Factors Influencing Applicant Performance When Retaking Employment Exams

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Retest or Not Retest?

To retest or not retest? That is the question.

Or is it? Do you really have a choice?
Obligation to Retest

- Uniform Guidelines on Employee Selection Procedures (1978)
  - Use users should provide a reasonable opportunity for retesting and

- Standards for Educational and Psychological Testing (1999)
  - Retest opportunities should be provided for promotion, graduation, admission, licensing, or certification decisions
Why Is There An Obligation to Retest?

Two rationales underlie the professional endorsement for retesting (Lievens, Buyse, & Sackett, 2005)

- Retesting is warranted due to the possibility that the initial assessment was in error …
- Retesting is warranted because there is the possibility that candidates have improved their standing on the construct of interest …

In addition, our society has an expectation that individuals will have the opportunity to "try again." Not allowing individuals to retest would be construed as unfair.
The Issue is Not to Retest

- The focus should be on the effect and impact of retesting in order to answer critical questions regarding retesting
  - Do re-takers score higher on the retest?
  - What is a reasonable test-retest interval?
  - How many retests should be allowed?
  - Which scores best reflect the true score?
  - Is there a validity reduction with retesting?
  - Do retest takers differ from non-retest takers?
  - Are certain types of tests more prone to retest effects than others?
  - What are the potential benefits to organizations of retesting?
Published Research on Retesting, Coaching, and Practice Effects
A Brief Literature Review

Most of the research and published literature is in the educational arena and centers around coaching and practice effects:
- Aptitude, achievement, and ability tests

To date only two articles have been published that focus on retesting in employment settings:
- Hausknecht, Trevor, & Farr, 2002
  - Police officer entrance examination
- Lievens, Buyse, & Sackett, 2005
  - Used medical school admissions exam as a proxy for employment setting
Coaching Effects
Aptitude & Achievement Tests

- Meta-analysis on aptitude test coaching
  (Kulik, Bangert-Drowns, & Kulik (1984))
  - Raised SAT scores an average of 0.15 SD
  - Raised other aptitude and intelligence test scores an average of 0.43 SD

- Coaching raised scores on the revised SAT by 0.10 SD and 0.20 SD on the verbal and math sections (Powers & Rock, 1999)

- SAT and ACT scores increased following participation in test preparation activities (Briggs, 2001)

- Attendees of test preparation programs for selection settings scored no better on ability tests than non-attendees (Ryan, Ployhart, Gregarus, & Schmidt, 1998)
Practice Effects
Aptitude & Achievement Tests

- Test scores increase in the second administration of achievement and aptitude tests (Kulik, Kulik, & Bangert, 1984)
  - Test score increases for identical tests = 0.42 SD
  - Test score increases for parallel forms = 0.23 SD

- Multiple retests result in larger practice effects for achievement and aptitude tests (Kulik, Kulik, & Bangert, 1984)
  - First to second = 0.42 SD score increase
  - First to third = 0.70 SD score increase
  - First to fourth = 0.96 SD score increase
Selection Research
Police Entrance Exam Test Scores

Adapted from Hausknecht, Trevor, & Farr (2002)
Selection Research

Police Entrance Exam Retest Effect Sizes

Incremental Effect Sizes

Adapted from Hausknecht, Trevor, & Farr (2002)
Selection Research

Police Entrance Exam Retest Effect Sizes

Adapted from Hausknecht, Trevor, & Farr (2002)
Selection Research
Medical Entrance Exam Test Scores

Adapted from Lievens, Buyse, & Sackett (2005)
Selection Research
Medical Entrance Exam Retest Effect Sizes

Adapted from Lievens, Buyse, & Sackett (2005)
Unpublished Research on Retesting Effects Based on the CWH Selection Solutions Firefighter Written Examination
Selection Solutions Firefighter Written Test

- First administration in 1997
- Administered to over 65,000 applicants
- Database contains 10,000+ repeat test takers
  - Approximately 3400 with 3 retests
  - Approximately 1300 with 4 retests
  - Approximately 500 with 5 retests
- Repeat test taker sample includes:
  - Applicants who have taken the up to 10 times
  - Applicants who have taken the test anywhere from one month after their initial session to up to nine years after their initial session
Characteristics of the Selection Solutions Test

- Not an ability or achievement test
- Uses situational items
- Uses practical (applied) based items
- Allows candidates to draw from their life experiences
- Measures dimensions that change over time as well as dimensions that remain fairly stable over time.
Components Included in the Selection Solutions Test

- Basic Educational Skills
- Practical Skills
- Interpersonal Skills
- Self Awareness Skills
Selection Solutions
Firefighter Exam Test Scores

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<th>Mean Score</th>
<th>1st Score</th>
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- 2 Retests
- 3 Retests
- 4 Retests
- 5 Retests
- 6 Retests
Selection Solutions
Firefighter Exam Test Scores

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<th></th>
<th>1st Score</th>
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Educ          | Prac         | Inter       | Self        |
--------------|--------------|--------------|--------------|
88            | 86           | 84           | 82           |
88            | 86           | 84           | 82           |
88            | 86           | 84           | 82           |
88            | 86           | 84           | 82           |
88            | 86           | 84           | 82           |
88            | 86           | 84           | 82           |
Selection Solutions Test-Retest Effect for Multiple Retests

Incremental Effect Sizes

- Educational
- Practical
- Interpersonal
- Self-Awareness
- Final Score

Retest 1-2 | Retest 2-3 | Retest 3-4 | Retest 4-5 | Retest 5-6

June 27, 2006
Selection Solutions Test-Retest Effect for Multiple Retests

Cumulative Effect Sizes

- **Educational**
- **Practical**
- **Interpersonal**
- **Self-Awareness**
- **Final Score**

Retest 1-2  Retest 1-3  Retest 1-4  Retest 1-5  Retest 1-6
Selection Solutions Test-Retest
Mean Score Differences Over Time

Overall Score

Mean Score Difference

Months Between Test and Retest

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Selection Solutions Test-Retest
Raw Score Differences Over Time

Months Between Test and Retest

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N = 10389
r = .06
Implications (and Inferences) of Retesting
Potential Organizational Disadvantages When Candidates Re-Take Tests

- Practice effects appear to be consistent for the first retest
  - First time re-testers can enhance their "standing" relative to candidates taking the test for the first time

- When using cognitive ability tests, the scores increase incrementally with each retest
  - Subsequent scores may not be a true reflection on the candidate’s cognitive ability

- Test validity may be lower for retests
  - Academy training performance when hired after one test $r = 0.36$
  - Academy training performance when hired after retest $r = 0.24$
  - Retest scores had lower correlations with GPA
Potential Organizational Advantages When Candidates Re-Take Tests

- Retesting shows persistence and motivation
- Retesting positively correlated with performance
  - Each retest was associated with a 12% SD increase in police academy test scores
- Retesting positively correlated with job retention
  - As police entry retests increased, turnover decreased
- Scores on dimensions that are related to life experience and educational skills can improve over time
  - Retesting allows candidates to demonstrate this improvement
- Scores on dimensions that are related to traits that are stable over time do not change with repeated retesting
References & Readings