



# Infancia y Aprendizaje

Journal for the Study of Education and Development

ISSN: 0210-3702 (Print) 1578-4126 (Online) Journal homepage: <https://tandfonline.com/loi/riya20>

## On the intricacy of children's innate abstractions

Thomas Roeper & Ana T. Pèrez-Leroux

To cite this article: Thomas Roeper & Ana T. Pèrez-Leroux (2011) On the intricacy of children's innate abstractions, *Infancia y Aprendizaje*, 34:3, 315-318, DOI: [10.1174/021037011797238513](https://doi.org/10.1174/021037011797238513)

To link to this article: <https://doi.org/10.1174/021037011797238513>



Published online: 23 Jan 2014.



Submit your article to this journal [↗](#)



Article views: 25



View related articles [↗](#)

# On the intricacy of children's innate abstractions

THOMAS ROEPER AND ANA T. PÉREZ-LEROUX

*University of Massachusetts; University of Toronto*



## *Abstract*

*Acquisition theory should be able to provide an explanation for the complexity of adult grammar, and the stages children go through in their path to attain the abstractness of the adult system. Current debate obscures the problem by failing to explicitly address the complexity of early representations. It is fundamental to offer concrete proposals that can fully characterise the early stages of development.*

*Keywords:* Negation, recursion, grammatical abstraction, continuity, ellipsis.

## Sobre la complejidad de las abstracciones innatas infantiles

### *Resumen*

*La teoría del aprendizaje lingüístico debe poder dar cuenta tanto de la complejidad de las abstracciones de la gramática adulta, como de las etapas que los niños deben pasar para lograr alcanzar la abstracción del sistema adulto. El debate actual impide ver claramente el problema al no abordar explícitamente la complejidad de las representaciones tempranas. Es necesario plantear propuestas concretas que permitan describir en detalle las etapas tempranas del desarrollo.*

*Palabras clave:* Negación, recursión, abstracción gramatical, continuidad, elipsis.

*Acknowledgments:* We wish to acknowledge participants at the language acquisition groups at the University of Massachusetts and the University of Toronto, and at the Hispanic Linguistic Symposium at the University of Puerto Rico, for useful commentaries.

*Author's Address:* Thomas Roeper, Department of Linguistics, South College # 218, University of Massachusetts, Amherst, MA 01003 USA. Phone: (413) 545-6834, Fax: (413) 545-2792. E-mail: roeper@linguist.umass.edu.

Acquisition theory requires an approach that can account for both abstract features of adult grammar and stages of development. There is a mystery of how children segment and analyze input, at the phonological, syntactic and semantic level. This is the Primary Linguistic Data Problem (Chomsky, 1965).

Therefore we need concrete proposals that show how linguistic principles function as biases in pattern recognition. A general learning theory can never succeed, because each domain of cognition has its own substantive biases. Vision, muscle-memory, emotional representations of other people are all highly specific in ways that must be represented in elementary forms of memory. Terms like “learning”, “association”, “frequency”, “integration” are not wrong, but cover up rather than illuminate the problem (Roeper, in press). Generativists also use frequency “jump points” in acquisition as clues to changes in representations and appreciate constructivist work willing to examine grammar in detail. But the common goal remains dual, as stated by Naigles and Hoff (2006): how to explain development without giving up on abstraction. As we show, the integration of linguistic principles with pattern recognition reveals itself when a child uses negation at the two-word stage. Grinstead provides additional examples of how intricate representations are needed to capture transition between stages.

Constructivism (as far as we understand it) simply does not address generative power. The critical question is: what *stops* one from learning the wrong thing. Via UG, many possible generalizations are avoided that would be allowable under unconstrained learning.

Generative grammar is about how humans generate (*produce* and *comprehend*) novel sentences and structures that go beyond experience. Even if only one in a million sentences has the property of multiple recursive possessives, the capacity still exists. If a person can high-jump 6 feet, then a physiologist has to explain that extreme fact, no matter how infrequent. A pilot study showed that Japanese six-year olds understood *John's friend's dog's ball's color* in Japanese, though these are probably non-existent in the input (Fujimori, 2010).

We have partial agreement with the learning- by-frame analysis. Roeper (1992) specifically states that children begin grammar with lexical subcategorization frames, much like in emergentist work. Clahsen, Eisenbeiss and Penke (1996), Borer and Wexler (1987) have claimed that all parametric features are represented on lexical items. And constructivists are right that one point is understated in generative approaches: frames or subcategorization by individual words can take on idiomatic, special meanings or syntax. For instance, *how come* exceptionally allows non-inversion in questions:

How come John can sing?

We can represent this fact by extending frames:

How come [NP (aux) V]

Notably, *how come* does not allow long-distance movement, while *why* does:

How come you said John came? => *why-say* only

Why did you say John came? => ambiguous *why-say, why-came*

Thus idiosyncrasy does not extend to recursive domains. There are no examples where idioms extend below one clause (a possible subcategorization frame). No verb is such that in cases like *want to start to sing* it specifies an idiosyncratic connection between *want* and *sing*.

Dąbrowska disputes our claim that negation reflects a very early decision that Spanish is a Focus dominant language, by looking at an earlier stage. Yet the data remain startlingly clear. At 1;07 fixed forms with a single verb *estar* arises for the negation initial pattern, with half the uses made up of *No está* 'not there' and the rest of *no está* + NP. Medial and final *no*, however, show productive association with multiple lexical entries. By 1;09, sentence final negation dominates.

TABLE I

	Holophrastic <i>no</i>	Initial <i>no</i>	Medial <i>no</i>	XP + <i>no</i>
1;07	58/129	24/129	4/129	43/129
1;09	28/63	3/63	1/63	31/63

Why? Some languages front focused elements, others don't. Focus movement, unlike topicalization, fronts an element inside the core clause. Negation *follows* these focused elements, and the remaining (unfocused) parts can be deleted. This yields a negation final sentence fragment. Surprisingly, even to us, this child recognizes the pattern. To achieve this, she has ignored the most frequent frame for *no*, sentence initial, in favor of an analysis relying on grammatical biases and sensitivity to information structure. Plausibly, focal intonation is the critical trigger for this analysis, an essential ingredient in the input. The child recognizes a whole syntactic (movement), semantic (negation), and phonological (intonational focus) pattern at once.

Although children in English hear both *no* and *not* with great frequency, a brief survey shows that Nina uses *no* for 10 sessions before *not*, often in contexts requiring *not*:

- no put him down
- no take him
- no Nina stand up there

These distinctly non-adult examples show that children can easily produce structures that violate the input. We argue these cases do not happen randomly, but only under a grammatical analysis that is non-target, but UG compliant and justified by partial misanalysis of input. Why does a child use *no* where an adult uses *not*? Nina's first 11 files contain roughly 300 uses of *no* versus zero cases of *not*. Later (File 27) the ratio is 17 to 14. Pertinently, *no* is sentence-initial and the child also hears it in isolation. Incorporating this information implies adding structural conditions that begin to build in exactly the assumptions of UG, for instance, high attachment of first merge, rather than morphological attachment. The child could assume that *no* is part of a word, linking *no* to the word *milk*, associating the reference to an empty bowl, and the say "I want no milk" meaning 'I want a bowl'. Children get the difference between syntactic and morphological attachment easily because they are looking for it, and a separate source, intonation, probably helps them out precisely because UG specifies a relation between morphology and intonation. Child segmentation errors occur, but as the interesting exception rather than the norm. This is key evidence of the power of the underlying system.

That subtle steps are beautifully captured by formal notions like Labelled Merge is a powerful evidence in behalf of the theory. Constructivists object to

the abstractions of grammar, but rely on extremely abstract terms like learning instead. If constructivists can propose concrete steps to solving the learning problems, they may add insight into how the child solves the PLD problem. Otherwise the debate leads to no progress.

## References

- BORER, H. & WEXLER, K. (1987). The maturation of syntax. In T. Roeper & E. Williams (Eds.), *Parameter Setting* (pp.123-172). Dordrecht: Reidel.
- CHOMSKY, N. (1965). *Aspects of the theory of syntax*. Cambridge: MIT Press.
- CLAHSEN, H., EISENBEISS, S. & PENKE, M. (1996). Lexical learning in early syntactic development. In H. Clahsen (Ed.), *Generative Perspectives on Language Acquisition* (pp. 129-159). Amsterdam: Benjamins.
- FUJIMURI, C. (2010). *Acquisition of recursive possessives in Japanese*. Unpublished Manuscript. University of Massachusetts/Amherst.
- NAIGLES, L. & HOFF, E. (2006). Verbs at the very beginning: Parallels between comprehension and input. In K. Hirsh-Pasek & R. Golinkoff (Eds.), *Action meets word: How children learn verbs* (pp. 336-363). New York: Oxford University Press.
- ROEPER, T. (1992). From the Initial State to V-2: Acquisition Principles in Action. In J. Meisel (Ed.), *The Acquisition of Verb Placement* (pp. 333-371). Dordrecht: Kluwer.
- ROEPER, T. (in press). Interfaces, frequency and the primary linguistics data problem. *Lingua*.