“Evidence-Based” is Not a Dirty Word: How to Confidently Use and Contribute to Research in Your Practice

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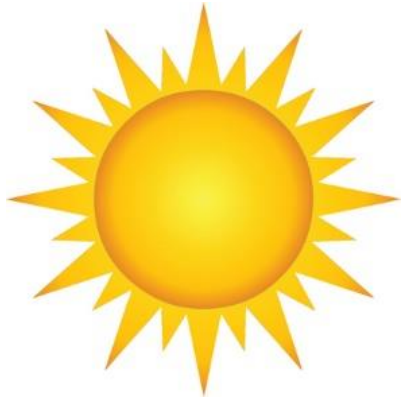
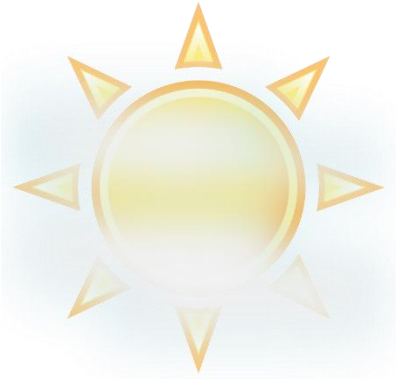
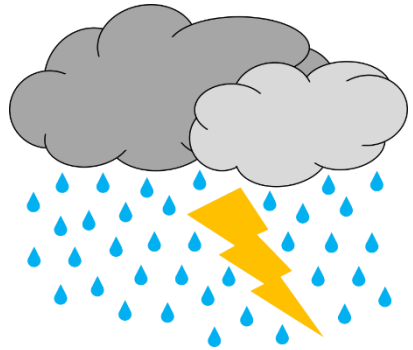
Activity

Find a corner that best describes your feelings about research







What brought you to this session?

What is research?

It is one way of knowing that differs from other ways of knowing

Way of knowing	Strength	Limitations
Direct Experience	• You experience it	• Opportunities for direct experience are limited for any given individual
Logical Reasoning	• It feels reasonable	• Incorrect assumptions can lead to wrong conclusions
Religion and the Arts	• Religion and the arts connect us to one another and the past	• No way to verify conclusions
Experts/ Authority Figures	• Many times experts have done the work for us	• Challenging their conclusions is to challenge their expertise/authority
Research:	○ Not limited to any given individual ○ Tests hypotheses and assumptions ○ Provides verification for conclusions ○ Challenges conclusions	• Can be difficult to understand jargon and way that articles are written

How can I tell if an article is a credible research article?

The research

- Is from a credible source
- Is peer reviewed
- Describes sources of data
- Presents analytic techniques
- Presents limitations of the method, analytic technique and findings

How do I find research?

- **Google**
  - You can use it but will likely pay for articles
  - You might find sources that are not credible
- **Child care and early education research connections**
  - https://www.researchconnections.org/childcare/welcome
- **Libraries and librarians**
  - Use boolean logic
  - Try Academic Search Premier or another academic research database
  - You can use community library but will might not have access to full articles or as many peer reviewed journals

- Call **a librarian**, ask a librarian, ask **a professor** or instructor, or ask a **colleague or classmate**
- **Contact the author**

Tools and Resources

- Going Public: Writing about Research in Everyday Language – Although geared toward writers, this resource has a handy glossary that puts research terms into accessible language
- Quantitative Research Assessment Tool – Developed by Research Connections, this tool can help readers understand quantitative articles
- A Policymaker's Primer on Education Research – These "questions to ask" exercise can help readers consider who produced the document, what was the setting, who were the participants, etc.
- How to Read (and Understand) a Social Science Journal Article – This breaks down parts of a journal article with a description of what it is and what it tells you. It also has a little rubric for devising a reading strategy based on what you are looking for.
- https://www.lib.ncsu.edu/tutorials/scholarly-articles

Anatomy of an Article:

- Https://www.lib.ncsu.edu/tutorials/scholarly-articles

Anatomy of a Scholarly Article

A Cognitive Model for the Representation and Acquisition of Verb Selectional Preferences

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Abstract

1 Introduction

Verbs have preferences for the semantic properties of the arguments filling a particular role. For example, the verb *eat* expects that the object receiving its theme role will have the property of being edible, among others. Learning verb selectional preferences is an important aspect of human language acquisition, and the acquired preferences have been shown to guide children's expectations about missing or upcoming arguments in language comprehension (Nation et al., 2003).

Resnik (1996) introduced a statistical approach to learning and use of verb selectional preferences. In this framework, a semantic class hierarchy for words is used, together with statistical tools, to induce a verb's selectional preferences for a particular argument position in the form of a distribution over all the classes that can occur in that position. Resnik's model was proposed as a model of human learning of selectional preferences that made minimal representational assumptions; it showed how such preferences could be acquired from usage data and an existing conceptual hierarchy. However, his and later computational models (see Section 2) have properties that do not match with certain cognitive plausibility criteria for a child language acquisition model. All these models use the training data in "batch mode", and most of them use information theoretic measures that rely on total counts from a corpus. Therefore, it is not clear how the representation of selectional preferences could be updated incrementally in these models as the person receives more data. Moreover, the assumption that children have access to a full hierarchical representation of semantic classes may be too strict. We propose an alternative view in this paper which is more plausible in the context of child language acquisition.

In previous work (Alishahi and Stevenson, 2005), we have proposed a usage-based computational model of early verb learning that uses Bayesian clustering and prediction to model language acquisition and use. Individual verb usages are incrementally grouped to form emergent classes of linguistic constructions that share semantic and syntactic properties. We have shown that our Bayesian model can incrementally acquire a general conception of the semantic roles of predicates based only on exposure to individual verb usages (Alishahi and Stevenson, 2007). The model forms probabilistic associations between the semantic properties of arguments, their syntactic positions, and the semantic primitives

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Alternating verbs		Non-alternating verbs	
write	0.61	*bring*	0.56
sing	0.67	*wear*	0.71
drink	0.67	*say*	0.75
eat	0.74	*catch*	0.76
play	0.74	*show*	0.77
pour	0.76	*make*	0.78
watch	0.77	*hit*	0.78
pack	0.78	*open*	0.81
steal	0.80	*take*	0.83
push	0.80	*see*	0.87
call	0.80	*like*	0.87
pull	0.80	*get*	0.87
explain	0.81	*find*	0.87
read	0.82	*give*	0.88
hear	0.87	*bring*	0.89
		want	0.89
		put	0.90
Mean	0.76	Mean	0.81

Figure 6: Similarity with the base profile for Alternating and Non-alternating verbs.

than verbs with stronger preferences. We use the cosine measure to estimate the similarity between two profiles p and q:

$$\text{cosine}(p, q) = \frac{p \times q}{|p| \times |q|} \quad (9)$$

The similarity values for the Alternating and Non-alternating verbs are shown in Figure 6. The larger values represent more similarity with the base profile, which means a weaker selectional preference. The means for the Alternating and Non-alternating verbs were respectively 0.76 and 0.81, which confirm the hypothesis that verbs participating in implicit object alternations select more strongly for the direct objects than verbs that do not. However, like Resnik (1996), we find that it is not possible to set a threshold that will distinguish the two sets of verbs.

5 Conclusions

We have proposed a cognitively plausible model for learning selectional preferences from instances of verb usage. The model represents verb selectional preferences as a semantic profile, which is a probability distribution over the semantic properties that an argument can take. One of the strengths of our model is the incremental nature of its learning mechanism, in contrast to other appreoaches which learn selectional preferences in batch mode. Here we have only reported the results for the final stage of learning, but the model allows us to monitor the semantic profiles during the course of learning, and compare it with child data for different age groups, as we do with semantic roles (Alishahi and Stevenson, 2007). We have shown that the model can predict appropriate semantic profiles for a variety of verbs, and use these profiles to simulate human judgments of verb-argument plausibility, using a small and highly noisy set of training data. The model can also use the profiles to measure verb-argument compatibility, which was used in analyzing the implicit object alternation.

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References

highlighted areas of
to look for when

o continue.

Anatomy of a Research Article

- Source
- Title
- Abstract
- Introduction
- Literature Review
- Methods and data
- Results
- Discussion & conclusion
- References

Reviewing an Article

Review of Research

1. **Early Care and Education Quality and Child Outcomes**
   - https://www.acf.hhs.gov/sites/default/files/opre/early_ed_qual.pdf
2. **Does Training Toddlers in Emotion Knowledge Lead to Changes in Their Prosocial and Aggressive Behavior Toward Peers at Nursery?**
   - https://www.tandfonline.com/doi/full/10.1080/10409289.2016.1238674
3. **Associations between structural quality aspects and process quality in Dutch early childhood education and care settings**
   - https://www.sciencedirect.com/science/article/pii/S0885200615000599

How to critique an article

Element	Questions to ask
Source	Is the source credible?
Title	Does the title presents a concise statement of the issues investigated?
Abstract	Does the abstract describe what the article is about about? What topic the author is studying? What the primary findings are?
Introduction	Does the introduction describe what the author plans to address in the article/paper? Does it describe why we should care about the problem/study? Does it introduce how the study will contribute to the field?
Literature Review	Do the authors describe what we already know about this topic and what is left to discover? Some of the most important past findings on this topic? How have these past studies led the authors to do this particular study? How existing studies informed the framing of research questions and hypotheses?

How to critique an article

Element	Questions to ask
Results	Do the authors succinctly describe what they found? Do they present findings with adequate detail? Do the authors present tables and graphs that succinctly present findings.
Discussion & conclusion	Do the authors use plain English to summarize what they found and why is it important? Do the authors describe why the findings are important? Do they describe limitations of the study do the authors identify (if any)? Do they provide suggestions for future research? Do the authors consider implications for policy and practice that are appropriately limited to the paper's approach and findings?
References	Are all references included and cited in a consistent format? Do authors provide persistent links if the references are downloaded?

How can you contribute?

- Example from the field
  - UC, Irvine School of Education partnership
    with Orange County Head Start
- Look in your community
  - What higher education institutes are nearby?
  - What faculty work in early childhood?
- *Teaching Young Children*

Thank You!

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