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Interfaces and Processing

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I assume that the interface between syntax and discourse is a possible locus for deficits in bilingualism and second language acquisition, and that a principled explanation for this fact is called for. In this brief commentary, I will suggest that a resource-based processing account is worth pursuing and that such an account has the potential to supersede the Interface Hypothesis.

A major challenge for a processing account of interface phenomena is that we have little understanding of the precise factors that contribute to computational difficulty in this area. A possible starting point for the needed research program lies in what we have been able to learn about processing at the level of 'narrow syntax,' which is arguably the core case of language-related mental computation. A particularly suggestive finding, which I will focus on here, is that the processor prefers computations that draw on elements and information that are immediately and locally available. This propensity is manifested in the processing of various phenomena, including:

– filler-gap dependencies, whose processing cost increases with the number and type of intervening elements (e.g., Kluender, 1998: 247; Gibson, 1998).
– anaphoric dependencies, which are resolved more quickly by a local antecedent than a more distant antecedent (Sekerina, Stromswold, & Hestvik 2004).
– head-argument relations, including those involving agreement, for which well-documented typological tendencies point toward strong locality preferences (Hawkins, 2004: 103ff).

The contrast between overt and null pronouns in Romance languages offers an illustration of how processing locality might be relevant to interface difficulties.

(1) Null and overt pronouns in Italian (Sorace & Serratice, 2009: 204)
    a. Mentre Gianni mangia, Ø parla [3SG] al telefono.
        While Gianni$_i$ eats, (he$_i$) talks on the phone.
    b. Mentre Gianni mangia, lui parla [3SG] al telefono.
        While Gianni$_i$ eats, he$_j$ talks on the phone.

As Sorace notes, the null pronominal is employed to signal topic continuity — hence Gianni is the intended antecedent in (1a). In contrast, an overt pronominal indicates a change in topic, so that *lui* in (1b) refers to someone other than Gianni.

Remarkably, even Spanish-Italian bilinguals tended to overuse and overaccept the overt pronominal, allowing it to refer to Gianni in (1b), despite the fact that Spanish has essentially the same contrast as Italian. Why should this be?

Sorace proposes that overt pronouns constitute a strategic 'fall-back' to the typologically unmarked default, but a locality-based processing account also suggests itself. Particularly intriguing is the possibility that the articulatory advantage of null pronouns is outweighed, especially in biclausal patterns, by an increase in the difficulty of tracking agreement. As the example above helps illustrate, the [3SG] agreement dependencies associated with the second verb can be resolved immediately with the help of the adjacent overt pronoun in (1b), but require non-local (extra-sentential) resolution in (1a), where there is no visible pronoun. This might well be enough to encourage overuse of overt pronouns in speakers whose processing resources are compromised. Three predictions follow.

First, overt subject pronouns should not be overused in cases where both languages lack subject-verb agreement. Thus one would not expect overuse of overt pronouns by Korean-Japanese bilinguals, for instance. There are indications that this prediction is correct (Yamada, 2008).

Second, overt object pronouns should not be overused when both languages permit object drop (and both lack object agreement). Korean and Japanese are once again a case in point, and there is once again supporting evidence (Yamada, 2008).

Finally, returning to Italian, there should be no overuse of overt pronouns in the second conjunct of coordinate structures such as (2), where the two verbs are in the same clause as their shared subject.[1]

(2) Gianni [$_{VP}$ mangia [3SG] e parla [3SG] al telefono].
     'Gianni eats and talks on the phone.'

I have no information on the correctness of this prediction.

On this view then, processing cost — rather than interface involvement per se — is crucial to understanding the class of deficits that originally motivated the Interface Hypothesis. Two sorts of data will be crucial here, moving forward.

First, the processing cost hypothesis would receive support if interface phenomena that are unproblematic for bilinguals turn out to create a lighter burden on the processor than do their problematic counterparts. Focus-related phenomena are a potential case in point, since they seem to be acquired with remarkable success, as Sorace notes (see Slabakova & Ivanov, 2011, White, 2011, and Montrul, 2011 for critical discussion of this and other cases). Unfortunately, there is

currently no basis for attributing this to processing considerations — not because the idea is implausible, but simply because there appears to have been no relevant experimental work on the subject.

Second, evidence that the processing view is on the right track could come from the existence of phenomena in the 'narrow syntax' that are difficult for bilinguals even though no interface is involved. A candidate phenomenon in this regard involves agreement systems that arguably place greater computational demands on the processor than do the relatively simple systems found in European languages such as English and Italian. Consider for instance long-distance agreement in Hindi-Urdu, in which the matrix verb can (optionally) agree with the direct object in a complement clause.[2]

(3)

    Vivek-ne [**kitaab** paṛh-nii]   caah-**ii**. (Bhatt, 2005:760)
    Vivek-ERG book.FEM read-INF.FEM want-PFV.FEMSG
    'Vivek wanted to read the book.'

Indications that such patterns are problematic for bilinguals, even those who speak other Indo-Aryan languages that allow this sort of agreement, would support the idea that the narrow syntax is not inherently privileged, any more than certain interfaces are inherently disadvantaged.

The idea that processing cost is the arbiter of acquisition difficulty, regardless of where it occurs, has considerable promise, I believe. Yet, with a few exceptions, the hypothesis is currently untestable due to the lack of a precise theory of the factors that contribute to processing cost at the interfaces and to a dearth of psycholinguistic data relevant to the evaluation of such a theory. It seems safe to suggest that addressing these shortcomings will be crucial for our eventual understanding of acquisition at the interfaces.

Notes

1. I am grateful to Kevin R. Gregg for drawing my attention to the relevance of coordination patterns and for his comments on this paper in general.

2. The presence of long-distance agreement seems to be associated with specificity (Bhatt, p.761), a formal semantic feature that is internal to grammatical representations on Sorace's account.

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