Linguistic prominence, sequential precedence and the pars opercularis

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Recent neuroimaging findings in the domain of word order variations have revealed a sensitivity of the pars opercularis of the left inferior frontal gyrus to a variety of information types governing linear order in language. Thus, the increased activation observed in this area for a violation of the subject-before-object principle appears to constitute a special case of more general linearisation parameters. On the basis of findings such as these, we have formulated the "linearisation hypothesis" of pars opercularis function during language comprehension. (LH; Bornkessel et al., 2005; Grewe et al., 2005). Most generally, the LH assumes that languages must provide a *linearisation* of a variety of different hierarchically structured information types on account of the inherently sequential nature of speech. While these hierarchies are typically grounded in general conceptual prominence of some description (e.g. Actors vs. Undergoers, old vs. new information etc.), languages differ with respect to how they have conventionalized the applicability of such information and, thereby, as to which distinctions determine word order. Therefore, the information types shown to correlate with differences in pars opercularis activation correspond very closely to the cross-linguistic prominence hierarchies that are a central explanatory concept in language-typological research (see, for example, Comrie, 1989; Croft, 2003). The pars opercularis therefore appears to play a crucial role in decoding abstract representations (i.e. hierarchical dependencies in the sense described above) from underlying patterns in the linguistic input (i.e. the linear order).