

Measuring Mental Math: A Simple Task Presents Complex Problems

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**Funded Under Contract:
N00173-07-C-2011**



Overview of Presentation

- **AIR's Measure of Mental Math**
 - Rationale
 - Development
- **Innovative Item Types (IITs)**
 - What are they?
 - Challenges
 - Benefits
- **Applicant Reactions to AIR's IIT**
- **Conclusion and Future Research**

Rationale for Measure

- **A thorough job analysis of a security-related position revealed:**
 - “*Ability to perform basic mental math quickly*” was
 - Very important (M=4.63, 5-point scale)
 - Linked to ¼ of the job tasks
 - Needed prior to training
- **Challenges:**
 - Minimum qualifications would not be sufficient
 - Existing measure for this low level ability did not exist
 - Needed to assess candidate’s ability to *quickly conduct simple mental math* in a manner that was:
 - Face valid
 - Created variability in scores

Development of Measure

1. Paper and pencil methods

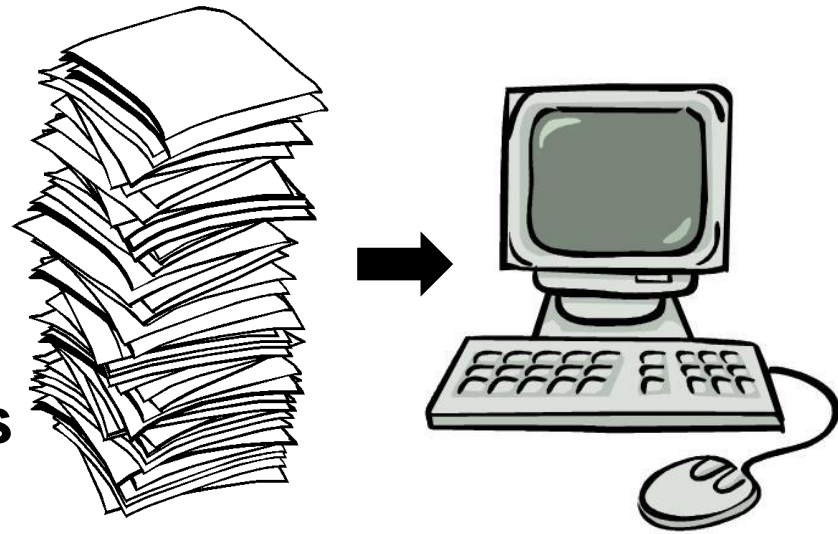
- Time limits

2. Alternative methods

- Interactive
- Processing speed element

3. Innovative Item Types

- Development Dimensions International, Shaker Group, and SHL Previsor (2011)



What are Innovative Item Types?

- **Originate in areas with minimal background research**
- **Replicate certain functions of a particular job**
- **Incorporate technology**
- **Can be used along with other IITs, work samples, or traditional methods in the selection process**

Challenges to Creating IITs

- **Longer initial development**
- **Additional pilot testing**
- **Greater familiarity with technology**
- **Balancing job-relatedness and statistical integrity**

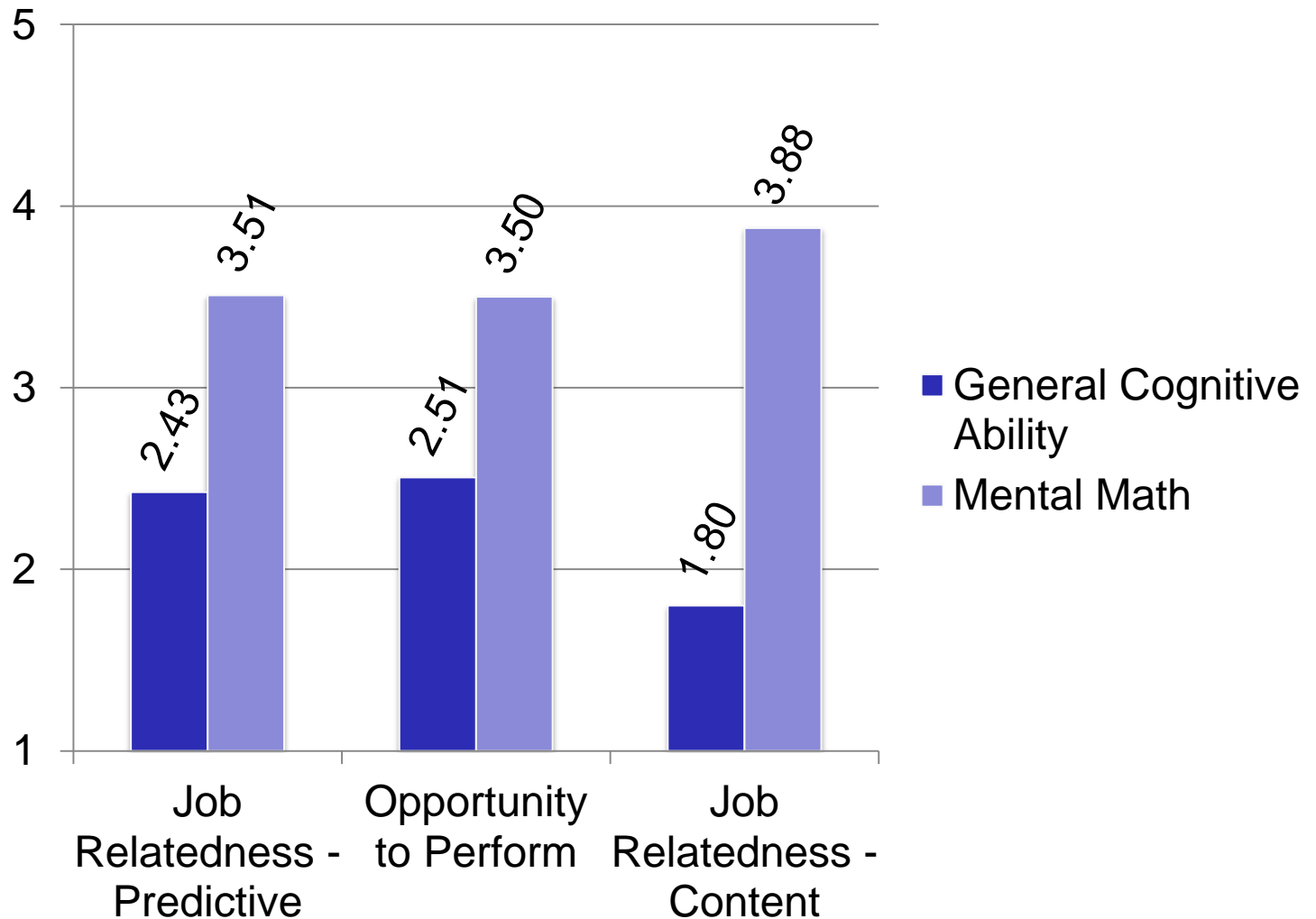
Benefits of Using IITs

- **Applicant reactions**
- **Realistic job previews**
- **Client and stakeholder buy-in**
- **Wider range of potential constructs**
- **Streamlining the administration process**

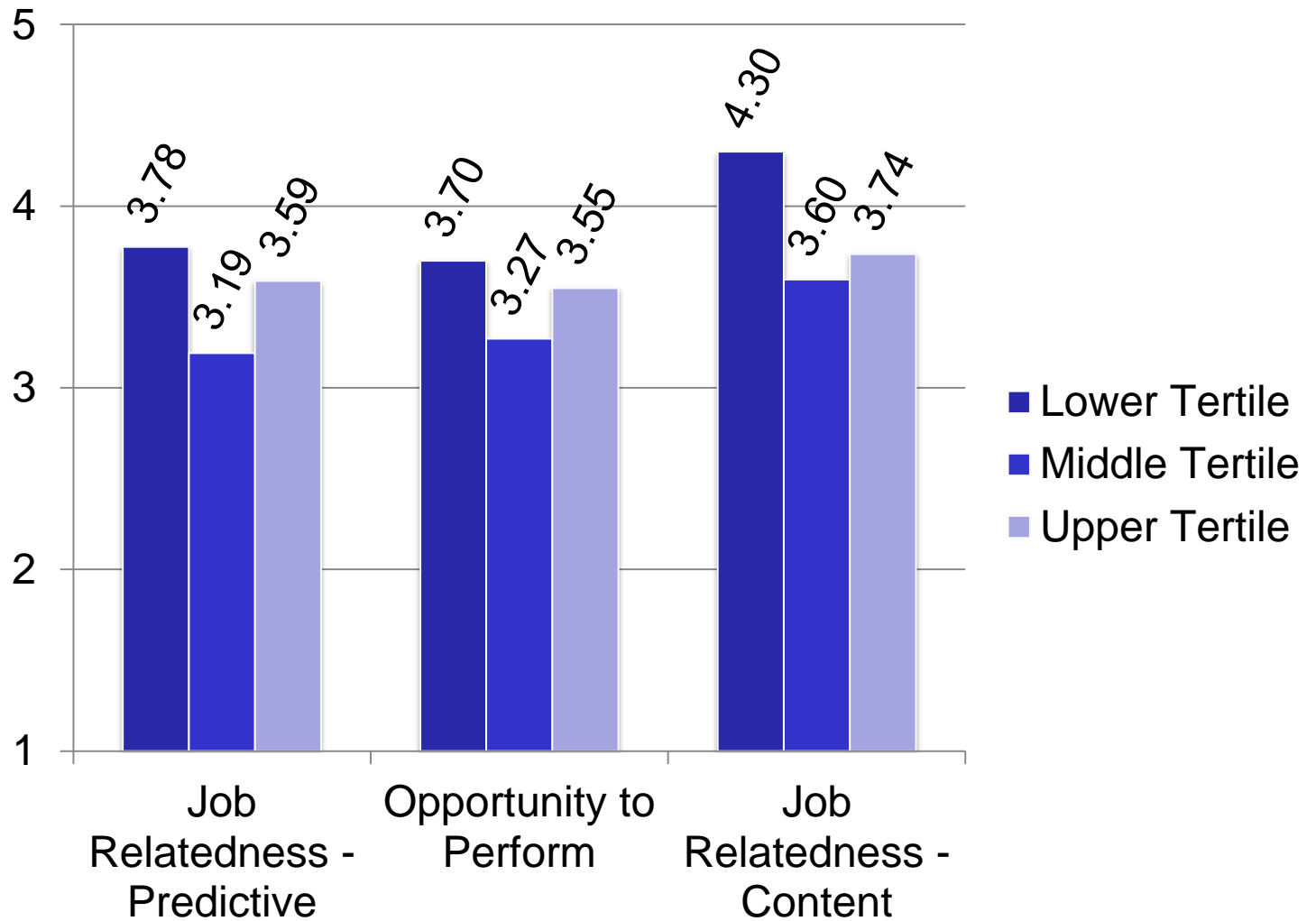
Applicant Reactions

- **Bauer et al. (2001)'s six categories of applicant reactions:**
 - Job-relatedness – predictive
 - Opportunity to perform
 - Openness of the administration process
 - Two-way communication
 - Proprietary of questions
 - Job-relatedness – content

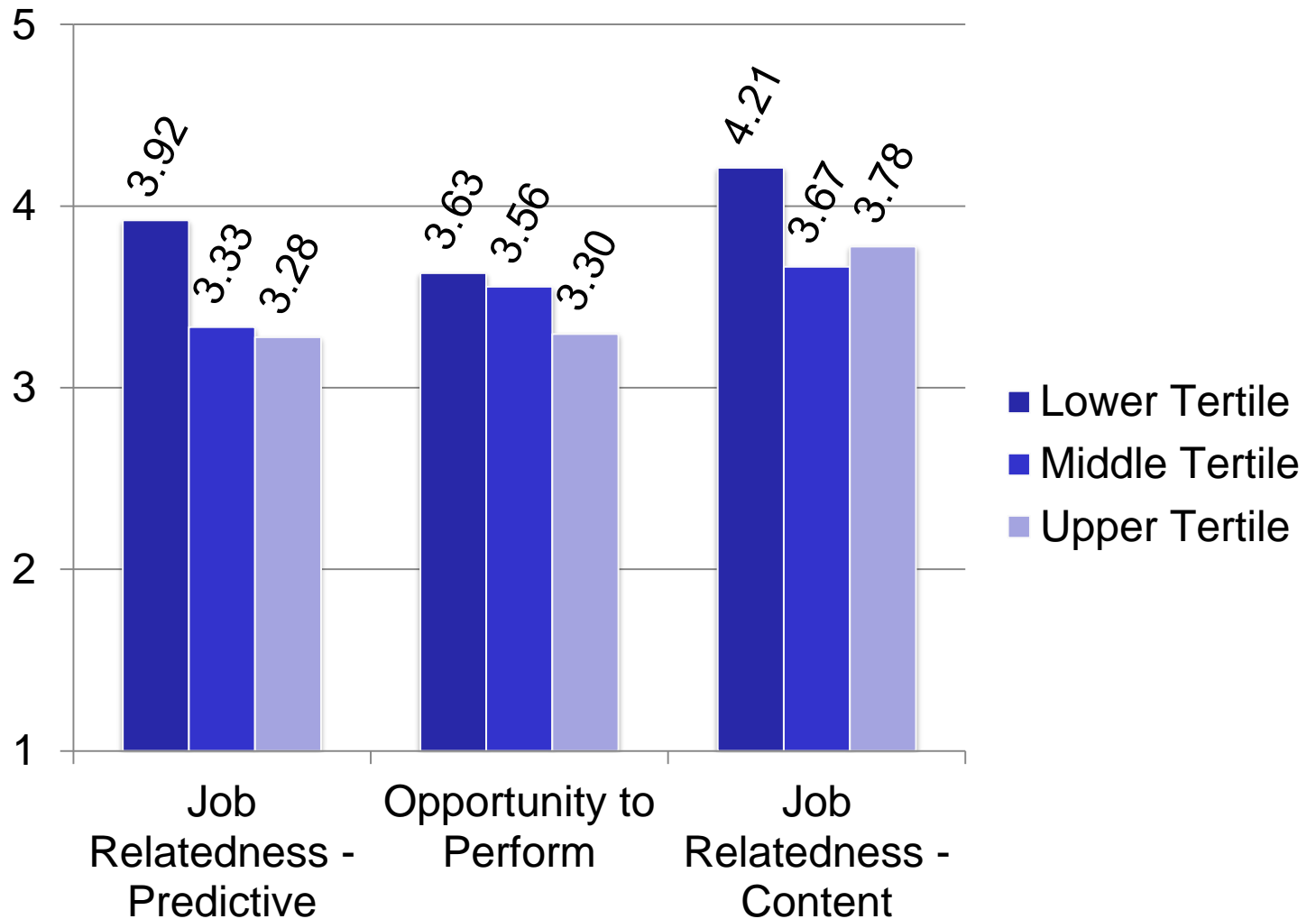
Applicant Reactions – General Cognitive Ability



Applicant Reactions by Age



Applicant Reactions by Tenure



Conclusions and Future Research

- **Further evidence supporting the use of IITs for assessing certain skills within a high fidelity context**
- **Propositions for future research on Applicant Reactions and IITs**
 - Examine differences in applicant reactions to IITs versus a standard measure while holding the content of the measure constant (cf., Chan & Schmitt, 1997)
 - IITs versus standard measures of interpersonal or communication skills