

# Content Validity and Subject Matter Expert Sources

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# Background

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- ❖ **The State of Alabama is in the midst of a class action discrimination lawsuit.**
- ❖ **At issue is the purported adverse impact and therefore validity of selection tools for a considerable number of registers that have been established over a 20+ year period.**

# Background (Cont'd)

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- ❖ **The State hired Landy Litigation Support Group (LLSG) and Applied Psychological Techniques, Inc. (APT) to review a number of registers and corresponding exam materials and where necessary, post-hoc document certain validity information.**
- ❖ **Subsequently, the State and LLSG conducted a study to examine various types of content validity ratings provided by various types of raters.**

# SME Defined ???

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## Who is an SME???

- ❖ There is little specificity available regarding WHO is an SME.
- ❖ Most analysts/professionals would likely argue that “subject matter expert,” “SME,” or some related phrase is mentioned in the *Uniform Guidelines*.
- ❖ The phrase IS in the 2003 *SIOP Principles*, but with little/no specificity.

# SME Definition???

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## ❖ ***SLOP Principles states,***

The success of the content-based validation study is closely related to the qualifications of the subject matter experts (SMEs). SMEs define the work domain and participate in the analysis of work by identifying the important work behaviors, activities, and worker KSAOs. The experts should have thorough knowledge of the work behaviors and activities, responsibilities of the job incumbents, and the KSAOs prerequisite to effective performance on the job. The SMEs should include persons who are fully knowledgeable about relevant organizational characteristics such as shift, location, type of equipment used, and so forth. A method for translating subject matter expert judgments into the selection procedure should be selected or developed and documented (p. 22).

# SME Definition???

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- ❖ Furthermore, the Glossary in the 2003 *SIOB Principles* states,

**Subject matter experts** - Individuals who have thorough knowledge of the work behaviors, activities, or responsibilities of job incumbents and the KSAOs needed for effective performance on the job (p. 71).

# The Studies

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**We conducted four content validity linkage studies:**

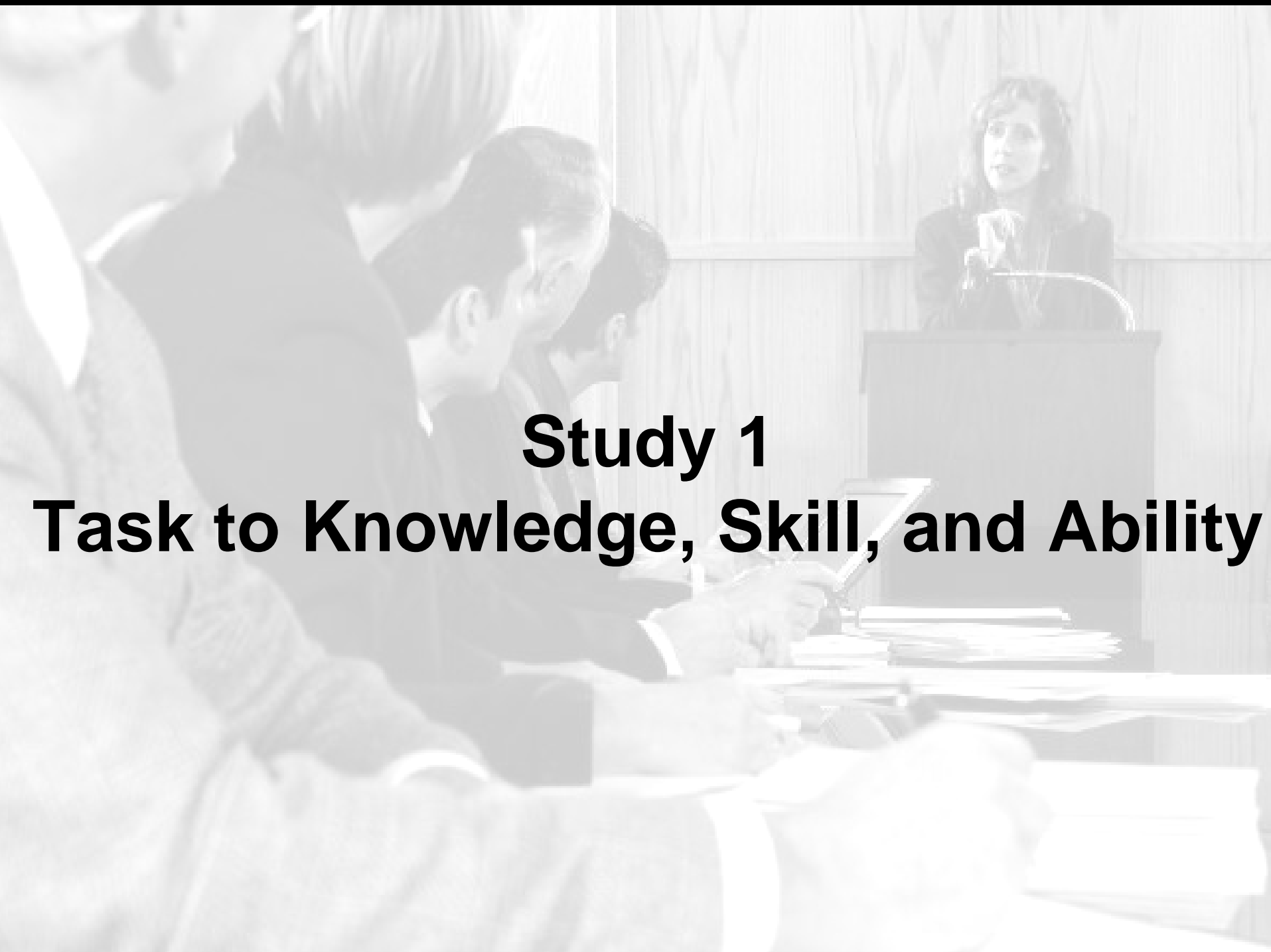
- 1. Task to knowledge, skill, and ability (KSA) [9 classifications]**
- 2. Minimum qualification (MQ) ratings and KSA linkage [20 classifications]**
- 3. KSA to multiple-choice exam [20 classifications]**
- 4. KSA/task to non-assembled exam [11 classifications]**

# Subject Matter Experts

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- ❖ **I/O Professionals and Graduate Students** – Ph.D. I/O psychologists with extensive job analysis and test development experience and M.A. level graduate students in I/O psychology at Colorado State University.
- ❖ **SPD Personnel Analysts** – B.A. / M.A. level test development professionals from the Alabama State Personnel Department.
- ❖ **Incumbents and Supervisors** – Alabama state employees in selected job classes, and supervisors of at least one person in the selected job classes.





# **Study 1**

## **Task to Knowledge, Skill, and Ability**

# SMEs / Participants

<b>Classification</b>	<b>I/O Professionals and Graduate Students</b>	<b>SPD Personnel Analysts</b>	<b>State of Alabama Incumbents and Supervisors</b>
Programmer	9	9	9
Personnel Assistant II	8	9	10
Legal Research Assistant	9	9	8
Planning & Economic Development Specialist I/II	13	9	11
Education Specialist	9	9	7
Education Administrator	9	9	9
Correctional Investigative Services Officer	9	9	9
Revenue Enforcement Officer	8	9	11
Automotive Mechanic	9	9	11

# SMEs / Participants

Classification	SPD Personnel Analysts	State of Alabama Incumbents and Supervisors
Programmer	1 AA / 4 Female (9)	5 AA / 5 Female (9)
Personnel Assistant II	1 AA / 4 Female (9)	5 AA / 9 Female (10)
Legal Research Assistant	1 AA / 4 Female (9)	3 AA / 4 Female (8)
Planning & Economic Development Specialist I/II	1 AA / 4 Female (9)	3 AA / 5 Female (11)
Education Specialist	1 AA / 4 Female (9)	3 AA / 4 Female (7)
Education Administrator	1 AA / 4 Female (9)	3 AA / 6 Female (9)
Correctional Investigative Services Officer	1 AA / 4 Female (9)	2 AA / 0 Female (9)
Revenue Enforcement Officer	1 AA / 4 Female (9)	3 AA / 0 Female (11)
Automotive Mechanic	1 AA / 4 Female (9)	5 AA / 0 Female (11)

# Process

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- ❖ **Each group session was held separately (i.e., I/Os, SPD Analysts, Incumbents/Supervisors).**
- ❖ **Each group session was conducted by an LLSG I/O psychologist (either Ph.D. or Master's level).**
- ❖ **The group sessions began with approximately an hour of SME training designed using frame-of-reference training methodology.**

**Task/WB-KSA Linkages for Custodial Worker I (80101) – 1989 Register**

**Job Description:** This is manual work involving the custodial care of state buildings and premises, including cleaning, maintenance, and minor repair work on buildings, equipment, fixtures, and grounds. Employees perform general janitorial duties in state buildings, National Guard Armories, and hospitals.

		<b>K-1</b>	<b>K-2</b>	<b>K-3</b>	<b>A-1</b>	<b>A-2</b>	<b>A-3</b>
	<p><b>How important is each KSA listed to the right in performing each of the tasks below?</b>  <b>0=Not important</b>  <b>1=Somewhat important</b>  <b>2=Important</b></p>	Knowledge of materials used in janitorial work and lawn care.	Knowledge of work methods and procedures used in janitorial work and lawn care.	Knowledge of equipment used in janitorial work and lawn care.	Ability to understand and follow simple oral instructions.	Ability to understand and follow simple written instructions.	Ability to perform a variety of routine manual tasks in the care, cleaning, and limited maintenance of buildings and equipment.
<b>T-1</b>	Scrubs, mops, waxes and polishes floors; dusts and polishes furniture; washes windows, woodwork, toilets, washrooms, and fixtures.						
<b>T-2</b>	Replaces burned out light bulbs; cleans and replaces air condition filter; assists in making simple repairs to buildings and equipment.						
<b>T-3</b>	Sweeps and cleans walks, mows lawns, rakes leaves, and generally assists in keeping outside premises in an orderly fashion.						
<b>T-4</b>	Pulls dirty linen, makes beds, and removes dirty laundry.						
<b>T-5</b>	Directs persons to and answers inquiries about the locations of buildings and properties; carries messages, picks up mail, and runs errands.						
<b>T-6</b>	Performs manual housekeeping work on wards and in dining areas in a state hospital; may assist in lifting and moving bed patients.						

# Criteria

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- ❖ **Agreement by 50% or more of the raters within a group defined a Task/KSA linkage for that group.**
- ❖ **Agreement among 50% or more of the SMEs in each group constituted a common Task/KSA linkage across the groups.**
- ❖ **To be a “qualified” Task, at least one KSA must link to it. To be a qualified KSA, at least one Task must be linked to it.**

# Results

<b>Classification</b>	<b>Number of Tasks</b>	<b>Number of KSAs</b>	<b>Number of Tasks <u>Not</u> Linked to a KSA</b>	<b>Number of KSAs <u>Not</u> Linked to a Task</b>
Programmer	5	17	0	0
Personnel Assistant II	9	3	0	0
Legal Research Assistant	52	16	2	0
Planning & Economic Development Specialist I/II	18	15	0	0
Education Specialist	47	8	1	0
Education Administrator	44	17	0	1
Correctional Investigative Services Officer	11	22	0	0
Revenue Enforcement Officer	19	22	0	0
Automotive Mechanic	78	15	3	0
<b>TOTALS</b>	<b>283</b>	<b>135</b>	<b>6</b>	<b>1</b>

# Results (Cont'd)

<b>Classification</b>	<b>Number of Tasks</b>	<b>Number of KSAs</b>	<b>Consensus Rate Across Three Groups – Tasks</b>	<b>Consensus Rate Across Three Groups – KSAs</b>
Programmer	5	17	100%	100%
Personnel Assistant II	9	3	100%	100%
Legal Research Assistant	52	16	96%	100%
Planning & Economic Development Specialist I/II	18	15	100%	100%
Education Specialist	47	8	98%	100%
Education Administrator	44	17	100%	98%
Correctional Investigative Services Officer	11	22	100%	100%
Revenue Enforcement Officer	19	22	100%	100%
Automotive Mechanic	78	15	96%	100%
<b>TOTALS</b>	<b>283</b>	<b>135</b>	<b>98%</b>	<b>99%</b>



# Results (Cont'd)

Classification	Number of Tasks	Number of KSAs	Number of Linkages to Rate	Consensus Among Three Groups
Programmer	5	17	85	84%
Personnel Assistant II	9	3	27	67%
Legal Research Assistant	52	16	832	63%
Planning & Economic Development Specialist I/II	18	15	270	40%
Education Specialist	47	8	376	61%
Education Administrator	44	17	748	41%
Correctional Investigative Services Officer	11	22	242	33%
Revenue Enforcement Officer	19	22	418	78%
Automotive Mechanic	78	15	1170	<b>68%</b>

# Closing Comments

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- ❖ **The Results from the three remaining studies were equally compelling:**
  - ❖ **Minimum qualification (MQ) ratings and KSA linkage**
  - ❖ **KSA to multiple-choice exam**
  - ❖ **KSA/task to non-assembled exam**

# Closing Comments – (Cont'd)

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- ❖ **Suggestions for practice:**
  - ❖ **Follow the *Principles* regarding SMEs.**
  - ❖ **Expect/require staff to become familiar with classes with which they are working.**
  - ❖ **Expect analysts to lead/participate in SME meetings.**
  - ❖ **At the very least, use analysts as SMEs when you can't get representation you desire, particularly in small sample situations.**

# References

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**Equal Employment Opportunity Commission, Civil Service Commission, Department of Labor, & Department of Justice (1978). Uniform Guidelines on Employee Selection Procedures. Federal Register, 43, 38290-38315.**

**Society for Industrial and Organizational Psychology. (2003). Principles for the validation and use of personnel selection procedures (4th ed.). Bowling Green, OH: Author.**

# Examining Job Analysis Rating Source Variance

31<sup>st</sup> IPMAAC Annual Conference  
St. Louis, Missouri  
June 11, 2007

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**WACHOVIA**

# Study Purpose

To examine Work Behavior-to-KSA linkage ratings to determine the degree to which differences in job analysis ratings are due to the type of rater

# Methodology

- Selected 9 job classes from a state government municipality to provide variability in:
  - Nature of work
  - Type of job
  
- Collected linkage ratings on 1 of 2 scales:
  - Five-point rating scale
  - Two-point rating scale
  
- Collected linkage ratings from three types of raters:
  - Incumbents
  - Project Job Analysts
  - Non-project Job Analysts



# Advantages of Different Rater Types

## ➤ **Incumbents** have a...

- Better understanding of the job's work behaviors (Landy and Vasey, 1991).

## ➤ **Job Analysts** have a...

- Better understanding of the relationship between Work Behaviors and KSAs.
- Universal perspective of the job.
- Willingness to complete the ratings.



# Analysis

- Compared Work Behavior-to-KSA linkage ratings by calculating:
  - Means, standard deviations, effect sizes, and correlations.
  - Reliability of the ratings.
- Estimated variance components for each rating type by applying the generalizability theory.

# Results

- The level of linkage ratings was similar across rater types for both ratings scales.
- The variance attributed to type of rater was very small (3 %) -- indicating that different types of raters could be expected to provide linkage ratings at roughly the same level.

# Practical Implications

- There is flexibility in who can complete job analysis linkage ratings.
- Design your job analysis process so that you obtain ratings from several raters, regardless of type.
- Keep in mind that fewer job analysts may be needed to obtain reliable ratings ( $r_{xx} = .80$ )
  - 5 job analysts vs. 9 incumbents

# Final Thoughts...

- What is the impact of rater type on the accuracy of the linkage ratings?
- Does the type of scale in which ratings are made influence reliability and validity?
- Are certain job analysis activities more appropriate for different types of raters?
- What knowledge of the job do raters really need to possess to make reliable and valid ratings?
- Are organizations today utilizing job analysts for job analysis ratings? If so, for what activities and what is outcome?

# For more details about the study...

Baranowski, L. & Anderson, L. (2005). Examining rating source variation in work behavior-to-KSA linkages. *Personnel Psychology*, 58, 1041-1054.



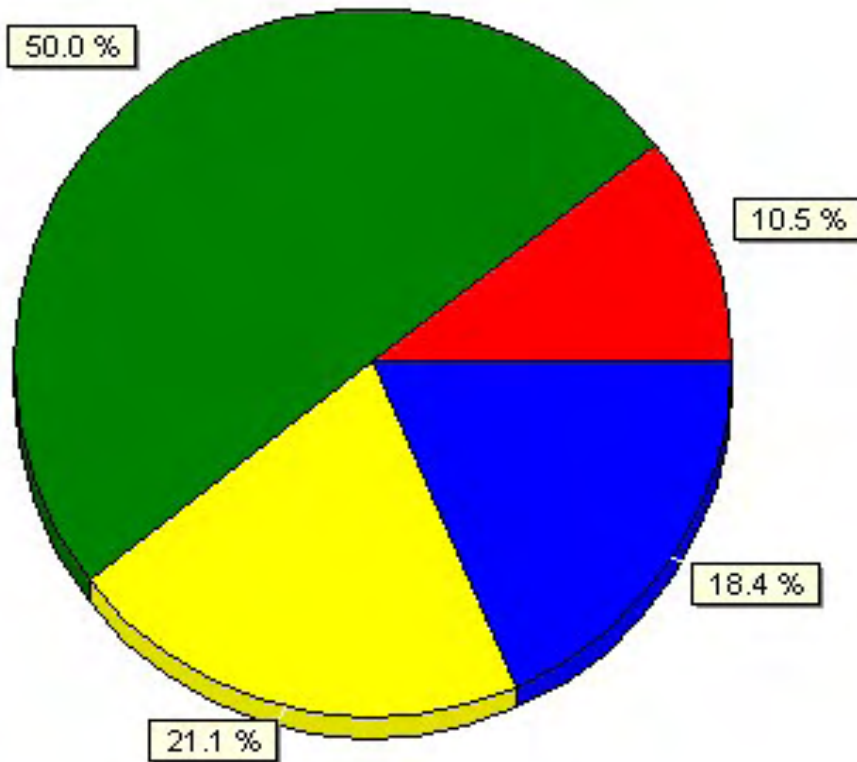
# The Use of Analyst Ratings: An Exploratory Survey of IPMAAC Listserv Members

Lance Anderson, Ph.D.  
ICF International  
Laura Baranowski, M.S.  
Wachovia Corporation



# RESULTS

Please indicate your organization's type from the list below.



**a. Public sector organization – Federal (4)**

**b. Public sector organization – Local or State (19)**

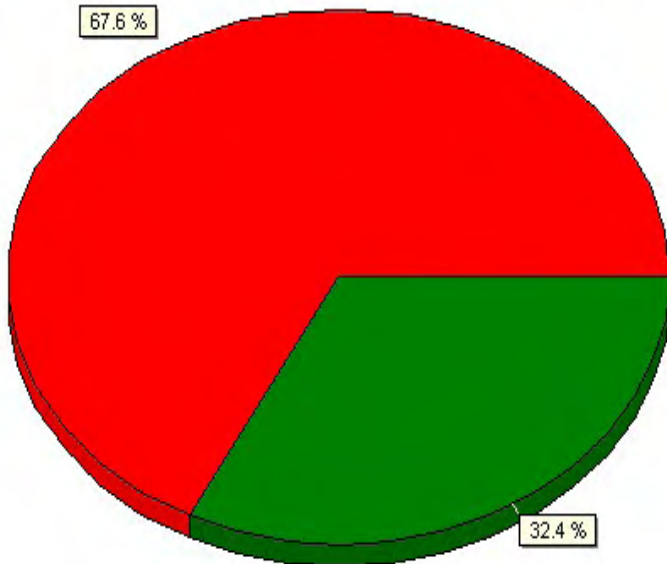
**c. Private sector organization (8)**

**d. Consulting organization (7)**

# RESULTS

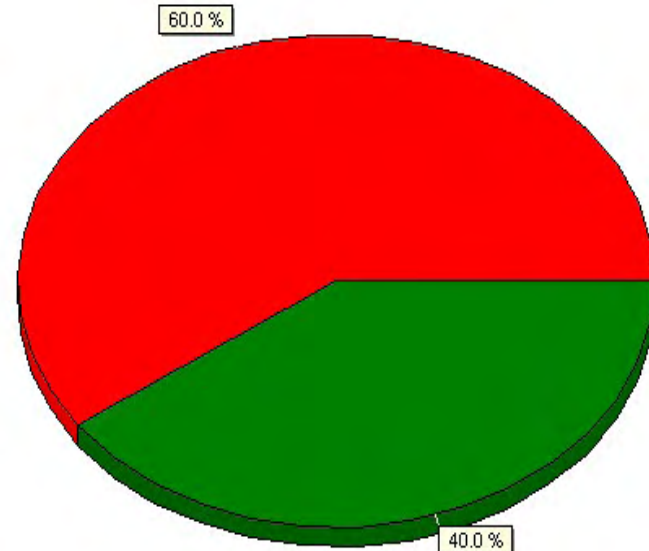
Has your organization ever utilized job analysts to make job analysis ratings?

- a. Yes (25)
- b. No (12)



Have you ever collected ratings from both SMEs and job analysts for the same job?

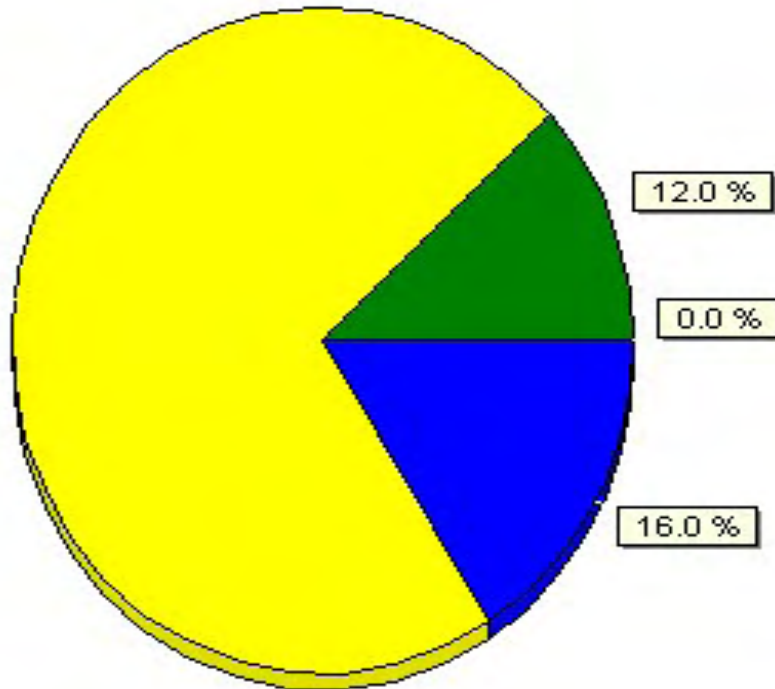
- a. Yes (15)
- b. No (10)





# RESULTS

**What level of job knowledge do your job analysts usually have on jobs they are asked to rate?**



**a. No knowledge (0)**

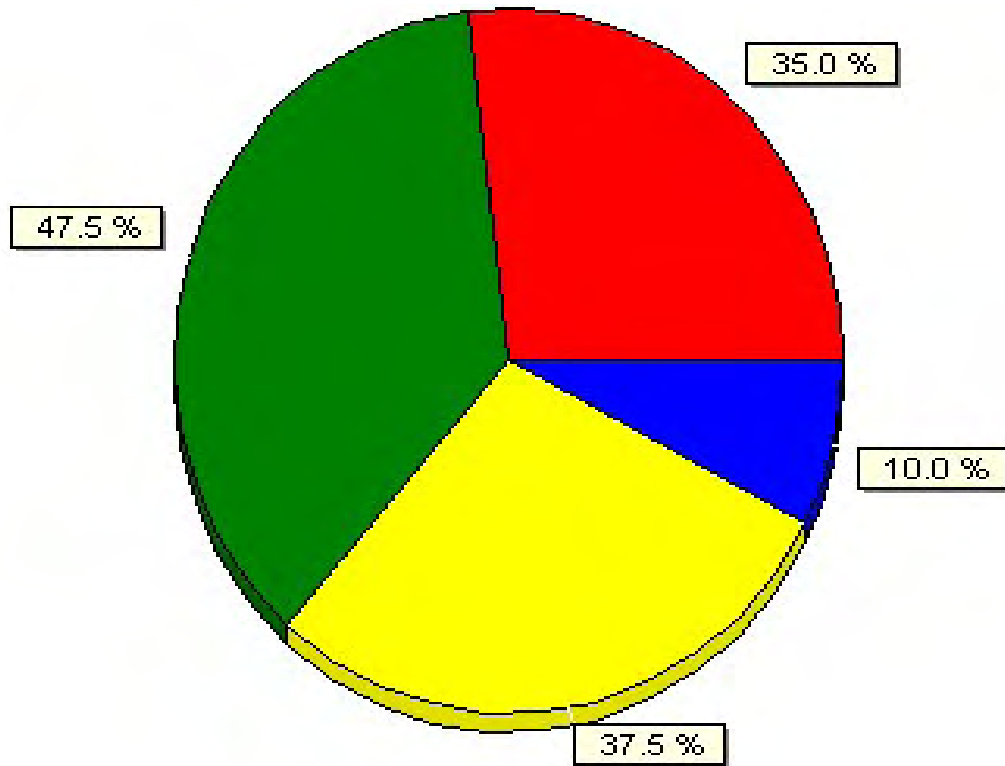
**b. Limited knowledge (familiar with stereotypes or broad job duties) (3)**

**c. Somewhat knowledgeable (conducted job observations/interviews with SMEs) (18)**

**d. Extremely knowledgeable – (have performed the job) (4)**

# RESULTS

**What types of ratings do your job analysts typically provide ? (mark all that apply).**



**a. Task ratings (14)**

**b. Knowledge, Skill, Ability (KSA) ratings (19)**

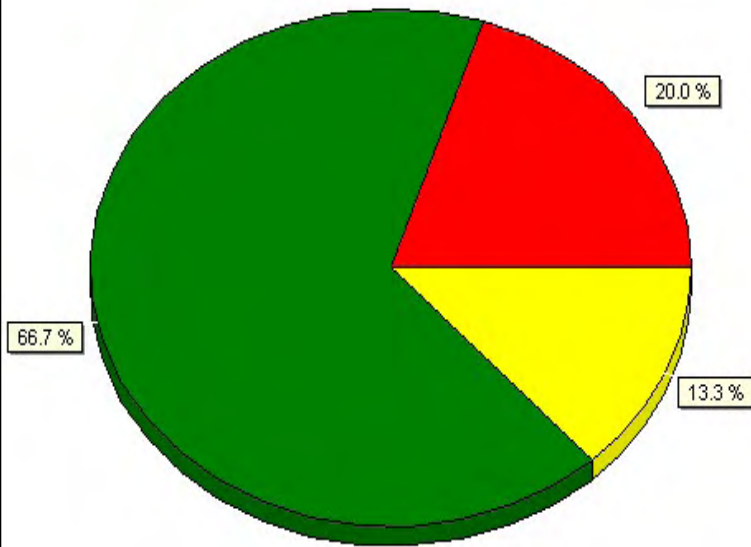
**c. Work behavior/Task to KSA linkage ratings (15)**

**Other (4)**

# RESULTS

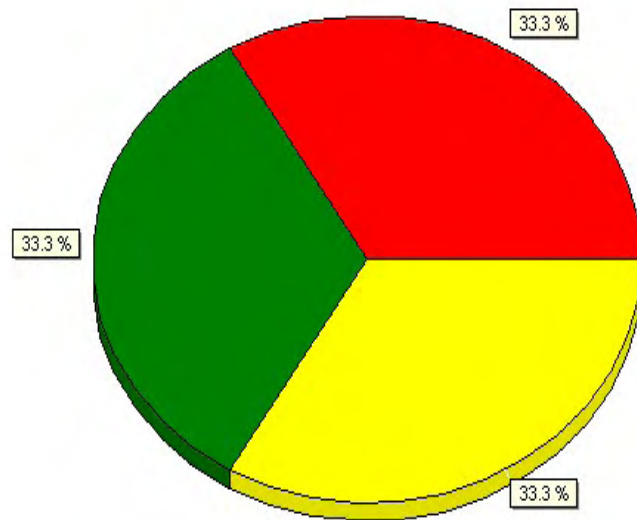
In your opinion, were there significant differences between the ratings made by SMEs and job analysts?

- a. Yes (3)
- b. No (10)
- c. Not Sure (2)



In your opinion, do you think this difference in the ratings might have led to two different job profiles had the SME and job analyst data been analyzed separately?

- a. Yes (3)
- b. No (10)
- c. Not Sure (2)



# RESULTS

**Briefly describe why you have never utilized job analysts to make job analysis ratings. What factors weighed into that decision?**

Typical comment:

Job analysts are not subject matter experts for the positions for which we develop and validate assessments. It would be professionally unsound and legally tenuous to rely on ratings from non-SMEs to validate an assessment process.

# RESULTS

## Effective Uses of Analyst Ratings Cited By Respondents

- **To complement SME responses (3)**
- **When there are few or no incumbents (3)**
- **To obtain linkage ratings (4)**
- **When using the PAQ (2)**
- **When SMEs are motivated and able to bias the results (3)**
- **Simple entry-level jobs (3)**
- **When jobs are highly observable (2)**

# Conclusions

- There is disagreement on whether analysts are appropriate JA raters
- Dissenters believe it to be professionally unsound
- There are several situations where analysts can be used as raters