Discussion

But do we need universal grammar?
Comment on Lidz et al. (2003)☆

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“Noun phrase number is a privileged source of information as to the semantic structure of predicates.” So concludes a recent article by Lidz, Gleitman, and Gleitman (2003: 169), which purports to demonstrate the viability of a “universalist” mapping between syntax and semantics as opposed to an “emergentist” view of the mapping, attributed to Goldberg (1999) and Tomasello (2000).

Lidz et al. (2003) performed an experiment involving the Dravidian language, Kannada, based on the methodology of Naigles, Gleitman, and Gleitman (1993). They presented to children (mean age 3;6) familiar verbs in familiar and unfamiliar (ungrammatical) contexts. Unfamiliar contexts included intransitive verbs presented in transitive frames and/or with causative morphology, and transitive verbs presented in intransitive frames with or without causative morphology. Children were then encouraged to act out a scene corresponding to the sentence they had heard using a set of toy animals. Of particular interest is the degree to which the children, when faced with an intransitive verb in an ungrammatical context, relied on causative morphology as compared with the transitive syntax in their interpretations.

The authors observe that in Kannada, the causative morpheme is reliably associated with a causative interpretation. They further note that the transitive construction involving the overt expression of two arguments is associated with a wider range of interpretations than causation (as is also the case in English—cf. transitive clauses with the verbs know, see, want, owe).

They suggest that any “emergentist” theory that claims that argument structure is learned from the input, would predict that subjects should rely more on the causative morpheme as

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a predictor of a causative interpretation than the number of semantic participants expressed. They suggest that the “universalist” position on the other hand, predicts that the appearance of two linguistically expressed participants should better predict a causative interpretation. For this, they invoke the “theta criterion” (Chomsky, 1981) or what we will refer to more transparently as the Isomorphic Mapping Hypothesis: “noun phrase number lines up as simply as possible with argument number” (Lidz et al., 2003: 154). They suggest that the Isomorphic Mapping Hypothesis is an aspect of “universal grammar”; i.e. part of a set of hard-wired principles that are specific to language and are not the result of empirical experience. Lidz et al. found that subjects rely on the number of linguistically expressed noun phrases (NPs) to a much greater extent than they rely on the causative morpheme, concluding that the evidence supports their universalist position.

The authors suggest that the emergentist vs. universalist debate is akin to the long standing empiricist vs. rational debate implying that those who eschew the Universal Grammar Hypothesis believe that humans are born blank slates, willing and able to learn anything at all. However, the emergentist position, as laid out by Elman et al. (1996), Lakoff (1987), MacWhinney (1999), and Tomasello (2003) for example, very explicitly relies on various sorts of constraints that may well be specific to humans. Human beings are biologically determined to have a particular perceptual/conceptual apparatus (as well as a particular type of physiology) that is distinct from that of dogs, chimps and chinchillas. Possibly critical aspects of the general, human conceptual apparatus include the fact that humans appear to be particularly adept at imitation, and at reading others’ intentions and realizing that they are able to alter them (Tomasello, 1999).

The question is not, therefore, whether anything at all is specific to human beings and/or hard wired into the brain, but rather, whether there exist rules that are specific to human language and not a result of our general conceptual/perceptual apparatus together with experience in the world.

As explained below, we fully agree that learners can be expected to pay attention to the number of nouns expressed as an indication of the propositional meaning being conveyed (see also Fisher, 1996, 2000). It is necessary to question, however, an interpretation of the facts that relies on an innate “universal grammar,” specific to language.

Note first that the Isomorphic Mapping Hypothesis is far from being universally valid as a generalization about the surface structure that is available to children. For example, it is systematically violated in many particular constructions within English where the number of linguistically expressed participants (“complements”) differs from the number of number of central semantic participants (“arguments”) in the scene. Examples are provided in Table 1.

The situation can be seen to be even more complex when one considers other languages. For example, in Ewe, many verbs that are expressed intransitively in English, obligatorily appear transitively with an NP object. For example, “run” is expressed fú du, literally “verb course;” “swim” is fú tsi, literally “verb water”; “blow” is gbγa, literally “breath air” (Ameaka, in press; Essegbey, 1999; Essegbey, in press). In Lao, various specialized constructions are required to convey three semantic participants—at most two full NPs are allowed for a single verb (Enfield, in press).

A universalist claim that the Isomorphic Mapping Hypothesis is true would presumably expect the generalization to be universally valid, and yet we see that it is systematically violated both within and across languages.
A more robust generalization is a weaker, pragmatic generalization: that the referents of linguistically expressed NPs are assumed to be directly relevant to the semantic interpretation conveyed. This generalization follows from Gricean pragmatic principles. Grice observed that human interactions generally, not just those that are specifically linguistic, are governed by a cooperative principle: one is assumed to make his/her contribution sufficient but not excessive, at the stage at which it occurs, by the accepted purpose or direction of the exchange in which s/he is engaged. For example, if I am in the middle of building a treehouse and I point to a hammer out of my reach, I do not expect you to hand me a screwdriver; I also do not expect you to run away, to throw nails at me, to begin to eat a kumquat, or to hand me a dozen hammers, assuming we are engaged in a communicative exchange. I expect you to recognize that my pointing gesture is directly relevant to the information I am trying to convey, and I expect you to hand me a single hammer.

The cooperation principle implies that any information supplied must be relevant to the communication at hand. In the case of language, for example, linguistically expressed participants must be relevant to the message being conveyed. This is captured by the generalization in (A) below. Moreover the generalization in (B) is also valid, following from the Gricean requirement that sufficient information be indicated for the intended message (e.g. if I do not mention, point or gaze at the hammer, I cannot expect you to realize that I want it).

**Pragmatic mapping generalizations:**

(A) The referents of linguistically expressed NPs are interpreted to be relevant to the message being conveyed.

(B) Any semantic participants in the event being conveyed that are relevant and non-recoverable from context must be overtly indicated.

### Table 1

Various systematic exceptions to the Isomorphic Mapping Hypothesis

<table>
<thead>
<tr>
<th>Construction type</th>
<th>No. of linguistically expressed NPs (complements)</th>
<th>No. of central semantic participants in the scene (arguments)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short passives(^a) (e.g. <em>Pat was killed</em>)</td>
<td>1: (<em>Pat</em>)</td>
<td>2: (<em>Pat</em>, <em>Pat’s killer</em>)</td>
</tr>
<tr>
<td>The deprofiled object construction(^b)</td>
<td></td>
<td></td>
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<tr>
<td>(e.g. <em>The tiger killed again</em>)</td>
<td>1: (<em>the tiger</em>)</td>
<td>2: (<em>the tiger</em>, <em>the tiger’s prey</em>)</td>
</tr>
<tr>
<td>Semantic “incorporation” constructions(^c)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e.g. <em>Pat buttered the toast</em>)</td>
<td>2: (<em>Pat</em>, <em>the toast</em>)</td>
<td>3: (<em>Pat</em>, <em>the toast</em>, <em>butter/spread</em>)</td>
</tr>
<tr>
<td>Cognate object construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e.g. <em>Pat laughed a hearty laugh</em>)</td>
<td>2: (<em>Pat</em>, <em>a hearty laugh</em>)</td>
<td>1: (<em>Pat</em>)</td>
</tr>
<tr>
<td>Certain idioms(^d) (e.g. <em>Pat kicked the bucket; Pat gave a salute</em>)</td>
<td>2: (<em>Pat</em>, <em>the bucket</em>/<em>a salute</em>)</td>
<td>1: (<em>Pat</em>)</td>
</tr>
</tbody>
</table>

\(^a\) See Mouner and Koeng (2000) for evidence that an agent argument is conceptually evoked by passives without the “by” phrase.

\(^b\) See Goldberg (in press).

\(^c\) See Mithun (1984).

\(^d\) See Nunberg, Wasow, and Sag (1994).
The difference between (A) and (B), on the one hand, and the Isomorphic Mapping Hypothesis, on the other, is that (A) does not specify exactly how the referents of linguistically expressed NPs should be integrated semantically, nor does (B) specify exactly how semantic participants may be indicated. This allows for the possibility that different languages and different constructions obey the principles (A) and (B) in different ways; some of this expected variation is in fact found in Table 1. Each of the constructions in Table 1 links form with function in a slightly different way (see references cited in table for discussion).

Note that (B) makes no predictions about semantic participants that are relevant and recoverable, or semantic participants that are irrelevant and non-recoverable. This is important because different languages (and indeed, different constructions within languages) do different things in these circumstances. In Kannada, as well as perhaps the majority of the world’s languages, recoverable arguments are regularly omitted. This is also the case in “incorporation” constructions cross-linguistically, in which one argument is indicated by the verb (or part of the verb) and is therefore recoverable. In English, in the majority of constructions, even recoverable arguments must be expressed as long as they are deemed relevant.

When arguments are irrelevant and non-recoverable (that is, non-recoverable except in the most general of ways as determined by the lexical semantics of the verb), languages also allow differing options. In English, the argument can be unexpressed as in the Deprofiled Object Construction (1), or it can be expressed as in (2):

1. The tiger killed again.
2. The tiger killed someone/something again.

The same scene can be described by either (1) or (2) and yet the number of overtly expressed NPs differs in the two examples.

Why do children rely on the number of nouns expressed to determine the semantic transitivity of novel expressions, as Lidz et al. found? The universalist position claims that it is a result of a general universal principle; however, we have just seen that there exist empirical problems with the idea that the generalization is universally valid within or across languages.

The pragmatic generalization in (A), namely that the referents of linguistically expressed NPs are interpreted to be relevant to the message being conveyed, predicts that subjects should be strongly motivated to try to integrate each linguistically expressed participant in some way. Moreover, three and a half year olds are old enough to recognize the transitive construction, by both means of language specific word order (Subject Object Verb) and by the morphological casemarkers specific to Kannada’s transitive construction, indications that were provided in the input to the experimental subjects. In addition, the simple transitive construction is presumably more frequent in Kannada than any other possible mappings of two NPs. Finally, the referents of the two NPs would rule out possible cognate object, idiomatic or other specialized constructions. For all these empirical reasons, a two participant interpretation is to be expected.

Lidz et al. suggest that subjects tended to act out overtly causative scenes despite the fact that the transitive construction is used to convey a broader range of meanings in
Kannada. It is not clear why a universal principle should predict this, however. Most accounts of transitive constructions cross-linguistically have allowed for a broader range of meanings, although emergentists have emphasized that causation is perhaps the prototypical interpretation (Hopper and Thompson, 1980; Kemmer and Verhagen, 2002). In fact, it is not clear that subjects ignored other possible interpretations of the transitive construction; the coding scheme developed by Naigles et al. and used by Lidz et al. would count as “causative” a situation in which a child picked up two animals in one hand and simply waved them around.

How does the pragmatic account explain that two NPs should serve as a better indication of a two participant message than the causative morpheme? Critically, the causative morpheme does not tell the child which entity should be chosen as the second argument. This source of indeterminacy would leave children in a quandary: how should they incorporate a causative meaning without knowing which entities are involved? There is a strong indication that this indeterminacy in what was expected of them led children to underproduce causative actions. In particular, the three year olds were no more likely to produce semantically transitive actions when presented with normally transitive verbs having a single overt argument (including rub, hit, hug, lift, pinch, pull) than they were to produce causative actions for semantically intransitive verbs in the same single-argument context (see Lidz et al., 2003: Fig. 1, p. 164). This is despite the fact that Kannada readily allows arguments to be omitted as long as they are recoverable in context. Because the arguments were not recoverable in context in the experimental setting, children were at a loss to decide which entity should play the role of the second argument.

More specifically, note that Grice’s cooperation principle implies that if there exists important information that is relevant and not known to the audience, it must be indicated by the speaker (B above). This implies that semantic arguments may not be omitted unless they are either irrelevant or recoverable, since semantic arguments, by definition, are normally important to an event being conveyed. Thus omitting an argument that is neither irrelevant nor recoverable in context is a violation of (B). To counter the violation, children in the experiment chose to avoid presupposing that a second argument was involved unless a second argument was expressed. 2

1 The causal morpheme in itself also does not directly indicate whether 2 or 3 major participants will be involved, since it is used both with simple and complex causatives (Lidz et al., 2003, note 5). While direct causation is entailed when the morpheme appears with two participants, indirect causation is entailed when the morpheme appears on an inherently causative verb such as open:

3. Hari naam-inda baagil-anmu terrey-FS-id-a  (Lidz et al. 2003: note 5 ii p. 159)
   Hari l-instr   door-acc  open-CAUSE-pst-3am
   “Hari made me open the door”

4. naanu burf-anmu karg-FS-id  (Lidz et al. 2003: 7c pg 158)
   I ice-acce  melt-CAUSE-pst-3am
   “I melted the ice.”

2 Adults were apparently somewhat more bold in guessing which second entity to use in acting out a scene with a verb that was known to be transitive (and with a verb with the causative morpheme). This is probably due to the fact that adults are better at imagining contexts in which the unidentified argument is somehow inferable from the context.
Another factor that may have been relevant is the following. While it is true that
the causative morpheme implies a causative interpretation, the converse is not true: a
causative interpretation does not necessitate the appearance of the causative
morpheme. As Lidz et al. note, lexical causatives appear transitively without the
causal morpheme. That is, while the causal morphology may well have perfect cue
validity as a predictor of causal meaning, it is far from having perfect category
validity (probability that the causative meaning involves the causative morpheme):
many causal utterances do not contain the morpheme.

At the same time, in contexts in which neither participant is recoverable, the simple
transitive has perfect category validity for a two participant causative meaning: whenever
a two participant causative meaning is expressed in a context in which neither argument is
recoverable (as in the experimental context), the transitive construction is used. Thus the
starting assumption of Lidz et al. (2003), that causal morphology in Kannada is
more strongly correlated with a two-participant interpretation than the transitive
construction is flawed.

It is interesting that the debate has shifted away from the traditional claim, that specific
syntactic mappings of particular semantic roles to fixed syntactic positions or relations are
universal and hard-wired into the brain (Gleitman, 1994; Grimshaw, 1990; Pinker, 1989).
That is, Lidz et al. do not claim that what is universal are traditional linking rules—they do
not claim that children are born with the expectation, for example, that agents will appear
as subjects, a claim that necessitates not only an innate representation for the notion
grammatical subject but also some universal way of identifying a particular language’s
subject (for critiques of such a suggestion see Bates & MacWhinney, 1987; Bowerman,
1996; Croft, 2001; Goldberg, Casenhiser, & Sethuraman, 2004; Morris & Cottrell, 1999;

To mention just one study that is relevant in this context, Sethuraman, Goldberg, and
Goodman (1997) replicated the original experiment that Naigles et al. had done with
English speakers, with one difference: instead of using known verbs, non-sense verbs
were used. This was done in order to disentangle the effects of experience with verbs
from knowledge of syntactic frames. As in the Lidz et al. (2003) and Naigles et al.
(1993) studies, subjects were asked to act out scenes corresponding to the sentences
they heard. Act-outs were coded as being either “frame compliant” (consistent with the
semantics associated with the syntactic frame) or not frame compliant (inconsistent with
the semantics associate with the frame). Sethuraman et al. found increasing frame
compliance as a function of subjects’ age, and decreasing frame compliance as a
function of syntactic complexity. Both of these findings indicate that the mappings
between syntax and semantics are learned, with learners showing more facility with
constructional patterns the simpler the patterns are and the greater experience with
language that subjects have.

The current Lidz et al. (2003) study focuses not on the mapping of semantic
roles to particular syntactic positions or relations, but simply on the number of
linguistically expressed participants. As we have seen, a pragmatic explanation for
their findings is at least as plausible as one based on a Universal Grammar
Hypothesis.
References


