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Who did Buzz see someone? Grammaticality judgement of wh-questions in typically developing children and children with Grammatical-SLI

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ABSTRACT

This paper tests claims that children with Grammatical(G)-SLI are impaired in hierarchical structural dependencies at the clause level and in whatever underlies such dependencies with respect to movement, chain formation and feature checking; that is, their impairment lies in the syntactic computational system itself (the Computational Grammatical Complexity hypothesis proposed by van der Lely in previous work). We use a grammaticality judgement task to test whether G-SLI children's errors in wh-questions are due to the hypothesised impairment in syntactic dependencies at the clause level or lie in more general processes outside the syntactic system, such as working memory capacity. We compare the performance of 14 G-SLI children (aged 10–17 years) with that of 36 younger language-matched controls (aged 5–8 years). We presented matrix wh-subject and object questions balanced for wh-words (*who/what/which*) that were grammatical, ungrammatical, or semantically inappropriate. Ungrammatical questions contained wh-trace or T-to-C dependency violations that G-SLI children had previously produced in elicitation tasks. G-SLI children, like their language controls, correctly accepted grammatical questions, but rejected semantically inappropriate ones. However, they were significantly impaired in rejecting wh-trace and T-to-C dependency violations. The findings provide further support for the CGC hypothesis that G-SLI children have a core deficit in the computational system itself that affects syntactic dependencies at the clause level.

1. Introduction

1.1. Outline

Wh-questions have long played an important role in linguistic theory and language acquisition (Crain and Thornton, 1998; de Villiers, 1991; de Villiers and Roeper, 1995; Manzini, 1992; Manzini, 1995; Rizzi, 1990; Stromswold, 1995). Their theoretical interest stems partly from the syntactic representation underlying wh-questions, which typically involves wh-movement, and partly from the developmental changes that occur during their acquisition. More recently, such interest has been extended to children with Specific Language Impairment (SLI). Our first investigation of wh-questions in children with SLI revealed that they have significant impairments with producing syntactic dependencies (movement) involving both wh-trace and T-to-C dependencies (van der Lely, 1998; van der Lely and Battell, 2003). There has since been a plethora of

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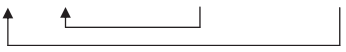
investigations of wh-questions in SLI in languages as diverse as English, Hebrew, French, Swedish, Greek, and Chinese (Deevy and Leonard, 2004; Friedmann and Novogrodsky, 2007; Hamann, 2006; Hansson and Nettelbladt, 2006; Stavrakaki, 2006; Wong et al., 2004). Where the language investigated incurs wh-trace dependencies, wh-questions are uniformly found to be significantly impaired in children with SLI. Such studies provide a new window on the acquisition of questions, as well as furthering our understanding of the underlying nature of SLI.

This paper forms part of a body of work in our lab investigating wh-questions using different methodologies to explore different input and output representations and processes in typically developing children and a subgroup of SLI children with Grammatical(G)-SLI (see also Fonteneau and van der Lely, 2008; Marinis and van der Lely, 2007; van der Lely and Battell, 2003). Here we use a grammaticality judgement task to tap input processes and representations of linguistic structures. This methodology has been shown to be particularly insightful when investigating subjects with acquired language disorders (aphasia) (Tyler, 1992), because it allows the researcher to distinguish impairments in representations/stored syntactic knowledge from impairments that occur later in the processing chain to full comprehension or production. Such processes include working memory, processing speed or capacity, processing at the interface, and knowledge outside the syntactic system (pragmatics/world knowledge). Thus, the aim of this study is to further distinguish whether the SLI children's impairment in wh-questions lies in the syntactic computational system itself (Friedmann and Novogrodsky, 2007; van der Lely, 2005; van der Lely and Battell, 2003), or outside the language faculty (Deevy and Leonard, 2004; Jakubowicz and Strik, 2008; Stavrakaki, 2006; Wong et al., 2004). Before discussing some of the different theories proposed for SLI, we discuss previous research that has investigated wh-questions in children with SLI.

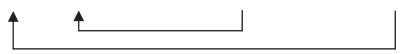
1.2. Wh-questions

We focus on the simple matrix subject and object questions that have been the topic of much debate in syntactic theory (Manzini, 1992; Manzini, 1995; Rizzi, 1990; Stromswold, 1995). It is generally agreed that in English, object wh-question formation involves two forms of syntactic dependencies as defined by syntactic movement. The first is movement of the wh-operator to the specifier (spec) position of the complementizer phrase (CP), which leaves a trace behind in the internal verb argument position, as in (1) (Rizzi, 1990). This prevents, in adult grammar, the empty internal verb argument position being filled by a determiner phrase (DP), as shown in (2). Second, object questions necessitate T-to-C dependency (or "*do*-support") of *do* bearing the question-feature to the head of CP, (1). *Do*-support determines appropriate tense and question-feature marking in object questions (hereafter T-to-C dependency).

(1)[$_{CP}$ Who$_i$[$_C$ did$_j$][$_{TP}$ Homer [$_T$t$_j$][$_{VP}$ [$_V$ find] t_i[$_{PP}$ at the farm]]]



(2) * [$_{CP}$ Who $_i$[$_C$ did$_j$][$_{TP}$ Homer [$_T$ t$_j$][$_{VP}$ [$_V$ find] Bart $_i$ [$_{PP}$ at the farm]]]



For subject questions we assume the analysis of Rizzi (1996), whereby the wh-word moves from an original position within the inflectional phrase (IP) to the CP as shown in (3) (but see Pesetsky, 1987 for contrasting analysis). In contrast to object questions, subject questions do not incur *do*-support, and therefore no T-to-C dependency occurs. Tense, however, is typically marked on the matrix verb following covert V-to-T movement.[2]

(3)[$_{CP}$ Who$_i$[$_{C'}$ [$_{TP}$ t$_i$ [$_{T'}$ [$_{VP}$ [$_{V'}$ found Homer[$_{PP}$ at the farm]]]]]]]

Despite their syntactic complexity, typically developing children acquire questions early in language development, acquire object questions at the same time as subject questions (around 3 years or earlier), and even show early acquisition of more complex long-distance wh-questions (Stromswold, 1995; Thornton, 1990, 1995). This competence is robust across languages despite variations in vocabulary and features to be learnt (Hamann, 2006; Jakubowicz and Strik, 2008; Stavrakaki, 2006; Weissenborn et al., 1995). This is not so, however, for children with SLI.

There is considerable theoretical discussion concerning what underlies and creates the syntactic dependencies such as those involved in wh-questions, e.g., feature specification, feature checking, movement, chains, merge and agree. What is evident is that the dependencies come in pairs and their interpretation is "blind" to semantics. However, for the purposes of this paper we are glossing over these issues, as what is important here is the phenomenon itself in relation to clause structure.

[2] Please note that for the purpose of this paper we use the notation T to C without any commitment to theoretical discussions of Split IP, etc.