

Empirically Linking Predictors to Competencies

HOGAN
ASSESSMENT SYSTEMS

EMPLOYEE SELECTION
EMPLOYEE DEVELOPMENT
TALENT MANAGEMENT

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What are competencies?

- Knowledge, Skills, and Abilities (KSAs)
- KSAs and “other personal characteristics” (KSAOs)
- Competencies
 - combination of them all!
- How are they used?
 - To create vision and expectations



How are competency models created?

- From scratch
 - focus groups
 - job analyses
- Off-the-shelf
 - existing competency taxonomies
 - e.g., Lominger
- Result?
 - tremendous variability!
 - 20 ways to say the same thing



Using personality for selection...

- Well-established and validated psychometric assessments (e.g., HPI/HDS)
- Composition
 - Scales (Conscientiousness, Prudence, Ambition, etc.)
 - How many scales are used in the final selection battery?
- Inferences of behaviors
 - “High Prudence applicants should likely _____”
 - often based on subjective interpretation



Taking out the inferences...

- Competency-based reporting
 - Example
 - allows for potential inclusion of all scales
 - gets directly to the heart of what clients are looking for



How do we establish prediction?

- Typical approach – single criterion study
 - multiple regression to create equations
 - sampling error and other potential confounds
- HAS approach
 - archival data (multiple studies)
 - synthetic validity evidence
 - create predictive algorithms



Algorithm Development

- Using meta-analytic corrected correlations as weights (similar to regression *b*-weights)
- Selection of relevant scales
 - Should a fully compensatory model be used?
 - what is the reality of personality?
 - HPI only? HPI and HDS?
 - flexibility to try whatever works!

| CET Dimension | <i>K</i> | <i>N</i> | ADJ | AMB | SOC | INP | PRU | INQ | LRN |
|---------------|----------|----------|-----|-----|------|-----|-----|------|-----|
| Integrity | 36 | 3,660 | .17 | .02 | -.05 | .13 | .24 | -.03 | .03 |

$$\text{Integrity} = ((\text{ADJ} * .17) + (\text{INP} * .13) + (\text{PRU} * .24)) * 100$$



From algorithms to selection...

- Which competencies?
 - have some?
 - mapping competencies to Hogan taxonomy
 - Hogan expert review (Delphi Technique)
 - need some?
 - conduct focus groups / job analyses
 - Hogan's Competency Evaluation Tool (CET)
 - 56 competencies
 - Subject Matter Expert (SME) ratings
 - identification of critical competencies
 - reviewed/approved by client organization



From algorithms to selection...

- creating “buckets”
(Low => Moderate => High)
 - Example
 - how many do you want?
 - cutoffs derived from frequency distribution
 - overall norm, subgroup norm, local sample
 - e.g., first third, second third, third third
- creating “total score” / “overall fit”
 - straight summation of competency scores (1,2,3)?
 - weighted summation?
 - allows prioritization of certain competencies
 - estimating cuts based on frequency distributions
 - can be adjusted for applicant flow

Walk-through Example

- Selecting Waiheke Trucking Company's Truck Drivers

$$\text{Safety} = ((\text{ADJ} * .21) + (\text{AMB} * .21) + (\text{PRU} * .21)) * 100$$

$$\text{Dependability} = ((\text{ADJ} * .17) + (\text{PRU} * .14) + (\text{SOC} * -.06)) * 100$$

$$\text{Trustworthiness} = ((\text{ADJ} * .17) + (\text{INP} * .13) + (\text{PRU} * .24)) * 100$$

$$\text{Work Attitude} = ((\text{ADJ} * .36) + (\text{AMB} * .15) + (\text{PRU} * .22)) * 100$$

$$\text{Citizenship} = ((\text{ADJ} * .09) + (\text{AMB} * .07) + (\text{PRU} * .14)) * 100$$

- HK manager

| CET Dimension | Definition | | | | | | | | |
|-----------------|------------|----------|-----|-----|------|-----|-----|------|-----|
| CET Dimension | <i>K</i> | <i>N</i> | ADJ | AMB | SOC | INP | PRU | INQ | LRN |
| Safety | 6 | 471 | .21 | .27 | .01 | .12 | .21 | .08 | .01 |
| Dependability | 44 | 4,907 | .17 | .06 | -.06 | .06 | .14 | -.03 | .02 |
| Trustworthiness | 36 | 3,660 | .17 | .02 | -.05 | .13 | .24 | -.03 | .03 |
| Work Attitude | 15 | 1,820 | .36 | .15 | -.11 | .12 | .22 | -.03 | .13 |
| Citizenship | 49 | 5,064 | .09 | .07 | .00 | .06 | .14 | .03 | .00 |



Walk-through Example

- Overall fit cuts are created
 - range of possible scores is 5 to 15
 - Low Fit < 8
 - Moderate Fit ≥ 8
 - High Fit ≥ 12
 - considered applicant flow to allow 33/33/33 pass rates



Walk-through Example

- Johnny the truck driver applicant
 - takes the HPI
 - his scores are plugged into the competency algorithms
 - he receives individual competency and overall fit ratings



Does it really work?

- Need for cross-validation
 - hold-out samples in criterion studies
 - for HAS
 - tested on archival data from studies not included in meta-analytic estimates
 - results are promising!
 - evaluation is similar to DFA classification equation accuracy



But that's not the whole picture...

- Incomplete picture
 - importance of including primary scale interpretation as well
 - highlights strengths and weaknesses
 - [Example](#)
- Incomplete competency models



Summary

- Competency-based reporting can cut to the chase and provide clients the information they most want
- Development of predictive algorithms is both an art and a science, and nothing's wrong as long as it works!
 - all about maximizing prediction
- Great flexibility in establishing cut scores for managing applicant quality and flow
- Cross-validate as possible and monitor performance.



QUESTIONS?