likelihood of success for candidates who score above the cut score. Arbitrary cutoffs should be avoided, because they can introduce disparate impact into a selection process. The best solution is local validation, which involves relating assessment scores with job performance within the client's organization. Local validation provides the best foundation for interpreting scores and differentiating candidates who are likely to be successful from those who are not.

Monitoring the Selection System for Adverse Impact

Assessment results (or any assessment metric used in decision making) should be evaluated for evidence of adverse impact. According to the Uniform Guidelines on Employee Selection Procedures (Equal Employment Opportunity Commission, 1978), adverse impact in an assessment is indicated when the selection rate for a protected group is less than 80% of the selection rate for the majority group. If a selection system demonstrates adverse impact under these terms, a local validation study showing that the employment assessment tool is equally predictive for protected groups will help demonstrate that the assessment is fair, as outlined by the Equal Employment Opportunity Commission.

An organization's ability to evaluate selection strategies and implement fair employment practices is dependent upon knowledge of the demographic characteristics of applicants and incumbents. Monitoring these characteristics and accumulating assessment score data are clearly necessary for establishing the legal defensibility of a selection system, including those systems that incorporate the SPM. The most effective use of the SPM will be achieved where a local norms database is established and regularly updated and monitored for compliance with applicable policies and best practices.

Maintaining Security of Results and Materials

SPM scores are confidential and should be stored in a secure location accessible to authorized individuals only. It is unethical as well as poor assessment practice to allow assessment score access to individuals who do not have a legitimate need for the information. The security of assessment materials (e.g., access to online assessments) and protection of copyright must also be maintained by authorized individuals.

Sources of Additional Best Practice Information

Governmental and professional regulations cover the use of all personnel selection procedures. Relevant source documents that the user may wish to consult include the *Americans With Disabilities Act of 1990*; the *Principles for the Validation and Use of Personnel Selection Procedures* (Society for Industrial and Organizational Psychology, 2003); the *Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 1999); and the federal *Uniform Guidelines on Employee Selection Procedures* (Equal Employment Opportunity Commission, 1978). For an overview of the statutes and types of legal proceedings that influence an organization's equal employment opportunity obligations, the user is referred to the U.S. Department of Labor's (1999) *Testing and Assessment: An Employer's Guide to Good Practices*.

References

- American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (1999). *Standards for educational and psychological testing*. Washington, DC: Author.
- Americans With Disabilities Act of 1990*, Titles I & V (Pub. L. 101–336). United States Code, Volume 42, Sections 12101–12213.
- Equal Employment Opportunity Commission. (1978). Uniform guidelines on employee selection procedures. *Federal Register*, 43(166), 38295–38309.
- Pearson. (2007). *Development of Raven's Standard Progressive Matrices (SPM)*. San Antonio, TX: Author.
- 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.
- Society for Industrial and Organizational Psychology. (2003). *Principles for the validation and use of personnel selection procedures* (4th ed.). Bowling Green, OH: Author.
- U.S. Department of Labor. (1999). *Testing and assessment: An employer's guide to good practices*. Washington, DC: Author.

