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# **Where are the Correlations? A Meta-analytic Struggle for Language Criteria Assessment**

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# An in-process meta-analytic study of language criteria across frameworks

## LTRC Conference 2010

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# Outline

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- Overview of Meta-analysis
- Research Questions
- Variables for our Study
- Progress Summary and Challenges
- Discussion Questions



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# Meta-Analysis

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- Definition: Statistical method for combining the results of a number of studies to come to generalizable conclusions
- Benefits:
  - Improve the generalizability of study results
    - Not limited to one study's population
    - Not limited to one study's setting
  - Removes bias that may be present in one study
  - Ability to explain variation in scores with moderator analysis



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# Process Meta-Analysis

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- Steps:
  - Identification of research question(s)
  - Search for, screen, and obtain studies
  - Encode data
  - Reliability Check
  - Conduct Analysis
  - Write up and report results



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# Research Questions

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- What is the relationship among various types of foreign language acquisition criteria?
  - How related are the different proficiency modalities?
  - How well do measures of foreign language acquisition predict future language specific job performance?
- What is the relationship of individual differences with language acquisition?
- Do the moderator variables significantly impact any of these relationships?



# Variables Chosen for Investigation

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## • Reactions

- Affective – satisfaction with the course or instructor
- Utility – satisfaction with the usefulness of the course

## • Learning

- Affective learning – Measures of post-training self efficacy, motivation, and attitudes
- Self rated proficiency – speaking, reading, writing, listening ability perception ratings
- Proficiency Tests – speaking, reading writing, listening formalized assessments
- Facets of Proficiency – Speaking fluency, speaking pronunciation, speaking speed, Reading fluency, Reading speed, Vocabulary (from all modalities), Grammar (from all modalities)
- Achievement – course grade, achievement tests

## • Transfer

- Intentions/Motivation to Transfer – any post training measure of intentions or motivations to transfer trained skills or knowledge to the job
- Job performance



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# Individual Difference Variables

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- First language ability  
(Vocabulary and Reading Ability)
- Cognitive ability
- Language aptitude
- Working memory
- Empathy
- Tolerance for ambiguity
- Learning style
- Learning strategy
- Personality
- Attitudes/Interest
- Motivation
- Anxiety
- Effort
- Self efficacy
- Heritage
- Experience



# Moderators

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## Contextual Variables

- Computerized instruction
- Teacher effectiveness
- Purpose of collecting criteria
- Class size
- Setting (elementary, university, etc)
- Language immersion (whether or not L1 is spoken as the primary language)

## Sample Characteristics

- Age
- SES
- Experience
- First language
- Target language difficulty
- Experience with other languages
- % Heritage



# Searching, Screening & Obtaining Articles



- Literature search: 8317 total citations identified
  - Keyword searches of databases
  - Email requests
  - Snowballing
- Screening: Common reasons for being screened out
  - Did not investigate a relevant variable or looked at L1 acquisition
  - Used a learning disabled sample
  - Sample size was not reported
  - Did not provide correlations or enough information to derive correlations
- Obtain articles and email authors for further information



# Encoding Data

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- Information encoded
  - Sample size\*\*
  - Correlations\*\* (or enough info to compute)
  - Measure used
  - Observed reliability
  - Time of measurement
  - Moderator variables

\*\*= NEEDED for inclusion in the meta-analysis



# Progress Summary

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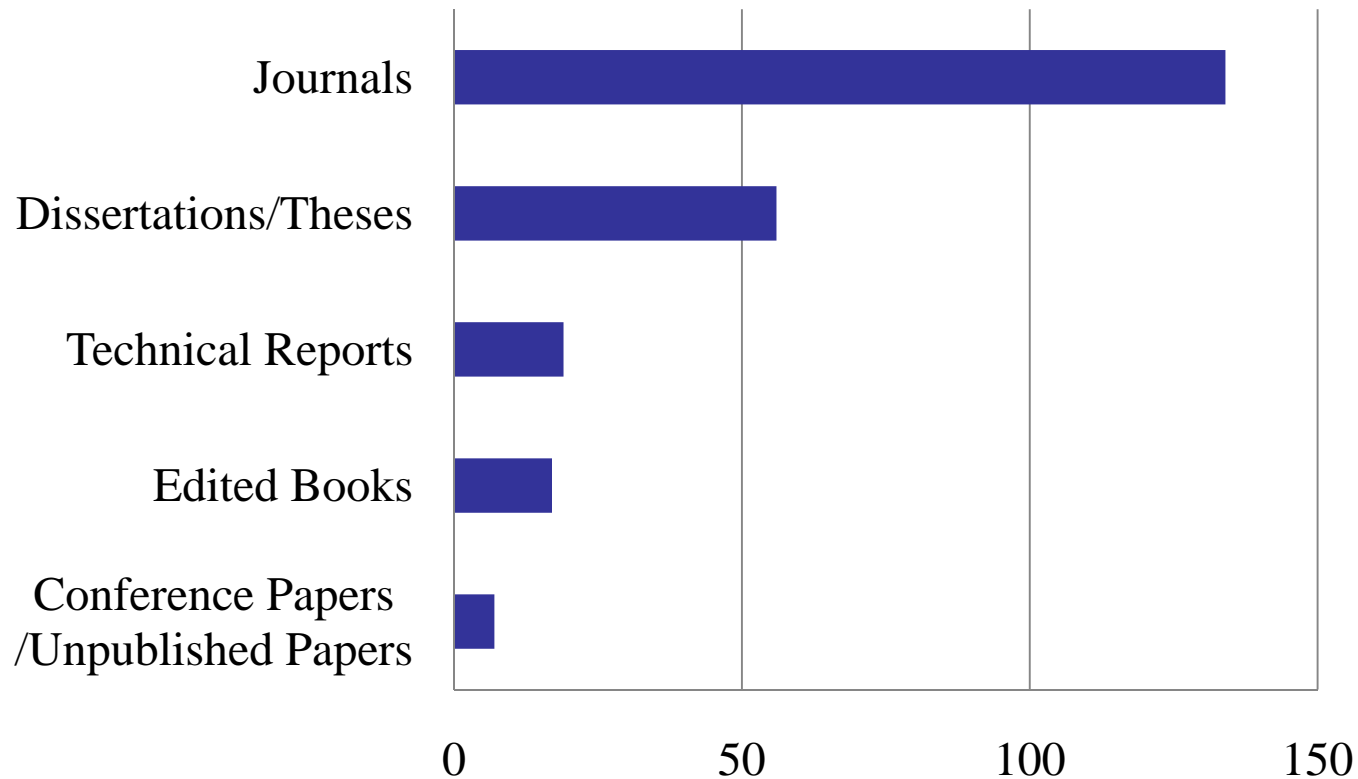
- Included:
  - 372 studies in criteria meta-analysis
  - 289 studies in individual differences meta-analysis
- Possible if missing information was included:
  - 171 more articles
  - 110 articles included that have more potential information
- Found contact information for 134 studies
  - 36 (27%) authors responded
  - 13 (10%) authors were helpful



# Challenges with Missing Information



## Overall: Number of authors needed to be contacted

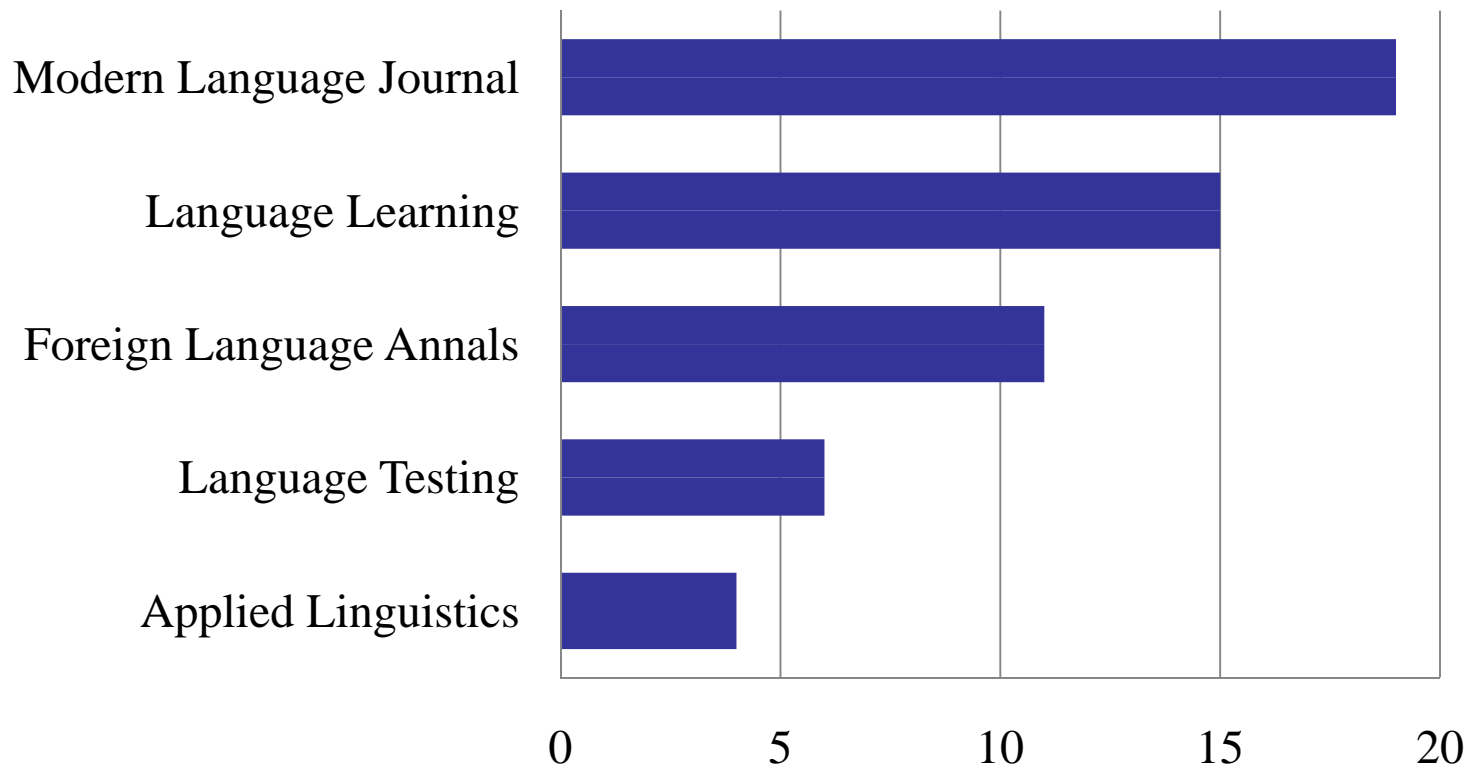




# Challenges with Missing Information



## Overall: Top Journals Missing Information

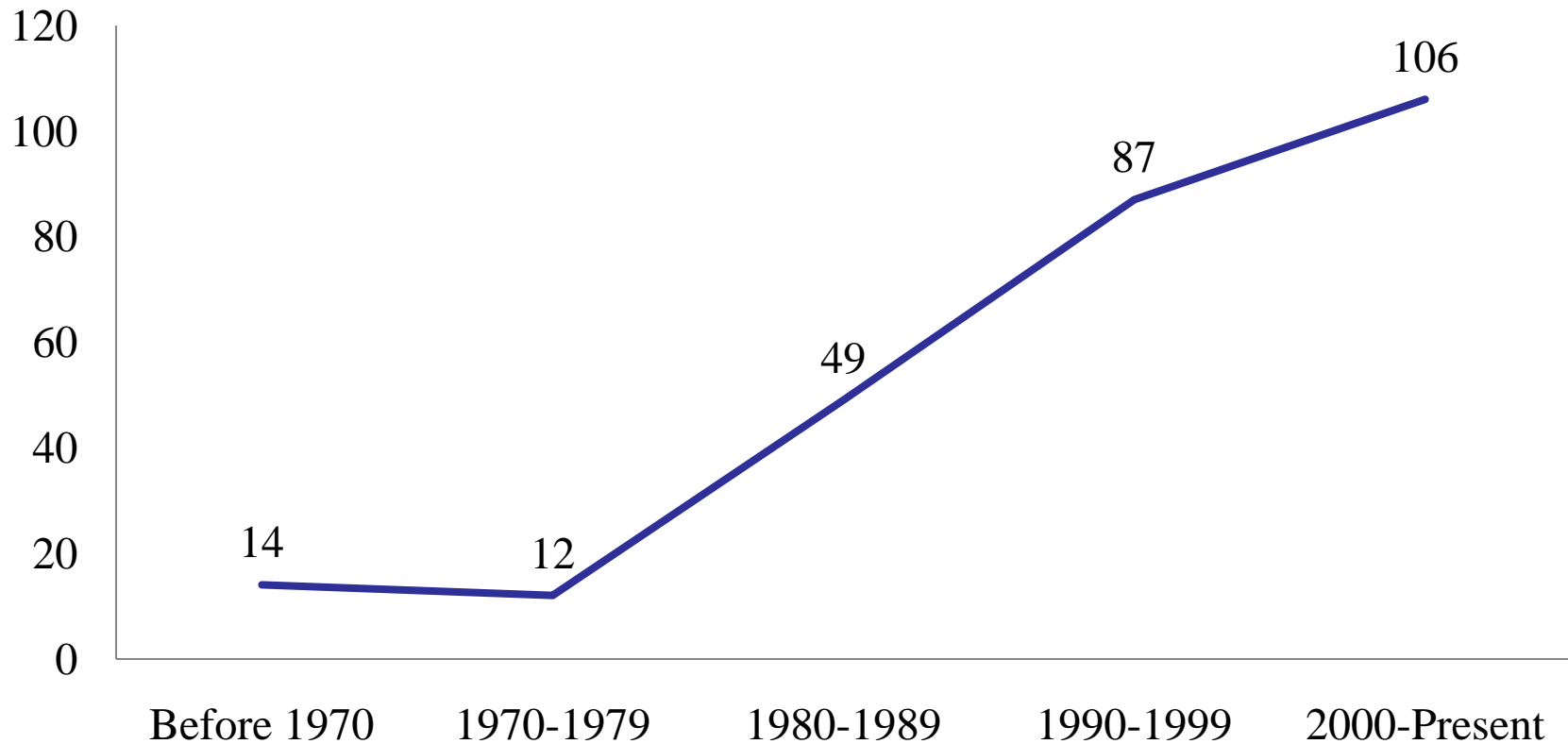




# Challenges with Missing Information



## Number of Articles Missing Information Over Time

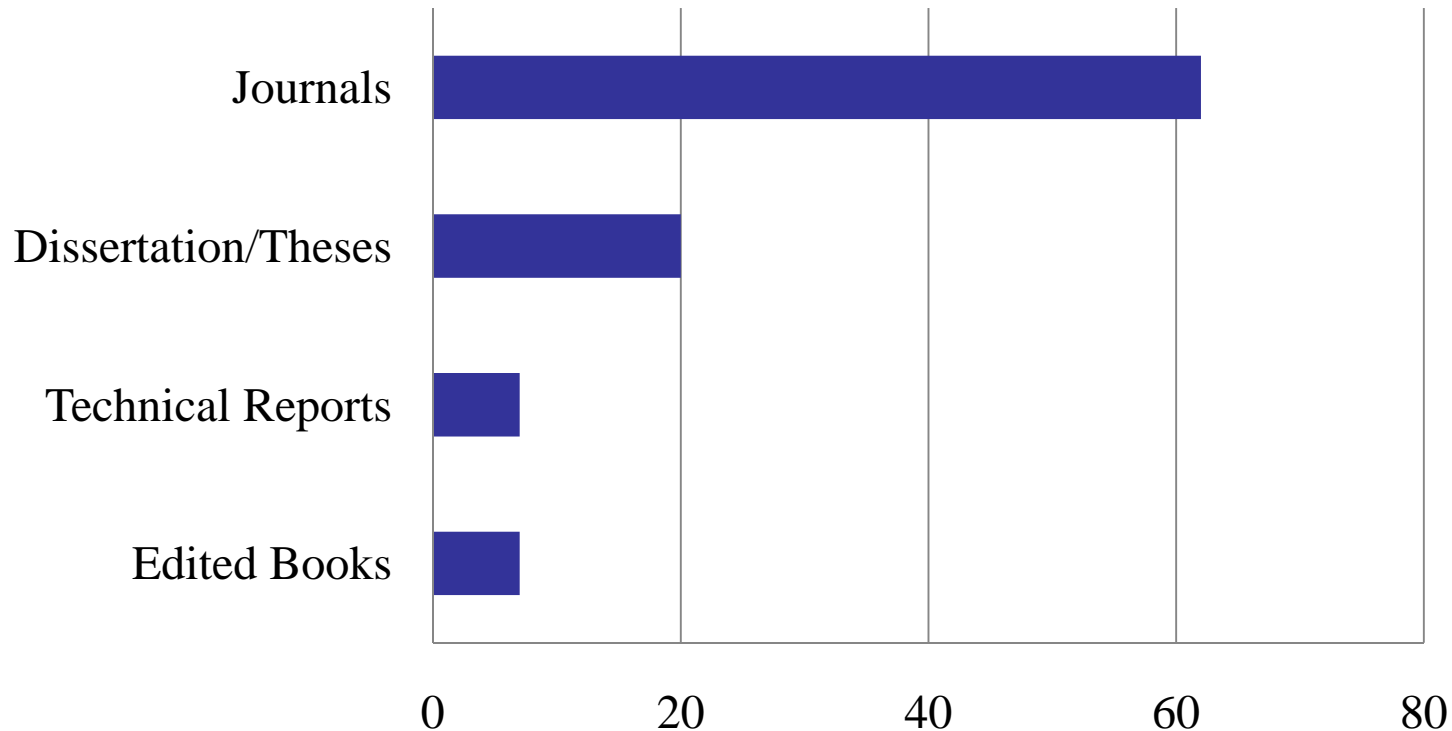




# Challenges with Missing Information



## 2000-2010 Types of Articles Needed





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# Discussion Questions

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- What should be done about the missing correlations?
  - How far should meta-analysis authors go to obtain the information?
  - Is it important to include the correlations in the original articles? Why aren't they reported?
- What percentage should be enough for a reliability check?



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# Discussion Questions

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- How do we categorized the languages?
  - By families?
  - By “difficultly category”?
- Can ESL and SLA be combined?
- Can we combine population categories?  
(Ex: elementary students with high school?...with adults?)



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# Discussion Questions

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- How should we divide things up?
  - See k tables and definition handouts
- What topic should we concentrate on first?
- Where would be a good place to publish?

## **ABOUT SWA CONSULTING INC.**

SWA Consulting Inc. (formerly Surface, Ward, and Associates) provides analytics and evidence-based solutions for clients using the principles and methods of industrial/organizational (I/O) psychology. Since 1997, SWA has advised and assisted corporate, non-profit and governmental clients on:

- Training and development
- Performance measurement and management
- Organizational effectiveness
- Test development and validation
- Program/training evaluation
- Work/job analysis
- Needs assessment
- Selection system design
- Study and analysis related to human capital issues
- Metric development and data collection
- Advanced data analysis

One specific practice area is analytics, research, and consulting on foreign language and culture in work contexts. In this area, SWA has conducted numerous projects, including language assessment validation and psychometric research; evaluations of language training, training tools, and job aids; language and culture focused needs assessments and job analysis; and advanced analysis of language research data.

Based in Raleigh, NC, and led by Drs. Eric A. Surface and Stephen J. Ward, SWA now employs close to twenty I/O professionals at the masters and PhD levels. SWA professionals are committed to providing clients the best data and analysis with which to make solid data-driven decisions. Taking a scientist-practitioner perspective, SWA professionals conduct model-based, evidence-driven research and consulting to provide the best answers and solutions to enhance our clients' mission and business objectives. SWA has competencies in measurement, data collection, analytics, data modeling, systematic reviews, validation, and evaluation.

For more information about SWA, our projects, and our capabilities, please visit our website ([www.swa-consulting.com](http://www.swa-consulting.com)) or contact Dr. Eric A. Surface ([esurface@swa-consulting.com](mailto:esurface@swa-consulting.com)) or Dr. Stephen J. Ward ([sward@swa-consulting.com](mailto:sward@swa-consulting.com)).