

Ling151/Psych156A  
Winter 2018

Review Questions: Poverty of the Stimulus

(1) Terms/concepts to know: positive evidence, negative evidence, direct evidence, indirect evidence, induction problem, subset, superset, structure dependence, yes/no question, auxiliary verb, main clause, structure independence, prior knowledge, nativist, linguistic nativist, constrained generalization, Bayesian reasoning, prior, likelihood, posterior, Subset Problem, ambiguous data, unambiguous data, counterexample

(2) What's the basic distinction between positive evidence and negative evidence? What about direct evidence vs. indirect evidence? What kind of evidence to children tend to ignore? (Hint: This evidence type is a combination of these two dimensions.) What kinds of evidence do children seem to use?

(3) What is an example of an induction problem in language? How does it relate to the generalizations that are compatible with a particular set of data?

(4) In what sense are the data "impoverished" for a poverty of the stimulus problem? (Hint: This has to do with induction problems.)

(5) Does a poverty of the stimulus problem automatically indicate that children use prior knowledge to solve it? (Hint: What else needs to be true in order for us to claim that children have prior knowledge when solving a poverty of the stimulus problem?)

(6) How do structural distinctions like main vs. embedded clauses figure into the rule that English speakers know for forming yes/no questions?

(7) How do children's performance on complex yes/no questions in English demonstrate constrained generalization in children? (Hint: What does it mean to have constrained generalization? What kind of yes/no question data do children often encounter? Are these data compatible with only one grammatical rule, or many different grammatical rules? How would an unbiased rational learner behave in this situation, and how do children actually behave?)

(8) What kind of knowledge does the nativist position believe children have in order to correctly learn how to form yes/no questions in English? (Hint: Is it innate or derived?)

(9) What is the difference between a linguistic nativist and a nativist? What kind of knowledge does each believe is necessary for English children to correctly learn how to form yes/no questions in English?

(10) Does children's pronoun interpretation show evidence of constrained generalization? How do you know?

(11) Consider the following three sentences:

- (i) The king will turn into an owl.
- (ii) The king will turn into an owl which can fly away.
- (iii) The king who can fall in love will turn into an owl.

(a) For each of the rules below, indicate the yes/no question that would be created from each of these sentences (i-iii) by using that rule.

- “move the third word to the front”
- “move the fourth word to the front if it’s a verb or auxiliary verb”
- “move the first auxiliary verb to the front”
- “move the last auxiliary verb to the front”
- “move the main clause auxiliary verb to the front”

(b) For each sentence (i-iii), indicate which of the rules listed in part (a) actually produced the correct yes/no question for English.

(c) Which rule, if any, works for all the sentences (i-iii)? Is this one of the rules that young children seem to use, according to Crain & Nakayama (1987)?

(d) Which of the rules in (a) would be classified as structure-dependent?

(e) Suppose that children only encounter simple yes/no questions (such as “Will the king turn into an owl?”). Why would it be difficult for them to decide that yes/no questions in English are formed with a structure-dependent rule? (Hint: consider your answers to (a)-(d).)

(f) Why do the results from Crain & Nakayama (1987) support the idea of children having prior knowledge about yes/no question formation rules, assuming children only encounter simple yes/no questions like the one in (e)?

(12) What does it mean for hypotheses to be in a subset-superset relationship? When a Bayesian learner encounters a data point compatible with both hypotheses, which one does the learner prefer? Why? (Hint: Think about the likelihood calculation.)

(13) Why did the control condition in the Gerken (2006) experiment train children on data that was only compatible with the more-general generalization? That is, in what sense was this a control for the first experimental condition?

(14) Which generalization did Gerken (2006) find that children prefer when they are given data compatible with multiple generalizations? Is this compatible with a Bayesian learning strategy?

(15) What is the Subset Problem? Is it a problem for a Bayesian learner?

(16) What happens when a Bayesian learner encounters a counterexample to the subset hypothesis? Do we have evidence from young infants that they also behave this way? (Hint: Think about the Gerken 2010 experiment.)