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# Agreement and movement: A syntactic analysis of attraction

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#### Abstract

This paper links experimental psycholinguistics and theoretical syntax in the study of subject-verb agreement. Three experiments of elicited spoken production making use of specific characteristics of Italian and French are presented. They manipulate and examine its impact on the occurrence of 'attraction' errors (i.e. incorrect agreement with a word that is not the subject of the sentence). Experiment 1 (in Italian) shows that subject modifiers do not trigger attraction errors in free inverted VS (Verb Subject) structures, although attraction was found in VS interrogatives in English (Vigliocco, G., & Nicol, J. (1998). Separating hierarchical relations and word order in language production. Is proximity concord syntactic or linear? Cognition, 13-29) In Experiment 2 (in French), we report stronger attraction with preverbal clitic object pronouns than with subject modifiers. Experiment 3 (in French) shows that displaced direct objects in the cleft construction trigger attraction effects, in spite of the fact that the object does not intervene between the subject and the verb in the surface word order (OSV). Moreover, attraction is stronger in structures with subject-verb inversion (...). These observations are shown to be naturally interpretable through the tools of formal syntax, as elaborated within the Principles and Parameters/Minimalist tradition. Three important constructs are discussed: (1) the hierarchical representation of the sentence during syntactic construction, and the role of intermediate positions by which words transit when they move; (2) the role of specific hierarchical (c-command) but also linear (precedence) relations; and (3) the possibility that agreement involves two functionally distinct components. A gradient of computational

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complexity in agreement is presented which relates empirical evidence to these theoretical constructs.

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#### 1. Introduction

Psycholinguistics has shown strong interest in the production of subject-verb agreement for the last decade. A number of studies have been conducted based on the elicitation of agreement errors in experimentally controlled situations in laboratory. The major theoretical issue in this line of research is the object of a long-standing debate opposing advocates of a 'modular' view of sentence production, according to which syntactic construction proceeds in relative isolation from other components of language (semantics, phonology), and supporters of an 'interactive' view of syntactic production. Modularity in psycholinguistic models of sentence production has often been reduced to one of the properties modules are assumed to exhibit, their informational encapsulation. This refers to the relative insulation of processes at each level of sentence construction from other levels of representation (Fodor, 1983). In line with this approach, experiments on agreement were mostly designed to test whether agreement processes at the syntactic level are influenced by representations at the semantic and (morpho)phonological levels. A rather conflicting picture emerged from these studies; some of the results indicating encapsulation of agreement from non-syntactic information (e.g. Bock & Eberhard, 1997; Bock, Eberhard, & Cutting, 2004; Bock & Miller, 1991), others suggesting that conceptual and/or morphophonological variables actually do penetrate the process (e.g. Vigliocco & Franck, 1999; 2001; Vigliocco, Hartsuiker, Jarema, & Kolk, 1996).

However, in addition to informational encapsulation, modules are also assumed to exhibit another important property, which is their domain-specificity (Fodor, 1983). For syntactic production, domain-specificity means that the processes at this level operate on the basis of principles that are specifically syntactic in nature, i.e. that can only be explained by relying on factors from inside the syntactic domain. Answering the question of whether syntactic production operates on the basis of syntactic factors requires us to adopt a theoretical framework that identifies these factors. Such research on agreement is relatively rare in experimental psycholinguistics, although some studies have started to point to the involvement of syntactic factors like the hierarchical structuring of the words (Bock & Cutting, 1992; Franck, Cronel-Ohayon, Chillier, Frauenfelder, Hamann and Rizzi, 2004; Franck, Vigliocco, & Nicol, 2002; Vigliocco & Nicol, 1998, see Section 2).

In contrast to the rather limited interest for syntactic aspects of agreement in psycholinguistics, theoretical syntax has devoted much attention to the phenomenon, most notably in frameworks such as principles and parameters, and head driven phrase structure grammar (see e.g. Chung, 1998; Haegeman, 1994; Pollard & Sag, 1994). These approaches provide precise theoretical models of the structural conditions governing the agreement

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