Job Knowledge Versus Multiple-Choice In-Basket Examinations: Which Method is a Superior Indicator of Job Knowledge?

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Purpose of Present Research

To explore whether the job knowledge exam (JK) or multiple-choice in-basket exam (MC IB) is the superior method for assessing the construct of job knowledge based on several criteria

Overview

- Provide an overview of the consulting project
- Review format and sample questions of a JK exam and MC IB exam
- Discuss the current study's research questions and findings

Project Overview

Agency Requirements

- 100 question multiple-choice exam
- Open-book and closed-book portions
- Screen for assessment center

Our Concerns

- High adverse impact
- Limited diversity in the assessment center

Project Overview

Our solution

- Split the multiple-choice exam into two parts
- Part One: 60 question traditional multiple-choice JK exam
- Part Two: 40 question multiple-choice IB exam

Job Knowledge Exam

- Closed-book
- Based on knowledge areas that were:
  - Critical
  - Required on the first day of the job
  - Necessary to memorize
- Knowledge areas were weighted equally

Job Knowledge Exam

Example

You are analyzing test data for a group of candidates. All candidates took two exercises. You want to determine if candidates' scores on the exercises differed significantly. You should perform a(n):

A. two-way ANOVA.
B. independent t-test.
C. dependent t-test.
D. chi-square.

MC In-Basket Exam

- Open-book
- Based on knowledge areas that were:
  - Critical
  - Required on the first day of the job
- Contained two types of questions
  - Source-based questions
  - SME judgement-based questions

MC In-Basket Exam

Example - Item 1

Memo

To: Consultant Candidate

From: Cassi Fields

RE: Presentation at GMU

I was asked to give a presentation at GMU regarding validating passing scores this Friday. Due to a conflict, I am unable to give the presentation. Therefore, I would like you to give the presentation in my place.

MC In-Basket Exam

Example - Item 1 Source-based question

Which of the following would you most likely address in this presentation?

A. The Angoff Method
B. Validity Generalization
C. Realistic Job Previews
D. Item Characteristic Curves

MC In-Basket Exam

Example - Item 1 SME-based question

In response to this item, you should tell Cassi that you:

A. can attend the presentation and will present your draft to her on Thursday.
B. cannot attend and suggest an appropriate person to give the presentation.
C. cannot attend the presentation, but will help another person prepare the presentation.
D. will check your schedule and get back with her on Wednesday.

Development & Validation

- Drafted by *FCG*
- Reviewed by a SME committee
- Validated using a content-oriented strategy
- Pilot tested by a second set of SMEs

Research Questions

JK Exam vs. MC IB Exam

- Which method results in:
  - higher correlations with job performance criteria?
  - lower standardized subgroup differences?
  - more favorable candidate reactions?
- Do different types of MC IB questions influence the magnitude of an in-basket's validity and observed subgroup differences?

Current Study

- Sample
  - Police officers who participated in a promotion process for the rank of Sergeant

- Measures
  - JK exam & MC IB exam
  - Criteria: supervisory performance rating (PRS)
    - Overall performance and six dimensions

Results: Job Performance Criteria

	JK	MC IB
✦ Overall performance	**.39****	.27**
✦ Dimension 1	.26**	.31**
✦ Dimension 2	.25**	.22*
✦ Dimension 3	.33**	.21*
✦ Dimension 4	.38**	.22*
✦ Dimension 5	.34**	.18
✦ Dimension 6	.34**	.11

Incremental Validity

Hierarchical regression results

	F	R^2	ΔR^2
Step 1	8.12^{**}	.07	$.07^{**}$
MC IB	$\beta = .27^{**}$		
Step 2	10.51^{**}	.17	$.10^{**}$
MC IB	$\beta = .11$		
JK	$\beta = .35^{**}$		

Subgroup Differences and Candidate Reactions

	JK	MC IB
✦ Minority-White (*d*)	**.31**	.55

✦ Candidate reactions

(based on anecdotal comments)

Type of MC IB Question

Standardized subgroup differences

	MC IB Total	Source-Based	SME-Based
d	.55	.59	**.00**

Type of MC IB Question

Candidate reactions (based on appeals written)

- A higher proportion of SME-based questions were appealed
  - "Says who?"
  - "Not in book."
- A lower proportion of appeals written on SME-based questions were upheld

Type of MC IB Question

Performance data

	MC IB	**Source**	**SME**
✦ Overall	.27**	.22**	.15
✦ Dimension 1	.31**	.28**	.11
✦ Dimension 2	.22*	.16+	.19*
✦ Dimension 3	.21*	.16+	.16+
✦ Dimension 4	.22*	.18+	.13
✦ Dimension 5	.18	.18+	.01
✦ Dimension 6	.11	.09	.09

Limitations

- PRS measure
  - Officer vs. Sergeant performance
- No quantitative data on candidate reactions
- Differences in format (open/closed book)

Conclusions

- Administering both exam types does not contribute incrementally to prediction
- Optimal method?
  - Both can reliably measure Job Knowledge
  - The MC IB allows for the measurement of other KSAs (e.g., Judgement)
  - If SME-based questions are included, adverse impact may be reduced
  - If only Source-based questions are included, may be unnecessarily cognitively complex and increase adverse impact