

Université de Montréal

Developmental Language Disorder and Universal Grammar

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Thèse présentée en vue de l'obtention du grade de docteur
en linguistique

Décembre 2021

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Cette thèse intitulée :

Developmental Language Disorder and Universal Grammar

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RÉSUMÉ

L'étude de la Faculté des langues (FL), telle que définie par la grammaire générative, a été principalement entreprise à travers l'examen des langues adultes, l'acquisition de la langue première, l'acquisition des langues secondes et l'acquisition bilingue. Peu de travaux ont abordé la FL à partir d'une situation d'acquisition atypique, communément appelée Trouble développemental du langage (TDL). Cette thèse est consacrée à l'étude de la façon dont FL est affectée par cette condition malheureuse. Le TDL est manifesté par certains jeunes enfants et adultes et peut être la cause de limitations importantes dans le développement du langage. La production et la compréhension langagières de ce groupe d'enfants sont atypiques par rapport au comportement linguistique d'autres enfants du même âge. Leur atypicité consiste en une grammaire non-cible en ce qui concerne ce qui est autorisé et ce qui est interdit dans la/les langue(s) à laquelle/auxquelles ils sont exposés. Les symptômes les plus communs, d'un point de vue morpho-syntaxique, sont (a) l'omission de morphèmes et de mots, (b) les commissions, c'est-à-dire la présence inadéquate de certains mots ou le remplacement inapproprié de morphèmes et (c) les redoublements, c'est-à-dire, l'apparition de mots ou de morphèmes dans plus de positions que celles autorisées dans la langue cible. Ces symptômes ont été pris comme l'indication que la FL est déficiente. Le résultat de cette défaillance est une grammaire développée par les enfants ayant le TDL qui est qualitativement différente de celle développée par leurs pairs typiques. Cette thèse examinera si la compétence linguistique sous-jacente des enfants DLD est déterminée par les mêmes traits, opérations et principes qui régissent le langage naturel en général. Extraites de la littérature expérimentale sur le TDL, les données pour l'analyse incluent la compréhension et la production par les enfants du TDL et concernent les domaines nominal, temporel/verbal et propositionnel. Les propositions

avancées pour rendre compte de ce disorder seront évaluées. Toutes proposent explicitement ou implicitement que la grammaire universelle (GU), c'est-à-dire l'ensemble des traits et opérations phonologiques, sémantiques et syntaxiques qui sous-tendent FL, est défectueuse: certains traits peuvent être absents, ou des opérations peuvent être inactives ou fonctionner par intermittence. Contrairement à ces propositions, l'hypothèse défendue ici est que la GU n'est pas affectée chez les enfants TDL. C'est-à-dire que malgré les nombreuses différences entre le TDL et l'acquisition typique du langage, la GU se révèle être similaire à un certain niveau dans les deux situations d'acquisition. Si la GU était altérée chez les enfants TDL, on s'attendrait à ce que les enfants affectés par cette condition produisent des phrases remarquablement différentes de celles produites par des enfants typiques. Plusieurs études ont révélé que les enfants DLD et leurs pairs typiques peuvent montrer des performances linguistiques similaires en termes de quantité et de type d'erreurs. De plus, les données révèlent que les énoncés TDL ne sont pas toujours erronés; lorsque tous les éléments et les mécanismes linguistiques sont présents, ils sont correctement utilisés. Ceci est considéré comme un signe que les traits syntaxiques, bien qu'ils ne soient pas toujours réalisés morpho-phonologiquement, sont présents dans les dérivations syntaxiques des enfants TDL, et que les opérations syntaxiques Fusion et Accord sont actives, tout comme dans les grammaires typiques. Enfin, l'analyse des énoncés non-cibles par les enfants TDL met en évidence une grammaire syntaxiquement normale et même une ressemblance avec des langues auxquelles ces enfants n'ont pas été exposés. La conclusion est que, malgré la non-convergence entre le TDL et la langue cible, la GU dans cette situation d'acquisition est intacte.

Mots-clés: Syntaxe, Trouble Développemental du Langage, Dysphasie, Trouble Spécifique du Langage, Acquisition du langage, Faculté du langage, Grammaire Universelle, Traits, Fusion, Accord

ABSTRACT

The study of the Faculty of Language (FL), as defined by generative grammar, has been mainly undertaken through the examination of adult language, first language acquisition, second language acquisition and bilingual acquisition. Few works have approached the FL from an atypical acquisitional situation, standardly called Developmental Language Disorder (DLD). This dissertation is devoted to the study of how FL is affected by this unfortunate condition. DLD is displayed by some young children and adults and can be the cause of significant limitations in language development. The linguistic production and comprehension by this group of children is atypical compared to the linguistic behaviour of other children of the same age. Their atypicality consists in a non-target-like grammar with regard to both what is allowed and what is disallowed in the language(s) to which they are exposed. The most common symptoms, from a morpho-syntactic point of view, are (a) omission of morphemes and words, (b) commissions, i.e., the inadequate presence of certain words or the inappropriate replacement of morphemes and (c) doublings, i.e., the appearance of words or morphemes in more positions than are allowed in the target language. These symptoms have been taken to indicate that the FL is deficient. The result of this deficiency is a grammar developed by children with DLD that is qualitatively different from that developed by their typical peers. This dissertation will consider whether or not the underlying linguistic competence of children with DLD is determined by the same features, operations and principles that regulate natural language in general. Drawn from the experimental literature on DLD, the data for analysis include comprehension and production by children with DLD and concern the nominal, the temporal/verbal and the propositional domains. The proposals that have been put forth to account for this impairment will be evaluated. All of them explicitly or implicitly propose that Universal Grammar (UG), i.e., the set of

phonological, semantic and syntactic features and operations that underlie FL, is faulty: Some features can be absent, or operations can be inactive or function intermittently. Contrary to these proposals, the hypothesis defended here is that UG is not affected in DLD children. That is to say, despite the many differences between DLD and typical language acquisition, UG is revealed to be similar at a certain level in both acquisitional situations. If UG were impaired in DLD, children affected by this condition would be expected to produce sentences remarkably different from those produced by typical children. Several studies have shown that children with DLD and their typical peers can display similar linguistic performance in terms of both quantity and type of errors. Moreover, the data reveal that DLD utterances are not always erroneous; when all linguistic elements and mechanisms are present, they are correctly used. This is taken as a sign that syntactic features, while not always realized morpho-phonologically, are present in DLD syntactic derivations, and that the syntactic operations Merge and Agree are active, just as in typical grammars. Finally, the analysis of non-target utterances by children with DLD evinces a syntactically normal grammar and even a resemblance with languages to which these children have not been exposed. The conclusion is that, despite the non-convergence of DLD and the target language, UG in this acquisitional situation is intact.

Key words: Syntax, Developmental Language Disorder, Specific Language Impairment, Acquisition, Faculty of Language, Universal Grammar, Features, Merge, Agree

ACKNOWLEDGEMENTS

First and foremost, I would like to thank my advisor, professor Daniel Valois, for his valuable suggestions, inspiring comments and mostly for his faith in me. When I started my dissertation, I was fairly hesitant about my topic, its plausibility and its soundness. My conversations with Daniel surely led me to become more confident and to believe that my project could make a real contribution to linguistics.

A very special thanks to Lisa Travis. In spite of her heavy schedule, she has been immensely generous with her time. Whenever I needed help, either as a student or as an alumnus, she always made time to meet with me and set me back on the right track.

Additional thanks go to Hernán Fernández-Meardi, who has always challenged me to defend my ideas and encouraged me to thoughtfully consider my assumptions about language.

I also thank Manuel Español and Heather Goad for their wise advice when I went through a period of despair.

My sincere gratitude also goes to my dear friend Émile Khordoc, with whom I spend hours talking about diverse non-linguistic issues. I admire him for his vast knowledge and rigorous thinking.

I would also like to thank Guillaume Sillon, Andrés Salanova, Clara Foz, Hiên Pham, Marc Brunelle, Analia Llugdar and Clint Parker. Finally, finally, last but by no means least, I thank my mother and the rest of my family for the unceasing encouragement, support and attention throughout my whole period of study.

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ABBREVIATIONS

acc	Accusative
Adv	Adverb
AdvP	Adverbial phrase
Agr	Agreement
AgrP	Agreement phrase
asp	Aspect
C	Complementizer
CAP	Control-agreement principle
CCH	Computational Complexity Hypothesis
C _{LH}	Computational system of human language
CI	Conceptual-intensional interface
cl	Clitic
CP	Complementizer phrase
D	Determiner
Def	Definite
DefP	Definite phrase
dem	Demonstrative
DLD	Developmental Language Disorder
DP	Determiner phrase
dat	Dative
EPP	Extended Projection Principle feature
φ	Phi-feature
fem	Feminine
FIP	Full Interepretation Principle
FL	Faculty of language
FLB	Broad FL
FLN	Narrow FL

G	Grammar
Gen	Gender
I(NFL)	Inflexion
inf	Infinitive
L1	First language
L2	Second language
LI	Lexical item
masc	Masculine
MLU	Mean length utterance
N	Noun
n	nominal functional category
Neg	Negation
NegP	Negation phrase
NP	Noun phrase
neut	Neutral
nom	Nominative
NPI	Negative polarity item
Num	Number
O	Object
OR	Object relative
p	Person
P	Preposition
part	Participle
PersP	Person phrase
PHON-F	Phonetic feature
PIC	Phrase Impenetrability Condition
pl	Plural
PLD	Primary linguistic data
PP	Prepositional phrase

S	Subject
SCH	Strong Continuity Hypothesis
SD	Standard deviation
SEM-F	Semantic feature
sg	Singular
SM	Sensori-motor interface
Spec	Specifier
SR	Subject relative
SYN-F	Syntactic feature
T	Tense
TD	Typical development
u	uninterpretable
UG	Universal Grammar
V	Verb
VP	Verb phrase
V2	Verb second
v	Verbal functional category
wh	Wh-element

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1 INTRODUCTION

This dissertation is concerned with the Faculty of Language (FL), as defined in Chomsky (1995, 2000, 2001), being affected by an unfortunate condition called Developmental Language Disorder (DLD). This condition is found in some children and adults, and can be a cause of significant limitations in language development (Leonard 1998, 2014). The observation is that linguistic production and comprehension of this group of children is not typical with respect to linguistic behaviour of other children of the same age. Their atypicality consists in a non-target-like grammar regarding what is both allowed and disallowed in the language or languages to which they are exposed. DLD seems to affect all areas of FL: phonology, morpho-syntax, semantics, pragmatics and the lexicon (Radford 2007, van der Lely et al. 2011). Nevertheless, DLD is not a homogeneous disorder. Language-impaired children differ with respect to the language they acquire (that is, the types of errors observed in DLD grammars can differ from language to language, Leonard 2013), to the particular linguistic domains which are affected and the degree of severity of the impairment (Bishop, 1997: 35; Ullman & Pierpont, 2005: 399), to the (non) co-occurrence of non-linguistic deficits (e.g., motor disorders, Ullman & Pierpont, 2005: 399), or difficulties with short-term memory (Gathercole & Baddeley, 1990; Marton & Schwartz, 2003; Montgomery, 1995; Newbury, Bishop & Monaco, 2005) or with visual imagery (Johnston & Ellis-Weismer, 1983). Since this dissertation is concerned with the FL, the topic is approached from a strictly linguistic point of view and so it will deal only with those aspects relevant to linguistic theory. Thus, this dissertation will characterize the linguistic systems developed by children diagnosed with DLD. It will consider in particular the extent to which the underlying linguistic competence of children with DLD is determined by the same features,

operations and constraints that regulate natural language in general (cf. White 2003). The result of this study will be a descriptive model of DLD which will show that, as typical language development, this condition also reflects the content of Universal Grammar (UG). The general conclusion is that, despite the non-convergence of DLD on the target language in several respects, the grammars in this acquisitional situation also satisfy the properties inherent in UG. **So UG in DLD grammars is intact and also invariant.**

1.1 The Faculty of Language and Universal Grammar

Since the advent of the linguistic revolution initiated by Noam Chomsky during the late fifties, modern theoretical linguistics has had as its central preoccupation the nature of language from a mental point of view and its representation and development in the human mind. From this perspective language is a cognitive capacity that allows human beings to produce and understand words and sentences. This cognitive capacity is designated as the faculty of language (FL).

As a mental capacity FL has a core property: computation (see Lust 2006). This is a calculation through which symbols from an input alphabet are functionally mapped to an output. The calculation is performed with an algorithm, i.e., a step-by-step set of instructions that always results in an output. Since a computation comes in the form of symbols, it is said to require a mental representation. The linguistic computational system takes a set of symbolic units as input, combines them and derives linguistic representations as outputs. It is characterised by several attributes: digitality, combinatoriality, internal structure and structure dependency, hierarchical structure, and recursion. Digitality means that the system uses units that are discrete, invariant and categorical (Lieberman 1996). Its units are individually separate and distinct. Words are formed with 1, 2, 3, etc. phonemes, but not with 1.5 or 2.3 phonemes at the phonological level. Sentences are formed with 4 words, 5 words, but

there are no sentences with 4.7 words (Chomsky 2000, 2001, 2004, 2005, Hauser, Chomsky & Fitch 2002). Combinatorality refers to the fact that the system employs a small set of units to build an infinite set of other units by combination of the units (Chomsky 2000). Phonemes can be used to construct words, so that a large and open vocabulary can be created, and words can be used to construct an infinite number of sentences. Structure dependence means that the system does not operate on a linear string. It creates constituents out of linguistic elements by grouping units within units, and operations such as movement or deletion apply not on a sequence of words but on constituents (Chomsky 1988). That is to say, there is no rule specifying, for instance, that an operation will apply to the second or third word in a sentence. Instead, operations target words or groups of words located in certain positions determined by the structure in which they are inserted, i.e., constituents. Moreover, constituents are not constructed as flat structures but are represented in a hierarchy, i.e., an arrangement in which the symbols are represented as being “above”, “below”, or “at the same level as” one another. Recursion is a process involving the repeated application of a procedure to successive results. A procedure is a set of steps based on a set of rules. Recursion is the process through which a procedure goes when one of the steps of the procedure involves invoking the procedure itself. Thus, the output of a linguistic operation can serve as input to this same operation. Recursion enables a linguistic derivation to have no limit, i.e., a sentence in principle can be infinite. There is no grammatical limit to the length of a sentence. Limitation is enforced by extra-linguistic factors, such as short-term memory. In sum, recursion is a basic property of the human cognitive capacity responsible for the infinite character of natural language.

The particular manifestation of the FL in individuals is a grammar. A grammar is the result of the development of the FL during the course of language acquisition. It can roughly be characterised as the set of lexical items

that form words and sentences in a particular language, and the set of rules and constraints that are operative in the different components of the FL, i.e., phonology, syntax, morphology and semantics. A grammar defines the set of structures that make a language in an individual and reflect the linguistic properties described above. The knowledge of grammar, i.e., the representational content of linguistic expressions, is called competence. According to Chomsky (2001 and references therein), the FL has an innate basis and guides the development of linguistic competence. Moreover, Chomsky (2005) proposes that the FL is designed with the intervention of three factors:

- 1) Factor 1: Genetic endowment
Factor 2: Experience
Factor 3: Principles not specific to the language faculty

Factor 1 corresponds to Universal Grammar (UG). UG is defined as ‘the genetically given human cognitive capacity, which makes language possible and at the same time defines a possible human language’ (Roberts, 2017: 2). Thus, it is ‘the biological system that accounts for the different individual grammars that humans have’ (Ludlow 2017: 63). This capacity is species-specific since only humans possess it, and it is universal since there is no human ethnic group that has ever been encountered and described without this capacity (Hauser et al. 2002). After the reconceptualization of the FL with the advent of the minimalist programme (Chomsky 1995), the definition of UG has remained the same but its content has changed (see Mendívil-Giró 2018). From this point of view, UG contains a universal set of phonological, semantic and syntactic features and operations (Select, Merge, Transfer and Agree) that underlie the grammars of all natural languages (Collins & Stabler 2016, see chapter 2). This dissertation is concerned with syntactic and semantic features and the operations Merge and Agree. Merge is considered to be part of UG

since it is a conceptually necessary operation: The system must contain some combinatorial device; Merge is a device that combines elements into sets and this form of combination is deemed to be the simplest operation possible (see Roberts 2017). The Agree operation is necessary in order to establish syntactic relations between lexical items (LIs) (cf. Lorenzo 2013).

UG also comprises constraints on the kinds of acquirable languages (Lohndal & Uriagereka 2017), and parameters which allow for variation from language to language (White 2003). Factor 2 comprises Primary Linguistic Data (PLD) for language acquisition. PLD serve as linguistic input, i.e., as the linguistic data available to the learner from their linguistic environment. Factor 3 includes developmental constraints, principles of structural architecture and principles of efficient computation, all of them non-language-specific, according to Chomsky (2005). These principles and constraint are considered to be necessary for the explanation of the nature, the properties and the growth of language.

With these properties as part of the FL, and with the interaction of the third factor, UG is said to regulate the course of language acquisition and to restrict the range of possible grammars that can be built. Thus, it is a function that, during the acquisition process, takes linguistic data as input and yields a particular grammar (reflected by a specific language) (see White 2003) and only those attested or attestable languages as output. UG, with the third factor, regulates the language acquisition process through the delimitation of the form and functioning of grammar (Montrul 2004). It determines the inventory of possible phonological, morphological, syntactic and semantic features that are integrated in LIs and it limits the way LIs combine and establish dependencies in the computational system.

The view that the FL is innate is mainly based on the following facts about first language acquisition (White 2003, Prévost 2009):

2) Speed and easiness: Children succeed in developing their grammar in the span of about four years, without much effort and with no instruction.

Uniformity: The same level of competence is reached by all children learning a language, independently of the language being acquired and of the culture in which the child is immersed.

Underdetermination of the input: Complex knowledge of grammars can be amassed that is not explicitly present in the input, and creativity shown by children goes beyond the input to which they are exposed.

As a process, language acquisition is achieved via the guidance of the FL and exposure to linguistic input, i.e., PLD. Linguistic data play a vital role in this process in that it guarantees the learning of lexical items of the language to which children are exposed and guide them in the choice of the options that languages offer, that is, the different properties that vary from one language to another (Guasti 2016). Thus, PLD help learners to determine the precise form that their grammar will assume (White 2003), so that they acquire only languages to which they are exposed.

However, most of the linguistic knowledge developed by humans does not seem to be input-driven. That is, children display fairly abstract linguistic properties, but these properties cannot be deduced from the PLD (Guasti 2016). This is mainly shown in the following points. Children can produce and understand an unlimited number of sentences including many of them which are novel and unfamiliar, even though they are exposed to a limited number of sentences. Moreover, although they produce utterances that are not target-like, i.e., not possible in an adult grammar of the language being learned, they are rarely corrected (McNeill, 1966). Thus, they are not instructed in the (un)acceptability of sentences in their language. However, they end up knowing

the difference between possible sentences and impossible ones. Finally, children do not make certain errors that could be expected through analogical reasoning from generalizations from the input (Guasti 2016 and references therein). These points are an indication that linguistic input does not provide direct information about abstract linguistic properties such as structure dependency. Yet children manage to gain such knowledge of them very rapidly. Chomsky (1986 and references therein) called the question of rapid, uniform and input-impovertished attainment of linguistic knowledge the logical problem of language acquisition. UG (factor 1) and the third factor are the solution proposed by him in order to account for these properties.

1.2 Universal Grammar and Acquisitional Situations

As previously stated, this dissertation is concerned with the extent to which the underlying linguistic competence of children with DLD is determined by UG. One way to elucidate the question is to examine the similarities and differences between DLD acquisition and other acquisitional situations, namely first language acquisition and second language acquisition. This comparison will be done in chapter 4. In order to establish the basis of comparison, a brief and concise description and claims regarding these acquisitional situations is provided.

1.2.1 First Language Acquisition

It is self-evident that, when starting the process of language acquisition, children do not display a grammar that is similar to the grammar of adults speaking the language to which they are exposed. This implies that attaining a

target-like grammar takes some time. It is assumed that during their linguistic development children construct intermediate grammars (Prévost 2009) before attaining the final grammar, i.e., the steady state grammar for the mother tongue (White 2003):

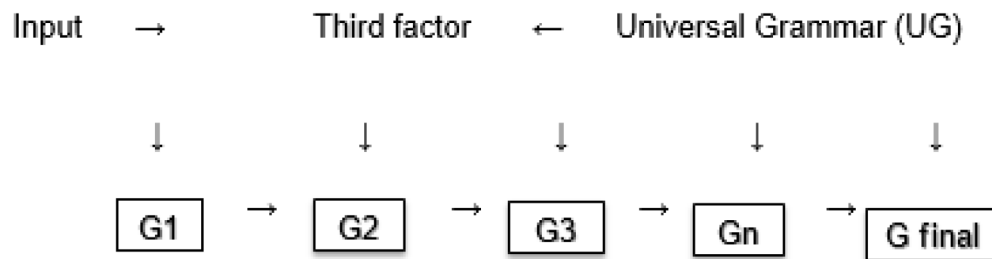


Figure 1-1 L1 Acquisition

The figure (adapted from White 2003 and Lorenzo & Longa 2009) illustrates the fact that (a) at the starting point of L1 acquisition, all linguistic elements and operations are available to the child (cf. Montrul 2004); (b) the developing grammar may be restructured over the acquisition period, as the child is responsive to the different properties of the input (White 2003); (c) all these intermediate grammars are assumed to be constrained by UG with the interaction of the third factor so that the developing grammar reflects the properties of the FL during all the acquisition period.

1.2.2 Second Language Acquisition

This is the name given to the situation of acquiring any number of languages after the acquisition of the first language, generally after childhood. While the view that UG guides monolingual child acquisition is consensual, two opposing views arose within the field of L2 acquisition. In one view, UG is not available for L2 acquisition, so grammatical development is not UG-constrained; in the

other, UG is available and so it regulates L2 grammars (see Prévost 2009 and references therein). The main justifications for the first view are that L2 development can be very slow and take quite a long time and that it is non-uniform: L2 learners of the same language show great differences in proficiency, even after the same number of years of exposure or instruction under similar learning conditions; moreover, L2 learners attain a final state that often falls short of being native-like. Grammars deemed not to be UG-constrained are said to be impaired. If UG is completely unavailable, impairment is said to be global (Meisel 1997), whereas if UG is partially available, impairment is deemed local (Beck 1998; Eubank, 1994; Eubank 1996). Local impairment affects only some aspects of linguistic knowledge. Such impairments, whether global or local, are assumed to be permanent (see Prévost 2009).

The second view states that all linguistic elements and operations are available to L2 learners. As in L1 acquisition, L2 learners are able to develop a grammar whose content goes beyond the input they receive or the grammar of their L1 (Prévost 2009) so that the input received does not entirely determine the content of the grammars developed by L2 speakers. Thus, L2 acquisition is also constrained by UG. The difference between L2 grammatical competence and native competence of the target language seems to be due to linguistic factors, such as amount of input and of language use, interference from the first language, psychological factors, such as cognitive maturity, motivation, and social factors, such as the degree of identity with the culture in which the target language is spoken.

Within the UG-availability view, positions differ with respect to the role of the first language in L2 acquisition. Mainly three proposals have been put forth: (i) there is no transfer from the L1 to the L2; (ii) there is full transfer; (iii) there is only partial transfer. The no-transfer position states that L2 acquisition is identical to L1 acquisition (Epstein, Flynn & Martohardjono 1996). Since UG

is completely available, they do not need to use their prior knowledge of language i.e., the grammar of their L1; parametric values in L2 are set solely based on the input. Thus, only UG and the input are operative in the development of the L2 grammar. For the full transfer position, the entire L1 grammar is transferred into the initial L2 grammar (Schwartz & Sprouse's Full Transfer/Full Access Hypothesis 1994, 1996). That is, L2 acquisition starts with all the linguistic properties of the L1; these properties are operative until counterevidence is found in the input. This L2 input can not be accommodated within the L1 grammar so it triggers a restructuring of the L2 grammar. Finally, the partial access proposal states that only part of the L1 grammar transfers; researchers differ as to what aspect the L1 grammar is operative in L2 acquisition. Importantly, according to the three views, all L2 grammar restructuring, whether from full or partial transfer, is constrained by UG (see Prévost 2009).

1.3 Developmental Language Disorder and Universal Grammar

The major task of an acquirer of their mother tongue or second language is to succeed in developing a linguistic system which can accommodate the input that they receive from the linguistic environment, so that they can construct linguistic representations and derivations, and produce and understand language. As mentioned above first language acquisition has been described as rapid, uniform and underdetermined by data, which means that it is constrained by UG. One view concerning L2 acquisition asserts that despite slowness in development and lack of uniformity in L2 grammatical final attainment, L2 grammars are UG-constrained. The other view maintains a contrary position, i.e., UG is unavailable.

Language acquisition in children with DLD bears similarities to L2 acquisition (see Paradis & Crago, 2004). Language development in children with DLD seems to be slower than in typical developing children's (TD) since the onset of language development in children with DLD occurs after the age at which most TD children start producing utterances and many linguistic traits emerge at an age later than that observed in TD children. Moreover, their linguistic attainment appears to be non-uniform since many DLD speakers produce more non-target forms than target forms while others present the reverse situation, and many, or most, do not resolve the deficit. (Nippold & Schwarz 2002). The question concerning the linguistic nature of DLD is whether UG also regulates language acquisition in these children, either completely or partially, or more generally whether the FL in children with DLD is similar to the one in TD children or different from it. In current syntactic theory, the FL comprises a lexicon, a syntactic engine, which is its central part, a morpho-phonological interface and a semantic interface (see chapter 2). Most linguistic accounts explicitly or implicitly sustain that DLD grammars are impaired due to a deficit in UG in terms of syntactic features, functional categories or operations (e.g., Tsimplici, 2001; Tsimplici & Stavrakaki, 1999; van der Lely 1988; van der Lely & Battel 2003; van der Leley et al 2011; Jakubowicz & Nash, 2001; Jakubowicz et al. 1998). They propose that core language abilities, determined by UG, are affected. A deficit in UG would cause a disorder in the syntactic component since lack of features or grammatical categories or inactivity of operations or constraints would prevent the syntactic engine from deriving proper linguistic expressions. This disorder would result in defective linguistic representations in terms of hierarchical structure, recursion, structure-dependence and constraints, i.e., the core properties of language.

In contrast to the previous view, the hypothesis advanced in this dissertation states that **UG also guides and constrains DLD grammars and their development**, and so the syntactic engine necessary for the derivation

of sentences is not affected. It will be shown that syntactic features and functional categories are present in linguistic expressions and that operations and constraints are active for their derivation. Thus, despite the fact that the linguistic behavior of children with DLD is atypical, the core properties of their FL are not disturbed. Moreover, it will be shown that DLD grammars resemble typical L1 grammars in some respects and to L2 grammars in others. All these traits can be taken as an indication that UG is available in DLD grammars.

Most studies of DLD have focused on one or two languages (e.g., Tsimpli & Stavrakaki, 1999; Tsimpli, 2001; Novogrodsky & Friedmann, 2006; Corver et al, 2012) and on one or two phrasal domains (e.g., Bottari et al, 1998; Roulet-Amiot & Jakubowicz, 2006; Thornton et al, 2016). This dissertation undertakes a broad cross-linguistic study and covers the nominal, the temporal and the propositional domains. Since it was not possible to collect data for all the languages reported here, the data have been drawn from the literature on DLD. Moreover, no experiment was run, thus this dissertation is a purely theoretical work.

1.4 Outline

Chapter 2 presents the assumptions of the linguistic model under which the topic will be dealt with. It provides a precise and concise description of the FL as conceived by the minimalist program for linguistic theory (Chomsky 1995, 2000, 2001) and so it will show how the content of UG is implemented for the derivation of sentences. Chapter 3 deals with general issues concerning DLD. The chapter provides the standard definition of this disorder and an overview of the grammatical errors observed in children with DLD speaking different languages. The chapter ends with a short summary of the approaches to DLD. The following chapters justify the hypothesis that UG is intact. Chapter 4

presents a comparison between typically developing children and DLD children. It will be seen that, despite the many differences observed, it is also the case the DLD children's linguistic performance can resemble typical children's performance. This resemblance indirectly supports the UG intactness hypothesis. Chapter 5 deals with syntactic features. Formal features have been argued to be absent in DLD grammars. In contrast to this view, it will be shown that UG provides the features that are necessary for the derivation of sentences. Chapter 6 and chapter 7 deal with the basic UG operations Merge and Agree. Proposals stating that these operations are deficient are evaluated and considered inadequate. These chapters show that in fact the basic syntactic operations are functional in DLD grammars and that they derive linguistic expressions as in typical children's grammars. Chapter 8 analyses DLD utterances that are not language-target. It shows that these non-target forms also reflect normal grammars. Some non-target forms are also produced by typical children and even typical adults, or they are convergent in other languages. Despite the non-convergence of many utterances in the language to which children with DLD are exposed, they are UG-compliant. Chapter 9 concludes.

2 THE FACULTY OF LANGUAGE

The general statements about DLD in the previous chapter leads one to wonder whether DLD children's language capacity is different in nature from typical children's, in which case UG in DLD grammars is defective, or whether despite divergences, the linguistic systems of both populations are similar, in which case UG in both learning situations is similar. Before trying to elucidate this question, it is necessary to describe the faculty of language (FL), which is the implementation of the content of UG. This chapter presents the general architecture of the FL: its components, its operations, the elements to which the operations apply and the relations into which the elements enter during the construction of sentences. It also shows the derivation of sentential structure at a general level.

The relevance of the chapter resides in (i) the fact that language is conceived by the minimalist program for linguistic theory as a mental capacity that allows humans to construct and interpret words and sentences; this capacity makes use of theoretical tools proposed by linguistic theory (features and operations) for the derivation of structure; DLD appears to be a deficit affecting this mental capacity, so the possibility exists for DLD to be described with the theoretical tools conceived within the minimalist program; (ii) the fact that the linguistic accounts of DLD that will be evaluated in the following chapters are based on theories based on the minimalist program and make use of these theoretical tools. Thus, the theoretical overview provided in this chapter forms the basis for the analysis of DLD grammars.

2.1 The Architecture of the Language Faculty

As stated in chapter 1, language is symbolic in that it makes use of symbols that have sound/visual signs and meaning. A linguistic expression, then, is the pairing of sound/visual sign and meaning. As Agüero-Bautista (2012) states, a model that admits this fact has to postulate a perceptual interface and a meaning interface (Chomsky 1995). Moreover, since linguistic expressions are constructed into unbounded hierarchical representations of structures, they must be generated through a computation. Therefore, there must be a structure building workspace where representations are built. Thus, the architecture of the language faculty is composed of three sub-systems: the workspace, the perceptual interface and the meaning interface. The workspace interacts with the interfaces in that the derivation of the structure of a linguistic expression is sent from the workspace to the interfaces in order to be phonetically and semantically interpreted. Chomsky (1995, 2001, 2004, 2005, 2008) respectively names these sub-systems the computational system of human language (C_{HL}), the sensori-motor interface (SM) and the conceptual-intentional interface (CI). Hauser, Chomsky and Fitch (2002) call the C_{HL} the faculty of language in the narrow sense (FLN) and the global architecture comprising FLN and the interfaces the faculty of language in the broad sense (FLB).

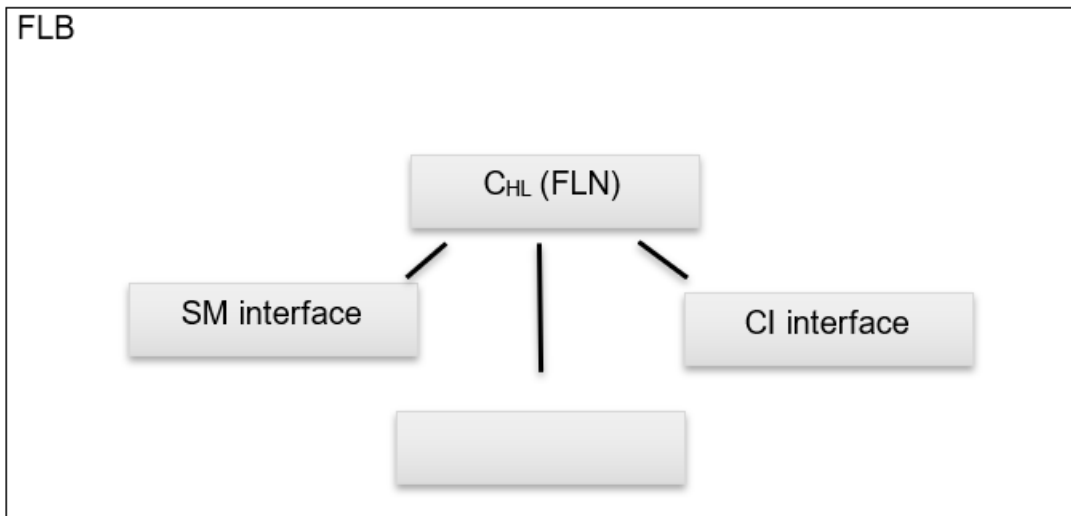


Figure 3-1 Components of the FLB 1

Hauser, Chomsky & Fitch (2002) states that FLN could interact with other cognitive components, hence the indeterminate interface in the schema.

2.1.1 The Lexicon

Linguistic expressions are formed from lexical items (LI), which are the atoms employed for the construction of hierarchical representations of structures. Lexical items are said to be stored in a mental lexicon. The lexicon is a finite set of LIs (Collins & Stabler 2016). The workspace interacts with the lexicon in that it takes lexical items from the lexicon and constructs the derivation of a structure (Chomsky 1995).

2.1.1.1 Features

LIs have properties that determine their behaviour in sentential derivations (Adger 2003) and that distinguish lexical items from each other (Adger & Svenonius 2011). Linguistic theory captures the behaviour and differentiations of LIs with a linguistic entity called feature. Features are made available by UG and form three different sets: a phonological (PHON-F), a semantic (SEM-F) and a syntactic set (SYN-F) (Collins & Stabler 2016 and references therein). The phonological set includes features concerning place and manner of articulation, voicing, sonority, vocalic height and tension, etc. So phonological features are the articulation/perception-related properties of a LI. The semantic set includes features pertaining to aktionsart, thematic roles, negation, focus, topic, tense, aspect, quantification, definiteness, plurality, causation, and so forth. So semantic features are the meaning-related properties of LI. The syntactic set includes features that play a role in syntactic derivations: Some are relevant for the construction of syntactic structures and others are involved in the relations that LIs establish with each other in the derivation. Typical syntactic features are grouped in natural classes such as category (e.g., V, N, A, Adv, P, T, etc.), case (nominative, accusative, dative, etc.)¹, tense (past, future, etc.), number (sing, plural), person (1st, 2nd, etc.), gender (masculine, feminine, etc.) and operator (ClauseType, wh, etc.). Number, person and gender are called ϕ features (Chomsky 1995).

As properties of LIs, phonological, semantic and syntactic features are organized in bundles (Chomsky 1995). Thus, a lexical item is a triplet: LI = <SEM, SYN, PHON> (Collins & Stabler, 2016). Languages vary with respect to their specific set of features and the way they combine their features into LIs. So LIs have different bundles of features cross-linguistically. Some languages

¹ Case features will be included within the class of tense features (see below).

use aspiration as a phonological feature (e.g., Thai, English, etc.), while in others this feature is absent. In turn, aspiration is used as a distinctive feature in Thai, whereas it is used as the output of a phonological rule in English. Scottish Gaelic uses semantic features such as shininess, naturalness or light in the composition of words referring to colours, whereas in other languages these features are irrelevant. Likewise, some languages use gender as a syntactic feature in nouns (French, Spanish, etc.), and in turn these features are organized differently in these languages, as the same nouns can be masculine in one of them but feminine in another. Thus, each language specifies its own lexicon by building its lexical items from feature domains. (Chomsky 1995). From a language acquisition point of view, the child's task is to select the specific features relevant for her language (Adger 2003). The set of purely linguistic features may be universally available (Harley & Noyer 1999). Other feature sets that can be linguistically relevant, for instance those related to cultural and social factors, may appear during the acquisition process.

2.1.1.2 Feature (Un)interpretability

A crucial assumption pertaining the computational system is the difference between features that are uninterpretable and those that are interpretable (Chomsky 1995). Uninterpretable features are pertinent only to syntax and have no effect on the semantic interpretation of sentences. Interpretable features are relevant both for syntax and semantics. The effects of features on syntax are revealed by the relations that LI establish in the syntactic tree and by the restrictions imposed by features on the positions that LI can occupy in the tree (Adger 2003). The effect of features on semantics is revealed by the fact that the construal of sentences depends on the features lodged on the LI contained in sentences. Semantic interpretability of features depends on the

category of the LI that includes the feature. A feature can appear in more than one category, for instance number and person on a subject DP and on T:

- 1) Ellos tocan la sonata.
pron-**3p-pl** play-**3p-pl** the-sing sonata-sing
'They are playing the sonata.'

The ϕ features on DPs may make a crucial contribution to semantic interpretation (Pesetsky & Torrego 2007): Number and person features included on a DP give information about the quantity of participants and information about the identification of participants involved in an event. The corresponding ϕ features on T appear to make no contribution to meaning, i.e., information about quantity and identification of participants is not conveyed by T, thus these features are uninterpretable on T. Tense is an interpretable feature in a T head, since tense in T provides information about the moment at which an event takes place. Pesetsky & Torrego (2001) propose that the tense feature is also present on DPs, but it is uninterpretable. According to them structural case is the manifestation of a tense feature on DPs.² So nominative case is the uninterpretable counterpart of the interpretable tense feature on T. Pesetsky & Torrego (2004) extend their proposal to accusative case. According to them, the sentence structure contains a second interpretable tense feature which is expressed in a second T projection and whose uninterpretable version, realised as accusative case, is placed on DPs in object position.³ So according to them, the semantic content of tense is realised in T but not in DPs (though see some qualifications in Pesetsky & Torrego, 2001 note 17). Likewise, gender is an interpretable feature on N (Carsten 2000, Svenonius 2006) and uninterpretable on A (Hornstein et al. 2005). Svenonius (2006) suggests that

² Contrary to the standard position, Pesetsky & Torrego (2001) claim that case is not a feature different from the others in that it is uninterpretable in all heads in which it is present.

³ Alternatively, this second tense projection is headed by an aspectual category reflecting aktionsart (Kratzer 2004) (see footnote 11).

one possible semantic function of gender is the distinction between nouns and other categories, and for Jakubowicz & Roulet (2010) gender indicates the class to which a noun belong.⁴

According to Hornstein et al. (2005), the classification of features as interpretable or uninterpretable is made in the lexicon: Person and number are lexically specified as uninterpretable on verbs and T and lexically specified as interpretable in pronouns and nouns; gender is lexically specified as interpretable on nouns but lexically specified as uninterpretable on adjectives. Finally, the interpretability of features derives from the fact that there are systematic correspondences between the appearance of these features in the syntax and some aspects of the semantic representation (Svenonius 2006).

2.1.1.3 Feature Values

Another important assumption pertaining to the computational system is the division between valued and unvalued features (Chomsky 2000, 2001, 2004). A valued feature is a feature that is fully specified in the lexicon. For instance, the pronoun *she* is stored in the lexicon as [D, person: 3rd, number: sing, gender: fem]. An unvalued feature is a feature that is not specified in the lexicon, that is, it enters the derivation with no particular specification. The tense feature *-ed* is stored in the lexicon as [T, tense: past, person: __, number: __]. Features can have distinct values, depending on the LI where they are lodged. As the examples just shown, ϕ features are unvalued on T but valued on D, since D carries the specific values for the identification and number of participants. Likewise for the tense feature: This feature is unvalued in D (case) but valued on T since T carries the specific value for the temporal

⁴ This view of features reflects Pesetsky & Torrego's (2004) idea that all grammatical features have semantic content, although some of them might not have the opportunity to express their semantics in all contexts in which they occur.

location of the event. Unvalued features are valued in the derivation: When unvalued features enter the derivation, they receive their value from a valued instance of the same feature, present on another LI (Pesetsky & Torrego 2007). Valuation is closely related to interpretability: Only interpretable features are fully specified in the lexicon, i.e., valued; uninterpretable features come unvalued from the lexicon and, as just mentioned, they acquire their value in the course of the derivation (Chomsky 2000, 2001, 2004).⁵

In sum, lexical items (LIs) have phonological, syntactic and semantic properties called features. LIs are defined as bundles of phonological, syntactic and semantic features (Chomsky 1995). Retrieving a lexical item from the lexicon for it to be part of a syntactic structure implies retrieving a set of interpretable/uninterpretable and valued/unvalued features. Formal features (categorical interpretable features and uninterpretable features) have been claimed to be absent in DLD grammars. According to some accounts, lack of affixes and words in DLD sentences is the reflex of absence of formal features in LIs. However, it will be shown that, despite their intermittent morphological realization, they in fact are present in LIs (see chapter 5).

2.1.2 The computational system of human language (C_{HL})

2.1.2.1 Numeration and Select

Chomsky (1995) proposes that the computational system does not have direct access to the lexicon, but only to a collection of LIs that should function as a starting point for a derivation. One of the main reasons for this proposal is that the computational system has to know when a given derivation has finished. Direct access to the lexicon does not allow to determine this. But a collection

⁵ But see Pesetsky & Torrego (2001, 2007) for a different view.

of LIs acting as a starting point enables the computational system to set the end of a derivation. Chomsky (1995) names this collection of LI numeration: a set of pairs (LI, i) where LI is a lexical item and i expresses the number of occurrences of that lexical item available for the derivation:

2) That musician might play that sonata.

The numeration showing only formal features has the form in (7):

3) Numeration (N) = {D₂, N₁, T₁, v₁, V₁, N₁}

The item D has an index of 2 because it occurs twice in the numeration, while the other items have an index of 1 since they occur only once. Access to the lexicon from the numeration by the computational system is possible through the operation Select (Hornstein et al. 2005). This operation extracts an LI from the numeration and reduces its index by one. The examples in (4) and (5) show how the operation applies (based on Hornstein et al. 2005):

- 4) a. N' = {D₁, N₁, T₁, v₁, V₁, N₀}
b. Application of Select = D
c. Application of Select = N
d. [DP D N]

The item D has its index reduced to 1 since one of its occurrences was selected to form a DP with N, which in turn has its index reduced to 0 since there is no more occurrences of this item in the numeration. The other items have not been selected yet and therefore they keep their indexes.

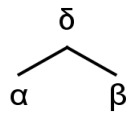
- 5) a. $N'' = \{D_0, N_0, T_0, v_0, V_0, N_0\}$
 b. $[TP [DP D N] [T [vP v [VP V [DP D N]]]]]$

In (5) all the items have their indexes reduced to 0 since all of them were selected to form the whole sentence. The whole numeration is exhausted, and the computational system has no more access to the lexicon for derivation.

2.1.2.2 Merge

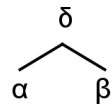
Merge is the basic operation involved in the construction of linguistic objects (Chomsky 1995). The operation consists of the combination of two syntactic objects to form another syntactic unit, a set $\{\alpha, \beta\}$. Merge derives complex objects from elementary ones. The way Merge applies reflects two properties, constituency and binarity: The product of the operation is a constituent, and the fact that it takes only two elements at a time results in structures in which all branching is binary:

6)

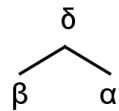


The new syntactic object is the entire structure labelled δ . Merge makes no difference in terms of the position of the elements merged. (7a) and (7b) are both valid syntactic objects:

7) a.



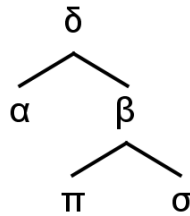
b.



The operation Merge itself does not determine the order of the joint elements, therefore for Merge (7a) and (7b) are the same syntactic objects. The order of constituents is regulated at the PF component of the language faculty.

Recursion, i.e., the repeated application of a procedure to successive results, is also a property of this operation. That is, Merge can combine lexical items, i.e., syntactic elementary objects, and form sets, or it can combine sets, i.e., complex syntactic objects, and derive other sets.

8)



The operation takes two elements π and σ , and forms a complex object labelled β . Then it re-applies by taking this already formed object β and a simple one, α , and forming a new syntactic object, δ . Hauser Chomsky & Fitch (2002) and Roeper (2011) state that Merge is characterised by a universal form of recursion, a binary recursive operation that is invoked as soon as more than two LIs are combined. Therefore, all combinations of three LIs are examples of recursion over two applications of Merge.

There are two types of Merge: external and internal (Chomsky 2001, 2004). External Merge takes two separate objects from the numeration and combines them:

- 9) a. $N = \{\alpha_0, \beta_0\}$
b. Application of Select = α
c. Application of Select = β
d. Application of External Merge = $\{\alpha, \beta\}$

Internal Merge replaces the operation Move in the GB model: It takes one object that has already been merged and merges it again higher up in the

structure. The re-merged item is seen as a copy of the item originally merged (shown in strikethrough):

- 10) a. $N = \{\alpha_0, \beta_0, \gamma_1\}$
b. Application of Select = α
c. Application of Select = β
d. Application of External Merge = $\{\alpha, \beta\}$
e. $N' = \{\alpha_0, \beta_0, \gamma_0\}$
f. Application of Select = γ
g. Application of External Merge = $\{\gamma \{\alpha, \beta\}\}$
h. Application of Internal Merge = $\{\beta \{\gamma \{\alpha, \beta\}\}\}$

In order for Internal Merge to operate, the item to be targeted must already be in the derivation and must be part of the element with which it is to be merged. In (10), β complies with both conditions: Before being copied and internally merged it was externally merged from the numeration and it merged with γ , an element which already comprises β . Some researchers claim that DLD is the result of the faulty application of Merge. That is, External Merge does not easily apply to some functional categories and Internal Merge does not apply in all derivations that require it. However, it will be shown that Merge is not deficient in DLD grammars and that in fact it is active (see chapter 6).

2.1.2.3 Hierarchical Structure

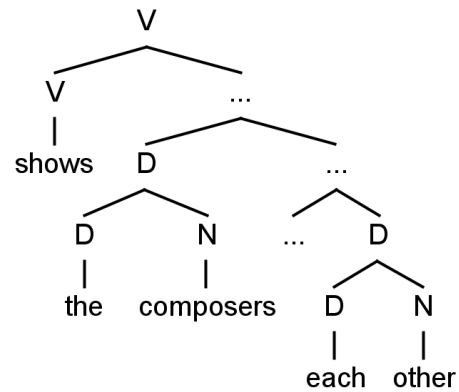
LIs in sentences are not just grouped in a sequence. They are assembled in constituents. One crucial property of constituents is the internal organisation of syntactic elements in a hierarchical structure, that is to say, linguistic elements are placed at different levels in the structure. Binding and licensing of negative polarity items provides motivation of this property of syntactic objects.

Binding and licensing of negative polarity items (NPI) both require c-command (see Adger (2003) and references therein).⁶ This relation can be established in terms of hierarchical structure. This means that for a DP to bind an anaphor and for a negative word to licence a negative polarity item, the binder and the licenser must be positioned in the structure at a different level than the bindee and the negative polarity item, so that binder and licenser can respectively c-command the anaphor and the NPI (see Barss & Lasnik, 1986). The placement of linguistic elements in a hierarchical structure results in an asymmetric c-command relation since the binder and the licenser c-command the bindee and the NPI but it is not the case that the inverse relation applies. Merge creates structures where the asymmetric c-command relation for these elements can be established:

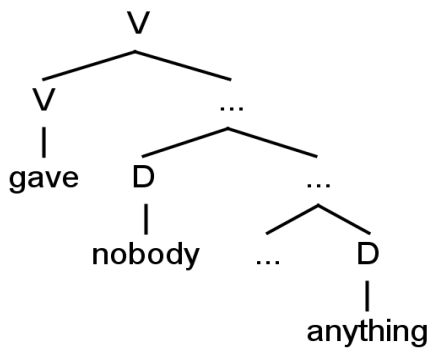
- 11) a. Guillaume shows [the composers]_i [each other]_i
b.

⁶ This relation is defined as follows (Chomsky 1981)

- α c-commands β iff
- (i) α does not dominate β
 - (ii) β does not dominate α
 - (iii) the first branching node dominating α also dominates β ; and
 - (iv) α does not equal β .



- 12) a. Guillaume gave nobody anything
 b.



In (11) the DP *the composers* is placed at a higher level than the anaphor *each other*. The DP can c-command the anaphor. Since both constituents are related this way, the DP *the composers* binds the anaphor, establishing the reference of the latter. Similarly, in (12), the DP *nobody* is placed at a higher position than the negative polarity item *anything* and the DP c-commands the negative

polarity item. Again, because of this relation between both constituents, *nobody* can license *anything*. If the binder, bindee, licensor and licensee were at the same level, then binding and negative polarity licensing would not be accounted for. Thus, the possibility of binding and negative polarity licensing constitute evidence for hierarchical structure (see Kayne 1984).

2.1.2.4 Agree, Feature Valuation and Feature Deletion

It has been mentioned that some features are interpretable in some LIs and uninterpretable in other LIs, and that some features are inherently valued in some LIs and unvalued in others. The relationship between value and interpretability is that interpretable features are inherently valued and uninterpretable features acquire their value in the course of the derivation (Hornstein et al. 2005). An LI having a negative feature in both dimensions holds an agreement relation with an LI having the positive feature of the relevant type. According to Chomsky (2000, 2001) and Pesetsky & Torrego (2007) among others, this relation is established through the Agree operation.⁷ The result of this operation is valuation and deletion. Agree, according to Pesetsky & Torrego (2007), consists of the scanning by a probe, which is an unvalued feature on a head at a certain syntactic location, and in its c-command domain for a goal, i.e., a head having the relevant feature with a value at another syntactic location. The unvalued version of the feature is valued by virtue of Agree. Then, once uninterpretable features are valued, the uninterpretable versions of features are deleted, since they are not useful for the semantics. Deletion is a requirement for the compliance of the Full Interpretation principle (FIP), which states that the input for semantic interface

⁷ The formal implementation of this relation in Pesetsky & Torrego (2007) slightly differs from Chomsky's.

rules must contain only interpretable features (Chomsky 1995). Hornstein et al. (2005) state that deletion is not to be construed as removal of valued uninterpretable features from the structure. In fact, deleted uninterpretable features are said to stay in the derivation, since their presence has syntactic effects. Instead of removal, the result of deletion, according to Hornstein et al. (2005), is the invisibility of valued uninterpretable features for the CI interface. Once an uninterpretable feature was active for agreement, it remains in the structure but is rendered inactive in the syntax and it becomes unviewable for the semantics. This invisibility enables the compliance of the FIP. Lack of the realization of some formal features and its consequent absence of agreement in DLD grammars have been taken to be caused by the inactivity of Agree. Nevertheless, it will be seen that, despite inconsistent agreement, Agree is operative in DLD grammars (see chapter 7).

2.1.2.5 Phases

The operation Agree establishes a relation between a probe and a goal that must be local (Chomsky, 2001). This relation must be local for minimization of search, that is, a minimal amount of searching must be assured that will enable a probe to find an appropriate goal (Uriagereka 1998, Chomsky 2000, 2001, 2008). The standard view about locality forced by minimal search adopts a processing explanation, (although the overall goal of linguistic theory has always been to explain competence rather than performance). According to Chomsky (2001) the faculty of language can only process a limited amount of structure at one time and can only keep a reduced amount of structure in its active memory. Chomsky (2001) proposes that since a reduction of computational burden is necessary, the derivation of linguistic expressions proceeds by phase, so that syntactic structures are constructed one phase at a time. Moreover, Chomsky (2001) states that phases should be as small as

possible in order to minimize burden of memory. He suggests that phases are units of derivation and interpretation: The nature of phases is propositional, and CP and transitive vP (a vP with an external argument labelled v*P) are the syntactic constituents that form phases.^{8,9} This nature of phases originates by the fact that CP constitutes a complete clausal complex (including a specification of force) and v*P represents a complete argument structure (including an external argument). When a structure forming a phase has been completed, i.e., the operations applying in a given phase, Merge and Agree, have finished their activity, the complement of the phase head, named the domain of the phase head, becomes impenetrable in the sense that no more operations can apply within the domain. This situation of inaccessibility of the domain is called the Phase Impenetrability Condition (PIC), which states that the c-command domain of a phase head is impenetrable to an external probe (Chomsky 2001). The domain of a phase head is inaccessible to an external probe because after formation of a phase, the domain of the phase is subjected to the operation Transfer. That is, the structure constituting the domain is sent to the SM system and the CI system respectively for morpho-phonological interpretation and semantic interpretation. From that point on, the domain is no longer accessible to the syntax.

Now, in interrogative sentences (e.g., direct or indirect object questions), formed via *wh*-movement, a *wh*-phrase merged within the phase domain must be accessible after transfer, for it to be able to be fronted. This means that the *wh*-phrase must move before the phase domain is transferred. Since this transfer is made before the merging of the root node, i.e., CP, the *wh*-phrased cannot

⁸ Transitive phases include typical transitive and unergative verbs: Both involve an external argument and in some accounts unergatives have a phonetically empty complement position. Unaccusative vP phrases and clauses lacking the CP projection are considered defective and so do not form phases, according to Chomsky (2001). However, Legate (2003) argues in favor of a phasal status for unaccusative and passive clauses.

⁹ Some linguists also take DP and PP to be phases (see Citko, 2014 and references therein).

move directly to Spec-CP. It is proposed (e.g., Hornstein et al., 2005; Radford, 2009 and references therein) that the wh-phrase first moves to the edge of vP-phase and then it moves to Spec-CP. The phase edge is the highest head or specifier position of a phase from where syntactic dependencies can be established with heads or phrases outside the phase (Koenenman & Zeijlstra, 2017) and the part of the structure that excludes the phase complement (Radford, 2009). The edge phase functions as an escape hatch from which the wh-phrase can continue to move (Hornstein et al., 2005). For the wh-phrase to be placed at the phase edge, it is attracted by an edge feature contained in vP-phase head (Chomsky, 2001). When a wh-phrase is placed in the phase edge, it is no longer within the phase domain and therefore it is available for further computations. As mentioned above, CP is also a phase, and C also has an edge feature that attracts a wh-phrase to its specifier. The result of this attraction is a fronted wh-phrase (Radford 2009 and reference therein).

2.2 Derivations

This section introduces the general mechanism for the derivation of sentences. The list of LIs and their feature specification that is the most common to enter a derivation is presented first (based on Di Sciullo & Isac 2008).¹⁰

13)	noun:	[N]
	n:	[n] [uN]
	determiner:	[D] [φ] [un] [uT]

¹⁰ Standard notation: [X] = interpretable/(inherently) valued feature; [uX] = uninterpretable/unvalued feature; [~~uX~~] = uninterpretable valued and deleted feature.

wh-D:	[D] [wh]
transitive V:	[V] [uD]
v:	[v] [uT] [uD]
lower T:	[T] [uV] [uD] [uφ]
upper T:	[T] [uv] [uD [EPP]] [uφ]
declarative C:	[C] [ClauseType] [uT]
interrogative C:	[C] [ClauseType] [uT] [uwh]

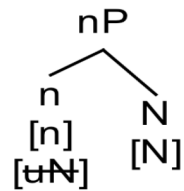
The derivation starts with a numeration. The numeration contains a subarray, that is, a subnumeration that defines phases (Chomsky 2000, 2001, 2004). This subarray can be selected directly from the initial numeration:

14) Numeration (N) = {C, T, {D₂, N₂, n₂, v, T, V}}

The structure to be derived represents a transitive sentence. The derivation proceeds bottom up. First, an item with interpretable/valued features is

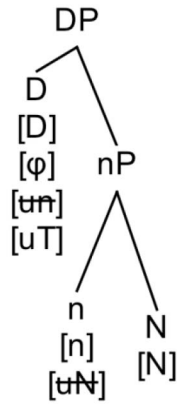
selected, in this case N, which is merged with a n. Marantz (1997) proposed that this functional category is necessary in order for root N to become a noun.

15)



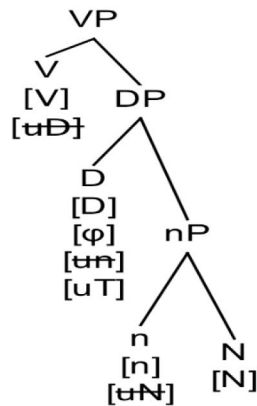
Valuation and deletion take place as soon as n projects and forms its phrase (Pesetsky & Torrego, 2001; Di Sciullo & Isac, 2008). n has a c-selectional uninterpretable/unvalued N feature, so it merges with a matching category and the uninterpretable/unvalued feature instance of N on n is valued. Once valuation has occurred, the unvalued instances of features share the value of the valued instances and the uninterpretable instances delete. nP then merges with D, since the latter includes an uninterpretable n feature. It also comprises ϕ features and an uninterpretable/unvalued tense feature to be valued later in the derivation.

16)



Then D merges with V:

17)

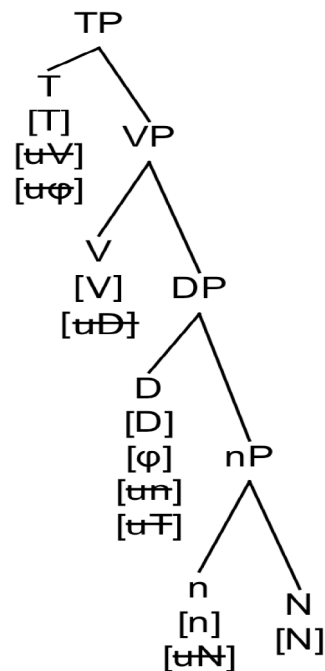


The c-selectable uninterpretable/unvalued D feature on V agrees with D. The following step is the merge of VP with lower T.¹¹ This head contains a c-

¹¹ Pesetsky & Torrego (2004) describe the nature and the location of this head in the following terms. According to Klein (1994), Zagana (1990) and others, temporal heads have the property of ordering pairs of times. Upper T orders the event time with utterance time and is located below C and above v. Events, e.g., telic verbs such as *eat*, can involve two different sub-events:

selectional uninterpretable/unvalued V feature and an interpretable T feature. Lower T also has [$u\phi$] that can be valued by the direct object DP (Pesetsky & Torrego 2004). :

18)

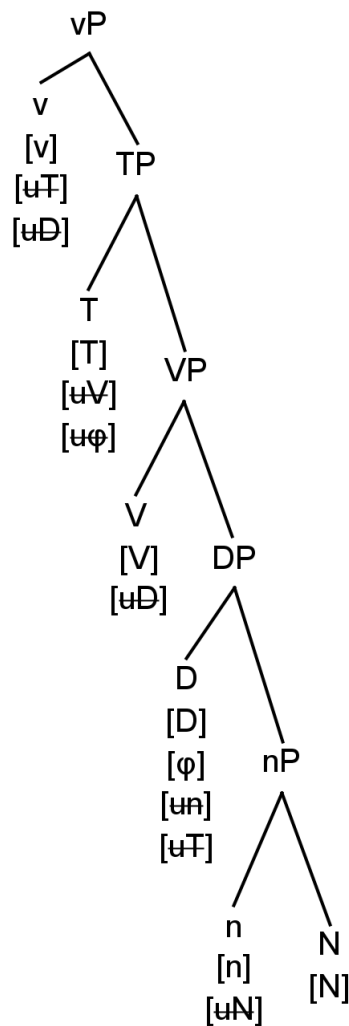


[uV] on T acts as a probe and is valued by its goal, V. [$u\phi$] on T also acts as a probe in search of an adequate goal. This goal happens to be D. The interpretable ϕ features on D agree with [$u\phi$] on T, they value them, and the features delete. Concurrently, the [uT] on D is valued and as consequence of agreement, this DP surfaces with accusative case.

a process (a predicate with agent argument) and the result of the event (a predicate with a theme argument). Adopting Chomsky (1995) and Hale & Keyser (1993) proposal, Pesetsky & Torrego (2004) suggest that each sub-event is a distinct LI and place the process predicate under v and the result predicate under V. Lower T orders these subvents and so they locate it below v and above V.

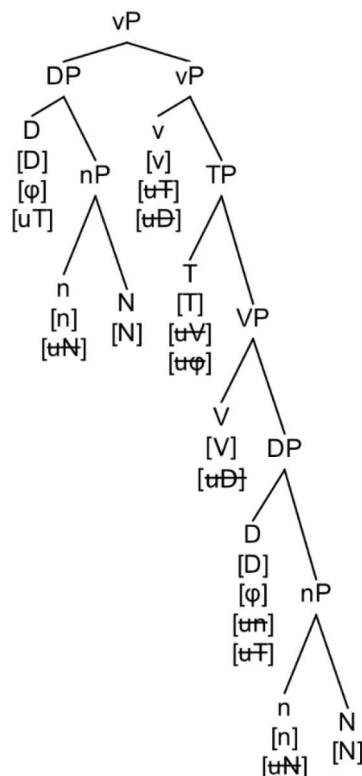
Little *v* enters the derivation. It has an uninterpretable/unvalued [T] feature, so it selects a T. This instance of [uT] on *v* is valued through agreement with lower T and deletes. Little *v* also has an uninterpretable/unvalued D feature:

19)



This instance of D on v is valued and deleted when it merges with a DP, which happens to be the external argument, in Spec-vP.¹² This argument also has an interpretable/valued [φ] features and an uninterpretable/unvalued [T] feature to be valued and deleted later on. Once in the specifier position of little v, agreement between the interpretable/valued instance on D and uninterpretable/unvalued instance on v of the [D] feature occurs:

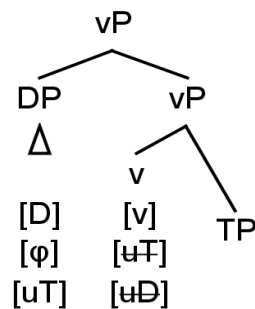
20)



¹² Before this DP merges with little v, it has to be derived in a tree separate from the main one. This is in compliance with the Extension Condition, which determines that applications of Merge can only target root syntactic objects. In (19), little v is a root syntactic object; if N merges directly with it, then D would not be able to merge with N in order to form a constituent, because N would not be a root syntactic object (Chomsky 2001, 2005). Therefore, since little v selects for a D, the external argument DP has to be formed in parallel in another workspace and then incorporates into the main tree.

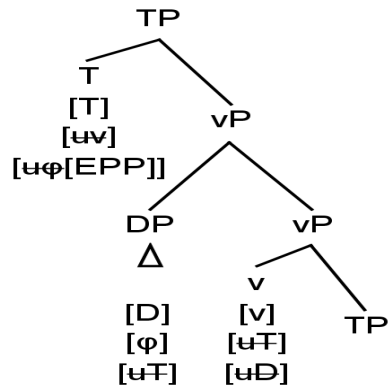
The vP represented in (20) is a phase. Its complement lower TP and all the lower projections have all their features valued and all their uninterpretable features deleted. Lower T is in domain of the vP phrase and so it will undergo transfer to the phonological component and the semantic component and become inaccessible to further syntactic operations:

21)



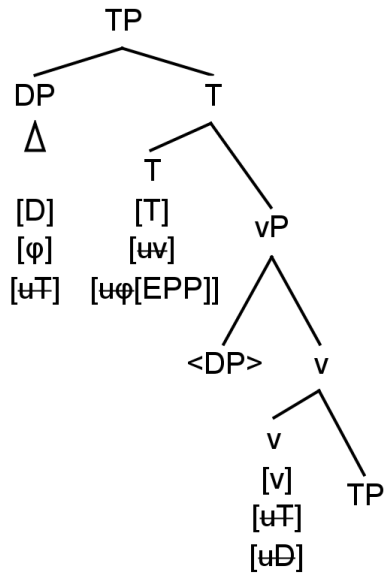
The next merge is between little v and upper T. The latter head is specified as follows: [T], [uv], [uφ/EPP]. T has an uninterpretable/unvalued little [v] feature and so it selects for an appropriate head having the instance of this feature. The [v] feature on T and its instance on v agree, so the uninterpretable/unvalued [v] feature on T obtains its value and then deletes:

22)



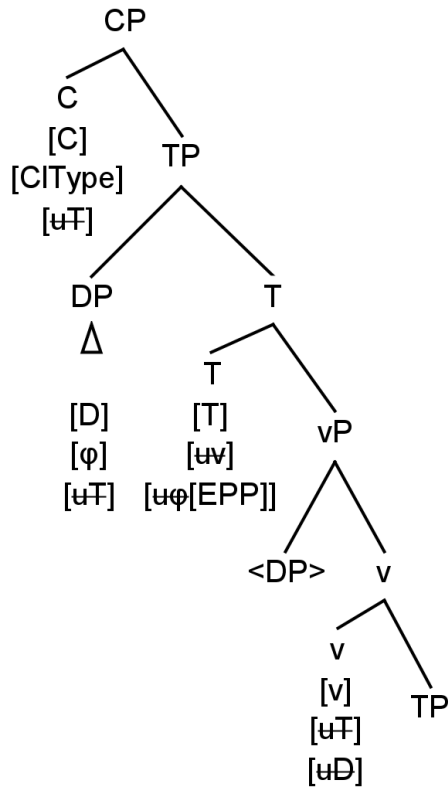
T also hosts uninterpretable/unvalued $[\phi]$ features. These features are valued through agreement: When T merges, Agree applies again; T probes its complement for a suitable goal. It finds the external DP in Spec-vP. T gets its uninterpretable/unvalued features valued while the external DP has its $[T]$ feature valued so that at PF it surfaces with nominative case. The instance of the $[\phi]$ features on T includes an EPP sub-feature, probably present in most languages (Chomsky 1995). This EPP sub-feature has originally been proposed in order to account for the requirement that a tense constituent T must be extended into a TP projection containing a specifier. In order for this requirement to be satisfied the external DP argument internally merges into the specifier of T. A more recent conception of this features states that it simply indicates movement of the relevant element into a checking configuration (Travis 2010). The subject DP is internally merged in order to satisfy the EPP feature in T, leaving a copy ($< >$) in its base position.

23)



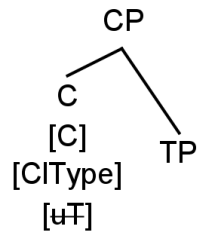
Finally, C, the category encoding the force of the sentence (declarative, interrogative, imperative) enters the derivation. This category has a selectional uninterpretable/unvalued [T] feature and an interpretable/valued [Clause type] feature that encodes the sentence force. The [uT] feature on C is valued and then deleted:

24)



As with the case of lower T, the representation in (24) shows that all features are valued and uninterpretable features are deleted. CP is also a phase. The domain of the C head, i.e., TP, is spelled out at the end of the phase, that is, it will be transferred to the semantic and phonological components:

25)



By assumption, at the end of the overall derivation, all remaining constituents undergo transfer (Chomsky 2000), thus CP will be spelled out.

2.3 Summary

This chapter has outlined the main traits of the architecture of the language faculty. The main components of this faculty are the lexicon and the computational system (C_{LH}). The lexicon is the set of lexical items (LI). A LI is a linguistic element characterised as a set of properties called features. The main rationale for the use of features is that they enable LIs to be distinguished among each other, they have an effect on the morpho-phonological, semantic and syntactic behavior of LIs, and they denote natural classes. Features come in two types: interpretable features, relevant for syntax and semantics, and uninterpretable features, pertinent only to syntax. Furthermore, features are also classified as valued and unvalued. A valued feature is a feature that is fully specified in the lexicon and an unvalued feature is a feature that is not specified in the lexicon. Feature interpretability and feature valuation are related in that interpretable features enter the derivation with a value and uninterpretable

features come unvalued from the lexicon and receive their value in the course of the derivation.

C_{HL} is a formal system where the derivation of sentence structure is produced. Since it needs to know when a derivation has finished, it makes use of a collection of LIs, called a numeration. When the numeration is exhausted, the derivation terminates. The LIs comprising the numeration enter the computational space and are manipulated by Merge, the basic operation involved in the construction of linguistic objects. The main properties of this operation are constituency, i.e., the construction of structure, binarity, i.e., the combination of only two elements at each step of the derivation, recursion, i.e., the repeated application of the operation, and subjection to the Extension condition whose results is the upward expansion of the tree. Moreover, the operation has two types: external, i.e., the combination of two elements taken from the numeration and internal, i.e., the copy of one object that has already been merged and the remerging of it in a higher position. The output of Merge is a constituent whose format is a structural hierarchy.

In a derivation, unvalued/uninterpretable features are valued and deleted. This is a requirement of the Full Interpretation principle (FIP). Valuation and deletion are the result of the Agree operation: A probe, i.e., an unvalued feature on a head at a certain syntactic location, scans its c-command domain for a goal, i.e., a head having the relevant feature with a value at another syntactic location. Finally, the derivation of linguistic expressions proceeds by phase, that is to say, syntactic structures are constructed in stages. The constituents that are considered phases are CP, a complete clausal complex, and v^*P , a complete argument structure. Once a phase has been created, the complement of the head phase is transferred to the SM interface and the CI interface and thereby becomes inaccessible to further operations in the syntax.

As mentioned throughout this dissertation, DLD is a linguistic deficit, that is to say, a highly complex and intricate impairment that affects FL. A satisfactory account and analysis of this deficit necessarily involves the description of the components and workings of FL in a clear and precise manner. This task requires the use of the technical means and methods of modern linguistic theory. The characterization of the FL using the theoretical tools provided by minimalism satisfies this requirement. Most linguistic accounts of DLD have been stated in terms of this and other linguistic frameworks. DLD precisely has been claimed to be a deficiency involving features (see chapter 5) and/or a problem concerning the operation Merge (see chapter 6) and Agree (see chapter 7). The presentation of the architecture of FL allows us to understand and assess the proposals that features are absent or defective, or that Merge and Agree work erratically in DLD grammars. Moreover, the depiction of FL, as made in this chapter, enables us to locate the loci within FL that are affected or unaffected by DLD. Thus, this chapter appears to be useful for an adequate description and explanation of the language characteristics of children with DLD.

3 GENERAL ISSUES CONCERNING DLD

This chapter contextualises the topic of this dissertation and presents some background for the next chapters by providing an overview of the main issues related to DLD. It starts with the definition standardly adopted by most researchers and with a comment on a debate on different labels that this condition received before the adoption of the current term 'Developmental Language Disorder' (section 3.1). The atypical linguistic behaviour of children with DLD has led researchers to engage in a discussion on the difference in nature between DLD grammars and typical grammars: Is DLD qualitatively different so that it can be described as deviant, or it is a question of different timing of acquisition and degree of use of grammatical traits such that it can be described as a delay? (section 3.2).¹³ The purpose of this section is to situate the topic of this dissertation within the debate. However, it does not explicitly adopt the deviance-delay dichotomy; in fact, the position taken in this dissertation is that DLD grammars are **not qualitatively different** from typical developing grammars. In order to adequately describe the grammatical behavior in children with DLD, it is necessary to compare language development in children with this impairment with typical language development. This comparison allows us to determine the extent to which the grammar of children with DLD is impaired. Section 3.3 describes the groups and the criteria employed for such a comparison and their usefulness. Then follows the grammatical description of this condition. It will be seen that the manifestation of DLD can vary from one language to the other and seems to

¹³ As mentioned in section (3.1), the term 'delay' was ruled out as a descriptor of this linguistic problem. It is included in this dissertation because it is the label used by Leonard (1998/2014) to describe the debate about the nature of DLD which contributed to its rejection.

disrupt the verbal, the nominal and the peripheral domains (section 3.4). Section 3.5 concludes this chapter with an overview of the most prominent theoretical accounts regarding the underlying causes of DLD. Section 3.6 summarizes the whole chapter.

3.1 Definition of Developmental Language Disorder (DLD)

DLD is defined as atypical language acquisition by children having normal intelligence and audition, and an appropriate learning environment (Leonard 1998). The atypicality of this condition is reflected in the slowness and great effort in the acquisition of language (Leonard 1998), and variability in the accurate production and comprehension of sentences by this population. It seems to be the most common childhood learning disability, affecting approximately 7 to 8 per cent of 5-year-old children (Tomblin et al., 1997). The effects of DLD can persist into adolescence. Some children tested at age 5 and diagnosed with DLD continue to have low language performance at age 15 to 16 (Nippold & Schwarz, 2002, and references therein). It appears to be more common in boys than in girls (Tomblin et al., 1997; Roulet-Amiot, 2008). The exact etiology of DLD seems to be unknown, but it is considered not to be caused by known neurological, sensory, intellectual, or emotional disturbance (Leonard 1998). Children with DLD do not present apparent brain abnormality, that is, they do not have clear brain lesions or marked anatomical differences from typical-language children in either brain hemisphere (Trauner et al. 2000).¹⁴ Moreover, language difficulties cannot be accounted for by hearing loss, physical deformity or malfunction of the speech apparatus, or environmental deprivation (Bishop 2006). Socially adverse conditions which

¹⁴ Bishop (2014) states that abnormalities such as developmental cortical malformations are sometimes observed in children with DLD. Nevertheless, correlates of DLD on structural or functional imaging tend to be subtle and often inconsistent from study to study. She concludes that it is not possible to diagnose DLD from brain scans.

could prevent or hinder language development, as well as emotional conditions which could affect linguistic expression and interaction, cannot also be identified as the source of the atypical language development which characterizes DLD (Corrêa 2006). Recent discoveries suggest that DLD has a genetic link, that is, it is caused by a genetic deficit (Marcus & Fisher, 2003; Bonneau et al., 2004; Bishop, 2006;). Children with DLD are more likely than those without DLD to have parents and siblings who also have had difficulties and delays in speaking. In fact, 50 to 70 per cent of children with DLD have at least one other family member with the disorder. However, environmental factors can have an effect as well (Bishop 2006).

From the beginning of the study of this atypical language condition in the 19th century, throughout the 20th century and up to the 21st century, different labels were used to name and describe it (Leonard 2014b). Labels and descriptions of language difficulties in children have been influenced by different professional groups (e.g., physicians, linguistics, speech pathologists and developmental psychologists), their theoretical views, the evolving health and education systems, and the available methodological approaches (Reilly et al. 2014a). In a survey of labels, Bishop (2014) found that presently 130 different terms were used (e.g., *developmental language disorder*, *language impairment*, *primary language impairment*, *language delay*, *specific language impairment*). The use of so many different terms unsurprisingly creates several problems, including inadequate reflection of clinical realities, exclusion of many children from services (Bishop et al. 2017) and miscommunication with researchers, individuals having language problems, their family, health and educational professionals concerned with language problems and policymakers (Reilly et al. 2014b). These authors suggest that the adoption of an appropriate and consistent terminology can enable not only a better communication with the actors previously mentioned but also a better

understanding of the causes of language problem(s), the determination of the prevalence and the design of effective treatments.

Reilly et al. (2014b) summarize the debate on the label for this linguistic condition. According to them, three terms were consensually rejected: *language delay*, *primary language impairment* and *language disorder*. The first label was ruled out since it implies recovery of the deficit, a situation rarely seen, and it seems to be 'often used to deny services to children' (Reilly et al. 2014b:457). The second label was discarded because it is difficult to determine which condition is primary in children having more than one impairment and it could be misunderstood as indicating primary school-age. The third term was rejected as, in a search engine, it yields too many results unrelated to children's language problems, such as aphasia, autism, epilepsy, etc., so that it ends up being over-inclusive. Other labels reflected a mixture of views, according to Reilly et al (2014b). *Specific language impairment* was the most widely used term in the English-speaking research literature (Bishop 2014). Leonard (2014b:11) stated that 'the advantage of using this term in clinical settings, aside from its prevalence in the literature, is that it is not mistaken for conditions such as autism or intellectual disability, yet it avoids the impression that the weakness in language is minor or temporary'. However, Reilly et al. (2014a) argued that this label is not suitable for reflecting the heterogeneity of language problems and for the description of the majority of the children with language problems, that it may result in denial of access to services, that it has not been widely accepted by the scientific and clinical community and that it causes confusion amongst clinicians, families and policymakers. Moreover, the term implies that the child presents a relatively pure deficit with language in the absence of any other impairments; however, language as the sole limitation in the children in question is not often observed. Thus, the atypical language condition is diagnosed by applying exclusionary criteria, which is disadvantageous to children not fitting them when determining eligibility for and

access to speech pathology services (Reilly et al. 2014a). In order to deal with this inconvenience, Reilly et al. (2014a) proposed to relax the exclusionary criteria and to adopt inclusionary criteria, and Bishop (2014) suggested a redefinition of the word 'specific' so that it means 'idiopathic', i.e., 'of unknown origin'. According to Bishop (2014), this solution allows one to retain familiar terminology so that a link with an existing body of research is ensured, a concern expressed by Gallagher (2014) and Rice (2014). Other people favored the elimination of the label since the term 'specific' could encourage people to maintain the use inappropriate exclusionary criteria. Another term that received relative consensus was *Language learning impairment*. It is positively viewed as 'it stressed learning and was education-friendly' (Reilly et al., 2014b:459). It was however rejected by a small group of parents who were afraid that the label would be considered equivalent to low ability. Finally, *Developmental language disorder* was the preferred label, according to Reilly et al., (2014b), the main reason being that it stresses the congenital nature of the language problem. Bishop et al. (2017) also proposed the adoption of this term. They justify their choice by mentioning that (i) the word 'developmental' 'in this context refers to the fact that the condition emerges in the course of development, rather than being acquired or associated with a known biomedical cause' (Bishop et al., 2017:1071), (ii) the label has been used in the field for several decades, (iii) it is consistent with planned usage in International Classification of Disease (ICD) 11 and has a proximity to the term *Language Disorder* used in Diagnostic and Statistical Manual of Mental Disorders (DSM) 5, and (iv) it seems to have an important presence in the internet. Thus, *Developmental language disorder* is the consensually adopted label that is 'a superordinate heading or overarching term that describes the problem(s) and works for services, for families and for individuals' (Reilly et al., (2014b:460).

3.2 Nature of the difference between typical development and DLD

In general, the following differences have been found between typical developing children (TD) and children with DLD, (Radford 2007):

1. TD children produce their first word around 11 months of age, while children with DLD around 23 months.
2. TD children produce their first multiword combinations around 17 months, while children with DLD around 37 months.
3. Children with DLD show a higher proportion of errors than TD children.
4. Children with DLD's scores on languages tests are significantly lower than those of TD children.

Researchers have attempted for decades to determine whether the linguistic development in DLD is similar but delayed or altogether different from typical language development (Leonard 1998/2014). In many cases, whether DLD resembles typical development, or it is deviant depends on the researcher's assumptions. Three criteria can be used in order to describe the difference between the two language development situations: timing, degree of use and quality.

Timing. This criterion can be used to portray a pattern where onset of language development in some children is later than onset of development in other ones. This pattern can present three scenarios (Leonard 1998). In one case some children start developing language later than their peers, but their rate of acquisition can speed up and reach age level at around three years of age, and then continue development at the same speed. These children are not usually diagnosed with DLD. In the second case, emergence of language is not only

delayed but development can be protracted from the point of emergence to the point of mastery, that is, their rate of acquisition is slower, so that the gap between them and their peers widens over time. Leonard (1998, 2014a) is not explicit about the recovery of the deficit by the children under this scenario, but, given a proposed third scenario, different from this one, it can be inferred that they can reach target levels. The third scenario is observed in individuals whose language deficit is persistent into adulthood. Language development levels off before mastery levels of attainment. That is, the language acquisition process of these individuals is not only delayed and protracted but also apparently incomplete in the sense that certain linguistic aspects are never fully mastered. Their linguistic competence seems to reach a plateau. The children showing the traits described in the second and third scenarios are usually diagnosed with DLD. In all the three scenarios, these children can show an adequate organisation in the lexicon and in the computational system, and a constrained developmental trajectory of these elements (Rice 2003). The above description seems to present a portrayal of similarity between typical children and DLD children. The only difference between the two language situations would be the onset of language emergence. And the delay would be uniform, so that the linguistic system of an DLD child would resemble that of a typical child two or four years younger, depending on the age of the DLD child (Leonard 1998). Such a uniformity would be shown in terms of acquisitional stages. DLD would follow the same stages than typical development in that children with DLD would acquire different linguistic elements in the same order than typical children. In view of that, children with DLD would reveal a late emergence, a slower development and an eventual later mastery of each linguistic element, but also the relationship among the linguistic elements would match that observed in typical children (Leonard 1998). The first and second scenario could be described as typical delay whereas the third could be

deemed a deviance if it is assumed that all characteristics seen in children with DLD have to match the stages of typical language development.

The profile just described show a synchronous acquisition, that is every linguistic feature should show later emergence, slower development, and later eventual mastery but the relationship between features should be similar to that observed in typically developing children (Leonard 1998). Acquisition can also be asynchronous, in that the relationship among linguistic elements acquired (e.g., the acquisition of -s plural morpheme and -s 3rd sg morpheme) does not match that of typical children. In one case, the acquisition of one linguistic aspect would be more delayed than the acquisition of another aspect in DLD development. Perhaps it could catch up to those of unimpaired children or be persistently behind with respect to the rest of the linguistic system (Rice 2003). Another case of asynchrony is the appearance of a morpheme at an earlier stage than it appears in typical children, but its mastery occurs at later stages (Curtiss et al. 1992). Rice (2003) invokes that idea the DLD grammatical system can have a localized variance in linguistic elements, so that the relations between elements in children with DLD and in typical children do not show the expected alignment. According to Leonard (1998), such pattern might constitute different degrees of delay across linguistic aspects and the DLD profile would not be homologous to the typical children profile. Rice (2003) described such profile as delay-within-delay since the pattern showed by children with DLD is similar to the one revealed by typical children with the difference that the linguistic aspect in question emerges much later in DLD children. However, Tsimpli (2001) assumed that such pattern is deviant: According to her, given the characterisation of typical language acquisition in terms of stages, if linguistic elements observed in the different stages in typical acquisition appear in the same stage in DLD, so that DLD development does not reflect a typical developmental trajectory, then DLD is a distinct process from typical development.

Degree of use. This criterion can mainly distinguish two profiles. Children with DLD can use certain linguistic element to a lesser extent than do language-matched typically developing children. The difference between both groups is numerical in that incidence of occurrence is quantitatively lower in children with DLD but the pattern of use is similar in both groups since the frequency of appearance of the element tended to augment in both groups. Leonard (1998) states that this lower frequency in DLD language might be attributable to the slower rate of development observed. Children with DLD lag in the development of such element and so this profile exemplifies a case of delay (Leonard 1996). Another profile shows an abnormal frequency of error (Leonard 1998). Children with DLD can produce some error that is also observed in typical children, but its frequency is higher in DLD than in typical language and can be present for a longer period in DLD children. Leonard (1996) reports research where across ages, the incidence of error in typical children was low and tended to stay stable, whereas in children with DLD the incidence of error was higher and tended to increase. Leonard (1996) suggests that this difference in error pattern reveals a deviance rather than a delay because the degree to which the error appeared in DLD was unlike that seen in typical children.

Quality. This criterion can apply to a situation where children with DLD produce forms that have never been seen in typical language. This is a situation that is closest to the traditional 'deviance' interpretation. Leonard (1998) mentions that the literature cites very few examples that conform to such description. At the morphological level, some commission errors (e.g., 3rd sing. -s with plural subject) were observed in DLD but the same error was also committed by typical children. At the phonological level, unusual patterns were found in DLD speech, like the production of [s] in final position of words ending in consonants other than labials. However, this pattern is very rare even in DLD (Leonard

1998). Moreover, unique phonological patterns were also found in typical children. Leonard (1998) reported a case where one otherwise typical child placed initial strident continuants in final position. Therefore, qualitative difference in terms of rare or unique patterns in DLD seems to be a very unlikely category (Leonard 1998) and so DLD would not be a deviance. However, Håkansson & Nettelbladt (1993) mentioned that, while typical Swedish children who they studied produce target constructions at a very early period, children with DLD use syntactic structures that do not occur in the language to which they are exposed. That is, children with DLD produce a non-grammar target configuration, namely verb third instead of verb second sentences, while typical children correctly use V2 in topicalized declaratives. These patterns led them to conclude that DLD is a deviant language situation.

Leonard (1998) concludes that the patterns described above, whether it is a typical delay, a plateau, an uneven profile or a quality difference, cannot fit the dichotomy delay-deviance and that viewing the disorder in those terms can be an oversimplification and even misleading. For if deviance is defined as failure of the linguistic characteristics seen in children with DLD to match at no time the early stages of typical language development, all patterns but the typical delay constitute a deviance. If it is defined as a trait never seen in normal development, only the qualitative difference conforms to it. Moreover, as mentioned, the label assigned to the condition varies according to the researcher. Beyond this dichotomy, the stance adopted in this dissertation is that DLD grammars are not qualitatively different from typical grammars for the following reasons:

-Asynchrony can also be a trait in typical language acquisition. The development of accusative clitics and the definite article coincide in typical Greek children (Tsimpli 2001). However, these elements do not appear

simultaneously in typical French. According to Hamann (2004), determiners appear in typical French grammars long before clitics. This is precisely the same acquisitional pattern observed in Greek DLD by Tsimpli (2001).

-A low degree of use could only indicate absence of mastery instead of absence of knowledge of a linguistic trait. Hyams & Safir (1994) suggest that diagnostics other than a quantitative criterion level for acquisition can be used to measure linguistic knowledge. For instance, knowledge of inflection in English can be determined if the child overregularizes verbal forms (e.g., *goed*), does not produce form/class errors (e.g., *mays*) and does not produce agreement errors (e.g., *I goes*). In the following chapters, it will be seen that children with DLD fulfill all these criteria.

-One of the typical-developing participants in Håkansson's (2001) study produced a non-target V3 configuration and Lange & Larsson (1973, 1977, cited by Håkansson & Nettelbladt, 1993 and Håkansson 2001) also attested single occurrences of this non-target pattern in typical children at different ages. Moreover, although the V3 configuration is non-target in Swedish, it is grammatical in many other languages. Thus, although some unusual patterns seem to be more frequent in DLD they do not seem to be absent in typical language, and while these patterns may be infrequent in some languages, they are usual in others (see also chapter 4).

-As mentioned above, the lexicon and the computational system display an adequate organisation and a constrained developmental trajectory. This seems to be an indication that the different order of the acquisition of linguistic elements and asynchrony do not have an influence in the acquisitional process (cf. Lust 1999).

Thus, although developmental processes in DLD yield slower growth rates, much of the evidence concerning its nature shows that the developmental route of language for children with DLD follows the same course as that found in typically developing children and is consistent with the view that DLD grammars exhibit qualitatively similar features as those of typically developing children (cf. Tromblin, 2009).

3.3 Reference Point for Comparison between DLD and Typically Developing Children

In the study of DLD as a linguistic deficit, a simple description of errors is not enough. In order to characterize this condition in a more accurate way, it is necessary to have a baseline. The setting of such a baseline requires the comparison between children with DLD and typically developing children. Leonard (1998) mentions three comparison groups. This first group is the typical age-matched controls (TD-A). It is composed of typical children in the same chronological age as the DLD children. By observing that this control group have no or few problems with some aspect of language, researchers can determine whether children with DLD are really impaired for their age. The comparison between the performance by chronological age controls and children with DLD enables researchers to establish whether children with DLD have more difficulty in an area under investigation than would be expected for their age (Gallon 2007). The expectation is that DLD children's level of performance on grammar is lower than the TD-A children's (Schaeffer 2012). The second group is the IQ-matched controls. According to Leonard (1998), it has been found that some DLD groups showed a non-verbal IQ lower than the age-matched groups. This difference in IQ, rather than in linguistic abilities,

could be responsible for the effects observed in DLD. In order to overcome this problem, a control group of typically developing children matched on non-verbal mental age is used. Thus, the comparison between the age-matched or IQ-matched controls and children with DLD allows researchers to determine that DLD children's linguistic system is impaired. Now, it has been observed that children with DLD differ from these control groups in almost all language aspects. At the same time, it has been proposed that the weaknesses of some linguistics aspects are more relevant for the elucidation of the core of the deficit than others. According to Leonard (1998, 2014), the comparison between these groups might obscure this issue, which means that it does not enable researchers to describe the way in which the deficit affects language. Therefore, a third group is employed, which is composed of language-matched controls (TD-L). The children recruited for this group are younger than the DLD group. This comparison is useful to determine if some linguistic aspect is more problematic than another or if it is acquired at a later stage of development. According to Rice, Redmond & Hoffman (2006), similar results on the overall proficiency or error typology on a particular language aspect between the DLD group and their younger language controls are taken to be evidence of delays within the DLD group. On the other hand, observed differences between the DLD group and the TD-L group would indicate an unexpected developmental disruption or deviation from the course of typical linguistic maturation. However, as mentioned above, this situation does not seem to hold in DLD, such that even differences between the two groups would reveal a qualitative similarity in their grammatical system (see chapter 4).

The pairing of DLD groups with the language-matched groups is carried out on some measure of language ability. Leonard (1998, 2014) states that the specific measure of language ability selected depends specially on the nature of the investigation. Mean length utterance (MLU) in morphemes is a measure frequently selected as the mean of matching groups of children in the study of

DLD morphosyntax. The children's ability to utter sentences that are sufficiently long enough to support forms such as inflectional affixes, relative clauses or questions can influence the production of such forms (Rice, Redmond & Hoffman, 2006). If a child's MLU is low, he will probably be unable to produce them, but if those forms are inherently difficult, as they can be in DLD, then they might be produced erroneously independently of the child's MLU. Thus, according to Leonard (2014b), MLU matching is useful to ensure that children with DLD fail to use some linguistic form because that form is intrinsically problematic and not because of length limitations, i.e., the children with DLD's MLU is lower than that of the control group.

Another basis for matching groups of children mentioned by Leonard (2014b) are the mean number of arguments expressed per utterance, the mean number of open-class words used per utterance, phonology measures, expressive vocabulary and comprehension measures.

Leonard (2014b) states that some concerns have been raised regarding the use of language measures as a basis for matching. One of them pertains to the use of children younger than DLD children. Since the language-matched control group is precisely younger, the two groups might display differences in many ways: Some of these may be related more to general cognitive developmental differences (e.g., world knowledge, attention, motivation, and social development) rather than to differences connected to the linguistic traits under investigation (Plante, Swisher, Kiernan, & Restrepo, 1993, cited by Leonard, 2014b). For Leonard (2014b) the solution to this problem is not the inclusion of only an DLD group and a TD-A group, with the exclusion of a younger group: Differences in the relationships among variables observed in comparisons between children with DLD and TD-A children are also seen in the comparison between two groups of typically developing children differing in chronological age. Leonard (2014b) goes on to state that "relationships

between different measures often change as a function of age” (Leonard 2014b:40); therefore, younger controls should be included in DLD studies.

A second concern mentioned by Leonard (2014b) relates to the characterisation of the language measures. Since in previous studies on language acquisition there was a link between MLU levels and grammatical stages, MLU matching has been characterised as a matching measure based on developmental level of grammar. The problem would reside in that although morphosyntactic skills can be adequately predicted by MLU at levels below 3 morphemes, the grammatical details can vary broadly from utterance to utterance having the same MLU level. Leonard (2014b) dismisses this problem by saying that a wide variation between utterances with the same MLU level is expected since this variation is the main reason to hypothesize that a difference in the dependant variable will be found between two groups matched on MLU. Moreover, according to Leonard (2014b), the same criticism concerning MLU can be raised for any language measure. According to Schaeffer (2012), the use of MLU (frequent as it is) as a language-matching measure for the study of the acquisition of a linguistic trait such as verbal morphology, is extremely controversial. Thus, the language-matching problem is avoided by some researchers through the selection of a TD group that is approximately two years younger than the children with DLD. However, Rice, Redmond & Hoffman (2006) still argues that MLU is a reliable and valid general language development measure and an appropriate matching variable from age 3 to 10. That is because, according to these authors, MLU appears to be highly correlated with other language measures such as the developmental sentence scoring (DSS) and index of productive syntax (IPSyn), and it is strongly associated to growth of sentential complexity.¹⁵

¹⁵ This association seems to be based on surface forms, though, and it does not seem to take structural complexity into account (see Scarborough 1990).

A third concern is related to the content of the language tests used for matching. Schaeffer (2012) states that language tests used for matching should never include the target structure, that is the topic of investigation. According to her, the prediction is that in language tests incorrectly including the target structures, the DLD group's performance will not necessarily be worse than the TD control group's, and in language tests correctly excluding the target structures, the DLD children's performance may or may not be worse than that of the TD control group's. Thus, a performance that is similar in both groups in some studies and a performance that is worse in the children with DLD in others can be accounted for by the choice of the language-matching measure.

To conclude, a proper description of DLD requires a baseline set on the comparison between children with DLD and typically developing children. At least an age control group and a younger typically developing control group are necessary for this task. The first group is formed with typical and children with DLD being the same chronological age. The basis used to form the second group is usually MLU. This measure has been questioned as a basis for matching, so some researchers do not make use of it. Nevertheless, at least some concerns raised by MLU have been addressed and MLU has been found to be correlated to other language measures. Thus, it is still used as a matching-basis by most researchers, as it is the case with most of the works presented in this dissertation.

3.4 Overview of the Grammatical Symptoms Observed in DLD Children

Developmental Language Disorder (DLD) is claimed to affect Faculty of Language (FL) at the syntactic, semantic, morphological, phonological,

pragmatic and lexical components (Radford 2007, van der Lely et al. 2011, Schaeffer 2012). Children with DLD typically display some (or all) of the following types of impairment (Radford 2007: 4):

- a. *morpho-syntactic* (e.g., problems with the production of affixes/inflections and articles/particles)
- b. *phonological* (e.g., problems with consonant clusters and syllable-final consonants)
- c. *lexical* (e.g., delayed acquisition of words: delayed appearance of words and word-finding problems)
- d. *semantic* (e.g., difficulties in determining the linguistic meaning of words, phrases and sentences, and understanding the meaning of metaphors)
- e. *pragmatic* (e.g., problems in the use of language in appropriate contexts)
- f. *reading problems*

This dissertation will concentrate on **morpho-syntactic** deficits observed in children with DLD. This decision is motivated by three reasons. First, according to Roulet-Amiot (2008) and Schaeffer (2012), researchers working on DLD have reached a quasi consensus that, despite difficulties in different areas of the FL as mentioned above, the main problems that were observed in children diagnosed with DLD concern the use of grammatical morphemes (functional affixes and words, see below). This means that a problematic morphosyntax can possibly be deemed to be the trademark of DLD. Second, this dissertation makes use of data from the literature exclusively. Most of the works devoted to DLD, irrespective of the language under study, from any theoretical point of view and any approach, deal with morpho-syntactic deficits. Therefore, these works on DLD can form an adequate corpus that can facilitate a comprehensive study of FL carried out from this atypical language situation. Finally, this dissertation is concerned with the extent to which the underlying linguistic

competence of children with DLD is determined by the same features, operations and constraints that regulate natural language in general, i.e., UG. These aspects of the FL are mainly reflected in morphosyntax. Consequently, morphosyntactic deficits are the relevant type of data for the enterprise.

It is not really possible to find a common symptomatic denominator, i.e., a cross-linguistic factor that distinguished children with DLD from their typically developing peers (e.g., a deficit in verbal inflection), regardless of the language being acquired (Leonard 2013, see also Schaeffer 2012). Some symptoms are more conspicuous in some languages while they are virtually absent in others. According to Leonard (2013), the relative strengths and weaknesses of children with DLD seem to be determined by the characteristics of the ambient language, just as in typical language acquisition. Leonard (2014a) states that, for typical language development, the ease or difficulty with which a linguistic trait is acquired can be fashioned by the language to which children are exposed. Interestingly, according to Leonard (2013), for a certain language the linguistic traits that are challenging for typical children happen to be the same as those with which children with DLD have difficulties. Thus, in English, DLD and typical children show omission of tense and agreement inflections (see examples below). The most remarkable symptom in Romance is the difficulty with clitics, especially direct and indirect objects. Clitics tend to be omitted in French DLD and typical language (Prévost 2009, Jakubowicz et al. 1998) (see below and chapter 6) and accusative clitics can be replaced by dative clitics in typical and DLD Catalan (Gavarró 2012). The V2 in Germanic languages configuration can also be problematic (Leonard, 2014a and references therein). For instance, as mentioned above, instead of showing XVSO order in main and independent clauses, Swedish-speaking children with DLD and typical children produce the XSVO order, that is, they tend to preserve the subject-verb-object word order, even when a different constituent precedes the subject. Children learning a Uralic language (Hungarian and Finnish) display a deficit with the

exact form of verbal morphemes. In these languages, a transitive verb can be followed by a tense morpheme, a subject agreement morpheme and an object agreement morpheme in definiteness (i.e., a definiteness marker is used when the direct object is definite, and an indefiniteness marker is used when the direct object is indefinite). While DLD and typical children speaking Hungarian have no difficulty using inflections in the proper order, they tend to commit what Leonard (2013) terms near-miss errors. For example, instead of an inflection sequence requiring past tense, third person plural and definite, they produce a form with the past tense, third person singular and definite, or a form with the past tense, third person plural and indefinite. Finally, children with DLD speaking Cantonese have problems with aspectual markers. These morphemes are optional in adult language, that is, in a same context both a sentence containing an aspectual marker and the same one without it are grammatical. In some contexts, most Cantonese speakers choose to include an aspect marker, but children with DLD are prone to underuse them, even when younger typically developing peers use them (see Leonard 2013).

A very noticeable trait in DLD is **variability** in grammatical behavior: It is not the case that children with DLD produce only incorrect forms; most of them display a variable correct production or comprehension of grammatical forms. That is, DLD's production alternate between appropriate forms and inappropriate forms. Variability is observed within the same morpheme and the same stem: A morpheme, e.g., the past *-ed*, can appear in some verbs but not in others, and the same stem, e.g., *go*, used in a present 3sg context can sometimes be realised as *go* and sometimes as *goes*. Moreover, in most cases correct forms are produced in appropriate linguistic and extra-linguistic environments. In many cases the difference between typical and children with DLD is quantitative rather than qualitative (see chapter 4).

As hinted in section 2.3, it is not the case that children with DLD produce forms that have never been seen in typical language. Children with DLD

generally produce errors of the same types that have also been observed in typical acquisition. From this point of view, the main difference between typical acquisition and DLD is that children with DLD exhibit a linguistic behavior that is observed in typical children that are 2-4 years younger than DLD children.

DLD production involves mainly two types of errors: **omissions**, i.e., the absence of obligatory Lexical Items (LI) in relevant contexts and **commissions**, i.e., the replacement of some form with another one, or the use of a LI in an inappropriate context. Note that the division between omission and commission is not always obvious: For instance, a form without a certain marker could result in another existing form in the language in question, so this type of error could be considered either a commission or an omission.¹⁶ Since the present study concerns DLD children's syntactic competence, the exact description of the symptoms from the point of view of morphology is not really relevant: The classifications below are made for the sake of facilitating the presentation of symptoms.

DLD affects the verbal domain, the nominal domain and propositional domain. Importantly, however, the manifestation of the disorder is not cross-linguistically consistent. In some languages LIs are omitted, while they are merely replaced in others. In most studies, measures of commissions and omissions were realized according to obligatory contexts. This is a configuration in which a linguistic element must be present and have the right form for a sentence to be grammatical and pragmatically appropriate (e.g., the past tense morpheme *-ed* in a regular verb used to describe a past situation) (Junyent, Levorato & Denes, 2010).

¹⁶ An example is the use of a verbal singular form instead of a plural form by children with DLD speaking Spanish: A plural form (e.g., *comen* 'they eat') can be replaced by a singular form, *come* 'he/she eats. This replacement can be considered an omission, i.e., the absence of *-n* or a commission, the substitution of *-e* for *-en*.

3.4.1 Omissions

Absence of functional affixes (e.g., verbal inflections) is a characteristic production error in DLD. For instance, English children with DLD tend to omit the past *-ed* morpheme (1a), the *-ing* progressive/gerund morpheme (1b) and the *-s* third person morpheme (1c) (Radford 2007:5):

<u>1) DLD Response</u>	<u>Target</u>
a. I drop him.	I dropped him.
b. We were do Superman.	We were doing Superman.
c. My dad drink tea.	My dad drinks tea.

The sentences in (1) are unmarked for tense (1a), aspect (1b) and agreement in number (1c). Likewise, French children with DLD tend to omit the 3p pl morpheme from verbs realized by a consonant added to the root, as in *il lit* [il li] 'he reads', *ils lisent* [il liz] 'they read'. Children with DLD tend to drop this additional consonant (Roulet-Amiot 2008:147):¹⁷

<u>2) DLD Response</u>	<u>Target</u>
Les filles [bwa] une bouteille de sirop <i>the girls drink-3p.sg one bottle of syrup</i>	Les filles [bwav] une bouteille de sirop <i>the girls drink-3p.pl. one bottle of syrup</i> 'The girls are drinking a syrup bottle'

The result is that number in (2) is marked on the subject DP but not on the verb. Other examples concern aspect and tense. Jakubowicz (2003) found that children with DLD replace the imperfect past and the future with a bare verbal form that correspond to the present.

¹⁷ Most verbs in French are not differentiated between the 3sg and the 3pl (e.g., *il mange* [il mɑ̃ʒ] 'he eats', *ils mangent* [il mɑ̃ʒ] 'they eat') The difference is made only in the written form.

Determiner phrases (DP) also undergo some type of omissions. For instance, English children with DLD tend to drop the genitive case (3a) and the plural marker (3b) (Radford 2007: 5):

- 3) a. You know what my doctor name is?
 b. Then I wanna put more sticker on

Swedish DLD exhibit similar traits. In Swedish plural inflections are marked with the suffixes *-or*, *-ar*, *-(e)r*, *-n* for indefinite plurals and *-(n)a*, *-en* for definite plurals and genitive case with the suffix *-s*. Swedish children with DLD tend to omit these markers (Leonard et al 2001). As in English, the lack of the plural marker results in singular forms. The following example shows omission of genitive case in Swedish (Leonard et al 2001:629):

4) <u>DLD response</u>	<u>Target</u>
mamma nickel 'mommy key'	mammas nickel 'mommy's key'

In French, for some adjectives feminine gender is most often obtained by adding some consonant to the masculine form (e.g., *petit* [pəti] 'small'-masc; *petite*¹⁸ [pətit] 'small'-fem; *vert* [vɛʀ] 'green'-masc; *verte* [vɛʀt] 'green'-fem). This morpheme tends to be absent in children with DLD (Royle et al. 2010:11):

5) <u>DLD response</u>	<u>Target</u>
la petit maison <i>the-fem small-masc house-fem</i>	la petite maison <i>the-fem small-fem house-fem</i> 'the little house'

¹⁸ The difference in gender is marked with the presence of the final vowel in the written form, but with the presence of the final consonant in the oral form.

Thus, the absence of this morpheme results in masculine-sounding forms. As the examples show, the children studied by Royle et al. (2010) had to produce DPs containing a size adjective, a colour adjective or a DP containing both. In cases where both adjectives were present the tendency was to omit the feminine only from the colour adjective, only from the size adjective, or from both types (6) (Royle et al. 2010:12):

6) DLD response

la petit maison vert
the-fem small-masc house green-masc

Target

la petite maison verte
the-fem small-fem house- fem green-fem
 'The little green house'

In (6) both adjectives lack the feminine marker.

Absence of functional words is also a typical characteristic in DLD productions.¹⁹ Auxiliaries are typically omitted in English DLD (Radford 2007: 5):

- 7) a. How [do] you get this out?
 b. It [is] not wood.
 c. He [has] got no eyes.
 d. I [have] been there.
 e. Yeah, that [will/would/can/could] be fun.

The dummy auxiliary *do* is absent in (7a); (7b) lacks the copula *is*; in (7c-d) the auxiliary *have* is missing and finally (7e) lacks a modal auxiliary. As Radford (2007) notes, many auxiliaries in English have both a full form and a clitic form. Children with DLD frequently omit auxiliaries in contexts where adults would use a clitic form of the auxiliary in colloquial English, the regular form of English

¹⁹ Auxiliary omission has also been observed in Broca's aphasia subjects (see Radford et al. (2009) and references therein)

to which young children are exposed. French children with DLD also omit auxiliaries indicating past (Jakubowicz 2003: 52):

8)	<u>DLD response</u>	<u>Target</u>
	a. Il tout bu he all drunk	il a bu le biberon. he has drunk the baby's bottle
	b. Il sorti le bain he got the bath	il est sorti du bain he is got out of the bath 'He got out of the bath'

French has two types of auxiliaries for past tense marking, *être* 'be', used with unaccusatives and pronominal verbs and *avoir* 'have' used with other verb classes. Children with DLD tend to omit both types. French also has an auxiliary for future marking *aller* 'go', which is also prone to be absent in DLD production (Paradis & Crago 2001).²⁰

As mentioned above, in Romance DLD, children have difficulties with clitic pronouns. French distinguishes between nominative (e.g., *je* 'I') reflexive (e.g., *se* 'himself/herself/themselves'; and accusative (e.g., *le* 'him') pronouns.^{21, 22} In French DLD they tend to be omitted (Jakubowicz 2003:58):

- 9) Context : The DLD child is presented with a picture depicting a girl brushing another girl and the experimenter asks the child: *Que fait Nounours à Kiki?* 'What is doing Nounours to Kiki?'

<u>DLD Response</u>	<u>Target</u>
a. Elle coiffe She combs 'She is combing her'	Elle la coiffe She her combs

²⁰ Typical children also omit auxiliaries in these contexts.

²¹ French distinguishes three types of reflexive pronouns: reflexives as such, middle voice markers and anaphors. Jakubowicz's study deals with anaphors.

²² Jakubowicz's study does not include datives.

Context: The DLD child is presented with a picture of a girl washing herself while another girl is looking at her. The experimenter asks: *Que fait Kiki?* 'What is Kiki doing?'

DLD Response

Target

b. Elle lave
She washes
'She is bathing'

Elle se lave
She herself washes

The examples in (9) show omissions of accusative and reflexive clitics. Nominative clitics have also been reported to be absent (Prévost 2009) (see chapter 4). Interestingly, the rate of clitic omission was not homogenous. Object clitics tend to be omitted more frequently than reflexives, which in turn are prone to be omitted more frequently than nominative clitics (Jakubowicz 2003). Italian children with DLD also show difficulties with accusative clitics, which can be omitted (Arosio et al. 2014:651):

- 10) Context: The DLD child is presented with two pictures. In one of them a child is trying to catch a butterfly; in the other one the child has caught the butterfly. The experimenter says *In questa storia un bambino vuole prendere una farfalla* 'In this story a child wants to catch a butterfly' and then asks the child: *Cosa ha fatto il bambino alla farfalla?* 'What did the child do to the butterfly?':

DLD response

Target

Prende
(he) catches

La prende
(he) it-fem catches

This sentence is about a butterfly that was mentioned in the discourse. Instead of substituting a feminine pronoun for *la* 'it', the child opted for its omission. Pronouns in English can also be omitted. According to Radford (2007), this propensity to be absent is undergone mainly by weak pronouns, i.e., those which are unstressed and non-contrastive in use. Such weak pronouns often

have a reduced form: For instance, *he* can be pronounced [i] instead of [hi] in spoken English, in a sentence such as *[i]'s lying, I know [i] is* (Radford 2007:6):²³

11)	<u>DLD response:</u>	<u>Target</u>
	Need no more How do skate?	I need no more How does it skate?

Determiners suffer the same fate (Radford 2007:7):

- 12) a. Can I finish [the] game?
b. Sue wanna take [a] bath

Count nouns such as those in (12) represent obligatory contexts for the use of a definite determiner (12a) or an indefinite determiner (12b), respectively. According to Radford (2007), this type of omission is another characteristic in the production of DLD children.²⁴

The CP domain is also prone to omissions (Håkansson & Hansson 2000). As is the case in English, object relatives in Swedish can be produced either with an overt complementizer (13a) or with a covert one (13b):

- 13) a. Mannen *som* ni söker är inte här.
Man that you look-for is not here
- b. Mannen \emptyset ni söker är inte här.
man you look-for is not here.
'The man (that) you are looking for is not here.'

However, also like English, subject relatives must use the overt complementizer (Håkansson & Hansson 2000:321):

²³ Radford does not provide contexts for pronoun production.

²⁴ Determiners can also be absent in Italian DLD (Bottari et al. 1998).

- 14) Flickan som inte sover
girl-the who/that not sleeps
'the girl who does not sleep'

Swedish children with DLD omit the complementizer even in these cases (Håkansson & Hansson 2000:326):

- | 15) <u>DLD response</u> | <u>Target</u> |
|---|---|
| Hon har en hund inter skäller
<i>she has a dog not barks</i> | Hon har en hund som inter skäller
<i>she has a dog that not barks</i>
'She has a dog that doesn't bark' |

Italian children with DLD produce similar relatives (Cantemori & Garrafa 2010:1948):

- | 16) <u>DLD response</u> | <u>Target</u> |
|---|---|
| Il bambino pettina il re
<i>the child combs the king</i>
'The child that is combing the king' (i.e., that is combing the king's hair) | Il bambino <i>che</i> pettina il re
<i>the child that combs the king</i> |

The subject relative in the DLD response in (16) has no complementizer, *che* 'that'.²⁵

Complement clauses can also lack complementizers in certain languages. In German, unlike English, complementizers in subordinate complement clauses must be overt. Children with DLD speaking this language can omit them (Hamann, Penner & Lindner, 1998: 211):

²⁵ Complementizers in Italian are compulsory in all type of relatives.

17) DLD Response

Gehört hab-i der Zwackelmann gut zaubern kann.
heard have-I the Zwackelmann well witch can

Target

Ich habe gehört, dass der Zwackelmann gut zaubern kann.
I have-I heard that the Zwackelmann well witch can
'I have heard that the Zwackelmann can witch well.'

To conclude this section, the examples in (1-17) show that bound morphemes as well as free morphemes can undergo omission in DLD speech.

3.4.2 Commissions

Replacements of affixes and words are another distinguishing feature in DLD. For example, substitutions have been observed in verbs produced by Swedish children with DLD (Hansson, Nettelblatt & Leonard 2000). To illustrate, some verbal stems in Swedish end with a consonant; the infinitive in these forms is created by adding *-a* and the present by adding *-er* [ər] (Hansson, Nettelblatt & Leonard 2000:856):²⁶

18) stem: köp infinitive: köpa present: köper 'buy'

Swedish children with DLD tend to replace the present tense marker with the infinitive marker. The regular past tense is formed with the addition of *-de* [də] or *-te* [tə]. Irregular past tense forms are created by a vowel change in the stem (e.g., stem *bit*, past form *bet* 'bit') or with a vowel change and an additional

²⁶ Swedish verbal forms are marked for tense but not for agreement.

consonant (e.g., stem *gå*, past form *gick* 'go'). Past irregular forms were seen to be regularized in Swedish (Hansson, Nettelbladt & Leonard 2000:856):

19)	<u>DLD response</u>	<u>Target</u>	
	a. springde	sprang	'run-past'
	b. hållde	höll	'hold-past'

English children with DLD can also regularize irregular forms (Radford 2007:8):

20) Something hurted you.

Instead of using the form undergoing a vowel change in Swedish and the bare stem in English, children with DLD tend to use a form resulting from the addition of the regular past morpheme to the stem.

In the DP domain, commissions were observed in determiners, nouns and pronouns. The replacement affecting these items can concern number, definiteness, gender and case. In Spanish DLD singular determiners replace plural determiners (e.g., *el* 'the-sg' for *los* 'the-pl'; *los/*el huesos* 'the.pl/*the.sg bones') or definites can be used instead of indefinites (e.g., *el* 'the' instead of *un* 'a, some'; *un/el hueso* 'a/the bone) (Bedore & Leonard, 2001). In singular contexts, feminine determiners were replaced with their masculine counterpart (e.g., *el* 'the-masc' instead of *la* 'the-fem'; *la/*el zanahoria* 'the.fem/*the.masc carrot') (Bedore & Leonard 2005). Note, however, that when the determiner was present in DLD production, it underwent replacement of a single feature. Thus, if number is affected gender and definiteness are intact, or if definiteness is disturbed then number and gender remained correct. Gender in determiners can also be affected in Swedish DLD (Leonard et al. (2001). This language has

two genders concerning common nouns, the uter and the neuter.²⁷ The neuter tends to be replaced by the form inflected for the uter (Leonard et al. 2001: 630):

21)	<u>DLD response</u>	<u>Target</u>
a.	en bord <i>a-uter table</i>	ett bord <i>a-neuter table</i> 'a table'
b.	den stora tåget <i>the-uter big chair</i>	det stora tåget <i>the-neuter big chair</i> 'the big chair'

Swedish children with DLD tend to do this replacement both with indefinite and definite determiners.

Overregularizations were also observed in nouns (Radford 2007: 8):

22) Firemans live over here.

The noun *man* has an irregular form *men*, so do the compounds containing that noun. Children with DLD seem to prefer the regular form.

Pronouns can trigger commission errors with respect to number, gender, and case. In Spanish DLD (Bedore & Leonard, 2001), in contexts requiring plural clitics, singular pronouns were sometimes produced instead, both with masculine and feminine items (e.g., *lo* 'it/him' instead of *los* 'them-masc' (23a) and *la* 'it/her' instead of *las* 'them-fem' (23b)) and the singular masculine sometimes appears in lieu of the singular feminine (e.g., *lo* 'it/him' instead of *la* 'it/her' (23c)):

²⁷ Swedish uter or common gender is the result of the historical merging of the former masculine and feminine genders.

- 23) a. Experimenter: El niño compra los helados y luego...
 'The boy buys the ice-creams and then...'

DLD response

Target

lo come
 it eats
 'He eats them.'

los come
 them eats

- b. Experimenter: El niño compra las zanahorias y luego...
 'The boy buys the carrots and then...'

DLD response

Target

la come
 it eats
 'He eats them.'

las come
 them eats

- c. Experimenter: El niño compra las zanahorias y luego...
 'The boy buys the carrots and then...'

DLD response

Target

lo come
 it.masc eats
 'He eats it.'

la come
 it.fem eats

In Italian DLD the singular feminine *la* 'it/her' was used instead of the plural feminine *le* 'them-fem' (Bortolini et al. (2006). English children with DLD showed problems with gender: The feminine tended to be substituted by the masculine (Moore (2001), so that *he* and *him* are used in lieu of *she* and *her*. As for case, dative clitics were substituted for accusative clitics in Catalan (24) Gavarrò 2012:89):

- 24) Experimenter: *La mare ha pentinat la nena i la nena ha quedat molt maca. Com és que la nena ha quedat molt maca? La nena ha quedat molt maca perquè la mare...* 'The mother combed the girl's hair and now the girl looks very pretty. How come the girl looks pretty? She looks pretty because the mother...'

<u>DLD response</u>	<u>Target</u>
perquè la mare li pentina. <i>because the mother cl-dat combs</i> 'because the mother combs his/her hair.'	perquè la mare la pentina. <i>because the mother cl-acc combs</i>

In English, the accusative forms of may be used for the nominative form (25a) or the genitive pronoun as in (25b) (Radford 2007:9):

- 25) a. *Me* don't want those.
b. *Him* eyes have water in.

In (25a) the accusative is used instead of nominative *I* and in (25b) it replaces the genitive *his*. Radford states that DLD production in English is not random but shows a systematic pattern in that appropriate pronominal forms alternate with default forms. The accusative seems to be the default form that tends to replace the other ones in English. It is possible that the nominative is the default form in Afrikaans (Southwood 2007:179):

26) <u>DLD response</u>	<u>Target</u>
'n hand vashou met hy <i>a hand fast-hold with he</i> 'Hold hands with him'	hande vashou met hom <i>hands fast-hold with him</i>

Prepositional objects in Afrikaans are marked with accusative case, but children with DLD can replace this form with the nominative.

Genitive pronouns in English have two forms, a weak form (e.g., *my*) which precedes and modifies a nominal expression and a strong form (e.g., *mine*) which is used when the genitive is placed in a predicate position (e.g., *that toy is mine*) children with DLD substitute the weak form for the strong one (Radford 2007:9):

27) DLD response

Target

Mine baby fits.

My baby fits

Another type of commission concerning DPs is the use of full DPs instead of pronouns. A pronoun is usually expected to replace a full DP in a context where the referent named by the DP has been introduced and so is already known for all the speakers. Cases of pronoun commission have been observed in French (28a) (Jakubowicz et al 1998:135), Italian (28b), (Arosio et al. 2014: 651) and Afrikaans (28c) (Southwood 2007:171):

28) Context: The DLD child is presented with a picture depicting a boy brushing another boy and the experimenter asks the child: *Que fait Nounours à Kiki?* 'What is Nounours doing to Kiki?':

DLD response

Target

a. Il brosse Kiki.
he brushes Kiki
'He is brushing Kiki.'

Il le brosse
he him brushes
'He is brushing him'

Context: The DLD child is presented with two pictures. In one of them a child is trying to catch a butterfly; in the other one the child has caught the butterfly. The experimenter says *In questa storia un bambino vuole prendere una farfalla* 'In this story a child wants to catch a butterfly' and then asks the child: *Cosa ha fatto il bambino alla farfalla?* 'What did the child do to the butterfly?':

DLD response

Target

b. Prende la farfalle
(he) catches the butterfly
'(He) catches the butterfly.'

La prende
(he) it-fem catches
'(He) catches it.'

Context : The DLD is presented with a picture of a boy pushing a girl while the experimenter says *Dié seun stamp haar* 'This boy is pushing her'; then the DLD child is shown another picture depicting another boy pushing two people; the child is requested to complete the sentence started by the experimenter who says *maar* 'but':

DLD response

Target

c. dié seun stamp die oom en die tannie dié seun stamp hulle
this boy is pushing the uncle and the auntie *this boy is pushing them*
=the man and the woman

In the three cases, the sentences are grammatical but inadequate from a discourse point of view: Since the referent have been introduced in each context, an object pronoun replacing the full DP is expected to be produced by the DLD child. However, a full referential expression appears in lieu of the pronoun.

Complementizers may also lead to commissions. The Swedish complementizer *som* 'that/who' (29a) and the Italian complementizer *che* 'that' (29b) can be replaced by a so-called dummy marker: (Håkansson & Hansson 2000:327 and Contemori & Garraffa 2010:1948):

- 29) a. Jag känner en flicka [m] inte äter äppel
I know a girl [m] not eats apple
'I know a girl who doesn't eat apple'
- b. Il bambino [e] lava il pinguino
the child [e] washes the penguin
'The child that is washing the penguin'

In the above examples, the full complementizers are substituted for by an incompletely pronounced element, i.e., realized with the last phoneme of the complementizer.

A further commission error is morphological double marking. Doubly marked forms result from attaching regular inflection morphemes to irregular forms (e.g., *went+ed*). An example of double-marking in English is (30) where the irregular past tense form of *break* (*broke*) is further inflected for past via the regular suffix *-ed* (Radford 2007:8):

30) This broked.

The example in (30) shows that the verb contains a double past inflection, i.e., the vowel change [brek → bro^uk] in the stem and the regular past suffix *-ed*. Doubling also refers to the multiple overt occurrences of a LI in configurations where that LI can usually appear once in adult language (Corver, Southwood & van Hout 2012). In structures containing a tense auxiliary and a bare verb, English children with DLD produce utterances where the tense/agreement morpheme appears on both LIs (Radford 2007: 8):

31) It doesn't really closes.

The example in (31) shows that the 3sg morpheme appears on the auxiliary and on the verb.

In Afrikaans doublings can involve verbs and auxiliaries (32a Corver, Southwood & van Hout 2012:76; 32b Southwood 2007: 209):

32)	<u>DLD response</u>	<u>Target</u>
a.	nou reën hulle nat reën <i>now rain they wet rain</i> 'Now they are getting wet in the rain'	nou reën hulle nat <i>now rain they wet</i>
b.	gaan hulle hamers gaan nou kry <i>will their hammers will now get</i> 'They will now get their hammers'	gaan hulle hamers nou kry <i>will their hammers now get</i>

The verb in (32a) and the auxiliary (32b) appear in two positions while in typical Afrikaans they appear only once.

Negation in adult Afrikaans can simultaneously occur in two different positions (Southwood 2007:230):

- 33) Ons het nie visse nie
We have not fish not
'We don't have fish'

In Afrikaans DLD it can appear in more than two positions:(Southwood 2007:271):

- 34) DLD response

hulle wil nie skoonmaak nie hier nie
they want.to not clean-make not here not

Target

hulle wil nie hier skoonmaak nie
they want.to not here clean-make not
'They do not want to clean here'

The example produced by the children with DLD shows three realizations of negation instead of only two. Pronouns are also involved in doublings (from Corver, Southwood & van Hout 2012:77):

- 35) DLD response

Target

ons ma leer ons saam ons ons ma leer saam met ons
our mom learn us with us our mom learn together with us
'Our mom is learning with us' (i.e., she is in our class at school)

Corver et al. (2012) note that the second instance of the pronouns does not add any semantic content to the sentence. They do not also introduce any affective, emphatic or contrastive meaning, as they do in Spanish (e.g., *Quiero verte a VOS (no a Guillermo)* I want see-you to you (not to G.) 'I want to see you, not G.').

Some commissions involving word order can also be observed (Hamann, Penner & Lindner 1998). Atypical word orders are observed mainly

in Germanic languages. They concern the position of main verbs, auxiliaries and subjects. Germanic languages, apart from English, are V2 languages: The finite verb is canonically in second position and the preverbal position can be filled by the subject (36a) or another constituent (36b) in independent declarative clauses, as the following German sentences show (Hamann, Penner & Lindner 1998:197):

- 36) a. Hans *mag* Kuchen essen.
Hans likes cake eat
 'Hans likes to eat cake.'
 b. Kuchen *mag* Hans essen.
cake likes Hans eat
 'Hans likes to eat cake.'

The examples in (37) show cases where the finite verb is not placed at the canonical position in main clauses. Examples (37a-b) were produced by German children with DLD (Hamann, Penner & Lindner 1998:209) and example (37c) was uttered by an Afrikaans DLD child (Southwood 2007: 234):

37) DLD response

Target

- | | |
|---|---|
| <p>a. Bei mir federmappchen <i>weg</i> war.
 <i>at me pencil-satchel gone was</i>
 'My satchel was gone.'</p> <p>b. Jetzt grosse drache <i>kommt</i>.
 <i>now big dragon comes</i>
 'Now the big dragon comes.'</p> <p>c. hulle TV <i>kyk</i>
 <i>they TV watch</i>
 'They are watching TV'</p> | <p>Bei mir war das Federmäppchen <i>weg</i>
 <i>at me was the pencil-satchel gone</i></p> <p>Jetzt <i>kommt</i> der grosse Drache
 <i>now comes the big dragon</i></p> <p>hulle <i>kyk</i> TV
 <i>they watch TV</i></p> |
|---|---|

In the three examples the tensed verb stayed in its base position instead of being placed in second position. Afrikaans children with DLD also produced an atypical utterance concerning the first position (Southwood 2007: 234):

38)	<u>DLD response</u>	<u>Target</u>
	vryf hy die been en 'n pappa <i>rub he the leg and a daddy</i> 'He is rubbing daddy's leg'	hy vryf die been van pappa <i>he rub the leg of daddy</i>

The example in (38) shows a VSO word order instead of a SVO word order.

Word order difficulties are also noticed in English DLD. These concern subject-verb inversion in questions (Radford 2007:9):

- 39) a. Which one I can do?
b. Where this is?

The child fails to invert *can* with *I* in (39a) and to invert *is* with *this* in (39b).

Finally, a mixture of omissions and commissions (including doublings) is found in DLD productions. These combined errors concern interrogatives (van der Lely & Battell 2003:162) and negative sentences (Thornton et al. 2016:19).

- 40) a. What cat Mrs. White stroked?
b. Who Mrs. Scarlett saw somebody?
c. Which Reverend Green open a door?
d. What did Colonel Mustard had something in his pocket?
e. It not works.
f. It's not works.

In (40a) the dummy auxiliary *do* is missing and the past tense is realized on the verb. (40b) contains no dummy auxiliary, the past tense is realized on the verb and the gap left by wh-movement is filled with a quantifier. In (40c) no auxiliary is present, tense is not marked and the wh-constituent *which door* seems to be

split: Half of it is placed in sentence-initial position and the rest stays in its base position. (40d) contains a doubly marked tense, i.e., in the auxiliary and in the verb, and the question gap is occupied by a quantifier. In (40e) the auxiliary is absent and present tense is marked on the verb and in (40f) the dummy auxiliary is missing but tense is doubly marked: The 3sg suffix is cliticized onto the subject pronoun and also appears on the verb.

To summarize, commissions, just like omissions, are pervasive in all sentential domains. More precisely, these errors consist in the variable use of functional affixes and words. These elements are intermittently omitted or substituted for others, so that in some cases functional affixes or words can sometimes be absent from or sometimes be present in obligatory contexts or can sometimes be realized with a non-target form or be sometimes realized with a target form. As such, DLD, as an acquisitional situation, exhibits resemblance with typical language acquisition in the sense that the ambient language determines the ease or difficulty with which a linguistic trait is acquired.

3.5 Approaches to DLD

Current research in DLD has been mainly concerned with finding a cause for DLD. This cause has been a concern for linguistics but also for psychology and cognitive science. Consequently, two different approaches have been proposed in order to account for this disorder (see Leonard 1998, 2009, Clahsen, 1999 and Jakubowicz, 2003). One argues that the deficit arises at the processing level. Investigators adopting a processing approach consider that DLD is not only a linguistic but also a non-linguistic problem. The main reason for this position is that, on top of their language difficulties, some non-

linguistic cognitive abilities have been found to be weak in DLD children.²⁸ The other proposes that the disorder originates at the linguistic level: The Faculty of Language (FL) in children with DLD lacks some principle, operation and/or feature, so that DLD affects the linguistic components of FL. The FL being affected, children with DLD tackle the language learning task with grammatical representations that are either deviant or delayed as compared to typical developing peers. Given the fact that for this approach the deficit lies exclusively in FL, the accounts that have been offered from this perspective make use of linguistic theory. The accounts differ according to the area affected by DLD: the lexicon, the computational system or the interfaces (see chapter 2). Since the topic in this dissertation is the FL as it is affected by DLD and it will be examined through the lenses of the linguistic model of FL proposed by

²⁸ Several types of processing accounts have been offered: speed of processing, capacity of processing, perceptual processing, and verbal working memory. The speed account states that DLD is due to processing delay or slowness. For some researchers, children with DLD suffer from a generalised slowing across all types of processes (see Kail, 1994), while for others, slowness is process-dependant such that DLD reflects a slow processing of linguistic material (e.g., poor lexical retrieval or lexical recognition, see Montgomery, 2002). According to the capacity account (Leonard 1992), DLD children's linguistic profile depends on the language to which they are exposed. For instance, in languages with poor morphology (e.g., English) children with DLD dedicate more attention and cognitive resources to some cues (e.g., word order) and less resources to other cues (e.g., inflexional morphology) whereas in languages with rich morphology (e.g., Italian and Hebrew) more attention and cognitive resources are spent on inflexional morphology. The amount of paid attention and used resources reflects the DLD children's characteristics of language deficits. For one perceptual account, the primary problem with DLD resides in the auditory system. Children with DLD cannot process certain kinds of acoustic information that is not language-specific, so the linguistic information encoded by these signals is absent in affected children (Tallal & Piercy 1973). Another perceptual account (e.g., Leonard, Eyer, Bedore & Grela, 1997) proposes that children with DLD have difficulties in acquiring grammatical morphemes that have low phonetic substance (i.e., they have non-salient and short duration perceptual features compared to adjacent elements). These perceptual difficulties prevent children with DLD from identifying the grammatical function of these morphemes and from constructing morphological paradigms. The verbal working memory account states that the main cause for DLD is a limited phonological short-term memory. According to Baddeley (2003), these limitations can be problematic in the formation of appropriate phonological representations and in learning new words. These rather impoverished phonological representations, in turn, disturb other linguistic representations.

the minimalist programme, only the linguistic approach will be dealt with in this dissertation. This section presents an overview of the main linguistic accounts. Those accounts which are directly relevant to the hypothesis that UG is not affected by DLD will be more thoroughly described and evaluated in the following chapters.

3.5.1 Featural Deficit

Gopnik (1990) and Gopnik & Crago (1991) propose that DLD is caused by a lack of grammatical features such as person, number and tense in DLD grammars. This absence of features results in the non application of morphosyntactic rules. Accordingly, English children with DLD will not acquire the rule by which the -s morpheme is attached to the verb when the sentence is in the present tense and the subject is in the third-person singular form. In Gopnik's and Crago's view, even though DLD grammars sometimes resemble that of typical children, since DLD sometimes produce target forms, they are always deviant. This is due to the very absence of grammatical features from DLD grammars. Children with DLD can compensate for the absence of these features and the non-application of morphosyntactic rules in two ways, according to Gopnik and her colleagues. The first option is rote learning: Children with DLD memorize all inflected forms, whether the form is regular or irregular, so that a past form such as *played* and a past form such as *bought* are learnt in the same way.²⁹ The second option is the use of explicit rules taught to them, so that children with DLD can produce plural forms as they have consciously learnt a rule such as 'add an -s to a noun if it refers to more than one object'. Another account invoking the absence of features is Guilfoyle et

²⁹ Rote-learning in language acquisition is meant to be a process by which the child acquires complex forms (e.g., *played* = *play+ed*) as unanalyzed simple forms and not as a product of a morphological or syntactic rule.

al. (1991). These authors argue that DLD grammars lack functional categorial features (D, T, C) and have only lexical categorial features (N, V, A, P). A grammar without functional features will derive sentences containing only lexical features and consequently children with DLD produce utterances without tense markers, modals and auxiliaries. Moreover, since T is absent from the representation, no Spec-TP is projected so that no subject movement of full DPs take place or sentences can contain null subjects. A third account concerning features has been offered by Tsimpli (2001) and Tsimpli & Stavrakaki (1999). They claim that DLD is caused by the absence of uninterpretable features from representations, while interpretable features are unproblematic. This featural deficit results in the omission of functional categories composed of exclusively uninterpretable features (e.g., the definite determiner in Greek) but the presence of functional categories containing interpretable features (e.g., the indefinite determiner in Greek) (see chapter 5 for details and the evaluation of these accounts).

3.5.2 Agreement Deficit

The approach proposed by Clahsen and colleagues (Clahsen, Bartke & Goellner, 1997), originates in the absence of the agreement relation. According to them, in DLD grammars the agreement relation between subjects and verbs cannot be established due to a deficit in the uninterpretable phi features on the verb. That is, [person] and [number] features being uninterpretable in T are impaired. Since [tense] under T is interpretable, it is spared. [person], [number] and [gender], being interpretable on DPs are also spared. Thus, there is a dissociation in the workings of formal features according to their status in terms of interpretability. The uninterpretable instances are impaired and as a consequence agreement is not established. The (a)typical workings of features is reflected in the morphology: Interpretable features, being spared, surface

morpho-phonologically while uninterpretable features can be morpho-phonologically absent or having a non-target surface form. According to Clahsen, Bartke & Goellner (1997), their hypothesis is supported by the fact that the English DLD and the German children examined by them produced many more correct forms with the past tense morpheme than correct forms comprising agreement morphemes. The correct marking for tense and the incorrect marking for agreement also applies to auxiliaries in English. This difference between both types of marking is statistically significant. Children with DLD achieve very low correctness scores for subject-verb agreement. Clahsen et al. (1997) found that nominative case marking, however, is not impaired in DLD grammars. They state that in all the utterances having finite forms produced by their English participants the subject was marked with nominative case. According to them, this is due to the fact that case checking is independent of agreement and so it is unaffected (see chapter 7).

3.5.3 Deficit with Merge

Jakubowicz & Nash (2001) and Jakubowicz (2003) account for DLD in terms of a difficulty of the application of the External Merge (see chapter 2). They propose that External Merge unproblematically applies to certain functional categories but cannot easily operate with some other functional categories. This difference in application of External Merge depends on Computational Complexity: The possibility of merging functional categories in typical children's grammar and the patterns of impairment versus the relative preservation in DLD children's grammar is a function of the complexity of syntactic computation. Jakubowicz and Nash define complexity in terms of the systematic presence or non-obligatory presence in the derivation of the functional elements to be acquired. The syntactic computation in a given

language is less complex when a merged functional category must be present in every sentence and more complex when the derivation contains a functional category that appears only in some derivations. Computational complexity varies from language to language, so that a functional category (e.g., T in German) may be obligatory and it is present in all sentential derivations, so the computation is less complex. But that same category can be non-obligatory in another language (e.g., in French), it appears only in some derivations (e.g., past sentences) and so the computation is more complex. According to them, INFL in Romance languages, identified as Person, is obligatory in French, so its presence in the derivation is systematic. Person is encoded by number-person morphology in Romance and by the nominative clitic in French, according to Jakubowicz & Nash (2001). A sentence in the present tense in Romance does not contain T but the number-person morphology suffices to express the present tense. The presence of this morpheme suffices to indicate the absence of an overt temporal morpheme and the interpretation of the sentential tense as present. In contrast, the past tense, i.e., the perfective past, in French is expressed with the auxiliaries *avoir* 'have' or *être* 'be', their choice being partly dependent on the valence of the lexical verb. Sentences in the past tense contain the Pers head and an additional head, T, that encodes the past. This head is not systematically present in all derivations of French sentences, so it is not obligatory. Jakubowicz & Nash (2001) claim that External Merge can easily apply to functional categories which are syntactic and indispensable in the derivation, since these derivations are less complex, and can be impaired to operate with non-obligatory functional categories that are semantically modifying but not syntactically necessary, since these derivations are more complex. As External Merge is sensitive to this difference in type of functional head and in complexity, obligatory functional categories may not be omitted or misused in DLD, while non-obligatory categories may be omitted or misused by children with DLD.

Van der Lely's (1998) and van der Lely & Battell (2003) argue that DLD originates from the optional application of Internal Merge. The impairment leads to some obligatory constituent movements being unforced in the grammar of children with DLD. Van der Lely (2003:127) explicitly mentions that Internal Merge is not absent from DLD grammars, but it applies intermittently. Specifically, the impairment lies in the principles that regulate the implementation of Internal Merge. Van der Lely (1998) assumes that Internal Merge is regulated by two principles. The first is that constituents only move if some feature must be checked. The second principle is that Internal Merge is forced if a constituent's features have not yet been checked either by External Merge or Agree. According van der Lely and Battel, the first principle is obeyed and so is not implicated in DLD since when checking takes place, its results are correct; incorrect checking has not been attested. In fact, if this principle were not available in DLD grammars, Internal Merge would be totally missing, which is not the case (van der Lely & Battell 2003). In contrast, the second principle is missing in DLD grammars, and this absence results in free-choice movement. The consequence of this optionality is either the correct attraction of features to an appropriate head to satisfy feature checking, or the non-application of movement with resulting failure of the checking. This free choice, thus, accounts for the general optionality of Internal Merge. Thus, this operation is available in DLD grammars, but it is not automatic and compulsory as it is in typical grammars (van der Lely & Battell 2003) (see chapter 6 for details and evaluation of Jakubowicz's and van der Lely and Battel's proposals).

3.5.4 The Agreement/Tense Omission Model

Wexler & colleagues (Rice & Wexler 1996, Rice et al.1995, Wexler, Schütze & Rice 1998, Wexler, Schaeffer & Bol, 2004) claim that in DLD both agreement and tense can be problematic. However, in contrast to Gopnik's and Crago's

view, which states that, even though DLD grammars sometimes resemble that of typical children, they are always deviant, Wexler & colleagues sustain that DLD grammars are normal but reflect a delayed development of language. Thus, children with DLD have a grammar similar to that of typical children, the only difference being that it grows more slowly or may never attain adult state. Their position is based on the fact that, as typical children, children with DLD go through a stage called Optional Infinitive in which the verb sometimes fails to be marked for finiteness (see chapter 8). Since this stage in children with DLD is longer (or permanent) than in typical children, they call it the Extended Optional Infinitive. This stage is characterised by the production of root sentences containing a non-finite verb simultaneously with root sentences containing a finite verb and the fact that children know the grammatical properties of finiteness and non-finiteness (Wexler 2014). Wexler (1994) proposed that during this period tense can be omitted or underspecified in the representation. A sentence with a non-finite verb is the reflection of the absence of TP and a sentence with a finite verb reflects the presence of this projection. Wexler (1994) claims that, although children do not know that all root sentences must have a finite verb, they do know the contingency between finiteness and word order modulated by syntactic parameters, so they place finite verbs and non-finite verbs in their correct positions.

Schütze & Wexler (1996) refined the tense omission account and proposed that not only tense, but agreement can be absent from derivations. This refinement, called the Agreement/Tense Omission Model (ATOM), aims to account for the case marking in subject DPs, which in English can alternate between nominative and accusative. Assuming, contra Chomsky (1995), that agreement is a projection distinct from tense, Schütze & Wexler (1996) claim that when this projection is present in the derivation, the subject will surface with nominative case. When this projection is absent, then the subject surfaces with a default case, which in English happens to be the accusative. Thus, with

the assumption that English verbal –s morpheme reflects the feature bundle [3rd, singular, present tense], so that a form like *cries* will appear only when both projections are present, a child (typical and DLD) grammar can produce the following forms (Schütze & Wexler, 1996:15):

- | | | | |
|-----|-----------------|--|-------------------------------------|
| 41) | a.[+tns,+agr] | NOM assigned, agreement visible | <i>he cries</i> |
| | b. [+tns, -agr] | NOM unassignable, default ACC surfaces | <i>him cry,</i>
<i>him cried</i> |
| | c. [-tns, +agr] | NOM assigned, agreement invisible | <i>he cry</i> |
| | d. [-tns, -agr] | NOM unassignable, default ACC surfaces | <i>him cry</i> |

Since a form like *cries* is an indication that both projections are present, and a default accusative subject indicates the absence of the agreement projection, Schütze & Wexler (1996) predict that a form like *him cries* will never appear in child language.

It has been observed that not all child languages show the OI period. Following this observation, Wexler (1998) proposes the Null-Subject/Optional Infinitive Correlation (NS/OI), which states that “a language goes through an OI stage if and only if the language is not an INFL-licensed null-subject language” (Wexler 1998:56) Since languages like Italian and Spanish are included in the set of that type of languages, children acquiring them do not go through the OI stage. The ATOM was proposed to account for the facts concerning verb, subject case and word order properties in the OI stage and to distinguish OI grammars from adult grammars. Moreover, null-subject grammars do not undergo the OI and so are not subject to the ATOM. Therefore, Wexler (1998) proposes the existence of one property that predicts both ATOM and the non-subjection of null subject languages to ATOM. He calls this property the Unique Checking Constraint (UCC), which, for child language, says that the D-feature of DP can only check against one functional category. Wexler (1998) assumes

that in non-null-subject languages both Agr and T host an uninterpretable D feature that must be checked by the interpretable D feature on the subject DP. In adult language, in a derivation of a finite sentence in Wexler's system, the subject DP raises to T, checks the D feature on T and then it raises to Agr and checks the latter's D feature. Thus, the D feature on DP checks twice against the two uninterpretable versions of this feature present in those functional categories. The UCC does not allow the checking of both uninterpretable versions of D. Only one version can be checked. This means that for the UCC to be satisfied either Agr or T must be absent from the representation.

Now, the examples in (41) show that child language can produce a derivation with both projections, or one only with T, or one only with Agr (adapted from Wexler 2014):

- 42) a. AgrS[uD] T[uD] [VP DP V...]
 b. [AgrSP DP_i AgrS[uD] [TP[uD] t_i T [VP t_i V...]]]
- 43) a. T[uD] [VP DP V ...]
 b. DP_i T[uD] [VP t_i V ...]
- 44) a. AgrS[uD] [VP DP V ...]
 b. DP_i AgrS[uD] [VP t_i V ...]

The structure in (42) has both uninterpretable versions of D checked, which means that the UCC is violated. The structure in (43), according to Wexler, violates an interface condition requiring the Agr projection. Likewise, (44) also violates an interface condition requiring the presence of T. The three derivations converge at LF since they have no uninterpretable features unchecked. But at the same time the three of them violate one constraint. Wexler (1998, 2014) assumes that the grammar chooses a derivation with the guidance of the Minimal Violation principle. This principle states that "given an LF, choose a numeration whose derivation violates as few grammatical

properties as possible. If two numerations are both minimal violators, either one may be chosen.” (Wexler 2014:111) Since the three possible structures, all having the same LF representation, contain one minimal violation, any of them can be chosen to surface.

According to Wexler (2014), the UCC provides natural solution to optionality between finite and non-finite root sentences during the (E)OI stage: Both types of sentences contain violations, although they are tied for the number of violations, and thus both are grammatical by the Minimal Violation principle.

The previous account is applicable to non-null-subject languages. What about null-subject languages? Wexler (2003) claims that, since UCC is a constraint, it applies universally. However, he states that ATOM does not apply in null-subject languages, that is to say, in this type of languages there is no omission of T and/or Agr. The effects of the UCC are not visible. According to Wexler (2003, 2014), this non-application of ATOM results from the fact that “the INFL of a language licenses null-subjects if and only if the D feature of AGR in the language is [+interpretable].” (Wexler 2014:303). He bases this assumption on the claim that agreement inflection in these languages is nominal or pronominal (Rizzi 1982, Zagana 1982, among others). Agreement itself acts as subject and so no other nominal subject is needed. The existence of sentences without an overt nominal follows from the interpretable version of the D feature on Agr. According to Wexler (2014), when a nominal subject is overt, it becomes co-referential with Agr. Thus, the Subject DP can raise to Spec-TP, and it can stay in that position. If it eventually goes on raising, it skips Spec-AgrS, since no checking of the D feature is necessary, and lands on the specifier of a higher projection in order to check a discourse feature. When no overt subject is present in the derivation, an empty pronoun enters it, and

checking occurs in a similar way as with overt subjects. Thus, in null-subject languages, Agr is always present. With an overt nominal subject or with an empty pronominal subject, only one checking of the D feature takes place during that period, and even though UCC is active, it is not violated.

Wexler (2003) argues that children with DLD behave linguistically as typical children with respect to finiteness. Their grammar can be described just as above, the only difference being the duration of the OI stage. They are delayed (or permanently stuck) with respect to their growing out of the UCC. The UCC is a genetically driven developmental constraint (Wexler 1998, 2003, 2014). As such it dies away under genetically guided maturation. As stated in chapter 1, DLD is a genetic deficit. In DLD language this deficit manifests itself through the delay of this maturation. According to Wexler, this delay accounts for a longer OI stage.

3.6 Summary

This chapter provides a very general panorama of Developmental Language Disorder (DLD), as provided by the linguistic and psychological literature. The definition of this condition states that it is mainly a cognitive, but not an anatomical, neurological, sensory or emotional deficit. Although its exact aetiology remains unknown, it seems to be caused by a genetic mutation. The percentage of the infantile population affected by this condition is 7 or 8. In some children DLD appears to disappear after the first years of school while in others it persists into adulthood. The comparison between DLD children's linguistic competence with typical children's competence can be undertaken according to three descriptive criteria: timing, degree of use and quality. The

interpretation of the differences between children with DLD and their typical peers varies between a delay and a deviance, and this variation can depend on the different stance adopted by researchers. However, Leonard (1998) states that it is not completely appropriate to describe DLD with this dichotomy since the profiles observed in the affected population do not allow us to locate the disorder within one class or the other. Moreover, since the linguistic behavior in terms of errors observed in DLD is not distinct from that displayed by typical developing children, the view adopted in this dissertation is that DLD grammars and typical grammars are not qualitatively different. For an effective elucidation of this condition, it is necessary to analyse data produced by children with DLD in comparison to data produced by typical children in terms of age on the one hand and in terms of MLU on the other. That is why most research on DLD employ both children matched on age and children matched on language level. As for DLD symptoms, a cross-linguistic unique factor that distinguishes children with DLD from typical children has not been found. The symptoms can be standardly classified as omission and commission. The impairment appears to affect the nominal, the verbal/temporal and propositional domain and it is characterised as a variable condition. Finally, the main theoretical accounts have been presented. The featural account states that DLD is an impairment concerning the absence of some formal features resulting in the deficient marking of some grammatical morphemes, or the absence of functional categories. On the agreement account, the agreement relation between subjects and verbs cannot be established due to a deficit in the uninterpretable phi features on the verb. The Merge account states DLD stems from a deficit with the application of External Merge to some functional categories that are not always present in the derivation or from the failure to obligatory apply Internal Merge to some constituents (e.g., wh-words). On the ATOM account, DLD is the reflection of the optional presence of T or Agr. This optional omission is also observed in typical children; however, the period

during which it operates is longer in DLD children. While the latter account is not directly related to the hypothesis defended in this dissertation, the first three accounts will be described in detail and evaluated in the following chapters.

4 CONTINUITY IN DLD

It was proposed in chapter 2 that grammars are constructed with a set of formal features, the Merge and Agree operations and constraints provided by UG. It was stated in chapter 1 that typical first language acquisition and second language acquisition were UG-constrained. The question then is whether DLD children's language development is also UG-regulated or not, i.e., whether the FL in children with DLD is similar to the FL in speakers found in the other acquisitional situations. The question can be elucidated by comparing the linguistic behavior of children with DLD and non-affected younger speakers and L2 speakers. If this behavior appears to be similar at a certain level, then it can be concluded that children with DLD and non-affected speakers have comparable linguistic knowledge. If it is assumed that UG in typical L1 learners and L2 learners is accessible from childhood to adulthood (Lust 1999, White 2003) and that DLD linguistic knowledge is similar to non-affected younger speakers and L2 speakers' knowledge in some respects, then it can be concluded that UG is also accessible to DLD children. This chapter describes facts that provide evidence about the availability of UG in typical language acquisition and second language acquisition and shows that it is the case that children with DLD can perform as well as their typical peers. The conclusion that UG is accessible for DLD grammars then seems to be warranted.

4.1 Continuous UG in Typical Grammars

A central issue in the field of language acquisition within the UG-framework concerns the content of UG in the state that precedes linguistic experience, specifically the availability (or unavailability) of all the linguistic elements provided by UG from the beginning of the process of language development. The question is whether or not UG in children and adults is similar so that derivations of linguistic expressions are UG-regulated in the same manner in children and adults. This issue is named the logical problem of representation (Montrul 2004).

An appealing stance dealing with this issue is the Strong Continuity Hypothesis (SCH) (Crain, 1991; Lust, 1999). It is appealing in that its proposal seems not to be confronted with learnability problems, mainly the origin of some linguistic knowledge and the way it appears in children's grammars. The SCH states that child grammars are essentially similar to adult grammars (in the UG sense), which means that there is continuity from child language development up to the adult grammar end-state. The same grammatical features, operations and constraints present in adult grammars are also present in child grammars. UG is available for the assistance in the construction of language-specific grammars from the beginning and during all the process of language development (Flynn & Lust 2002). According to Lust (1999) UG constitutes the model of the initial state in the acquisitional process. Importantly, this initial state is not conceived in terms of time or age, but rather as the state prior to linguistic experience (Lust 1999, 2006), independently of the acquisitional situation. It is 'the state of the mind/brain prior to experience with particular data and a particular new acquisition task' (Flynn and Lust 2002: 114). For second language acquisition the learner is once again at an initial state (Flynn & Lust 2002), i.e., the state previous to his/her exposition to the other language. This

implies that UG is accessible for the construction of new grammars during the speaker's lifetime; thus, UG can be said to be accessible for all language acquisition situations (cf. Flynn & Lust 2002). Moreover, UG does not undergo modifications during this process and remains distinct from specific language grammars throughout the lifetime of a speaker. Developmental changes in children's linguistic knowledge are not due to changes in UG but to the development in individual grammars and UG is reflected both at the initial state and final state of the FL (Lust 1999).

The SCH has theoretical and empirical support. For instance, this continuity view states that functional categories must be present in the grammar from the beginning because they are necessary, for instance, to extract formal regularities from the input. The child needs to know grammatical categories in advance so that she can learn to segment morphemes or distinguish lexical categories from grammatical markers (Montrul 2004). Moreover, Borer & Rohrbacher (2002) argue that just the presence of pre-existent grammaticalized notions (tense, number, etc.) allows the child to decompose a phonological string into a lexical stem and a discrete grammatical morpheme, and to distinguish the different morpho-phonological realisations of morphemes. Thus, the very early presence of, for instance, tense [T] guides the child to realize that, despite the multiple morpho-phonological realisations of the English past morphemes, the difference between an inflected form (regular or irregular) and its bare form reflects a distinction in tense. Without this presence of the T feature, there would be no guarantee that the distinction is inflectional, i.e., a difference in tense, and not lexical, i.e., a difference in the action denoted (e.g., move and move slowly) (Borer & Rohrbacher, 2002, 128).

Several studies provide empirical evidence of functional categories in early child grammars:

1) *Italian* (age 1;10-2;4)

- a. Uè **hai** messo Lole a catta?
Where has-2p.sg put L. the-fem.sg cat-fem.sg
'Where have you, Lole, put the cat?'

Target: Dove hai messo Lole la gatta? (Lust 1999 citing Nieddu 1997)

- b. Guarda **il** topo piccolino.
watch the-masc.sg mouse-masc.sg little-masc.sg
'Look at the little mouse.' (Lust 1999 citing Hyams 1984)

2) *Tamil* (age 2;00)

Ide aNNaccu- **Da-** **Num**
this switch off past definitely-asp must
'This (cassette player) must definitely be switched off.'
(Lust 1999 citing Raghavendra & Leonard 1989)

The data in (1) and (2) reveal the presence of overt functional categories, an auxiliary in (1a) determiners in (1b), a determiner, a tense marker and a modal in (2). The presence of functional categories has also been shown through verb movement (3), noun classification (4) and differentiation of finiteness:

3) *French* (age 2;00)

Child : Veux pas lolo Target: Je veux pas de l' eau
want-1p.sg not water I want not of-the water
'I don't want water.'
(Borer & Rohrbacher 2002, citing Pierce 1992)

4) *Sesotho* (age 2;1)

Child: Kólo sá-ne Target: se-kólo sá- ne
7- school 7dem-that
'that school'
(Demuth 1994)

The fact that finite verbs in child language surface before the negation marker (see 3), just as in French adult language, is taken as evidence that finite verbs move from V to T, which implies that the latter must be present in the derivation. The example in (4) illustrates the presence of a null classifier, a functional category. The early production of DPs by children acquiring Sesotho is characterized by a variable occurrence of overt and null classifiers (Demuth 1994). According to her, the presence of a classifier in (4) is revealed by agreement. In Sesotho, the classifier agrees with a demonstrative. The demonstrative in the example is class 7. The noun *kólo* 'school' belongs to class 7. Demuth (1994) concludes that in (4) there must be a null functional category of class 7 that agrees with the demonstrative. As for differentiation of finiteness, Guasti (1993) states that very young Italian children are able to distinguish finite and infinitival verbs and have knowledge of the verbal paradigm. In her view, these observations are evidence that children's initial clausal structure comprises functional categories. Note that French children also display this differentiation, since they know that finite verbs are placed before negation (see 3) and infinitival verbs are placed after it (see Pierce 1992, Labelle & Valois 1996).

Internal Merge also seems to be active right from the beginning of language development. As shown in (1a), the *wh*-phrase *u'é* (=dove) 'where' has been internally merged from its base position, VP below TP, to its derived position, Spec-CP. Likewise, child German also shows Internal Merge. German is a V2 language, i.e., the verb must always be placed after the first sentential constituent in main clauses. The standard analysis is head movement from V to T to C and constituent movement from its base position to Spec-CP. The following example shows movement of the direct object:

5) *German* (age 2;2)

Des habem ma' scho' mal geseht.
That have we already once seen
'We have already seen that' (Boser et al. 1992)

The object DP has undergone Internal Merge from its base position to Spec-CP.

Agreement has also been observed to be operative at early stages of language acquisition. Montrul (2004) reports that Spanish-speaking children as young as 1;7-1;8 produce verbal forms having different endings for person and number.

6) *Spanish* (age 2;4-2;6)

a. Yo salto
I.nom jump.1st.sg
'I jump'

b. Tú (te) quedas
You.nom stay.2nd.sg
'You stay'
(Torrens 2002 cited by Montrul 2004)

The first verbal forms to appear in Spanish L1 development are 1st, 2nd and 3rd singular, followed by 1st and 3rd plural forms, while 2nd plural forms are the last to emerge.

As also stated in chapter 1, grammatical development is not instantaneous. Attaining a target-like grammar is gradual and hence it takes some time. Theories of language acquisition must account for the way the process takes place and the reason why grammatical systems change over time, i.e., why final-state grammar is reached after a series of intermediate grammars, from a stage in which children produce utterances containing one word, passing through a two or three-word stage, up to a stage in which

structurally complex sentences in connected speech are produced (see Montrul 2004). This issue is named the developmental problem. The continuity view proposes that language development is considered a process of grammatical mapping from UG to a target grammatical system through the creation of grammars on the basis of input from the ambient language (Lust 1999). Grammatical mapping comprises the integration of the workings of the different linguistic components (phonology, semantics, morphology, pragmatics), the setting of parameters and language-specific rules and constraints. The Strong Continuity Hypothesis (SCH) solves part of the developmental problem with the postulation of a continuous process in which the child learns how to map innate categories and structures onto input (Valian 2009), and to integrate knowledge of directionality (i.e., the order of specifiers, complements and adjuncts with respect to a head), morphophonological forms and semantic meaning of LIs (Lust et al. 2009).

This integration is gradual and takes time and is not determined by UG (Lust 1999). Hyams (1996) claims that while the syntactic component in children's grammar functions as in adults' grammars, children take time to integrate the syntactic component with the pragmatic component or the morpho-phonological component. For instance, according to Hyams (1996), in child English, T(ense) is underspecified, i.e., it does not have the values [present] or [past]. Consequently, it is assigned a temporal 'here and now' interpretation by the pragmatic component and the morphophonological component does not match it with overt inflectional morphology, and so verbs are externalized bare. Thus, the difference between sentences produced by children and those produced by adults resides in syntax-external factors (Montrul 2004). Moreover, the fact that grammatical mapping takes time accounts for the fact that certain linguistic aspects are mapped from UG to the grammar of a specific language before other aspects (Lust 1999). For example, in languages whose relative clauses involve wh-movement, learners must first

know that *wh*-elements move overtly. And according to Flynn & Martohardjono (1994), parametrization is not instantaneous. Before full and productive parametrization takes place, language-specific instantiations of structures over which a parameter ranges must be acquired (cf. Yang, 2011). For instance, at the beginning of the acquisition process, L1 and L2 learners of languages such as Spanish or English analyse relative clauses as two independent clauses. They need to be exposed to several examples of relative clauses before they analyse them as a structure involving movement and whose head is placed at the left of its complement. According to these researchers, parameters are accessible from the beginning of the acquisition process, but their effects in the production of all structures covered by them are not immediately observable.

While maintaining that UG is not to be viewed as language growth, the SCH makes a strong connection between grammatical development and linguistic experience. Grammatical mapping consults the data to which the child is exposed for the construction of the target grammar (Lust 1999). From the point of the SCH, grammatical mapping, then, consists in the integration of the elements and the workings of UG, is influenced by linguistic experience and occurs in a lapse of time, which is the main reason why language development is observed to be gradual and incremental.

Thus, contrary to language-specific grammars, UG does not develop, as it is not modified during the acquisitional process, and is continuous, since the same grammatical features, operations and constraints are present in both child and adult language and are accessible from the onset of the acquisitional process. Language development from this point of view consist in the construction of grammar of specific language with the guidance of UG.

4.2 Similarities between DLD and Typical First Language Acquisition³⁰

It has been stated that UG in typical language acquisition is continuous, that formal features, the Merge and the Agree operations and constraints are available from the beginning of the language acquisition process. The question is whether UG is also continuous in DLD children. One way of elucidating the question is by comparing the linguistic behavior of typical children with the linguistic behaviour of DLD children. If the linguistic behavior of children with DLD is similar in some respects to that of their typical peers, then it can be concluded that UG is also continuous, intact and accessible in DLD acquisition. The following sections show quantitative and qualitative similarities between these two acquisitional contexts. The findings reported in the following sections show similarities between children with DLD and typical younger peers and in most cases differences between DLD and same age peers. This is not surprising, since DLD are children are considered to have a language deficit mainly because they do not exhibit the linguistic behaviour expected for their age. Nevertheless, since typical grammars are considered to be continuous from the beginning of the acquisition process, similarities between DLD grammars and typical early grammars warrant the conclusion that UG is also continuous in DLD children.

4.2.1 Quantitative similarities

Numerous studies report findings where children with DLD perform as well as their neurotypical, especially younger, peers. That is, although the percentages

³⁰ Examples are provided whenever they are available in the works dealt with.

of correct responses differ from one linguistic trait to another in the studies reviewed here, both groups show a similar linguistic behavior with respect to that trait.

This section is divided in two subsections: production and comprehension. The main reason for this split is the asymmetry found between these two performance types during language acquisition. It is generally assumed that, once the native final state has been reached, comprehension and production are symmetrical in that native adult speakers can understand what they produce and can produce what they understand (Hendriks & Koster 2011). However, during typical language development, this symmetry is usually not found. The general tendency is that comprehension precedes production (Hendriks & Koster 2011 and references therein), sometimes by several months. This tendency is a logical possibility since, in order to convey some meaning by producing an utterance, children must map the relevant meaning onto specific forms and store these units in memory to be accessed in subsequent occasions (Clark 1993, cited by Hendriks & Koster 2011). However, the reverse pattern has also been observed in some domains. For instance, research on the acquisition of pronouns and anaphors in English has shown that production can precede comprehension. That is, knowledge of principle B of Binding theory has been observed to be active first in children's production of pronouns and anaphors and then in their comprehension of these elements (see Hendriks & Koster 2011 for references).³¹ This asymmetry has also been observed in DLD: Affected children can show a poor performance in both modalities, or their performance in comprehension can be better than in production, but the reverse situation in which general production precedes

³¹ That production precedes comprehension might mean that some children can produce an utterance without understanding it. Since it is conceivable that this situation is not possible, it could be the case that the findings suggesting this directionality of the asymmetry are due to methodological failure.

general comprehension has not been observed (see Leonard 2014). The discovery of this asymmetry is an indication that grammatical knowledge may be reflected in one modality and not in the other. Since production is commonly disturbed in DLD, it could be concluded that, if only production experiments are run to study DLD grammars, affected children have poor grammatical knowledge. Therefore, comprehension tests are also necessary in order to be able to determine whether children with DLD have grammatical knowledge or not, and ultimately whether UG in this population is affected or not.

4.2.1.1 Production

Temporal domain. Similarities with respect to tense and agreement have been observed in typologically different languages. The first studies show that children with DLD have knowledge of tense, just as their typical peers. Håkansson (2001) studied tense in Swedish DLD. She carried out a study in two stages with a group of 10 children with DLD and a group of 10 typically developing children matched for grammatical level, according to results from comprehension and production tests. The age of the children with DLD was between 4;0 and 6;3 years, and that of the TD group between 3;1 and 3;7 years at stage 1. The children were 6 months older at stage 2. Håkansson examined the production of the present and past tense. Data on tense marking was obtained by asking the child to comment on pictures or activities. From pictures, the investigator asked questions such as ‘What did these children do yesterday?’ For actions, the investigator placed objects in different locations and asked ‘What did I do?’. Her scores included all occurrences of marking on the verbs corresponding to each tense, whether they were adult-like or not. That is, instances of over-regularisation were also counted as accurate. The results indicate 85% of correct responses provided by the TD group and 74% by the DLD group at stage 1. At stage 2, the correct responses were

respectively 97% and 95%. Håkansson (2001) mentions that no significant difference between the groups was found at any stage, although the TD group performed better at both stages. These data indicate that Swedish children with DLD and their typical peers have similar knowledge of tense.

Bedore & Leonard (2001) studied tense in Spanish DLD. They recruited 45 Mexican Spanish-speaking children. Fifteen children, whose ages ranged from 3;11 to 5;6, and whose MLU in words was 2.88 in average, were identified as having DLD. The remaining children formed the control groups, an age-match group (ranged in age from 4;0 to 5;6) and an MLU group (age ranging from 2;4 to 3;10). They used grammatical probes in order to assess verbal inflection: (1) present first person singular, (2) present first person plural, (3) simple past first person singular, (4) simple past first person plural, (5) present third person singular, (6) present third person plural, (7) simple past third person singular, (8) simple past third person plural, and (9) infinitive. In Spanish most of these morphemes are morphologically distinct. The grammatical probes comprised structured elicitation tasks in which children were asked to complete sentences, or describe ongoing events:

7) Prompt:

Ayer los niños columpiaron y el papá ...
'Yesterday the boys swung and the dad ...'

DLD Expected response:

cortó el pasto
cut-simple past-3p-sg. the grass 'he cut the grass'.

In most of the probes, the examiner described a drawing and the child had to depict a second drawing that was the companion to the first one. The creation of the obligatory context for the use of the target morpheme resulted from the combination of the examiner's utterance with the picture which the utterance

described. All children with DLD provided at least five obligatory contexts for most of the morpheme types, which is the minimal for a child to be included in the morpheme analysis. In this aspect, they resemble the TD-MLU group. The TD-A group produced more obligatory contexts than the other groups, but the difference was not important. The three groups performed similarly in 6 forms (present 1st singular, present 1st plural, simple past 1st singular, simple past 1st plural, present 3rd singular, and the infinitive). The correct percentages from the children with DLD ranged from 65,43 to 94,43. A difference was observed only in three verbal forms (see table 4.1):

Table 4-1 Spanish verbal forms (from Bedore & Leonard, 2001)

Groups	Verbal forms		
	Present 3rd plural	Simple past 3rd singular	Simple past 3rd plural
DLD	65.43%	83.20%	66.60%
TD-MLU	73.93%	89.33%	67.47%
TD-A	89.43%	98.33%	97.07%

Importantly, the correct percentages by the DLD were very high and the difference was found between the TD-A group on the one hand and the TD-MLU and DLD groups on the other. The latter groups showed no significant difference. An interesting observation concerning this study is that the children with DLD are younger than the Swedish children with DLD studied by Håkansson (2001); however, their performance was similar to that of their typical peers. This similarity also shows that both groups have knowledge of tense.

Similarities between children with DLD and TD-children were also found concerning the knowledge of aspect. Aspect is traditionally defined as the expression of the internal temporal organization of eventive predicates (Smith 1997). Two types of aspect have been proposed: lexical or situation aspect and

grammatical or viewpoint aspect. Lexical aspect refers to the inherent development of an event (beginning, progression and ending). For instance:

- 8) a. William walked to the school.
- b. William walked towards the school.

In (8a) the event is interpreted as being completed since it conveys the idea that an endpoint has been reached; in this case it has been reached when William arrived at school. In (8b), the event is construed as incomplete since it does not indicate that an endpoint has been reached. Grammatical aspect conveys the speaker's point of view on the "temporal contours" of the event described in the utterance in which they occur, that is, the perspective from which a part of or a whole event is focused (Smith 1997). An event described from an external point of view (perfective aspect) is presented with its temporal contours, so it is interpreted as a whole event:

- 9) Williams walked to school.

An event described from an internal point of view (imperfective aspect) is presented without its temporal contours, so it is construed as a partial event:

- 10) William was walking to school.

The findings concerning aspect in children with DLD were obtained in Cantonese, an isolating language. Isolating or analytical languages are those whose lexical items consist of single morphemes and are unvarying in form- there are no inflections for lexical categories- so words do not contain affixes, and grammatical information has to be expressed in separate words (O'Grady & Archibald 2004). Stokes & Fletcher (2003) studied DLD speakers of

Cantonese. They investigated their use of grammatical aspectual markers, which for them signal finiteness. This set of aspectual forms immediately follows the lexical verb in Cantonese and convey temporal (and aspectual) meanings (Matthews and Yip 1994). The morphemes investigated are the perfective *zo2*, used for completed events, the progressive (imperfective) *gan2*, similar to the *-ing* form, the stative *zyu6*, used with stative verbs, the “delimitative” *haa5* and the perfective experiential *gwo3*. Stokes & Fletcher (2003) point out that, unlike English tense and agreement morphemes, aspectual markers do not have to obligatorily accompany the verb. There is no element in the sentence that demands their presence, as the subject DP, which controls the agreement morpheme in the verb in English. Their presence is governed by semantic and pragmatic factors. The participants were 13 children with DLD and 14 TD children matched for age. The children with DLD’s age ranged from 3;8 to 6;11 (mean 4;6) and the TD children’s age ranged from 4;0 to 4;11 (mean 4;5). Three tasks were administered: a sentence-repetition task, video narration, and spontaneous conversation. Due to the varied use of aspectual markers across children and within groups, the group comparisons were made on the basis of the number of children in each group using an aspect marker. The results indicate that, in the first task (which included four aspectual markers *zo2*, *gan2*, *zyu6* and *haa5*), both groups performed similarly: Most of the children repeated the sentences containing the aspectual markers (except for the *haa5* morpheme, which was used more frequently by the TD group). In the second task and the third tasks, the children with DLD performed similarly to the TD group except for two morphemes (*zo2* and *zyu6*), which were more frequent in the TD group. Thus, although more TD-A children used a perfective and an imperfective marker than the DLD children, the latter group shows knowledge of aspect just as their typical peers. Thus, the findings reported in Håkansson (2001), Bedore & Leonard (2001) and Stokes & Fletcher (2003) show that DLD and typical children have knowledge of tense and

aspect. This knowledge points to the presence of the categorial features encoding these notions in DLD grammars, just as in typical grammars.

The knowledge of verbal agreement also tends to be similar in both acquisitional situations. Paradis & Crago (2001) found similar correct percentages in all the three groups that they studied concerning agreement in French. Their subjects were 10 children with DLD (mean age 7;6) (MLU 3.97), 10 MLU-matched TD children (mean age 3;3) (MLU 3.67) and 10 age-matched TD children (mean age 7;3) (MLU 5.7). The data were collected through spontaneous language production. They assessed the use of (a) the present 1st person singular of *être* 'be' and *avoir* 'have', respectively *suis* and *ai*, since these forms are different from 2nd and 3rd singular (unlike most lexical verbs whose forms in these persons are similar), and (b) clitic choice in subject-doubled constructions (the simultaneous presence of lexical DPs and clitic pronouns as subjects):

- 11) Mon ami il a un ballon.
my friend he have-3p-sg a ball
 'My friend, he has a ball.'

They calculated the percentage of correct use of *avoir* and *être* in obligatory contexts for these 1st singular forms and the percentage of correct matches between a subject clitic and a lexical subject in constructions where these appear together. A high level of accuracy was obtained in both variables by all groups (see table 4.2):

Table 4-2 French auxiliaries and clitics (from Paradis & Crago, 2001)

	DLD	TD-MLU	TD-A
Auxiliaries with 1 st sg pronoun	97.9%	96.9%	100%
Clitic and a lexical subject in subject doubling	98.9%	96.3%	99.7%

No significant difference was found between the groups. Paradis & Crago (2001) concluded that children with DLD had no difficulty with person agreement, just as their typical peers.

Verbal agreement also seems to be comparable in Italian children with DLD and their typical peers. Bortolini, Caselli & Leonard (1997) examined the production of verbal forms by Italian-speaking children. They recruited three groups of 12 children. The first group consisted in children with DLD whose age ranged from 4;1 to 7;0 (M = 5;2) and whose MLUs measured in words ranged from 2.88 to 4.89 (M = 3.76, SD = 0.66). The second group included children younger than the DLD children, ranging in age from 2;6 to 4;0 and resembling the DLD group in MLU (M = 3.73, SD = 0.66) (TD-MLU). The third group constituted the age control, with their ages ranging from 3;11 to 7;0 (M = 5;1) (TD-A). The items tested were the present 3rd sing *è* and plural *sono* copula forms, the present 1st person singular (e.g., [piango] ‘I cry’), 1st person plural (e.g., [piandziamo] ‘we cry’), 3rd person singular (e.g., [piandze] ‘he/she cries’) and 3rd person plural verbal (e.g., [piangono] ‘they cry’) forms. The probes consisted of two line drawings on a page. For the 1st and 3rd person verb inflections, the experimenter pointed to each drawing and requested the child to describe the activities depicted. For the creation of obligatory contexts for 1st person singular and 1st person plural verb inflections, the experimenter and child assumed the roles of the characters depicted in the drawings, and the child responded to direct questions. Table 4.3 shows the results:

Table 4-3 Italian copula and verbal forms (from Bortolini, Caselli & Leonard, 1997)

Verbal form	DLD	TD-MLU	TD-A
Copula	61.25%	65.92%	80.93%
1 st sing	82.33%	87.58%	96.58%
1 st plural	61.58%	70.00%	92.50%
3 rd sing	93.59%	98.33%	99.00%
3 rd plural	64.42%	86.33%	99.08%

The results indicate a difference only in the 3rd plural forms.³² The DLD group was different from the typically developing groups. The three groups were similar in their use of copula forms, despite the seemingly higher percentages for the TD-A children. They were also similar for the 1st sing, and the 1st plural inflections. For both of these grammatical morpheme types, the TD-A children were at near-mastery levels but the percentages of the TD-MLU and children with DLD were very high. And all three groups used the 3rd sing with high percentages, so that no difference between the groups was found. Children with DLD show knowledge of agreement as well as their typical peers. This knowledge of agreement shown in Paradis & Crago (2001) and Bortolini, Caselli & Leonard (1997) studies is an indication that the Agree operation is accessible both in DLD grammars and typical grammars.

Nominal domain. This section reports similarities with respect to the knowledge of formal features and agreement within the DP. Data from Greek show similarities in determiner production. Tsimpli (2001) examined full DPs in Greek DLD. In this language, determiners, adjectives and nouns are marked for gender, number and case (from Tsimpli 2001: 434):

- | | | | |
|----------|--|-------------------------|---------------------------|
| 12) a. O | /Enas | kalos | kinighos |
| | <i>the-masc.sg.nom/one-masc.sg.nom</i> | <i>good-masc.sg.nom</i> | <i>hunter.masc.sg.nom</i> |
| | ‘The / A good hunter’ | | |
| | | | |
| b. I | /Mia | kali | anafora |
| | <i>the-fem.sg.nom/one-fem.sg.nom</i> | <i>good-fem.sg.nom</i> | <i>report fem.sg.nom</i> |
| | ‘The / A good report’ | | |

³² According to Bortolini, Caselli & Leonard (1997) and Bortolini et al. (2006), this difference could be accounted for in prosodic terms. In regular 3rd plural person forms, stress falls on the antepenultimate syllable (e.g., [dór.mo.no] ‘they sleep’). The antepenultimate and the penultimate syllables form a strong-weak syllabic sequence; the last syllable is not part of it. DLD may have difficulties with the production of weak syllables outside of this sequence. Therefore, these verbal forms are problematic. This account can be supported by the fact that 3rd plural forms that are constructed with two syllables, strong-weak (e.g., [fán.no] ‘they do’) do not seem to be difficult for Italian DLD children.

- c.i To efkolo provlima /
the-neut.sg.nom *easy*-neut.sg.nom *problem* neut. sg.nom
 'The easy problem'
- ii. Ena efkolo provlima
one-neut.sg.nom *easy*-neut.sg.nom *problem* neut. sg.nom
 'An easy problem'

The researcher recruited 7 children with DLD. Their ages ranged from 3;5 to 7;0. The control group comprised 4 TD children that were studied by Stephany (1997). The comparison basis is a developmental period divided in 3 stages determined by the chronological age of the TD group (stage 1: 1;8– 1;11 (mean 1;10); stage 2 : 2;3–2;5 (mean 2;4); and stage 3 : 2;9–2;11 (mean 2;10). The data was collected from spontaneous production. The percentage of correct use of the definite determiner in obligatory contexts by the children with DLD was 11.9. The use of this type of determiner is not different from the TD group at the first stage. The percentage of correct use of the indefinite determiner in obligatory contexts by the DLD group is 77. These results are also comparable to those produced by the TD group. The results revealed an asymmetry in occurrence between the definite determiner and the indefinite determiner, but this asymmetry is equally observed in both groups. Case marking was also studied. The correct use of the masculine nominative was calculated from the appearance of the –s marker on nouns (see 12a above). The percentage of correct use of this marker by the children with DLD was 39% (30 occurrences). The correct use of the feminine nominative could only be calculated from the appearance of the definite article / (see 12b above). The correct use of this case marker was 96% (number of occurrences 26), i.e., when this determiner occurred it was correctly inflected. Tsimpli (2001) mentions that, with respect to case, the DLD group also behaved similarly to the TD group, when they were at stage 1. According to Tsimpli (2001) the data reveal that children with DLD and typical children at the first stage do not have the D feature in their

representations. However, the data can receive a different interpretation which points to the presence of D in both type of grammars. First, despite the many omissions of the definite article, its presence must be posited due to interpretational and theoretical considerations (see chapter 5). Second, while the presence of a morphophonological form at PF indicates the presence of the feature which that form realises, the absence of the form at PF might not mean absence of the feature from the derivation. Finally, there might not be a correlation between any percentage of correct use of a particular linguistic trait and knowledge of that trait (Epstein et al. 1998), so that the low percentages concerning the definite article do not indicate absence of corresponding feature from the representation. The case feature also appears to be present in DLD grammars. Although the nominative masculine form rarely is produced, the nominative feminine form was correctly produced in most cases. The conclusion from this study is that the categorial D feature and the case feature are present in children with DLD and their younger peers' grammars.

Number marking in nominals was found to be similar between children with DLD and their typical peers. Grinstead et al (2008) studied plurals in DLD and TD children speaking Spanish. In this language, plurals are formed in two ways: words ending in vowels combine with the -s and words ending in consonants take the epenthetic vowel -e plus -s. The researchers recruited three groups of monolingual Mexican children: nine children with developmental language disorder, nine children matched for chronological age, and nine younger children matched for MLU in words. The DLD and the age-matched group's average age was 5:9; The language-matched group's average age was 5:2. The TD-A's MLUw was 4.43 and the DLD and TD-MLUw's was 3.0. The procedure comprised an elicited production task. Children had to observe pages containing two pictures. One picture contained a single item and the other contained two of that same item. The researcher would then point to the first picture and name the item in the singular form:

- 13) Aquí tengo una mariposa.
'Here I have a butterfly'.

He would then point to the second picture, the one containing two items, and provide the prompt:

- 14) Y aquí?
'And here?'

The experimental items included 10 canonical nouns ending in /a/, 10 canonical nouns ending in /o/, and 10 nouns with word-final consonants /l n r/. All children responded and all answers were relevant, so that there were no null answers. The results indicate extremely high percentages of correct responses:

Table 4-4 Number in nominals in Spanish (from Grinstead et al. 2008)

Groups	Plural with -s	Plural with -es	Total
DLD	97.8%	70%	88.5%
TD-MLU	100%	86.7%	95.5%
TD-A	99.4%	82.2%	93.7%

There was a difference between the groups with respect to plurals formed with the epenthetic vowel plus -s; there was no difference with respect to the plurals formed with -s. Interestingly, the DLD group performed as well as the TD-A group and both groups were superseded by the TD-MLUw group. Grinstead et al (2008), however, believe that this difference would disappear with a larger sample or younger children. The inter-group comparison indicates that the difference in these general results was not significant. Thus, Spanish children with DLD have a knowledge of plurals comparable to that of their typical peers.

Rice & Oetting (1993) also found that children with DLD and their typical peers have a similar knowledge of number (the -s marker in e.g., *trees* and

dogs) in English. Their data set consisted of 108 spontaneous language samples. Fifty of the samples were from 5-year-old children with DLD (mean age = 4;11) and 58 of the samples were from younger children who were regarded as typically developing by their teachers and parents (mean age = 3;2). The match between the children with DLD and the TD children was made on the basis of MLU. Mean MLU for the children with DLD was 3.40, and mean MLU for the TD children was 3.50. This study is interestingly different from others because, in addition to calculating conventional percent of correct use in obligatory contexts, further indices of linguistic productivity were measured: lexical productivity, selectivity, contrastivity and morphological productivity. Lexical productivity refers to the number of different words that appear with the plural affix. This measure was made in order to make sure that a high percentage of correct use was not achieved only with the use of a few frequently used words. The children with DLD generated plural markings with a total of 100 different words; the TD-MLU children, 105. Thus, both groups of children produced a large number of unique and varied nominal forms marked for plurality, and there was no difference between the groups with respect to the total number of different words. The mean of correct percentages for the children with DLD was 4.4 (SD = 3.2); for the TD-MLU children the mean was 5.1 (SD = 2.4). The means for the two groups did not attain a significant difference. Selectivity is the application of marking to the appropriate category. It involves forming class distinctions, so in the case at hand, the identification of nouns as the only class targeted for the application of plural marking. Out of 404 plurals produced by the DLD group, only one selectivity error was made. According to Rice & Oetting (1993), these results indicate that both groups can assign number marking to the appropriate syntactic category and therefore they satisfy the selectivity criterion. Contrastivity refers to the use of plural marking only on nouns having plural referents and zero marking only for nouns having singular referents. It involves complementary distributions of singular

and plural marking. The rationale for this criterion was the detection of confusion about the exact placement of plural markings. That is, it could be the case that even if children recognize the proper target syntactic category, they might only optionally mark plurals in plural contexts and occasionally mark singulars as plurals. The children with DLD made only four misapplications of plurals to singular nouns, out of a total of 152 instances of plurals in this sampling, yielded an overall error rate of 2.6%. The TD-MLU children made three such errors, out of 93 instances, yielding an error rate of 3.2%. For the omission of marking on nouns having plural reference, the children with DLD produced 53 instances out of 404 plurals, the average being 16%; the TD-MLU group generated 38 of such forms out of 473 plurals, the average being 7%. The difference between these two means is significant. Thus, the DLD were a little more prone to omit plural markings, although both groups of children did so. Rice & Oetting (1993) mentioned that most of these omissions occurred only in cases of quantifier + noun environments (e.g., *two bottle here*, DLD subject). After these cases were excluded from analysis, the differences between the groups were no longer statistically significant.³³ Rice & Oetting (1993) conclude that both groups also meet the contrastivity criterion. Morphological productivity involves overregularizations. This criterion was used in order to see if children apply number marking to plausible but not allowed contexts. The overapplication of plural marking is an indication of knowledge of noun marking with the plural morpheme. The DLD group made

³³ Rice & Oetting (1993) do not provide independent reasons for this exclusion. However, they state, as stated above, that this pattern is observed in both groups and that this omission is confined to this rather narrow linguistic context. It is perhaps worth mentioning that this pattern is attested in typical language: Nouns in Welsh do not take the plural marker after numerals (Tallerman 2020:53):

- | | | | |
|-----|--------------------------------------|-----|--------------------|
| (i) | pedwar ci
four dog
'four dogs' | (i) | ci/cŵn
dog/dogs |
|-----|--------------------------------------|-----|--------------------|

nine overregularizations whereas the TD-MLU group made eight. The DLD group produced non-target forms such as *peoples*, *fishes*, *mans*, *herselves*. Finally, concerning percent of correct use in obligatory contexts, the DLD group marked nouns with the plural morpheme in obligatory contexts 83% (SD = 22) of the time, whereas the TD-MLU group did so 93% of the time (SD = 12). Although the difference was statistically significant, both groups had very high percentages of accuracy. Thus, DLD children, and the TD-MLU children, show a relatively high level of overall accuracy and, in addition, satisfactorily meet all the other testing criteria for plural marking. This is an indication of knowledge of the syntax of number in DLD children. The results reported in Grinstead et al. (2008) and the Rice & Oetting (1993) reveal that the formal feature encoding number in the DP is present both in DLD grammars and typical grammars.³⁴ Moore (2001) reports similarities between children with DLD and TD-MLU children in the knowledge of case, gender, number and person. She examined the use of nominative third singular pronouns *she* and *he* in English. She studied three groups of 12 children each: a group of children with DLD with a mean age of 4;6 years (range 3;11-5;4), a group of TD children matched for age and a group of children matched for MLU (morphemes) (mean age 3;4, range 3;0-3;8). The mean DLD MLU was 3.45 and the TD MLU was 3.56. The data was collected through spontaneous speech consisting in interactions with graduate student speech and language pathology clinicians. Accuracy was measured for case, gender, number and person. The results are indicated in table 4.5:

³⁴ Lin & Schaeffer (2018) obtained different results on the comprehension of the plural morpheme in Dutch. These results concerned the mass-count distinction.

Table 4-5 English pronouns (from Moore, 2001)

Groups	Total pronouns	Masculine	Feminine
DLD	59.25%	78.1%	30.1%
TD-MLU	71.3%	83.0%	49.0%
TD-A	97.9%	98.3%	97.4

The general performance of the children with DLD is comparable to the general performance of the TD-MLU group. The general performance of both the DLD group and the TD-MLU group was significantly lower than the performance of the TD-A group. Note, however, that the main problem within the pronoun system in the children examined in this study is case. Out of 1093 pronouns produced by the DLD group, 700 forms were correct, 363 were case errors, only 30 were gender errors. No person or number errors were observed. Out of 1143 pronouns produced by the MLU group, 207 were case errors, only 30 were gender errors and again there were no number or person errors. These findings indicate that children with DLD and their MLU peers have a similar knowledge of nominal formal features, except for case.

However, just as it was seen in Greek DLD, the case feature is not absent from DLD and typical grammars. Southwood (2007) examined the production of nominative and accusative pronouns in Afrikaans DLD (*ek* 'I', *my* 'me', *ons* 'we, us', *jy* 'you-nom-informal', *jou* 'you-acc-informal', *julle* 'you-pl-nom/acc-informal', *u* 'you-nom/acc-pl/sg-formal', *hy* 'he', *hom* 'him' *sy* 'she', *haar* 'her', *dit* 'it-nom/acc' and *hulle* 'they-nom/acc'). The participants in this study included 45 children divided in three groups. One group consisted in 15 Afrikaans-speaking 6-year-olds diagnosed with DLD whose ages ranged from 6;0 to 6;11 (mean = 6;5). These children had an MLU measured in words ranging from 3.54 to 5.79 (mean = 4.35). Another group comprised 15 Afrikaans-speaking children aged between 6;2 and 6;11 (mean = 6;7) serving as the age-matched control group (TD-A). Their MLU ranged from 5.12 to 7.10 (mean = 5.92). The third group included 15 younger Afrikaans-speaking

children matched in MLU in words whose age ranged from 4;0 to 4;7 (mean = 4;2) and whose MLU from 3.91 to 5.00 (mean = 4.56) (TD-MLU). The experiment consisted of two tasks: spontaneous speech production and a sentence completion task very similar to the one administered in Bedore & Leonard (2001). For the second task, the participant looked at a picture, heard a sentence containing a certain pronoun, and had to complete a sentence containing another pronoun. In order for the child to produce 1st and 2nd pronouns, some pictures contained a character representing the participant, other pictures contained a character representing the researcher and others contained characters representing both. The percentage of correct occurrence of pronouns in the spontaneous speech task was very high in the three groups (DLD: 96.7%; TD-MLU: 98.29%; TD-A: 99.62%).³⁵ According to Southwood (2007), accuracy in the DLD and the TD-MLU groups was comparable; the accuracy in these groups differed from that in the TD-A group, and the difference between errors committed by the children with DLD and those committed by the TD-A children was significant. No difference was found between the DLD group and the TD-MLU group. As for the sentence completion task, the results revealed that out of a score of 56, the DLD group obtained a score of 32.53, the TD-MLU 33.27 and the TD-A 45.60. A significant difference was found between the DLD and TD-A groups and between the TD-MLU and TD-A groups, but no significant difference was found between the DLD and TD-MLU groups, which indicates that similarity in performance by both groups. These results show that children with DLD and the typical MLU children have similar knowledge of the case feature, which is an indication that this feature is present in their grammars.

Agreement within the DP was also revealed to be rather similar in children with DLD and TD children. Royle et al. (2010) studied agreement in

³⁵ The analysis of these data also contains the use of possessive pronouns.

DP, especially gender agreement, in French DLD. They recruited 8 children with DLD (mean 5;6, MLU in words 4.2). These children were matched to four groups of typically developing children according to age (mean = 5;6), MLU in words (mean age = 4;5, MLU = 4.79), receptive vocabulary (mean age = 4;3) and working memory (mean age = 5;2), so that the TD groups included 32 typical children. The task consisted in the elicitation of adjectives, which in French must agree in number and gender with nouns and determiners. The children were required to produce DPs containing a size adjective (*petit* [pəti] 'small'-masc; *petite*³⁶ [pətit] 'small'-fem), a DP containing a colour adjective (*vert* [vɛʀ] 'green'-masc; *verte* [vɛʀt] 'green'-fem) and DPs containing both types of adjective.³⁷ The results indicate that, although children with DLD had difficulties with feminine forms, there was not a significant difference between the DLD groups and the control groups for the size-DPs. The findings for the colour-DPs did not produce any global significant difference, either, although the results of a part of the task eliciting colour adjectives yielded significant difference between the DLD group and the TD-A group: Children with DLD had difficulties with the feminine adjectives. Despite this difference, Royle et al. (2010) mentioned that no clear tendency regarding agreement has been able to be detected in this task. Finally, for the size-colour-DPs, a not really significant difference was noticed for the global results between the DLD group and the TD-A group. Overall, both groups performed in a comparable manner. Thus, children with DLD and typical children show that they have knowledge of agreement within the DP, which is another sign that the Agree operation is active in both type of grammars.

³⁶ The difference in gender is marked with the presence of the final vowel in the written form, but with the presence of the final consonant in the oral form.

³⁷ Note that size adjectives in French are usually pre-nominal but colour adjectives are generally post-nominal.

4.2.1.2 Comprehension

Studies that examined the comprehension of different configurations also revealed similarities between the children with DLD and their typical peers.

Tense. Southwood (2007) (mentioned above) studied the comprehension of tense by Afrikaans DLD children. In order to assess the comprehension of tense, two tasks were performed: picture matching and grammaticality judgment. For the first task, the participant was shown a sheet containing three pictures: one in which an action is being performed, one in which the action is still to be performed, and one in which the action had been performed. The participant had to study the pictures while the experimenter uttered two sentences, each of them matching the pictures. Then the experimenter repeated one of the sentences and asked the participant to point to the picture matching the sentence. The items in the task were the past forms of *be* and *have*. For the second task, the participant had to judge the grammaticality of sentences containing *hendiadys*. A hendiadys is the combination of two constituents connected by means of a conjunctive particle, with the two elements entering a semantic relation of modifier-head (Roberge 1994). The following example from Afrikaans, where - *en* 'and' is the conjunctive particle, illustrates:

- 15) *loop en eet*
'walking along eating'.

The second verbal element is the main verb, and the first verb is the modifier (Roberge 1994). Sentences in the past tense (with the auxiliary *have*) can have two forms: The first element can appear with the participial form and the second one with the infinitival form (16a) or both elements can appear in the infinitive (16b) (Southwood 2007: 45):

- 16) a. Hy het gesit en eet
he has past part sit- and eat-inf
 'He was (sitting and) eating'
- b. Hy het sit en eet
he has sit-inf and eat-inf
 'He was (sitting and) eating'

The participant had to decide about the correctness of sentences such as *Hy het geloop en eet* 'He ate while walking' or **Gister het die kat heeldag staan en gemiaau* 'Yesterday the cat mewed all day long'. For this task, a response was considered correct if a grammatical sentence was judged grammatical and an ungrammatical sentence was judged as such; otherwise, a response was considered incorrect.

The results for *be* and *have* were divided into two sets: The first one contained past forms of both verbs and the second set contained only past forms of *have*. Table 4.6 displays the results for both tasks:

Table 4-6 Comprehension of tense in Afrikaans (from Southwood, 2007)

Groups	<i>Have and Be</i>	<i>Have</i>	Grammaticality
DLD	31.16%	64.17%	47.3%
TD-MLU	42.16%	63.85%	55%
TD-A	53.33%	84.71%	50.7%

Table 6 presents the results of the two tasks. The results of the first task were included in a group of sentences containing *have* and *be* and in another group containing just *have*. According to Southwood (2007), even though the TD-A performed better than the other groups in the *have* and *be* task, no significant difference between the groups was found for the *have-be* group. For the past *have* group, a significant difference was found between the DLD group and the TD-A group, and between the TD-MLU group and the TD-A group, but no significant difference between the DLD group and the TD-MLU group. Note, however, that even the DLD group performed higher than the chance level. For

the grammaticity judgements, no significant inter-group difference was found. The three groups performed similarly. The results were not very high. However, this situation may be due to an artifact of the experiments, according to Southwood (2007). Under the assumption that children aged between 6;2 and 6;11 have acquired the notion of time and given the fact the DLD did not perform very differently from the typical children, it can be deduced that they have knowledge of tense. This is an indication that the T feature is present in DLD grammars.

Agreement. Bortolini et al. (1997) (mentioned above) studied comprehension of verbal person and number in Italian DLD. The morphemes tested were also the present 3rd person singular *è* and plural copula *sono* forms, the present 1st person singular (e.g., [pianʒo] ‘I cry’), 1st person plural ([pianɖʒiamo] ‘we cry’), 3rd person singular ([pianɖʒe] ‘he/she cries’) and 3rd person plural verbal ([pianʒono] ‘they cry’) forms. The experimenters made use of a picture-sentence matching task: Each probe comprised two drawings on a page. The examiner described one of the drawings and the children had to point to the picture that represented the action denoted by the sentence presented to them. All items involved minimal contrasts. For the copula they used sentences with no overt subject and with an invariant predicate (e.g., *è sotto* ‘[it] is under’, *sono sotto* ‘[they] are under’). For the other inflection forms, the subject was also covert, person was held constant, and the contrast was made with number. The percentages correct are shown in table 4.7:

Table 4-7 Comprehension of verbal person and number in Italian (from Bortolini et al., 1997)

Groups	Copula	Other verbal forms
DLD	76.67%	81.67%
TD-MLU	64.17%	75.83%
TD-A	77.50%	90.83%

Although the DLD group performed a little worse than the TD-A group and a little better than the TD-MLU group, the results for the copula showed no difference. As for the other inflection forms, the TD-A group outperformed the DLD and the TD-MLU groups. There was no difference between the latter groups although the children with DLD performed a little better than the TD-MLU group. Both sets of results show that (a) the DLD group performed (at least slightly) better than the TD-MLU group and not very differently from the TD-A group and (b) the DLD group performed above chance level. Therefore, it can be concluded that in Italian DLD number and person are understood, which is an indication that agreement in DLD is functional.

Roulet-Amiot (2008) studied the comprehension of verbal number in French, specifically sensitivity to appropriate or inappropriate subject-verb number agreement. The assumption is that sensitivity to violations of agreement is a sign of knowledge of agreement, and that inversely, lack of sensitivity indicates lack of knowledge. Her subjects were 13 children with DLD between 6;10 and 13;5, with a mean age of 9;3, and 14 TD children between 6;6 and 6;11, with a mean age of 6;7. Her material consisted of suppletive verbs (e.g., *faire* 'do', as in *il fait* 'he does', *ils font* 'they do') and lexical verbs with plural endings distinctive from singular endings (e.g., *lire* 'read' as in *il lit* 'he reads', *ils lisent* 'they read'). The task was picture-sentence matching; the pictures contained one character performing an action or two characters performing the same action. The participants had to decide whether or not the picture corresponded to the sentence they heard. Decisions were taken by clicking on a happy smiley or on a sad smiley. The grammaticality of the sentence was manipulated, and two conditions were created: The subject and the verb were both singular (17a), or both were plural (17b) (matching condition), or the subject was plural and the verb was singular (17c), or the subject was singular and the verb was plural (17d) (mismatching condition):

- 17) a. Le garçon **va** à l'école.
the boy go-sg to the-school
'The boy goes to school.'
- b. Les garçons **vont** à l'école.
the boys go-pl to the-school
'The boys go to school.'
- c. *Les garçons **va** à l'école.
the boy go-sg to the-school
- d. *Le garçon **vont** à l'école,
the boy go-pl to the-school

Sensitivity to agreement was measured by response time and sentence checking. Sentence checking was correct if the child saw a picture containing one character, heard a sentence such as (17a) or (17b) and clicked on the happy smiley; it was incorrect if, after seeing a similar image and hearing the same sentences, the child clicked on the sad smiley. Inversely, checking was correct if the child saw a picture containing two characters, heard sentences such as (17a) or (17d) and clicked on the sad smiley; it was incorrect if, after seeing a similar image and hearing the same sentences, the child clicked on the happy smiley.

Sensitivity measured by response time is shown in the following way: a response time to click on the smiley after hearing a mismatching sentence longer than a response time to click on the smiley after hearing a matching sentence is an indication of sensitivity. Sensitivity measured by sentence checking is shown in the following way: a number of incorrect choices after hearing a mismatching sentence greater than a number of incorrect choices after hearing matching sentences is an indication of sensitivity to agreement.

The results indicated that the responses by both groups were slower in the mismatching condition than in the matching condition. That is, children in

both groups took longer to react when the sentences were ungrammatical in terms of subject-verb agreement than when the sentences were grammatical. Comparable results were obtained with sentence checking: More errors were made after hearing ungrammatical sentences than after hearing grammatical ones. Overall, both groups performed similarly. These results reveal that children with DLD as well as TD-children are sensitive to verbal number agreement. This sensitivity is another sign that the Agree operation is active in DLD grammars (see also chapter 7).

Tense and agreement. Rice et al. (1999) investigated comprehension of tense and agreement in English DLD. The participants formed three groups. The first included 21 children diagnosed with DLD, with a mean age of 6;0 and an MLU-morpheme of 4.16. The second comprised 19 younger children, matched to the DLD group for MLU (4.18) with a mean age of 4;1 (TD-MLU), and the third group was matched to the DLD for age (TD-A). Comprehension of tense was tested through the use of grammaticality judgements. The task consisted in a story description where the children watched the examiner act out a story with toy objects. The characters were people from outer space. The examiner pretended to speak for them, and the child was required to decide if their language was correct or incorrect after each target clause. The test sentences were simple declaratives similar to the prototypical clauses attempted by young children with DLD. They included grammatical morphemes (e.g., -s, -ed) and forms of BE, and were divided into four groups: finite sentences (18), main infinitival (19)³⁸, incorrect agreement (20) and dropped progressive -ing (21):

- 18) a. He landed on the box.
b. He is hiding

³⁸ (19b) is classified as a main infinitival as it lacks the tense and agreement marker, just as (19a) lacks it and only contains an infinitive.

- 19) a. He eat toast.
 b. He behind the box.
- 20) a. You jumps on the box.
 b. He are mad.
- 21) The bear is look for something.

The data was analysed in the following manner. The child had to respond “yes/good” or “no/not so good”. If they said “yes” to an adult grammatical sentence, the answer was a “hit”; if they said “yes” to an ungrammatical sentence (e.g., main infinitival), it was considered a “false alarm”; a “no” to an adult grammatical sentence was a “miss” and a “no” to an ungrammatical sentence was deemed a “correct rejection”. The study comprises a longitudinal experiment, the data being analysed at five different occasions. The percentages reported by the authors correspond to the third time of measurement.

Table 4-8 Grammaticality judgements in English (from Rice et al., 1999)

Group		Finite sentence	Infinitival	Agreement		Progressive <i>-ing</i>	
				+Agr	-Agr	Not dropped	Dropped
DLD	Yes	68% (hits)	32% (false alarms)	81% (hits)	19% (false alarms)	87% (hits)	13% (false alarms)
	No	18% (misses)	82% (correct rejections)	11% (misses)	89% (correct rejections)	12% (misses)	88% (correct rejections)
TD-MLU	Yes	85%	15%	90%	10%	95%	5%
	No	8%	92%	8%	92%	6%	94%
TD-A	Yes	95%	5%	100%	0%	100%	0%
	No	4%	96%	4%	96%	3%	97%

The DLD children’s accuracy is very high in all the conditions. The results indicate that the children with DLD differed from the control children only in the

finiteness and infinitival conditions while the three groups performed similarly in the other conditions. That is, the children with DLD performed differently than the typical children with the type of sentences exemplified in (18) and (19) but similarly with the type of sentences exemplified in (20) and (21). Thus, the pattern showed by the children with DLD is relatively similar to the one showed by the control groups. The three groups accepted finite sentences as grammatical. At the same time, the TD-A did not accept main infinitivals. The TD-MLU group at the age of 4 accepted main infinitivals as grammatical but then they stopped accepting them and they improved their performance towards adult language. The DLD group also accepted main infinitivals as grammatical. But their performance was lower than the TD-MLU group. The findings also reveal that all the groups were able to detect the grammaticality in sentences with correct agreement and ungrammaticality in sentences with incorrect agreement. That is, there is no difference between the groups in accurate detection of correct agreement and incorrect agreement. Finally, for the results concerning dropping of the progressive, again the three groups performed similarly. That is, all the groups succeeded in correctly accepting grammatical sentences, i.e., those containing the *-ing* morpheme and in detecting the ungrammaticality in the sentences lacking this morpheme. Thus, although the English DLD children's performance is not as appropriate as the control groups', they show very similar knowledge of tense and aspect and agreement as the other typical peers. The studies by Bortolini et al. (1997), Roulet-Amiot (2008) and Rice et al. (1999) again show that formal features encoding temporal notions, such as tense and aspect, are present and the Agree operation is active in DLD grammars in the same way as in typical grammars.

Peripheral domain. Some studies also found similarities between children with DLD and their typical peers with respect to Internal Merge. The activity of this

operation was revealed in the comprehension of questions and relative clauses constructed by overt movement. Friedmann & Novogrodsky (2011) studied the comprehension of wh-questions in children with DLD speaking Hebrew. The DLD participants were 14 Hebrew-speaking children aged between 9;3 and 12;0 (mean = 10;4, SD = 0;11). These subjects participated in two of the three tasks administered by the researchers. A second DLD group of 14 children, aged between 9;10 and 14;10 participated in the third task. The participants in the control group were 25 typically-developing children without learning disabilities or language difficulties, aged between 9;1 and 10;0 (mean = 9;6 SD = 0;3). Comprehension of wh-questions was tested by using two binary picture-selection tasks. The participant listened to a question uttered by the experimenter while looking at a page with two pictures. Then they had to point to the picture corresponding to the question. Task 1 comprised pictures with two figures. One picture had the figure roles matched to the sentence and another picture had the figure roles reversed.

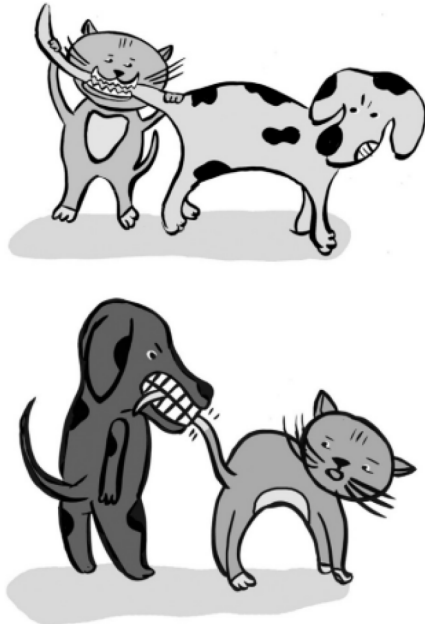


Figure 4-1 (Example for a picture pair used in the two-figure task; Friedmann & Novogrodsky 2011: 370)

The test sentences for this task included similar types of questions used by Ebbels & van der Lely (2001): *who* subject (22a), *which* subject (22b), *who* object (22c) and *which* object (22d) (Friedmann & Novogrodsky 2011: 371):

- 22) a. mi noshex et ha-xatul?
who bites acc the-cat
 'Who is biting the cat?'
- b. eize kelev noshex et ha-xatul?
which dog bites acc the-cat
 'Which dog is biting the cat?'
- c. et mi ha-xatul noshex?
acc who the-cat bites
 'Who is the cat biting?'
- d. et eize kelev ha-xatul noshex?
acc which dog the-cat bites
 'Which dog is the cat biting?'

Task 2 included three figures on each two-picture page. Friedmann & Novogrodsky (2011) used this task so as to verify whether it was more pragmatically felicitous, with a question like ‘who does the girl draw?’, to have to choose between two completely different figures rather than two figures of the same type (e.g., a mother and a witch instead of two cats). A figure appeared acting as the agent of the action in one of the pictures and acting as the theme of the same action in the other.



Figure 4-2 (Example for a picture pair used in the three-figures task; Friedmann & Novogrodsky (2011:372))

Only ‘who’ questions could be used in such a design (Friedmann & Novogrodsky (2011: 373):

- 23) a. mi mecayer et ha-yalda?
 who draws acc the-girl

'Who is drawing the girl?'

b. et mi ha-yalda mecayeret?
acc *who the-girl draws*
'Who is the girl drawing?'

Task 3 comprised the same design and 'which' subject and object questions, but each picture included 3 potential actors, two of the same kind, and one of a different kind (e.g., two dogs and one cat). The purpose of this different configuration was to further assess the methodological aspect of the picture selection task. The first actor was performing an action on the second, and the second actor was performing the same action on the third actor, which was of the same kind as the first actor.

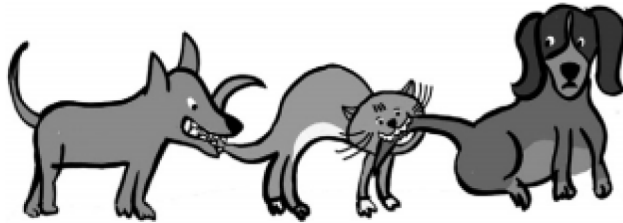


Figure 4-3 (A figure selection task in a 3-figure picture used in Task 3; Friedmann & Novogrodsky (2011: 373))

The results indicated that both the DLD and TD-A groups performed almost perfectly and equally in all types of questions except 'which' object questions. Table 4.9 shows the overall percentages correct for the first task:

Table 4-9 Comprehension of *wh*-questions in Hebrew (Task 1) (from Friedmann & Novogrodsky, 2011)

Group	'who' subject	'who' object	'which' subject	'which' object
DLD	92%	90%	95%	60%
TD-A	94%	94%	95%	85%

No difference was found between two groups for 'who' subject and object and 'which' subject questions. A significant difference was found for 'which' object. Note that despite the fact that the TD-A group performed better than the DLD group in 'which' object questions, the comprehension of this type by the control group is not as accurate as the comprehension of the other ones. Both groups also performed similarly in 'who' subject and object questions in Task 2: The results indicate an average of 98%. For Task 3, the DLD group 2 displayed comparable results with those of the DLD group 1 in the first task: The percentages correct for 'which' subject questions were 94,9 while the percentages correct for 'which' object questions were 68,8, yielding a significant difference. Since both DLD groups and the TD-A group obtained remarkably high results which showed no significant difference except in 'which' object questions, it can be concluded that children with DLD comprehend questions formed by overt movement. The non optimal performance in 'which' questions cannot be attributed to a deficit in movement, since the other wh-elements can perfectly move in DLD grammars. If movement was deficient in DLD grammars, then poorer performance would be expected in the other wh-questions as well. The conclusion from these findings is that Internal Merge is active in DLD grammars.³⁹

³⁹ Friedmann & Novogrodsky (2011) offer an account of DLD children's difficulty with object questions in terms of a deficit in thematic role assignment. According to them, children with DLD cannot assign thematic roles of the arguments in questions that include a moved object. Moreover, in the absence of lexical-semantic clues and of canonical order, they were forced to guess. Assignment of a thematic role to a displaced phrase is not problematic per se, but role assignment to an argument that moved over another argument, as in object questions, is hampered. Since performance by children with DLD in 'who' object questions is correct, unlike their performance in 'which' object questions, Friedmann & Novogrodsky (2011) refined their account by proposing that not every argumental crossing creates difficulties; only those crossings involving arguments of the same type. In 'who' questions, the wh-phrase is non-referential, whereas the intervening argument is referential, the arguments are of a different type; in 'which' questions, both arguments are referential, the arguments share their type; therefore, thematic role assignment to the object is blocked.

Friedmann & Novogrodsky (2004) examined the comprehension of relatives in Hebrew DLD. 30 monolingual Hebrew-speaking children participated in the study. They were divided in 3 groups of 10 children. The first group comprised children with DLD whose ages ranged from 7;3 to 11;2 (mean age = 9;0, S.D.=1;2). The second group included children whose age ranged from 5;11 to 6;5, with mean of 6;2 (TD-A6). The criterion for selection of these children was a chronological age at which relative clauses are already well understood. The third group consisted of children whose age ranged from 4;0 to 5;0, with mean of 4;7 (TD-A4). According to Friedmann & Novogrodsky (2004) children do not completely comprehend relatives at this age; they were included in order to compare their pattern of errors to that of the DLD group. Three types of sentences were used: simple SVO (24a), complement head-subject gap (C-S) (24b) and complement head-object gap (C-O) (24c) (Friedmann & Novogrodsky 2004: 670):

- 24) a. Ha-safta menasheket et ha-yalda.
the-grandmother kisses acc the-girl
 'The grandmother is kissing the girl.'
- b. Zot ha-safta she-menasheket et ha-yalda.
this the-grandmother that-kisses acc the-girl
 'This is the grandmother that is kissing the girl.'
- c. Zot ha-safta she-ha-yalda menasheket.
this the-grandmother that-the-girl kisses
 'This is the grandmother that the girl is kissing.'

All the verbs within the relatives were transitive, all the noun phrases were animate, and the relative sentences were always semantically reversible. A binary sentence-picture matching task was used: A sheet with two pictures was presented to the child while he listened to the test sentence. One picture matched the sentence, the other showed reversed roles.



Figure 4-4 (Friedmann & Novogrodsky, 2004: 671)

The percentages correct are shown in table 4.10:

Table 4-10 Comprehension of relatives in Hebrew (from Friedmann & Novogrodsky, 2004)

Group	SVO	C-S	C-O
DLD	96,5%	98,5%	62%
TDA-4	93,5%	85,5%	58%
TDA-6	99%	95%	86%

A comparison between the groups yielded the following results. The TD-A6 group significantly superseded the DLD group on the comprehension of the C-O relatives; they were slightly better than the children with DLD on SVO sentences but, interestingly, slightly worse on subject relatives. The TD-A6 group significantly superseded the TD-A4 group on all sentence types. The difference between the performance of the DLD group and that of the TD-A4

group was not significant on the comprehension of SVO and of C-O. However, the DLD group performed significantly better than the TD-A4 group on the comprehension of C-S. These findings are interesting in that not only did the DLD group in general perform like the TD groups but also in some conditions they superseded them. Relative clauses in Hebrew are assumed to be constructed by movement, i.e., Internal Merge. Internal Merge is assumed to be active in typical child grammars. Children with DLD comprehended movement-constructed relative clauses as well as their younger typical peers. It can be concluded then that Internal Merge is also active in DLD grammars.⁴⁰

The results reported in this section show that children with DLD can behave similarly to their (especially younger) typical peers. The comparability is revealed in the similar percentages of correct responses provided by both populations. This quantitative similarity has been observed in the production and comprehension of different languages, and in all sentential domains. Thus, DLD and TD children show comparable knowledge in the production and comprehension of tense, aspect, verbal agreement, determiners, pronouns, case and number agreement within the DP, as well as similarities the comprehension of questions and relative clauses, which is an indication that formal features, the Agree and Merge operations are present in DLD and typical grammars. These findings point to the conclusion that, since typical children show continuity in the acquisitional process and children with DLD can behave similarly to their typical peers, DLD children's grammars are also continuous. This continuity is an indication that UG in children with DLD is intact and available.

⁴⁰ Friedmann & Novogrodsky (2004) suggest that children with DLD have a deficit in processing or representing movement, i.e., Internal Merge. Specifically, they cannot co-index the operator that moves from its base position to Spec-CP in the embedded clause with its antecedent, i.e., the nominal head of the relative clause. However, in Friedmann & Novogrodsky (2006) they claim that the impairment resides in thematic role assignment, a similar account offered for 'which' object questions. See chapter 6, where it is shown that Internal Merge is not involved in DLD children's difficulties with relative clauses.

4.2.2 Qualitative similarities

As it should be clear from the previous section, **children with DLD produce many non-target forms but also target forms**. Regarding non-target form, as mentioned in chapter 3, section 6, a situation where children with DLD produce forms that have never been seen in typical language is extremely rare. In fact, most forms, target and non-target, produced by children with DLD **resemble** those that their typical peers produce. Most of the errors shown in the last section in chapter 3 are also committed by typical children. The observations that are reported in this section were made for the tense, pronouns and word order.

Tense. Rice & Wexler (1995) compared the linguistic behaviour of 18 children with DLD from 4;7-5;8, 20 MLU-matched TD children (age ranging from 2;6 to 3;6) (TD-MLU) and 22 age-matched typical developing children (age ranging from 4;7 to 6;7) (TD-A), all of them English speakers. They examined the production of the past form *-ed* and the 3p sing, indicative present agreement marker *-s*. They found that all the groups tested omitted the past morpheme and the agreement marker. Moreover, most of the productions of verbal forms occurred in appropriate contexts: *-ed* only appeared in past contexts and the *-s* marker occurred in present contexts, and there were no differences between the groups as regards appropriateness of contexts.

In the study of the production of tense in French (mentioned above), Paradis & Crago (2001) found that the children with DLD revealed a profile similar to the TD-MLU group. First, auxiliaries used in the compound past, *avoir* 'have' and *être* 'be', and in the near future, *aller* 'go', tend to be omitted:⁴¹

⁴¹ See footnote 11 for the category of the main verb in example (25).

25) DLD response : Moi déjà jouer dans le sable
 me already play (infinitive/participle) in the sand
Target: J'ai déjà joué dans le sable
 I have already played in the sand
 'I have already played in the sand'

Second, most errors in past and future contexts were due to children in both groups' use of bare stems and nonfinite forms. Third, the cases where an unambiguous participle appeared were restricted to past contexts, and the cases where an unambiguous infinitive appears were restricted to future contexts.⁴² This indicates that despite omission of auxiliaries, verbal forms were used appropriately according to their syntactic and semantic context, except that the obligatory tense-bearing element, i.e., the auxiliary, was missing (see chapter 8 for an analysis).

Hansson, Nettelblatt & Leonard (2000) studied verbal morphology in children with DLD speaking southern Swedish. The participants were 42 children and were divided in three groups. Fourteen children were diagnosed with DLD, their MLU ranged from 2.36 to 4.41 and their age from 4;3 to 5;7. Fourteen children formed the MLU control group. Their age ranged from 2;1 to 3;7. The rest of the 14 children constituted the age control group. Their data were collected through spontaneous speech. The researchers examined the use of the present, regular past and irregular past. In most cases, verb inflections involved addition of a morpheme to the stem. For stems ending with a consonant other than *r*, the infinitive is formed by adding *-a* and the present by adding *-er* [ər]:

26) stem: köp infinitive: köpa present: köper 'buy'

⁴² Most verb types in French display a homophony between the past participle and the infinitive such that it is not possible tell which form is being used (see example 25 in the text); unambiguous participles or infinitives refer to the different forms that a verb has for each category.

For stems ending with [r], the infinitive is also formed with *-a*, but the present morpheme *-er* is not added to the stem; for these verbs, the present tense form is similar to the stem:

27) stem: kör infinitive: köra present: kör 'drive'

With stems ending with a vowel, the infinitive is identical to the stem and the present is formed by adding *-r*. As for past tense, *-de* [də] is added to stems ending with a voiced segment (vowels and consonants) and *-te* [tə] is added to stems ending with a voiceless segment. Irregular past forms consist of a vowel change with respect to the stem (e.g., stem *bit*, past *bet* 'bit') or a vowel change plus an additional consonant (e.g., stem *gå*, past *gick* 'go'). For the present, only verbal forms whose stem ends with a consonant were analysed in this study. Almost all the forms produced by the three groups were target. And the three groups produced similar types of errors. Most of the errors for the present consisted in the use of infinitives (e.g., *sova* instead of *söver* 'sleeps'). The DLD and the TD-MLU groups also produced some bare stems (e.g., *skjunk* instead of *skjunker* 'sinks'). The errors produced by the children with DLD for the regular past are the use of the infinitives. The other groups made almost no errors. However, the three groups performed comparably in the irregular past condition, and they did not differ. Accuracy was similar in both types of irregular forms. And the errors committed with this form were also similar in the three groups. Most of them consisted in over-regularizations, that is, they used the regular morphological rule which adds the morpheme [tə/də] to the stem in forms that are irregular in the target language (e.g., *springde* instead of *sprang* 'ran'; *hållde* instead of *höll* 'held').

The Spanish children with DLD studied by Bedore & Leonard (2001) are also qualitatively similar to their typical peers with respect to verbs. The patterns observed in the children with DLD are very comparable to the ones

observed in the control groups. Most of the forms produced by the DLD group are target, even those one in which a difference was found between the control groups and the DLD group. Moreover, the error types were identical. The DLD, the TD-MLU and the TD-A children, although the latter to a much lesser extent, tended to commit near-miss errors, that is, the produced form differed from the target form in only one feature. Specifically, present forms tended to replace past forms in most cases; in only very few cases past forms replaced present forms. For person agreement, the tendency was the replacement of first person with third person. For agreement in number, the singular tended to replace the plural. These patterns showed a strong directionality. That is, present forms, third person forms and singular forms can be considered default forms. These forms tend to replace other forms, but the reverse replacement was not observed, which implies that substitutions operate from default forms to non-default forms. Infinitives instead of finite forms were also produced by the three groups.

Thus, the fact that children with DLD and typical children produced the -s and -ed morpheme in appropriate contexts in English, omitted auxiliaries but correctly used participles and infinitives, and almost all the verbal forms produced in Swedish and Spanish were target can be taken as an indication that the T feature is present in both type of grammars.

Pronouns. As mentioned in chapter 3, difficulties with clitics are characteristic in French DLD. But these difficulties were also observed in typical children. Jakubowicz et al. (1998) examined the production of French singular 3rd person nominative pronouns (*il* 'he/it', *elle* 'she/it'), singular 3rd person reflexive clitic (*se* 'himself/herself/itself/themselves') and singular 3rd person accusative clitics (*le* 'him/it', *la* 'her/it'). They tested 13 children with DLD (age 5;7-13;0, mean 8;11) and 20 TD children (age 5;6-5;11, mean 5;7). The comparison base between the groups is the findings in previous research that French TD children

acquire clitic pronouns relatively early during their linguistic development. The experiment consisted in an elicited production task. The children had to watch pictures representing a self-orientated action (for nominatives and reflexives) and pictures represented a non-self-orientated picture (for nominatives and accusatives) and answer questions prompting the use of clitics. For the first type the experimenter asked the child questions like *Que fait Kiki?* 'What is Kiki doing?' and for the second type questions like *Que fait Kiki à Nounours?* 'What is Kiki doing to Nounours?'. Both groups produced target forms. In terms of errors, accusative clitics were most frequently elided or replaced by lexical DPs; they were also replaced by possessives, to a much lesser extent strong pronouns Example (28) shows the use of a lexical DP (repeated from chapter 3):

28) Experimenter : Que fait Nounours à Kiki?
what does N. to K.
'What is Nounours doing to Kiki?'

DLD response: i(l) brosse Kiki.
he brushes Kiki
'He is brushing Kiki.'

The child repeats the full lexical DP *Kiki* rather than using an object clitic. Reflexive clitics were mainly omitted and or replaced by possessives:

29) I lave ses dents.
he washes his teeth
'He is brushing his teeth.'

To a lesser extent they were replaced by strong pronouns, the expression *tout seul* 'all alone' and lexical DPs. Very few instances include the use of the accusative instead of the reflexive. Nominatives underwent omission and replacement by lexical DPs.

Bedore & Leonard's (2001) results for Spanish DLD pronouns show a different picture from French DLD in that most of their produced utterances included a clitic. And again, both the children with DLD and their typical peers behaved comparably in qualitative terms. Bedore & Leonard's (2001) studied the occurrence of accusative clitics (*lo* 'him/it', *la* 'her/it', *los* 'them-masc', *las* 'them-fem'). In their experiment, they used an elicitation task. Children were required to complete sentences used to describe pictures. The children were shown a page with a two-picture sequence in which the subject performed an action on the same object in each picture. The experimenter described the first action with a full DP referring to the object and the child had to describe the second action with the verb and the clitic (e.g., *Los niños lavan el carro y luego (lo empujan)* 'The children wash the car and then ([they] it-push).'). The probe items were classed according to number and gender. The three groups produced target forms (DLD group: 117/360; TD-MLU group: 173/360; TD-A group: 265/360). Few errors comprised omissions or the replacement of clitics by a full DP. The rest of the errors consisted in commissions. Most non-target forms were near-miss errors: Singular masculine clitics tended to replace plural masculine clitics and singular feminine clitics tended to replace plural feminine clitics. The reverse asymmetry was not observed. This pattern is mainly characteristic in both the DLD group and the TD-MLU group, and to a much lesser extent in the TD-A group as well.

As mentioned above, Afrikaans-speaking children with DLD and their typical peers showed similar performance concerning pronouns. The three groups obtained very high accuracy rates, according to Southwood (2007). The faulty productions in the three groups also revealed similarities. Interestingly, for the analysis of the utterances obtained in her sentence completion task, Southwood (2007) initially created 24 different codes to be used in order to detect any patterns in the errors. Nevertheless, she found that most of the error categories occurred very infrequently, and so it was not possible to detect any

pattern in the errors committed by the three groups. One of the observed errors was omission: The TD-A only omitted one type of pronoun, oblique *dit*, whereas the other two groups omitted different ones. An example is provided in (30) (Southwood 2007:180):

30)	<u>DLD response</u>	<u>Target</u>
	Ek kon gedoen het <i>I can-past do-past part did</i> 'I could have done it'	ek kon dit gedoen het <i>I can-past it-obl do-past part did</i>

Substitutions also occurred in the three groups. They consisted mainly in the replacement of case forms. The accusative case was replaced by the nominative case (example repeated from chapter 3):

31)	<u>DLD response</u>	<u>Target</u>
	'n hand vashou met hy <i>a hand fast-hold with he-nom</i> 'Hold hands with him'	hande vashou met hom <i>hands fast-hold with him-obl</i>

No substitution concerning number and gender was observed in any group. The TD-A and the DLD groups made a person error:

32)	<u>DLD response</u>	
	(Die hond lek my) en die kat krap jou '(The dog is licking me) and the cat is scratching you-sg'	
	<u>Target</u>	
	(Die hond lek my) en die kat krap haar '(The dog is licking me) and the cat is scratching her'	

Doublings, i.e., the non-target pronunciation of the copy of an LI, were also observed but only in the DLD and the TD-MLU groups (Southwood 2007:181):

33) DLD response

Target

ons ma leer **ons** saam **ons** ons ma leer saam met ons
our mom learn us with us *our mom learn together with us*
'Our mom is learning with us' (i.e., she is in our class at school)

Corver et al. (2012) note that the second instance of the pronouns does not add any semantic content to the sentence. They do not also introduce any affective, emphatic or contrastive meaning (cf. Spanish *Quiero verte a vos* (no a Guillermo) I want see-you to you (not to G.) 'I want to see you, not G.). Finally, the DLD and the TD-MLU also provided full DPs instead of pronouns:

34) DLD response

(Dié seun stamp haar en) dié seun stamp **die oom en die tannie**
'(This boy is pushing her and) this boy is pushing the uncle and the auntie=the man and the woman'.

Target

(Dié seun stamp haar en) dié seun stamp **hulle**
'(This boy is pushing her and) this boy is pushing them.'

Thus, once again, the production by children with DLD is qualitatively similar to that of their typical MLU peers.

As shown above, children with DLD and their typical peers produced target forms, especially in Afrikaans and to a lesser extent in Spanish and French. It can be concluded that the D feature composing pronouns (see Tsimpli 2001 and references therein) is present in both types of grammars. The errors observed can be taken to be due to an ongoing grammatical mapping. Recall that, for the SCH, language acquisition mainly consists in grammatical mapping from UG to a target grammatical system. In order to reach the adult steady grammatical state, children must integrate the workings of the different linguistic components (phonology, semantics, morphology, pragmatics), the

setting of parameters and language-specific rules and constraints. It can be the case that the source of errors, in this case with pronouns, is the incomplete, and in the case of DLD, slow grammatical mapping.

Word order. Hansson, Nettelbladt & Leonard (2000) (mentioned above) also examined word order and the relationship between it and verbal morphology in Swedish. Swedish is a V2 language, i.e., the verb must always be placed after the first constituent in main and independent sentences (Hansson et al. 2000: 852):

- 35) a. Bill äter inte glass.
 B. eats not ice cream.
 ‘Bill doesn’t eat ice cream.’
- b. Glass äter Bill.
 ice cream eats B.
 ‘Bill eats ice cream.’

Moreover, the verb must precede the negation marker (see 35a). It was found that the patterns of the three groups was almost identical (DLD 96%, TD-MLU 99% and TD-A 100%). The distribution of finite forms and non-finite verbal forms in subject-initial sentences indicates that almost all the finite and all the non-finite forms were correctly placed in the right position by the three groups. This means that finite forms appeared before the negation marker and non-finite forms after it. The distribution of finite forms and non-finite verbal forms in other constituent-initial sentences (see 35b) presents a significant difference between the DLD group and the typical groups: The children with DLD misplaced more finite forms than the typical children. However, in more than 75% of the sentences containing a non-subject initial constituent without negation and in 90% of the sentences containing a non-subject initial constituent with negation produced by the DLD children, the verbal forms

appeared in the right position. This means that finite forms tended to be correctly placed between the first sentential constituent and the subject.

Paradis & Crago (2001) also studied verbal word order in French. They analysed sentences containing negation. Recall that the finite verb is placed before the negative marker and non-finite verbs after it in French. They found that in almost all the sentences including negation produced by DLD children, verbs were correctly placed. Moreover, the same correlation between finiteness and position found in Swedish was also observed in French: In sentences containing the verb-negation sequence, almost all forms were finite and in sentences containing negation-verb sequences, almost all forms were non-finite. These findings are very similar to those observed in typical children in other studies (e.g., Pierce 1992, Labelle & Valois 1996, Déprez & Pierce 1993).

Sentences displaying different positions occupied by the verb are standardly analysed as structures in which movement of the verb from V to T and, in the case of V2, movement to C takes place. V-movement is produced by the internal merging of the verb on the higher positions in the hierarchical structure (see chapter 2). This tendency to the correct placement of the verb is taken as an indication that children with DLD as well as typical children know how to perform V-movement, which means once again that Internal Merge is active in their grammars.

The data cited in this section shows similarities between children with DLD and their typical MLU peers, in some cases similarities even with their TD-A peers. Children with DLD and TD-MLU children were comparable in production in the verbal/temporal, nominal and peripheral domain, in terms of quality, i.e., the type of forms that were uttered. Both populations evinced similarities in their target forms and non-target forms concerning verbs, pronouns and word order. This is also an indication that DLD grammars and typical grammars are qualitatively similar. This resemblance is taken to be

derived from the fact that UG is similar in both acquisition situations, which means that UG in both populations contains formal features, the Agree and Merge operations and constraints. UG is then taken to be continuous and to be intact in DLD grammars.

An objection could be raised regarding the conclusion arrived at in this chapter: The fact that quantitative and qualitative similarities have been observed in both populations might not indicate that the same mechanisms, operations and constraints underly typical and DLD grammars, so that the inference that UG is also accessible in DLD grammars is not warranted. A grammar not constructed within the purview of UG would be qualitatively different from typical grammars. If DLD grammars were qualitatively different from typical grammars, all the similarities between them would be just a bunch of coincidences. That is, it would be a striking occurrence that many studies report comparable correct percentages in DLD and typical linguistic behavior. In fact, with a qualitatively different UG, children with DLD would have obtained correct percentages much lower than their MLU peers. Furthermore, the patterns in production and comprehension tests in children with DLD would be expected to be different from those in typical MLU children. However, the findings reported in this chapter do not point to mere coincidence and likely dissimilar linguistic behavior in DLD children. For instance, Spanish children with DLD and MLU typical children studied by Bedore & Leonard (2001) differed in production from the age control group in the very same verbal forms and they did not differ between them. The children with DLD and MLU typical children in Rice & Oetting (1993) study performed very similarly in four out of five of the measures used on plural marking. In the comprehension task designed by Rice et al. (1999), despite some quantitative differences, children with DLD exhibited the same pattern than their typical peers: In independent sentences, most finite sentences were hits (correct choices) and most infinitival sentences were correct rejections; in the agreement condition, most sentences

with agreement were hits and most agreementless sentences were correct rejections; likewise in the progressive condition, most sentences containing the *-ing* form were hits and most lacking it were correct rejections. The exposure to grammatical and ungrammatical sentences concerning verbal agreement in the study carried out by Roulet-Amiot (2008) yielded similar findings both for children with DLD and typical children: Longer reaction time was measured and more sentence checking errors were observed in ungrammatical sentences than in grammatical sentences. Thus, most of the studies described in this chapter examined different linguistic traits and domains using different methodologies and converge to similar results. These results are not taken to be a coincidence and do not point to DLD grammars qualitatively dissimilar from typical grammars.

The type of target and non-target forms produced by children with DLD also lead to the same conclusion. A qualitatively dissimilar grammar would probably allow English children with DLD to produce forms like *they likes* or, in present time contexts, *he walked*; or it would allow Spanish children with DLD to randomly replace verbal forms (e.g., 1st person with 2nd person, or 3rd person with 1st person); or else the word order patterns exhibited by Swedish DLD would be different from those produced by their typical peers. Nevertheless, children with DLD do not utter such forms, their production does not display randomness and, as it was mentioned, it resembles production by typical children. Again, this resemblance is not an accident.

From a theoretical point of view, based on Flynn & Lust's (2002) stance on first and second language acquisition, it can be stated that the null hypothesis is that similar performance and/or production of comparable types of errors must occur for the same reasons, i.e., they are underlain by the same mechanisms, operations and constraints. According to them, identification of a growing quantity of similarity between two language acquisitional contexts renders the provision of an alternative explanation for these phenomena more

difficult without an ad hoc account. Gopnik (1990) and Crago & Gopnik (1991) argue that DLD grammars are constructed from mechanisms different from typical grammars. However, as argued in chapter 5, their accounts are not satisfactory and in fact the data from the atypical language studied by them can be analysed as having been produced under the purview of UG. In light of all these considerations, the hypothesis about the intactness and accessibility of UG in DLD grammars is maintained.

4.3 Similarities between DLD and Second Language Acquisition

As mentioned in chapter 1, L2 acquisition is also proposed to be UG-constrained. According to White (2003), L2 speakers' grammar is systematic, and errors produced by them are not random but seem to be rule-governed. The sentential representations of the language being acquired are constructed by means of complex linguistic systems. L2-speaker grammars allow for representations of abstract and subtle differences that cannot be accounted for by invoking L1 grammar or L2 input, so their source is UG (White 2003).⁴³

⁴³ An example of this type of representation is provided by a restriction in the interpretation of pronouns in prodrop languages. This restriction concerns pronominal subjects in embedded sentences. In non-prodrop languages like English pronouns must be overt (i.a), whereas in prodrop language like Spanish, pronouns can be null (i.b) or overt (i.c):

- i) a. William thinks that *(he) will pass the exam.
- b. Guillermo cree que __ va a aprobar el examen.
 G. thinks that goes to pass the exam
- c. Guillermo cree que él va a aprobar el examen.
 G. thinks that he goes to pass the exam
 'Guillermo thinks that (he) will pass the exam.'

The antecedent of pronouns in both types of language can be a referential expression (ii.a,b) or a quantified expression (ii.c,d):

- ii) a. William_i thinks that he_i will pass the exam.
- b. Guillermo_i cree que ___i va a aprobar el examen.
- c. Everybody_i thinks that he_i will pass the exam.

According to Epstein, et al. (1998) and Flynn & Lust (2002), L2 acquisition is also continuous: UG remains unchanged, distinct from the L1 grammar and from the grammar of the language being acquired and is the initial state. UG remains accessible during the whole acquisition period and limits the

-
- d. Nadie_i cree que ___i va a aprobar el examen.
Nobody thinks that __ goes to pass the exam
'Nobody thinks that (he) will pass the exam.

The proper name is the antecedent of *he* in (ii.a) and of the null pronoun in (ii.b) and each individual included in the set specified in the discourse is the antecedent of *he* in (ii.c) and of the null pronoun in (ii.d). The examples in (ii.a,c) show that in non-prodrop languages pronouns in embedded sentences can have their antecedent within the same sentence. However, they can also refer to another individual in the discourse, for instance *he* in (iii.a,b) can refer to Howard.

- iii) a. William_i thinks that he_j will pass the exam.
b. Everybody_i thinks that he_j will pass the exam.

Prodrop languages behave differently with respect to the difference between overt pronouns and null pronouns. Null pronouns are similar to overt pronouns in non-prodrop languages: They can have referential expressions or quantified expressions as antecedents within the same sentence, as shown in (iv.a,b), or refer to another individual in the discourse:

- iv) a. Guillermo_i cree que ___i va a aprobar el examen.
b. Nadie_i cree que ___i va a aprobar el examen.

Overt pronouns in prodrop language can also have an antecedent outside the sentence (vi.a,b) or can have a referential expression as its antecedent within the same sentence, just like null pronouns (vi.c), but cannot have a quantified expression as its antecedent (vi.d):

- vi) a. Guillermo_i cree que él_j va a aprobar el examen.
b. Nadie_i cree que él_j va a aprobar el examen.
c. Guillermo_i cree que él_i va a aprobar el examen.
d. *Nadie_i cree que él_i va a aprobar el examen.

White (2003) reports a study carried out by Pérez-Leroux and Glass (1997) that involved English L2 learners of Spanish. The results of the study indicate that L2 learners, like Spanish native speakers, can make the distinction concerning the interpretation of null and overt pronouns in Spanish. Since English has no subject null pronouns, i.e., this distinction is absent in this language, no transfer from the L1 can be invoked to account for this phenomenon. Input from the L2 is also unhelpful for the distinction in question: According White (2003), on the one hand, the production of sentences including quantified antecedents are likely to be infrequent and, on the other hand, overt and null pronouns can have the same type of antecedents, so the absence of overt pronouns in sentences containing quantified expressions as potential antecedents of these pronouns would not be likely to be detected. Thus, the analysis of the phenomenon in question supports the assumption that L2 acquisition is UG-constrained.

hypothesis space that L2 learners can use for the construction of their new grammar. L2 learners have knowledge of the full inventory of lexical and functional categories and features provided by UG at all stages of acquisition (Epstein, Flynn & Martohardjono 1998).

Thus, according to Flynn & Lust (2002), the nature of L1 grammars and L2 grammars are similar in fundamental ways and this similarity can be linked to UG. However, Flynn & Lust (2002) do not mean that the UG-constrained language acquisition hypothesis entails that both acquisitional contexts are developmentally identical in all respects. That is, according to them, it is not necessarily the case that the L2 acquirer will develop her grammar in a manner similar to an L1 acquirer placed in a normal environment, since language acquisition depends on more than just UG, i.e., UG is necessary but not sufficient for acquisition.

Furthermore, like L1 acquisition, grammar development in L2 acquisition consists of process of mapping from UG to a target grammar through the integration of the workings of the different linguistic components, language-specific rules and constraints, the setting of parameters and the deductive consequences from parameter-setting with respect to independent factors (e.g., interpretative directionality of anaphors) (see Flynn & Lust 2002).

Just as similarities between L1 acquirers and children with DLD were observed, DLD grammars exhibit some resemblance to L2 grammars. This resemblance can be taken as an indication that, since L2 acquisition is UG-constrained, so is DLD. This is worth mentioning because, even though children with DLD often behave unlike their typical L1 peers of the same age, i.e., their grammar seems to be non-target, UG can still be considered intact and accessible in this acquisition situation.

Looking at French, Paradis & Crago (2000) studied the production of tense (simple present, compound past, i.e. aux *avoir* 'have' or *être* 'be + past participle, compound future, i.e. aux *aller* 'go' + inf), verbal agreement (which

includes agreement with a lexical subject or a clitic subject and the verb, and co-occurrence of lexical subjects with co-referring subject clitics in subject-doubled configurations), distributional contingencies (which include presence of subject clitics with finite verbs, and word order concerning negation, finite and non-finite verbs). The participants in the study were 10 children with DLD (mean age = 7;6), 10 typical children (mean age = 7;3), both groups speaking French, and 15 English-speaking L2 learners of French (mean age = 6;7). Paradis & Crago (2000) analysed spontaneous production data, which were collected during individual interview sessions. The sessions consisted in free discourse for the DLD and control groups, and specific questions for the L2 group. The three groups were also asked questions concerning past and future events in their lives so as to elicit sentences containing past and future tenses.

The correct percentages of finite verbs (the number of finite verbs of any tensed sentence out of the number of obligatory contexts for finite verbs) were: 88% for the DLD group, 89% for the L2 group and 99.5% for the L1 group. The difference between the L1 children and the other children is statistically significant while the difference between the children with DLD and the L2 children was not. Note that, despite this significant difference, the overall correctness for these groups is very high. The correct choice of tense was also examined. The percentage scores of accurate tense were calculated from the number of correct forms used out of the number of obligatory contexts for present, past and future forms. The three groups performed similarly on the present tense. The DLD and the L2 groups performed significantly differently from the L1 group on past and future tenses. And the L2 group's performance on the past and future tenses was significantly lower than the DLD group's. In addition, in the L2 group, the use of the present was significantly more accurate than the use of the past and the future, but the latter did not show any significant difference. In the DLD group, the use of the present was significantly more accurate than the use of the future but not more accurate than the use of the

past, and the correct use of the past and the future displayed no significant difference. Two types of errors were committed by both groups in past and future contexts: the use of the present form, considered a sort of a finite default by Paradis & Crago, and the use of non-finite forms (from Paradis & Crago 2000: 847):

36) Present form in past context:

- a. DLD child: Vendredi, j'**apporte** une affaire de xxx
Friday, I-bring something from xxx (unintelligible)
Target: Vendredi, j'**ai apporté** une affaire de xxx
Friday, I brought something from xxx
- b. L2 child: Quand maman elle **dit** quelque chose, j'**entends** pas très bon
When Mommy says something, I don't hear very well
Target: Quand maman elle **a dit** quelque chose, j'**ai** pas bien **entendu**
When Mommy said something, I didn't hear very well.

37) Non-finite form in past context

- a. DLD child: je **dessiner** un jeu de pupitre
I draw-inf a desk game
Target: J'**ai dessiné** un jeu de pupitre
I drew a desk game
- b. L2 child: Moi je **jouer** au baseball
(me) I play-inf baseball
Target : J'**ai joué** au baseball
I played baseball

38) Present tense in future context

- a. DLD child: Ma mère il **achète** le patin à roulettes
My mother, he buys me roller-blades
Target: Ma mère elle **va m'acheter** des patins à roulettes
My mother will buy me roller-blades

b. L2 child: Mon père **est** là
My father is there.

Target : Mon père **sera** là
My father will be there

39) Non-finite form in future context

a. DLD child : Oui, dedans trois semaines je **avoir** ma fête
Yes, into three weeks I have-inf my birthday

Target: Oui, dans trois semaines je **vais avoir** ma fête
Yes, in three weeks I will have my birthday

b. L2 child: je **jouer** au baseball, tag, soccer
I play-inf baseball, tag, soccer

Target: je **vais jouer** au baseball, tag, soccer
I will play baseball, tag, soccer

The L2 speakers tended to produce more of the present forms whereas the DLD group tended to produce more of the non-finite forms. Paradis & Crago (2000) hypothesize that the greater use of non-finite forms as errors by the children with DLD is an indication that this population has problems with non-thematic verbs, such as auxiliaries, but it has no difficulties with temporal reference. They support their view with sentences containing no auxiliary but having unambiguous participles and infinitives (see footnote 8). 100% of the sentences containing an unambiguous past participle was produced in past contexts; 90% of the sentences containing an unambiguous infinitive was uttered in future contexts. So French DLD children, have the formal temporal feature [T] in their grammars but they have problems with its morphological realisation in past and future contexts.

Accuracy in verbal agreement was calculated for correct matches between lexical or clitic subjects and verb forms overtly inflected and matches between lexical subjects and co-occurring subject clitics. For both

configurations, the three groups performed not only similarly but also almost perfectly:

Table 4-11 Verbal agreement (from Paradis & Crago, 2000)

Group	1st sg + avoir or être	Subject-doubled construction
DLD	99%	98%
L2	100%	100%
L1	99.7%	100%

As for distributional contingencies, the first one concerned subject clitics and finite verbs, the second one concerned the placement of negation with respect to finite and non-finite verbs. Only the DLD and the L2 groups were implicated in this analysis. The results indicate a very high accuracy:

Table 4-12 Distributional contingencies (from Paradis & Crago, 2000)

Group	Subj clitic + finite verb	Negation placement	
		After finite verb	Before non-finite verb
DLD	93.4%	99.3%	72.75%
L2	90%	97.7%	80%

Almost all of the clitics used by the children with DLD and almost all of the clitics used by the L2 children appeared with finite verbs. Thus, both groups obeyed the co-occurrence dependency between clitics and finite verbs. The placement of the negative marker also showed a very high accuracy, so both groups also respect the constraint regulating the position of the negative marker with respect to finite verbs and non-finite verbs. The data in this study indicate that the children with DLD revealed a linguistic behavior very similar to the linguistic behaviour of the L2 children, at least qualitatively, which can be taken as a sign that the linguistic systems in both groups are similar.

The Paradis & Crago (2000) study shows that children with DLD and L2 children pattern together and that the linguistic production of the DLD and L2

groups resemble the linguistic production of typical L1 French acquirers of the same age with respect to agreement and the production of younger typical L1 French speakers with respect to tense (see Jakubowicz 2003). Moreover, verbal placement is mainly correct in DLD and second language. This similarity reveals that formal features are present and the Merge and Agree operations are active in these grammars and can be taken as an indication of continuity.

However, there are other studies that challenge Paradis & Crago's assumption in that they could be taken as instances of discontinuity. Take Håkansson & Naettelblatt 1993, and Håkansson 2001 (mentioned above). These studies examined word order in the production of L1, DLD and L2 children acquiring Swedish and found that the patterns observed in the latter groups differ from the patterns observed on L1 acquirers. The configurations concerning word order are exemplified in (40) (Håkansson 2001, 88):

- | | | |
|--------|--|----------------------------------|
| 40) a. | Han köpte en bok igår
<i>he bought a book yesterday</i>
'He bought a book yesterday' | DPsubj + V-tense + DPobj + AdvP |
| - | | |
| b. | Igår köpte han en bok
<i>yesterday bought he a book</i>
'Yesterday he bought a book' | AdvP + V-tense + DPsubj + DP-obj |
| c. | En bok köpte han igår
<i>a book bought he yesterday</i>
'Yesterday he bought a book' | DPobj + V-tense + DPsubj + AdvP |

Since Swedish is a V2 language, the verb is placed after the first constituent. In addition to the groups of typical L1 children and children with DLD (described above), Håkansson's (2001) experiment included 10 children learning Swedish as an L2, aged 3;6-6;0 and whose L1 were Albanian, Bosnian and Arabic. The accuracy percentages were 98% for the L1 group, 59% for the DLD group and 57% for the L2 group. The difference between the control group and the

experimental groups was significant; the difference between the DLD and the L2 group was not. The results indicate that almost all the sentences produced by the L1 group respected the V2 rule. The DLD and the L2 children respected it occasionally; that is, while some sentences contained the XVS configuration, many of them contained XSV, a configuration where the verb is in third position (Håkansson 2001:93-94):

41)	<u>L1 child:</u>	Och sen är han törstig <i>and then is he thirsty</i> 'and then he is thirsty'	V2
	<u>DLD child:</u>	Sen han trilla här <i>then he fall here</i> 'Then he fell here'	V3
	<u>L2 child:</u>	Nu dom badade <i>now they swam</i> 'Now they went swimming'	V3

The DLD and the L2 children produced configurations that do not occur in L1 children and in the adult target language. As mentioned in chapter 3, these findings led Håkansson & Naettelblatt (1993) to claim that, since this pattern was observed in Swedish DLD but not in typical L1 acquisition of Swedish, DLD is a deviant acquisitional situation, which implies that UG is not continuous. However, the patterns not observed in L1 children by Håkansson and Naettelblatt were attested in other studies on acquisition of Swedish (e.g., Lange & Larsson 1973, 1977). Thus, since Swedish L1 children produce configurations not found in the target language, and UG is continuous in this population, UG in DLD and L2 children, who also produce non-target configurations, is also continuous.

The Continuity Hypothesis described above was proposed to account for child language development up to the adult grammar end-state in terms of the language to which the child is exposed, i.e., in terms of the same language

spoken by the child and adults in her environment. An additional version of the hypothesis, proposed by Crain (1991) and Crain & Pietroski (2002) and references therein, extends the notion of continuity in terms of different languages. According to this hypothesis, child grammars can differ from the target grammars in ways that adult grammars differ from each other (cf. Crain et al. 2006). Children learning a certain language can make errors reflecting linguistic traits appearing in adult languages other than the ambient one. That is, despite the fact that children's productions are not compatible with the target language, children making non-target errors are not simply producing less complex versions of the adult language. In fact, according to Crain (1991) and Crain & Pietroski (2002), the children elaborate structures used by adults, with the only difference that the adult language that children's production reflects is different from the one to which they are exposed. Since this different adult language is sanctioned by UG, so is the children's language reflecting this different option. Crain et al. (2006) illustrate this phenomenon with the medial-wh in child English:

- 42) a. What do you think what pigs eat?
b. Who did he say who is in the box?

These sentences were produced by English L1 children interviewed by Thornton (1990). They contain an additional wh-constituent appearing in the embedded clause. These sentences are not grammar-target in English, but they are grammatical in some dialects of German (see example 43) and Romani (McDaniel, 1986; McDaniel et al., 1995; Crain et al. 2006, 33):

- 43) *Wen_i glaubst du wer_i nach Hause geht?*
who think you who after home goes
'Who do you think goes home?'

This sentence is compatible with UG in that the *wh*-constituent is placed in Spec-CP in the embedded clause and then it undergoes Internal Merge to Spec-CP in the main clause. The derivation of the sentences is similar in the three languages. The difference resides in the pronunciation of the lower *wh* copy: It is null in English where it is overt in the other languages.

The V3 sentences produced by the Swedish DLD and L2 children parallels the child question production attested by Thornton (1990). That is, although the V3 configuration is not language-target in Swedish, it is attested in many languages:

- | | |
|---------------------------------|---------|
| 44) a. Después él se cayó aquí. | Spanish |
| b. Ensuite il est tombé ici. | French |
| c. Then he fell here. | English |

These sentences are obviously authorized by UG, since they are grammatical in each of these languages. As in the cases studied by Crain et al. (2006), the DLD and L2 children go through a stage at which they speak a language that is like adult Swedish in many respects (vocabulary, morphology, etc.), but one that is like Spanish, French or English with respect to the constituents placed at the left periphery. They speak like foreigners in certain respects but do not differ from L1 speakers in the acquisition of other linguistic aspects. Since the grammar that they exhibit is sanctioned by UG, it can be concluded that UG is available in children with DLD as well as in L2 children.

Just as L1 acquisition is not developmentally identical in all respects to L2 acquisition, it is not the claim in this dissertation that DLD and L2 are similar in all respects, e.g., that the same learning mechanisms apply in both populations. As Paradis (2004) mentions, DLD is a clinical condition and L2 is not an impaired acquisitional context, so their non-target grammars have different etiologies. Moreover, both populations displayed some differences. For, instance, in Paradis & Crago (2000), for non-target forms the children with

DLD produced more non-finite forms, whereas L2 produced produce more present forms. Thus, the similarities are not attributed to comparable learning mechanisms but to the availability of UG in both populations.

4.4 Difference between children with DLD and their typical peers in their linguistic behavior

The goal of this chapter was to suggest that if the linguistic behavior of children with DLD appears to be similar to the linguistic behavior of especially younger typical children at a certain level, it can be concluded that children with DLD and non-affected younger speakers have comparable linguistic knowledge in terms of the content of UG, i.e., formal features, the Merge and Agree operations and constraints. However, one crucial question that arises under that perspective is: How is it then that children with DLD are still different from their typical peers? Three main differences are reported by Leonard (2014b) (see also chapter 3). The first one is the slow rate of language development by children with DLD. It is assumed that typical children acquire their language(s) very rapidly while DLD acquire words and syntactic configurations rather slowly. As stated in chapter 3, children with DLD start producing words one year later and multiword utterances 20 months later than typical children. The second one is the fact that, while children with DLD can be similar to typical children in terms of some individual features of language, across features children with DLD are not found to have the same global profile. Many linguistic aspects are more difficult than others in DLD children, whereas all aspects are successfully acquired in typical children. The third difference is the persistence of the deficit in DLD children. According to Leonard (2014b), few adults with a diagnosis of DLD still commit morphosyntactic and lexical errors usually

observed in children, so that they seem to have reached target levels. However, after careful probing of these adults, it has been observed that they continue to exhibit a certain limited linguistic knowledge of the language(s) to which they have been exposed and this knowledge is not completely similar to the one in typical adults. That is, it seems that most people with DLD fail in fully developing their grammatical system as typical persons do, even after treatment.

4.5 Conclusion

This chapter provides evidence that DLD is similar in some regards to typical first language and second language acquisition, and hence it is continuous with respect to UG. These two types of acquisitional contexts have been argued to reveal continuity from onset of language development up to the grammar end-state, and accordingly they are UG-constrained. UG provides children and second-language learners with the same formal feature, the Merge and Agree operation that are present in native adult language. This means that UG is accessible for the assistance in the construction of language-specific grammars from the start of and throughout all the acquisitional process. UG is construed as the model of the initial state, conceived as the state prior to linguistic experience and independent of the acquisitional situation. Thus, UG is said to be available for all language acquisition contexts, even DLD.

The conclusion for continuity in DLD grammars from a UG point of view has been reached from the comparison of DLD with the other acquisitional contexts. The comparison between DLD and first language acquisition shows quantitative similarities in production and comprehension. For production, in the verbal/temporal domain, DLD and typical younger children yielded similar results for verbal forms in Swedish and Spanish and similar results for the

aspectual markers in Cantonese. This is an indication that DLD and typical children have comparable knowledge of tense and aspect. Both populations also produced similar correct percentages for verbal agreement in French and Italian, which are very high in both languages. In the nominal domain, children with DLD and typical children behaved similarly with respect to determiners, case, gender and number in Greek, Spanish, English and Afrikaans. Moreover, the data also revealed similar performance in production for nominal agreement in French. For comprehension, children with DLD showed performance comparable to typical children for tense in Afrikaans and for tense and especially aspect in English, as well as comparable performance for agreement in Italian, French and English. In the peripheral domain, similar results in comprehension were obtained from children with DLD and typical children for questions and relative clauses. The data collected in Hebrew indicates that both the DLD group and the typical group performed almost perfectly and equally in all types of questions except one, 'which' object questions. Moreover, children with DLD and younger typical children yielded similar results for relative clauses also in Hebrew. The data from the latter language reveal that children with DLD and typical children can interpret structures constructed with movement. The findings summarized above indicate that DLD children, as well as typical children, have access to formal features and the Merge and Agree operations, all of them provided by UG.

Children with DLD and younger typical children also displayed qualitative similarities, that is, they produced similar target forms and similar errors. In English, despite poor production of the *-s* 3rd person sg and the *-ed* past morphemes, children with DLD provided these morphemes in appropriate contexts, just as typical children. In French, children with DLD and younger typical omitted auxiliaries but they produced forms containing infinitives in future contexts and past participles in past contexts. In Swedish and Spanish almost all the verbal forms produced by the DLD and typical groups were target,

and the errors committed by the children with DLD and their younger typical peers were similar. All these results point to the knowledge of the formal feature encoding tense. As for pronouns, children with DLD and their typical peers produced target forms, especially in Afrikaans and to a lesser extent in Spanish and French, which can be taken as an indication that both groups have knowledge of the syntax of nominals. Finally, it was observed that children with DLD and especially their younger typical peers performed similarly with respect to word order. Swedish and French DLD and typical children were found to correctly place the finite verb and non-finite verb within the sentence. The different positions occupied by the finite verb are the result of movement. Thus, both group of children know how to apply movement, which is an indication that Internal Merge is active in their grammars.

The comparison of DLD and second language acquisition has also yielded results revealing similarities between the two acquisitional situations. Children with DLD and second language speakers learning French performed similarly with respect to tense and agreement. Both groups produced high percentages of target verbal forms, verbal agreement and verbal placement. These results show that that L2 learners and children with DLD have knowledge of formal features and the Merge and Agree operations, which implies that both acquisitional contexts are continuous with respect to UG. The data obtained from Swedish DLD and second language, however, seem to indicate that these acquisitional situations are discontinuous, because children with DLD and second language learners produced forms not found in the target language. This discontinuity is only apparent: According to an extended version of SCH, cases where sentences are not target in the ambient language but are grammatical in others are examples of continuity. Just as typical children learning English produced non-target sentences in English but grammatical in some dialects of German, Swedish children with DLD and second language

learners produced in Swedish sentences that are grammatical in English, French and Spanish. Thus, DLD and L2 grammars are also continuous.

Despite quantitative and qualitative similarities, children with DLD and typical children present differences. Besides the differences mentioned in chapter 3, it has been observed that children with DLD acquire language at a rate slower than typical children, their linguistic global profile is different from typical children's, and this different global linguistic profile can be permanent.

Since children with DLD can perform as well as (or almost as well in certain cases) as their (especially younger) typical peers and second language learners with respect to the linguistic aspects mentioned in this chapter, it is claimed that DLD grammars are continuous. This is taken as an indication that DLD grammars also UG-regulated, and so the FL in children with DLD is comparable in certain respects to the FL in speakers found in the other acquisitional situations. This means that formal features, operations and constraints provided by UG are accessible in DLD grammars, which in turn indicates that UG is intact and available to these particular grammars. The following chapters deepen the analysis of DLD production with respect to features, Merge and Agree, and reach the same conclusion.

5 PRESENCE OF FEATURES

As shown in chapter 3, part of the deficit in DLD is the absence of inflectional morphology. Research on English, Greek, Swedish DLD grammars has determined that this absence reflects a syntactic impairment, mainly a deficit in the featural composition of lexical items (LI) that these morphemes externalize. Two approaches have been proposed to account for this phenomenon. One states that DLD grammars lack some functional features (e.g., [Number]); consequently, functional phrases are affected. The other one advanced the idea that uninterpretable features, that is, features relevant only to syntax and with no effect on the semantic interpretation of sentences, are faulty. Specifically, some LIs have their featural specifications incomplete, due to their lack of uninterpretable features. Absence of functional features or incomplete feature bundles in LIs means that DLD children's grammar is qualitatively different from typical grammars: Exclusion of these features predicts the random use of the morphological markers that realize them, and multiple errors involving overt inflectional marking are expected (cf. Borer & Rohrbacher 2002). Moreover, while these accounts propose that children with DLD are eventually able to acquire these features, another one proposes that they are always absent from DLD grammars. The latter implies that DLD grammars are deviant with respect to UG since there is no natural language whose lexicon does not include functional features (Jakubowicz 2003). These linguistic accounts of DLD explicitly or implicitly propose that UG is defective in DLD grammars.

Contrary to this position, the hypothesis advanced in this dissertation is that **UG is not affected in DLD**, and functional features are present in the grammar of this population. This view is supported empirically: Data from

different languages show that these features can be morphologically marked, and they appear in the nominal, the temporal/verbal and the propositional domains. It is conceptually supported as well: The theory states that the presence of a certain head implies the presence of the head that is selected by the former. **This indicates that the relevant features are present in the representation and therefore provided by UG.**

This chapter presents a summary of accounts proposing that DLD is the result of absence of formal features (section 5.1), of functional features (sections 5.2 and 5.3) or of uninterpretable features (section 5.4). After the presentation of these accounts, their drawbacks are stated. The conclusion from these summaries will be that syntactic features are not missing in DLD grammars. Section 5.5 provides data and conceptual arguments pointing to the existence of functional features in DLD grammars. Section 5.6 concludes the chapter.

5.1 Absence of Syntactico-semantic Features

Gopnik (1990) and Gopnik & Crago (1991) propose that DLD is mainly characterized by the absence of certain functional features. Gopnik (1990) makes a distinction between categorial features (verb, noun, adjective, etc.), formal features which she called syntactico-semantic features (number, person, case, gender, tense and aspect), and exclusively semantic features.⁴⁴ According to her, these three classes of features reveal different levels of organization in the grammar. These levels are formally different, and they arise from different sources. Gopnik (1990) hypothesizes that the grammatical symptoms observed in DLD result from a grammar without syntactico-semantic

⁴⁴ Gopnik does not provide examples of semantic features, but they are probably features encoding concepts, such as color, shape, size, and not intervening in the syntax or in the morphology.

features: These features are absent from representations, while the other types of features are not necessarily affected. Exclusively semantic features are present in DLD representations, which means that knowledge about the cognitive categories of the world encoded in these features is intact. Likewise, categorial features are spared.

According to Gopnik (1990), this absence of syntactico-semantic features affects the form of LIs and the restrictions among the different LIs that have the same feature. She states that if her hypothesis that DLD resides in a feature deficit is right, then every manifestation of this feature, whether target or not, must be impaired. Her data present cases of a deficit with feature marking on number, gender, animacy, (un)countability, proper name, person, tense or aspect, with a consequent deficiency in a wide range of morphophonological manifestations depending on these features.

Note that Gopnik's research was undertaken with the participation of only one subject. No experimental or control group groups were set up. However, this paper is considered important in the DLD literature for it is one of the first studies approaching DLD from a theoretical linguistic point of view.

The data analyzed by Gopnik was produced by a French-English bilingual child aged 8-9 years. Data collection was undertaken in four sessions during a year and a half. Research activities included spontaneous conversation, prompted storytelling, grammatical judgments, repetition and production of specific features, as well as spelling and dictation tests. Gopnik's database amounts to 500 spontaneous English utterances, 70 spontaneous French utterances, and 500 test responses; the paper concentrates mainly in the English data. Gopnik states that the errors cited in her paper were very frequent in the data base and occurred in spontaneous speech in at least two different sessions and in the test sessions.

The research participant produced numerous errors concerning the features mentioned above. The absence of the number feature is mainly

illustrated by the prevalence of unmarked plural nouns, i.e., nouns that are semantically plural but are not morphologically marked with the -s marker (Gopnik 1990: 147):

1) I was make 140 box.

Gopnik (1990) states that this marker sometimes appeared in the utterances produced by her subject. That is to say, the child sometimes used the -s marker in nouns referring to more than one entity. However, according to her, the -s marker does not indicate plurality since it often occurred with nouns having a singular referent (Gopnik 1990: 147):

- 2) a. Can watch them at the Montreal Forums.
b. You got a tape recorders.
c. I find a cops.

There is only one Forum in Montreal, and the subject probably knew that (see 2.a). The plural -s marker incorrectly appeared in DPs containing the singular indefinite determiner (see 2.b-c). According to Gopnik (1990), -s is not a morpheme and as such it does not morphophonologically realize the [Number] feature. It is only a phonological variant. That is, the word, for instance, for the meaning 'policeman' can be phonologically realized as *cop* or *cops* in the participant's DLD grammar. Gopnik (1990) notes that the notion of plurality is not absent from the DLD participant's grammar. Instead of being encoded by a morpheme, plurality seemed to be conveyed by means of numerical quantifiers.

Pronouns likewise showed absence of the number feature (Gopnik 1990:150):

3) The king and the queen they look at the tree and say, 'Who did that?' *He* don't know so **he** look at the other side of the tree.

The pronoun *he* refers to both the king and the queen in the context of a picture described by the subject. The plural pronoun *they* is also used with singular referents (Gopnik 1990:149):

- 4) a. Red Riding Hood arrive at his grandma's house. Now **they** say "Oh, what big eyes you got."
 b. Jimmy starting eat his breakfast. **He** don't like it. Now **they** drop the bowl on the floor.

The pronoun *they* is used to refer to Red Riding Hood in (4a). In (4b) the same referent is referred to by the singular pronoun *he* and the plural pronoun *they*.

Thus, the examples above seem to show that semantically plural nouns can be correctly marked with the -s marker and incorrectly used in their bare form, i.e., without the marker. Moreover, semantically singular nouns can correctly appear bare or incorrectly marked with the -s marker. Both the singular pronoun *he* and the plural pronoun *they* can be used to refer both to multiple entities or only one.

Grammatical judgements and repetitions give support to the missing syntactic-semantic features hypothesis, according to Gopnik (1990). This is shown in the following tables (Gopnik, 1990: 148-149):

Table 5-1 Grammatical judgements

Indefinite Determiner + Noun (+ -s)		
	Correct	Incorrect
Grammatical: a + noun	4	1
Ungrammatical: a + noun + -s	5	
Numerical Determiner + N (+ -s)		
Grammatical: number + noun + -s	2	1
Ungrammatical: number + noun	2	1

Table 5-2 Repetitions

Indefinite Determiner + Noun (+ -s)		
	Accurate	Inaccurate
Grammatical: a + noun	2	3
Ungrammatical: a + noun + -s	2	5
Numerical Determiner + N (+ -s)		
Grammatical: number + noun + -s	3	1
Ungrammatical: number + noun	1	1

Table 5-3 Writing

	Accurate	Inaccurate	Missing
Singular nouns	32	0	11
Plural nouns	5	19	10

For Gopnik (1990), the incorrect grammatical judgements, the inaccurate repetitions and the inaccurate written forms of the configurations in question are a sign that the [Number] feature is absent from DLD child's grammar.

The animacy feature is absent as well, according to Gopnik (1990). Her subject employed the animate pronoun *he* when referring to an inanimate object (Gopnik 1990:151):

- 5) a. When the cup break, *he* get repair.
 b. When the bus goes fast *he* has an accident.

The adequate pronoun in this context is *it*.

The distinction between count nouns and mass nouns is affected too, since nouns from both classes appear in inappropriate syntactic contexts (Gopnik 1990: 152):

- 6) a. I play **musics**.
 b. The final is going to be **a** music.
 c. We're gonna ride **some** bicycle.
 d. I love **bicycle**.

Music in English is a mass noun, but here it is marked with the plural marker (6a) and wrongly appears with an indefinite determiner (6b), both contexts being for countable nouns. *Bicycle* is a countable noun, but here it inappropriately occurs with *some* (6c) and without a determiner (6d), both contexts being for uncountable nouns.⁴⁵ These examples show the absence of the countability feature from the representation, according to Gopnik (1990).

Proper names likewise appear in non-target configurations (Gopnik 1990:152):

- 7) a. **The** Marie-Louise look at the bird.
b. The wolf is hide on the back of the trees on **the** Red Riding Hood.

Marie-Louise and *Red Riding* are proper names. Unmodified proper names must appear without overt determiners in English. In the utterances in (7) they occur with overt determiners. According to Gopnik (1990) these inappropriate configurations are due to the absence of some syntactico-semantic feature. Gopnik (1990) states that a consequence of the absence of a feature is the inactivity of some constraint controlling the merging of LIs, in this case the merging of a determiner with a proper name. It seems that, because of the absence of this feature, the constraint restricting the presence of proper names and determiners within the same DP is inoperative and consequently the definite determiner is not prevented from merging with a proper name in this DLD child's grammar. Gopnik does not precise which feature is missing in these examples. It could be the case that, in these cases, the DLD child treats the determiner *the* as an expletive determiner, that is a semantically null LI (see Longobardi 1994). This expletive appears with proper names, optionally in

⁴⁵ Gopnik does not provide the exact context where (6d) was uttered. It is possible that the child intended to say *I love (to) bicycle* in which case *bicycle* would be a verb, not a noun. If that is the case, example (6d) would not illustrate an error on the mass/count distinction.

some languages (e.g., in Argentinian Spanish) and obligatory in others (e.g., Catalan). If this analysis of the determiner in examples (7) is plausible, then the DLD child is not violating any constraint concerning determiners and proper nouns and no absence of an unidentified feature is involved.

The feminine gender feature also seems to be absent in the DLD subject (Gopnik 1990:153):

8) The Red Riding Hood arrive at **his** grandma's house.

In this example, *his* occurs instead of *her*. This featural absence is also shown by this subject in his avoidance of feminine pronouns and his use of feminine proper names in contexts where a pronoun is pragmatically felicitous, according to Gopnik (1990). She provides the example of a narration of a picture book about a mother and son. The child used the mother's name throughout, even in those contexts in which the use of a pronoun would seem more suitable.

The verbal domain displayed absence of syntactico-semantic features as well. Besides the variable use of the present, singular, 3rd person -s and the past -ed morphemes, the use of -ing morpheme was also inconstant, which, according to Gopnik (1990), is an indication that the progressive aspectual feature was missing (Gopnik 1990:155):

- 9) a. This one is *look*.
b. The dragon *drying* himself.

English progressive aspect is realized with the auxiliary *be* and the lexical verb + *ing*. In (9a) the -ing morpheme is absent; in (9b) the auxiliary is missing. The sentences in (9) were spontaneously produced. In a depiction task, most of the forms, 12 out of 19, were missing either the auxiliary (10b) or the progressive morpheme (10c) (Gopnik 1990:156):

- 10) a. The queen is sleeping.
 b. The dragon jumping.
 c. The dragon is walk.

However, the results on a judgement task show a different picture:

Table 5-4 Grammatical judgements on aspect

	Correct	Incorrect
Grammatical: Aux V + -ing	10	1
Ungrammatical 1: V + -ing	11	1
Ungrammatical 2: Aux V	9	1

The DLD subject provided a correct judgement for most forms.

The absence of syntactico-semantic feature hypothesis led Gopnik to state the following consequences for an DLD grammar. First, the feature matching operation Agree does not apply to the relevant categories. Thus, in the sentence *One machine clean all the two arena* (Gopnik 1990:154), T does not agree with the 3p.sg Subject DP, which results in the absence of the agreement marker. Second, the morpho-phonological component cannot match the features missing in the syntax with their phonological form. The presence of a certain form in the subject's grammar, e.g., -s in nouns, is not the reflection of the matching of an abstract syntactic feature, e.g., [Number: plural] with its realisation [z]. The -s in a word such as *trees* is not the plural marker; *trees* is considered to be a phonological variant form of *tree*, the -s having no associated meaning.⁴⁶ Third, constraints among LIs such as determiners and nouns that operate by feature matching are absent. This is

⁴⁶ The view of these forms as phonological variants is reminiscent of variants in Québécois French: [isi] and [isit] 'here' are two forms for the same word. Note, however, those phonological variants in adult grammars are very rare, while they seem to be common in DLD grammars. Hence, the similarity between the two types of variants can be anecdotal.

illustrated by examples such as *The superman is say good-bye and hiding* (Gopnik 1990:152) where *Superman* is a proper name inappropriately used with a determiner. Fourth, notions such as number and time, although present in the representation, are not encoded by syntactic features, but by content lexical items, for instance a numeral or a temporal adverbial. Fifth, since syntactico-semantic features are absent from the derivation, phrases such as *a boy* and *some boys* are not derived the same way as in typical grammar even if they have an acceptable form. The fact that children with DLD sometimes produce forms with morphemes encoding some notion and the fact that they employ them both correctly and incorrectly indicate that all the forms produced are wrong from the point of view of typical grammar. Sixth, DLD symptoms, evident in all modalities (speaking, writing, grammaticality judgment and repetition) are the result of some deep and systematic underlying linguistic problem and not a momentary lapse.

In a different study, Gopnik & Crago (1991) propose a very similar account. They examined the linguistic behaviour of the KE family, a four generation English family, comprising typical speakers and speakers with DLD. The testing group was composed of 6 DLD subjects aged 16, 17, 40, 42, 45, 74 and 6 typical subjects 8, 12, 13, 14, 15, 17. Gopnik & Crago (1991) claim that the data collected from the family members with DLD also indicate an absence of syntactico-semantic features. Their experiment consisted of production as well as comprehension tests.

The production tasks included nominal plural formation, marking of tense on verbs and use of sentential and inter-sentential pronominal reference. For plurals, the subjects performed a wug-task. They were given non-words representing imaginary animals (e.g., *a zoop*) and ending in voiceless, voiced and sibilant consonants. The imaginary animals were represented in pictures containing one creature, or more than one. The experimenter pointed to the

image having one creature and named it; then the experimenter pointed to the picture containing more than one of the same creature and asked the subject to produce the word referring to it in the plural form. The correct scores are displayed in table 5:

Table 5-5 Ability to pluralize nouns

Means out of 6	
Typical subjects	5
DLD subjects	2,83

Score obtained from the total of non-words provided to the participants

The difference was significant. Examples of non-words produced by one subject are shown in (11) (Gopnik & Crago, 1991: 18-19):

- 11) a. [sas] [sasss:]
 b. [tob] [tobɪz]
 c. [za] [zaɪz]

The forms in (11a-b) are not target: The plural in (11a) is formed with the lengthening of the sibilant consonant instead of the addition of the allomorph [ɪz]; the plural in (11b) is formed with the addition of [ɪz] instead of the allomorph [z]. (11b) includes the same allomorph that is correctly used in (11c).

For tense marking, subjects were given sentences from which they had to produce another one with a change of tense (e.g., Experimenter: *Every day he walks. Yesterday, he _____*; the subject was expected to utter *walked*). The responses required past, future and present tense forms and progressive aspect forms.

Table 5-6 Tense marking

Means out of 10	
Typical subjects	9,17
DLD subjects	3,83

Score obtained from the total of sentences to be completed by the participants

The difference was significant. Unlike the typical speakers, the language-impaired speakers often produced unmarked forms.

For the evaluation of the use of sentential and inter-sentential pronominal reference, the subjects had to look at pictures that depicted a narrative and tell a story based on the pictures. Referential DPs and pronouns were counted. The aim was to measure the proportion of pronouns in the story. The expected results were few pronouns and more referential DPs since DLD grammars are hypothesized not to contain gender, number and person features, which are the ones comprised in pronouns. The score was based on the percentage of referential DPs produced in the narration.

Table 5-7 Proportion of production of referential DPs

Means in %	
Typical subjects	55,17
DLD subjects	91,2

Scores obtained from a narration of a story based on 6 pictures

According to Gopnik & Crago (1991), the results in this task indicate a significant difference between the DLD family members and the typical ones. This means that the DLD speakers used more referential DPs than the typical speakers and did not produce as many pronouns as the typical speakers.

The evaluation of comprehension included two types of tasks. One type involved non-metalinguistic knowledge such as following instructions and pointing. Four tasks are reported here. The first task consisted in pointing to a pile containing one object or three objects after listening to a command such as *Touch the books*. For the second task, the subject had to follow a more complex command like *Put the crayons on the balloon*. These tasks aimed at evaluating the subjects' ability to discriminate -s marked plural forms. The results are presented in table 5.8:

Table 5-8 Ability to discriminate -s marked plural forms

Command	Typical subjects	DLD subjects
Simple (means out of 6 commands)	5,33	5,33
Complex (means out of 4 commands)	3,83	3,33

Scores obtained from the total of commands heard by the participants

The difference was not significant. The third and fourth tasks consisted in pointing to the picture that matched the meaning of the sentence. The former was designed to test knowledge of reflexive pronouns. The subjects were presented a sentence containing a reflexive pronoun (e.g., *He washes himself*) or a sentence containing a non-reflexive pronoun (e.g., *He washes him*). After hearing the sentences, the subjects had to choose the corresponding image among pictures showing a man washing himself, a woman washing herself, a man washing a boy and woman washing a girl. The latter was designed to test knowledge of gender. After hearing a sentence containing two masculine pronouns (e.g., *He holds him*) or a masculine and feminine pronoun (e.g., *He holds her*), the subjects had to choose the matching image among pictures showing a man holding another man, a man holding a woman, a woman holding a man and a holding two women. The results are displayed in table 5.9:

Table 5-9 Reflexives and gender pronouns

	Typical subjects	DLD subjects
Reflexives (means out of 6)	5,5	5,67
Gender pronouns (means out of 4)	3,83	3,67

Scores obtained from the total of sentences heard by the participants

The difference in both tasks is not significant.

The second type of comprehension sentences involved metalinguistic knowledge such as grammaticality judgements and correction of the ungrammatical sentences involving number (e.g., *the boy eats three cookie__*), person (e.g., *the boy kiss__ a pretty girl*) tense (e.g., *yesterday the girl pet__ the dog*) and aspect (e.g., *the girl is play__ with her doll*). The tasks had subjects indicate the grammatical status of sentences and provide the correct form of the ungrammatical sentences. Results are shown in table 5.10:

Table 5-10 Metalinguistic knowledge

	Typical subjects	DLD subjects
Grammatical judgements (means out of 30)	27,5	17,17
Corrections (means out of 21)	18,33	7,83

Scores obtained from the total of sentences heard by the participants (21 ungrammatical and 9 grammatical) and the total of the ungrammatical sentences to be corrected

In both tasks, performance of both groups significantly differs. The DLD speakers were not able to correctly identify ungrammatical sentences and correct feature errors, according to Gopnik & Crago (1991).

According to Gopnik & Crago (1991), for production of plurals, the DLD speakers, even when they succeeded in forming the right form, did not do so by using the ordinary internalized set of morphological rules employed by the typical speakers, i.e., rules requiring the addition of [s], [z] or [ɪz] to the noun. This is shown in the task on the pluralization of non-words: The DLD subjects performed significantly more poorly than the typical subjects. Gopnik & Crago (1991) claim that the reason for this poor performance is the non-application of the rules for pluralization. The performance on the comprehension tasks testing their ability to discriminate -s marked plural forms was similar in both groups. This similarity might be interpreted as a sign that the DLD subject acquired the pluralization rules. Gopnik & Crago (1991) refuse this interpretation. The

resemblance between the DLD speakers' and the typical speakers' performances in these tasks can be accounted for by the fact that the DLD speakers have acquired feature-marked words as unanalysed lexical items. Accordingly, in DLD grammars, a word such as *books* is not composed of two morphemes by means of a rule combining the root *book* and the allomorph [s]. It is just a LI that contains the concept of more than one and so it means 'several reading objects'. Thus, individual nominal forms marked with -s are not complex forms with a root and a morpheme specified for the feature [number: plural], but atomic lexical items comprising the meaning "numerous" in their semantic specification. For Gopnik & Crago (1991) then plurality is present in DLD grammars, but it is not codified as a syntactico-semantic feature but as a feature included in the semantic featural matrix of LIs. The syntactico-semantic number feature is absent from DLD grammars, according to them.

Absence of the tense feature is also revealed by the tasks involving tense marking, according to Gopnik & Crago (1991). In the production task, while the typical subjects were able to produce sentences containing either the third singular third present -s or the past -ed morphemes for almost all the stimulus sentences, the DLD subjects succeeded in very few. They either produced unmarked forms of the stimulus verb or they replaced the stimulus verb with a semantically related verb. For instance, an DLD subject, for the stimulus sentence *Everyday he walks eight miles. Yesterday he ___*, responded *had a rest* instead of *walked*. Gopnik & Crago (1991) interpret these findings as an inability to manipulate tense marking. This inability is also reflected in the comprehension tasks: Not only did the DLD subjects not recognize feature errors, but also they were not able to correct ungrammatical sentences containing this type of errors. Gopnik & Crago (1991) claim that the cause of this inability is the absence of the tense feature from DLD grammars.

As for pronominal reference, Gopnik & Crago (1991) claim that a pronominal element such as *he* does not contain the phi-features ([gender: masc], [person: 3rd] [number: sg]) in the DLD grammar's subjects. They based this claim on the fact that the DLD speakers did not produce as many pronouns as the typical speakers and that they used more full DPs than the typical subjects in the narrative task. A narration involves intersentential cohesion. One way to accomplish intersentential cohesion is through pronominal reference, which requires the matching of phi-features between a pronoun and the full DP to which the pronoun refers. Since phi-features are present in typical grammars, typical speakers can unproblematically establish intersentential coherence. DLD speakers can also accomplish this type of coherence, but according to Gopnik & Crago (1991) they achieve it with the repetition of full DPs and not with pronouns. Since pronominals in DLD grammars do not contain the relevant syntactico-semantic phi-features no pronominal reference occurs, hence the quasi absence of pronouns in narratives by DLD subjects.

Contrary to the results obtained in production of pronouns and anaphors, in the comprehension tasks involving them, the DLD speakers performed as well as the typical speakers. DLD speakers did not have difficulty in matching a picture to a sentence with pronominals. These results could indicate that DLD subjects could establish reference in the same way as typical subjects, namely, with phi-features lodged in pronominals. If that were the case, then the previous claim concerning pronominals in production would be untenable. However, Crago & Gopnik (1991) maintain their view involving the absence of phi-features in pronominals and account for this performance by proposing that pronominals such as *he* or *she* are "lexicalized" pronouns comprising the meaning "unspecified male or unspecified woman" in DLD grammars. Lexicalization of pronominals in this approach seems to mean that they are referential expressions. Thus, if the subjects heard a sentence with *he*, *him* or

himself they pointed to a picture containing the image of a man, and if they heard a sentence with *she*, *her* or *herself* they pointed to a picture containing the image of a woman.

Gopnik (1990) and Gopnik & Crago (1991) suffer from drawbacks. First, Gopnik (1990) mentions that the grammatical judgements performed by her subject confirm the hypothesis that the number feature in the nominal domain is absent from his grammar. However, the number of correct responses involving plurals and singulars does not seem to corroborate it. In the task using the configurations *a N* (grammatical) and *a N -s* (ungrammatical) 9 responses out of 10 were correctly provided. In a task using the configurations *numerical quantifier N -s* (grammatical) and *numerical quantifier N* (ungrammatical) 4 out of 6 responses were correct. Further incorrect answers would be expected if the feature was absent (see tables 1 and 2). Moreover, the results of a dictation task testing the presence of the number feature are not entirely clear: Out of 77 sentences 32 were accurate for singulars and 5 for plurals; there were 0 inaccurate written sentences for singulars and 19 inaccurate sentences for plurals, but the nature of the inaccuracy is not clear; 11 sentences were classified as missing for the plural and 10 for the singular. It can be deduced that what is missing is the plural marker, but it is not clear at all what is missing in singular sentences (see table 3). Gopnik & Crago (1991) also argue that the absence of the [number] feature prevents the DLD speakers from using the English plural formation rule with non-words. However, a close examination of the data in (11) repeated in (12) allows one to see that in fact they use the English rule:

- 12) a. [sas] [sasss:]
b. [tob] [tobɪz]
c. [zaʃ] [zaʃɪz]

In (12) two of the three forms have the wrong allomorph: Instead of the [ɪz] form, the [s] form was selected in (12a); in (12b) the [ɪz] allomorph was selected instead of the [z] allomorph; the (12c) contains the right allomorph. It is evident that the outputs in (12a-b) are not target-like, but the systematic use of one form or the other, independently of the form of the input base, indicates the application of a plural formation rule.

As mentioned above, the DLD KE family members studied by Gopnik & Crago (1991) were successful in interpreting plural DPs in a comprehension task. Gopnik & Crago (1991) claim that the plural forms understood and produced by their DLD subjects are not complex forms containing the root and the -s plural morpheme, but unanalysed forms. This claim implies that an object such as a book is referred to with two distinct lexical items: one singular, *book* and one plural, *books*. Gopnik (1990), in turn, proposes that nouns that variably appear with a final -s or without this final consonant (e.g., *tree/trees*) in DLD grammars are the same LI being realized by two phonological variants, and -s does not codify the [plural] morpheme. This indicates that -s has a double role in the grammar: On the one hand it is a linguistic element that appears in nouns having the semantic feature 'more than one', and on the other hand it is a linguistic element that forms a variant of a noun appearing in DPs having no [number] feature. This characterisation looks very peculiar since the same element seems to have very dissimilar functions, so that when a form such as *books* occurs, it is not possible to know if it is the one containing the semantic feature 'more than one' or it is just the phonological variant of *book*.

Second, Gopnik (1990) and Gopnik & Crago (1991) propose that DLD grammars do not contain the [tense] feature. This feature is relevant for the interpretation of temporality. Its absence indicates that temporality is syntactically absent from the representation. Gopnik (1990) states that despite

this non-occurrence of the [tense] feature and absence of syntactic temporality, her DLD subject understands temporality because he used the PPs *last time* to indicate past events and *after* for future events and the AdvP *now there* for present events. The past is also lexically encoded by memorized past irregular forms and past regular forms (Gopnik & Crago 1991).⁴⁷ That is, temporality is somehow semantically present in the representation. This last statement seems to indicate that temporality in DLD production is marked only when these adverbials and/or memorized past forms appear in the representation and that the absence of them in the representation would not allow the DLD speaker to place an event in the timeline. This would imply that sentences not containing temporal AdvPs, PPs or memorized past forms would not be temporally interpreted and events in a narration would be potentially arbitrarily sequenced by DLD speakers. However, in the data reported by Gopnik & Crago (1991), it does not seem to be the case that sentence temporality was syntactically

⁴⁷ Gopnik & Crago (1991) examined the written notebooks of two DLD members of the family. The notebooks contained compositions about the children's activities during the previous weekend, all the verbal forms were supposed to be in the past tense. The subjects got their verbal forms corrected by their teacher (Gopnik & Crago 1991:39):

i) Monday 12th September: On Saturday I watched T.V. and I watch plastic man and I watch football. On Sunday I had pork and potato and cabbage.

The teacher added the *-ed* morpheme to all the occurrences of *watch*. This verb was marked for tense in its next appearance, but the other verbs were bare (Gopnik & Crago 1991:39):

ii) Monday 17th September: On Saturday I got up and I wash my self and I get dress and eat my breakfast and I watched TV all day and I went to bed.

The teacher added the *-ed* morpheme to *wash* and *dress*; she also provided the *got* and *ate* forms respectively for *get* and *eat*. These forms were then learnt as the sentence in (iii) shows (Gopnik & Crago 1991:39):

iii) Monday 28th November: On Saturday I got up and I got dressed and I watched Motormouth... and I ate my dinner.

From this pattern, Gopnik & Crago (1991) concluded that the subjects learnt the individual past forms after the corrected forms were provided by their teacher; however, they did not apply these corrections to new verbs. Thus, according to them, past tense forms were not produced by rule application, but they were simply memorized as unanalyzed lexical items.

unspecified. The DLD subjects were able to represent and recall events in the timeline and in the right sequential order in the narrative (comprehension and production) tasks whether or not the sentences contained the temporal markers mentioned above. In addition, as mentioned in chapter 2, the [tense] feature is involved in case marking of subject DPs. If this feature were absent, Agree should not operate and DPs subjects could not have their case checked. This absence of [tense] caused Gopnik's DLD subject to accept ungrammatical sentences with null subject pronouns and to drop subject DPs in repetition of grammatical sentences, according to Gopnik (1990). However, table 11 on pronoun deletion in Gopnik (1990:158) shows that the DLD child can indeed differentiate grammatical sentences (containing the subject pronoun) from ungrammatical ones (lacking the subject pronoun) : Out of 40 sentences, 21 were correctly accepted as grammatical and 17 were correctly rejected as ungrammatical. The repetition task reflects a similar accurate performance (see table 12 in Gopnik 1990:159): Out of 27 sentences, 22 were correctly repeated either with a grammatical form (a sentence containing the subject pronoun) or an ungrammatical form (a sentence lacking the subject pronoun). This picture seems to point to the fact that [Tense] is not missing in this DLD child's grammar.

Third, Gopnik and Crago's account of the absence of features in pronouns is also problematic. It is standardly considered that all pronouns comprise only a bundle of formal features.⁴⁸ Gopnik & Crago (1990) only make reference to 3rd person pronouns. But there is no a priori reason not to extend their analysis to the other grammatical persons, namely 1st and 2nd. If pronouns in DLD grammars do not contain any syntactic feature, especially person, it would be impossible for DLD speakers to have self-awareness, let alone talk

⁴⁸ However, see Déchaine & Wiltschko (2017).

of themselves. Hinzen & Sheenan (2014) argue that the capacity of self-awareness and self-reference is enabled by the notion of grammatical person, specifically 1st person. According to them, this notion is inherently grammatical as it is exclusively provided by UG and not by an extra-linguistic cognitive component. Thus, people can think and talk of themselves because their grammar contains the feature 1st person. If DLD grammars lack this feature, then children with DLD would be unable to refer to themselves. As far as all the literature about DLD reviewed herein is concerned, no such fact has ever been attested, which can be an indication that children with DLD use the 1st person singular pronoun.

In the case of 3rd person pronouns, Gopnik & Crago (1991) claim that they are acquired as referential expressions. Absence of features prevents the DLD subjects from forming inter-sentential pronominal reference, hence the quasi absence of pronouns in their narratives (see table 5-7). One of their participants, however, employed pronouns in the story-telling task but, according to them, her production is a description, not a narration, since there are neither inferred actions nor intentional states in it. Therefore, those pronouns are not used for inter-sentential reference but as lexical item to refer to the characters in the pictures. Gopnik & Crago (1991) do not provide independent evidence that for a story-telling to be a narration there should be explicit indication of inferred actions and intentional states that differentiate narrations from descriptions of sequential events.

Besides, absence of pronominal features would be problematic for the Binding Theory. The children with DLD were given sentences such as the one in (13) in a picture-pointing task:

13) He washes himself.

He and *himself* are coreferential in (13). If pronominal features were not present in the representation and pronouns were construed as referential expressions, the sentence in (13) would cause a violation of principle C of the Binding Theory, since *himself* is c-commanded by *he*.⁴⁹ Likewise, if coreference between *he* and *himself* can only be established as a result of the application of principle A of the Binding Theory, then if the necessary features were not present in the representation, the sentence would render Principle A inapplicable: *he* would never be co-referent with *himself*, since *he* and *himself* would not have the features necessary for the establishment of co-reference. The DLD subjects correctly performed in that comprehension task. This is an indication that co-reference has been established by means of Principle A, which means that pronominal features are present in the representations.

Since, according to Gopnik and Crago, the so-called syntactico-semantic features are absent from DLD grammars, they claim that DLD speakers always produce incorrect forms concerning the absent features whether they are acceptable or not in the target grammar. From their point of view, it can be stated that DLD grammars are deviant and so unconstrained by UG. UG on this account is defective. However, it has been seen that data obtained from comprehension and production tasks show that these features are present in the grammars in question. This allows one to conclude that UG provides the so-called syntactico-semantic features for DLD grammars.

⁴⁹ It could be said that this argument concerning Principle C is valid only if Gopnik & Crago (1991) stated that anaphors (just as pronouns) are subjected to the same conditions as referential expressions. Although they did not make such a statement, they claimed, as mentioned, that pronominal expressions lacked the features that allow co-reference. Anaphors are also pronominal expressions, therefore, according to Gopnik & Crago (1991)'s account, they should also lack these features and so they would be considered referential expressions.

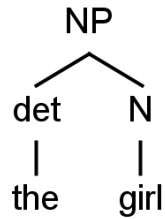
5.2 Absence of Functional Features

While Gopnik and Crago state that functional categories such as inflections (except tense) and determiners are present in DLD grammars, Guilfoyle et al. (1991) (cited by Jakubowicz 2003) propose that they are absent in DLD grammars. Based on Radford (1990) and Guilfoyle & Noonan (1992), they make the systematic distinction between lexical (N, V, A, P) and functional (D, T, C) categories. According to Radford (1990) typical children aged between 18 and 24 months would have an early grammar in which only lexical categories are present in the derivations. Functional categories appear later by maturation. Guilfoyle et al. (1991) propose that DLD grammars are similar to typical early grammars in that functional categories are not present in the derivations and only lexical categories are available.

Their empirical domain is the data produced by the KE family previously examined by Gopnik & Crago (1991) (see previous section). The DLD members of the KE family were observed to produce few determiners, pronouns or prepositions, and inflectional markers are mostly omitted; they construct their sentences mainly with lexical categories. This telegraphic speech is the reflection of lack of functional categories, according to Guilfoyle et al. (1991).

For the nominal domain, Guilfoyle et al. (1991) propose that the maximal projection is NP in DLD grammars. The few determiners that are produced by DLD speakers are analysed as being hosted in Spec-NP. The structure of the nominal subject in (14a) is analysed as in (14b) (Gopnik & Crago 1991:26):

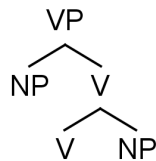
- 14) a. **The girl** gives the cookie to the boy.
b.



Pronouns in DLD grammars receive a similar structural analysis as nominals containing a determiner. Pronouns are analyzed as D in typical adult language. However, they seem to be sporadic in DLD grammars, just as in early typical language. Their infrequent appearance lead Guilfoyle et al. (1991) to claim that instead of being a projection of a D, pronouns are placed under the N node. According to this analysis, the functional category D is not part of DLD grammars.⁵⁰

The absence of functional categories in DLD grammars implies that T and v are not projected. Accordingly, a simple sentence would have the following structure in DLD grammars:

15)



This structure indicates that T and v are absent. Consequently, no [present] or

⁵⁰ Guilfoyle et al (1991) do not provide a specific argument concerning this claim. They base it only on the sporadicity of those LIs in DLD speech.

[past] feature is specified, no verbal tense marker appears on verbs, and modals and auxiliaries are also excluded. Moreover, no verb movement from V to v to T occurs, and as Spec-TP cannot project, there is no landing site for the subject, so no Internal Merge of the nominal subject takes place. Thus, this constituent stays in its base position. The sentence in (16) illustrates (Gopnik & Crago 1991:22):

16) The boy kiss the girl.

According to Guilfoyle et al (1991), since T and v are missing from the structure, this sentence has no tense and agreement markers, and the verb is present in its bare form.

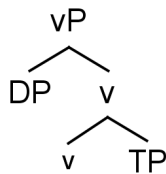
Guilfoyle et al (1991) claim that a grammar containing only lexical categories is consistent with UG. Although an DLD grammar is not identical to the typical grammar of the language to which an DLD speaker is exposed, it bears resemblance to other natural languages. This resemblance consists of presence of lexical categories but absence of some functional categories. For instance, Fukui (1986) and Fukui & Speas (1986) propose that Japanese lacks some functional categories, e.g., D. Since Japanese is a natural language, it is said to conform to the workings and constraints of UG, even without all functional categories in its lexicon. So do DLD grammars: They show variation in the same way that typical adult grammars vary. Languages are variable in the inventory and properties of functional categories and in the structures generated by UG, but they are invariant in the inventory of lexical categories and UG principles applying to linguistic structures.

The main weakness of this account is the assumption concerning variability in the availability of functional categories. It is standardly assumed that all languages contain this type of categories, including Japanese (see e.g., Watanabe 2006). According to this proposal, if DLD grammars do not comprise

functional categories, it can then not be the case that they comply with UG.

Furthermore, the absence of the functional *v* category puts this account at odds with standard views concerning the external argument (see e.g., Kratzer 1996): Sentential subjects are deemed to be merged outside the lexical verbal domain, under Spec-*vP*, a functional domain:

17)



In addition, under this proposal one UG constraint is violated with respect to DPs: The feature bundles of determiners include an uninterpretable *n* feature which must be checked upon merge of an *nP* in complement position. If determiners were merged under Spec-NP, the right configuration for feature checking would not obtain, and the derivations should crash. The same violation applies to verbs: Verbs select nominal arguments whose syntactic categories are D; if no DP merges with verbs, then the uninterpretable feature in verbs would not be checked and would cause the derivation to crash.

Functional categories seem to be necessarily reflected by their corresponding morphemes, in Guilfoyle et al.'s (1991) view: The presence of a morpheme is an indication of the presence of its related functional category and absence of a morpheme indicates absence of its related functional category in the representation; conversely, the presence of a functional category should be reflected by the presence of a corresponding morpheme (when it is available in the language) and its absence should be reflected by

the absence of a corresponding morpheme. If functional categories were absent from DLD grammars, then all morphemes reflecting them would be absent or rare in DLD speech, according to Guilfoyle et al.'s (1991). This is not the case, though: As Jakubowicz (2003) points out, English children with DLD have more difficulties with some morphemes than with others. Demonstratives and possessives are less problematic than verbal inflexion: Unlike the latter, the former are usually present in DLD speech. Moreover, it is not the case that any morpheme reflecting T is absent; modals are generally produced by children with DLD (see 5.5); they are merged under T, therefore T must be present DLD grammars. Under this categorial feature account, number and aspect are lexical categories. In current theory, these categories are functional. The prediction by Guilfoyle et al (1991) is the absence or rare appearance of them in DLD grammars. However, as shown in chapter 4 and in section 5.5.2, it is not the case that the -s morpheme realizing number is rarely produced; children with DLD show knowledge of number in more than one way, which implies that number is also present in DLD representations.

Finally, this proposal does not seem applicable to other languages. As observed in Bedore & Leonard (2001), inflection is not a difficulty for Spanish DLD children; most verbal inflectional forms are correctly produced. This also an indication that T is present in their grammars. All in all, these drawbacks point to the inadequacy of this proposal.

5.3 Absence of the Categorial Feature C

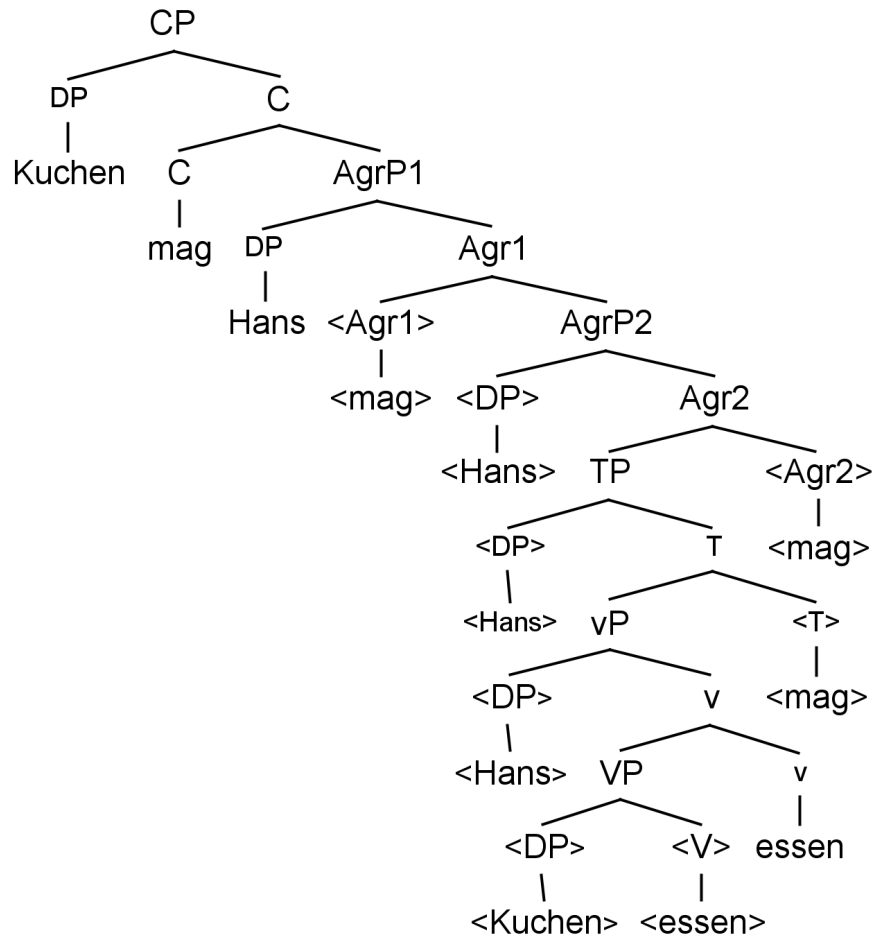
Hamann, Penner & Lindner (1998) propose that the deficit in DLD grammars in German is more selective than in other accounts in that DLD mainly affects CP, that is, the domain that hosts subordination conjunctions, wh-pronouns and other operators, and where the verb is placed in main clauses by enforcement of the V2 rule. Unlike the previous view that functional categorial features are

absent from DLD grammars, for this proposal these features but [C] are present in DLD grammars. The peripheral domain is projected from some LI functioning as a complementizer, but this LI is feature-deficient. The characteristic findings concerning a faulty CP are the placement of verbs in clause-final position in main or independent clauses, the free omission of complementizers and wh-phrases, and the co-occurrence of wh-phrases either with an infinitive or with a finite verb in clause-final position. The TP domain, according to them, seems in most cases to be intact since in general sentences mainly contain finite verbs. However, the V2 rule, which places the verb under C, is inoperative as a consequence of the deficient CP.

Hamann, Penner & Lindner (1998) assume the clause-structure in (18) for German. C and Agr2 are head initial phrases whereas V, T and Agr1 are head final. In main or independent clauses, the verb usually raises up to C and Spec-CP is filled by a DP, a PP or a AdvP in declaratives and wh-elements in interrogatives (based on Hamann, Penner & Lindner, 1998:197):

- 18) a. Kuchen mag Hans essen.
 cake likes Hans eat
 'Hans likes to eat cake.'

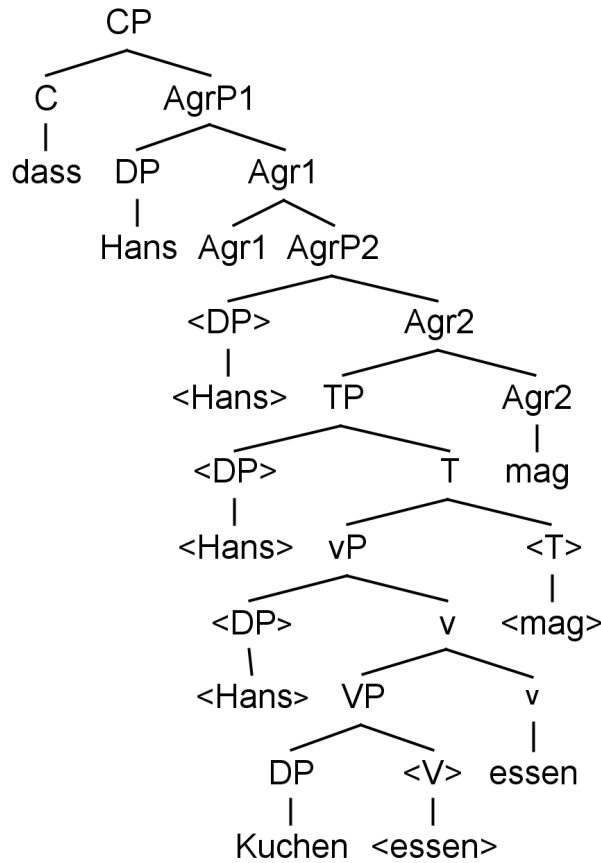
b.



In subordinate clauses the verb moves up to Agr2 and C is filled by a subordinating complementizer (based on Hamann, Penner & Lindner, 1998:198):

- 19) a. dass Hans Kuchen essen mag.
 that Hans cake eat likes
 'that Hans likes to eat cake.'

b.



Hamann, Penner & Lindner (1998) adopted a distinction between generalized V2 rule and residual V2 rule. The core assumption for the first one is V-to-v-to-T-to-C head movement and constituent movement regardless of the categorial, semantic, and relational identity of the constituent in Spec CP. For the second one, the V2 rule operates for movement to Spec CP (and verb movement to C) only if the raised constituent has a specific semantic function (Travis 1991; Zwart 1997). Thus, a constituent raises to Spec CP if and only if it has either an operator status (e.g., *wh*-) or a specific discourse function (e.g., topic or

focus). The consequence of this distinction is that whereas *wh*-questions and object initial clauses are unambiguously CPs, since the *wh*-constituent is an operator and the object DP is obligatorily focused (Büring 1995), subject initial clauses and adverb initial clauses are ambiguous between a CP and an AgrP1 analysis because subjects and initial adverbs are not necessarily marked as topics and/or focus, that is to say, they are informational-structurally neutral. They can be positioned at Spec-Agr1 and they do not undergo movement to Spec-CP. According to Hamann, Penner & Lindner (1998), the generalized V2 rule is the option instantiated in main clause structure in adult German, but the residual V2 option, due to the ambiguity just mentioned, is the null hypothesis initially adopted by the child during the process of typical language acquisition until he discovers the crucial evidence that forces her to make use of the generalized V2 rule. From the point of view of language acquisition, this proposal implies that the main task of the child at clause level is to disambiguate the input and to decide between the two possible hypotheses. Hamann, Penner & Lindner (1998) stated that German children with DLD typically stagnate before they can resolve the ambiguity between residual and generalized V2.

For their research, Hamann, Penner & Lindner (1998) analysed the data produced by 50 German DLD children, age between 3;2 and 10;3. The data were collected during conversations between the individual child and a therapist or an adult with whom the child was familiar. The data were taken from 7 corpora (Clahsen (1988); Clahsen, (CHILDES); Haffner (1995); Hansen (1994); Lindner (1995); Penner (Corpus 1994) and Penner (Corpus 1997)). The configurations of interest for this study were main declarative sentences, interrogatives and subordinate clauses. The criteria for their analysis are the children's choice of verbal forms (finite or infinitive), the placement of the verb

and the target-consistency and target-inconsistency of wh-questions and subordinate clauses. Percentages were obtained out of the total of the number of main declarative clauses, the sum of unambiguous finite constructions, the total number of (nonformulaic) wh-questions, and the total number of subordinate clauses.

For main declaratives sentences, with respect to the choice of verbal forms Hamann, Penner & Lindner (1998) observed that children with DLD use many more finite forms than infinitives (see table 5.11). With respect to the placement of the finite verb within the sentence, German children with DLD tend to produce sentences with the verb in clause-final position (see table 5.11). Examples of this configuration are presented in (20) (Hamann, Penner & Lindner 1998:209):

- | | | |
|-----|--|---|
| 20) | <u>DLD Response</u> | <u>Target</u> |
| | <p>a. Eine Streichholz hier rein soll.
 <i>a match here into shall/must</i>
 'A match shall go in here.'</p> <p>b. Haare nass wird.
 <i>hair wet becomes</i>
 '(My) hair becomes wet.'</p> | <p>Ein Streichholz soll hier rein</p> <p>(Meine) Haare werden nass.</p> |

Table 5-11

Verbal form		Verb placement		
Finite	Infinitive	Verb Final (VF)	Obj+V+XP	Subj+V+XP
57%	36%	44%	3%	27%

Relative frequencies of each form: The percentages of verbal forms were obtained the number of declarative main clauses with a verb; the percentages about verb placement were obtained from the total of unambiguous construction

The difference between the relative frequency of finite forms and the relative frequency of infinitivals is significant. The difference between the results for VF

and the genuine V2 (Obj+V+XP), and the difference between the results for VF and ambiguous V2 (Subj+V+XP) are significant.⁵¹

As for interrogatives, the results indicate target-inconsistent questions were produced with a relative frequency of 76%.⁵² Examples in (21) illustrate the type of errors that were observed (Hamann, Penner & Lindner 1998:212):

21) <u>DLD Response</u>	<u>Target</u>
a. __ Das is? <i>that is</i> 'What is that?'	Was ist das?
b. Das is da din? <i>what is inside</i> 'What is in there?'	Was ist da drin [= there inside]?
c. Wo das brennt ? <i>where that burns</i> 'Where does it burn?'	Wo brennt das?
d. Wo das denn wohl hingehen ? <i>where that then go to</i> 'Where is that then going to?'	Wo geht das denn wohl hin?
e. Warum __ hier kein Wasser? <i>why here no water</i> 'Why is here no water?'	Warum ist kein Wasser hier?

Sentence (21a) is missing the wh-element. Sentence (21b) contains a placeholder *das* instead of the genuine wh-element *was* 'what', according to Hamann, Penner & Lindner (1998). In (21c) the verb appears in final-clause

⁵¹ The total of the relative frequencies of unambiguous finite forms and infinitives adds up to 93%. The remaining 7% corresponds to ambiguous finite/infinitival forms, not included in the table. The total of the relative frequencies verb final, Obj+V+XP and Subj+V+XP adds up to 76; the remaining 24% corresponds to Adv+V+XP and V3 and V1 configurations, not included in the analysis.

⁵² Hamann, Penner & Lindner (1998) note that 14 children with DLD did not produce interrogatives and that the reason may be the absence of opportunities for question-asking during the conversations, and not necessarily the children's inability to produce them. The same applies to the production of subordinate clauses.

position instead of the expected second position, whereas the verb is its infinitival – as opposed to the tensed - form (21d) or missing in (21e).

Finally, most of the subordinate clauses produced by German children with DLD were target-inconsistent. The results indicate a frequency of 81%. Errors are exemplified in (22) (Hamann, Penner & Lindner 1998:211), where the complementizer (22a) or the wh-element (22b) are missing in the subordinate clauses.

22) DLD Response

- a. Gehört hab-i der Zwackelmann gut zaubern kann.
heard have-I the Zwackelmann well witch can
'I have heard that the Zwackelmann can witch well.'

Target

Ich habe gehört dass der Zwackelmann gut zaubern kann.

DLD Response

- b. Feds i nis _____ atehe tieche heiße.
(weiß ich nicht (wie die) anderen Tiere heißen)
know I not (how the) other animals named
'I don't know what the other animals are called.'

Target

Ich weiß nicht wie die anderen Tiere heißen

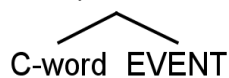
In order to account for these data, Hamann, Penner & Lindner (1998) claim that, just as in early typical language acquisition, the form of the DLD sentences in (20-22) reflects an interim grammar. This interim grammar is analyzed through the lenses of the Minimal Default Grammar Hypothesis (Roeper 1996) proposed for typical language acquisition. The main assumption

of this approach is that interim grammars are underspecified: They make use of only a subset of the formal features available in the target language, which means that LIs have an incomplete feature bundle. The incompleteness of the feature bundle of LI consists of the absence of categorial features. The result of this featural underspecification is a representation in which lexical features of LIs are present but selectional restrictions are inactive and the phrasal status of linguistic elements within the representation is undetermined, i.e., they cannot be identified as heads or as phrases.

According to Hamann, Penner & Lindner (1998), at the initial state negation, focus particles, adverbial quantifiers, interrogative markers in yes-no questions or constituent questions and subordinating conjunctions are treated by the child as category-neutral particles that have scope over an event. At this stage, operators (e.g., wh-elements) are LIs without their formal properties, that is, they contain some features, such as ‘interrogativity’ but they have no categorial labels such as C. Moreover, if selectional features are not projected, no phrase structure constraints on the realization of the event component applies. The event can also be syntactically projected in a category-neutral phrase. The structures assumed for DLD subordinate clauses and questions are shown in (23), (from Hamann, Penner & Lindner, 1998:207):

23)

C-word (subordination)



q-word (interrogative)



These C-word and q-word are neither heads nor phrases placed in specifier position. Their featural underspecification, according to Hamann, Penner & Lindner (1998), exempts them from satisfying their checking conditions. That is why, the operator word can be spelt out as null (see 21a and 22a-b), as a placeholder similar to a wh-constituent (see 21b) or as target wh-elements (see 21c-e).

Since the event part is also category-neutral and is not subjected to strict sub-categorisation, it can be realized in several different ways, according to Hamann, Penner & Lindner (1998). Accordingly, three patterns of declarative clauses can be generated in that part, namely root infinitives, subject-initial clauses and verb-final constructions. These patterns are manifestations of default representations, such as EVENT. Infinitives represent economical projections of the underlying event since the child has access to a default current temporal and spatial interpretation. This analysis can be applied to (21d) where the verb *hingehen* 'go to' is in its infinitival form. Subject-initial clauses are neutral in terms of information structure, as mentioned above, according to Hamann, Penner & Lindner (1998). This type of sentences is taken to represent events with a discourse-independent tense marking. In the surface these are target forms since the verb is in second position. However, from a structural point of view, they are non-target since C is absent from the representation, the Subject DP stays in Spec-Agr2 and the verb occupies the Agr2 head. Finally, verb-final configurations are analyzed as minimal projections at which the child can spell out inflectional features (see 19a-b). In fact, since most of the verbal utterances produced by their subject are finite, the authors ended up stating that the propositional core is probably intact, that is, the temporal domain is deployed. Hamann, Penner & Lindner (1998) are not explicit about the structure of sentences in (20), but according to their assumptions about German clause structure, the subjects *eine streichholz* 'a

match' and *hare* 'hair' would presumably be placed at Spec-Agr2 and the verbs *soll* 'shall/must' and *wird* 'becomes' would occupy the head position Agr2. This implies that children with DLD are capable of projecting complete feature bundles in this domain.

This account is objectionable on several grounds. First, Hamann, Penner & Lindner (1998) state that the LI that introduces subordinate clauses is category-neutral. This means that it does not have an interpretable C feature. This is problematic in terms of selection. The account predicts that verbs selecting a CP should be prevented from merging with their complement. This is because in order for a verb to merge with a subordinate clause, it has to select it. For it to select it, the head of the subordinate clause must have its categorial feature, since that is the interpretable feature against which its uninterpretable counterpart in V must be checked for selection to take place. Data provided by Hamann, Penner & Lindner (1998) show that subordinate clauses headed can be selected by a verb like *hören* 'hear' as in the example in (24) (repeated from 22a):

- 24) Gehört hab-i der Zwackelmann gut zaubern kann.
heard have-I the Z. well witch can
'I have e heard that the Zwackelmann can witch well.'

The categorial C feature must be present in the derivation (see also chapter 8).

Second, as Hamann, Penner & Lindner (1998) mentioned themselves, their model predicts that wh-in situ questions should be produced, at least it does not prevent the generation of such types of questions. It is standardly assumed that in wh-element-fronted questions, the wh-elements occupies two positions, the base position (enabled by External Merge) and the derived position (enabled by Internal Merge). The wh-element undergoes Internal Merge because of some feature-checking requirement of the interrogative

element at the left periphery. According to Hamann, Penner & Lindner (1998), the nature of the so-called q-word in DLD grammars exempts it from feature checking. This implies that the wh-element does not need to move to the periphery. The wh-element can then stay in its base position. Nevertheless, wh-in situ questions in their German data and DLD data from other languages with obligatory wh-movement have never been attested. Thus, they admit that the model may be too powerful. With wh-in situ questions out of the picture, two options for the placement of the C-word acting as wh-element at the sentential periphery can be envisaged. First, the C-word could be externally merged (Ch 3). This option is problematic: The question would not be interpretable since an operator must bind a variable in its base position. The binding relation is created by a chain which in turn is formed by the application of Internal Merge to the operator from its base position to the periphery (see chapter 2). No such binding relation exists if the C-word is directly merged in its surface position (see also chapter 6, section 6.2).

The second option is Internal Merge of the C-word, that is, the C-word is externally merged at its base position and then internally merged at the periphery. But this option is also inadequate. Constituent questions are formed with phrases, that is the wh-element is a maximal projection. Whether the wh-element is an argument or an adjunct it has to be a phrase. Being a phrase, it means that that wh-element has a categorial feature that allows it to form a maximal projection. Therefore, it cannot be the case that the C-word acting as a wh-element is a category-neutral element whose featural underspecification prevents it from being a phrase.

Third, according to Hamann, Penner & Lindner (1998), the C-word position can be filled by the so-called particle questions, which are considered to be wh-words reduced to placeholders (*wo-də*, *wo-de*, *wo-za*, *wo-s*, *wo-za*,

wo-tha). The use of these placeholders is also taken by these authors to be a sign of lack of the categorial feature [C]. Nevertheless, placeholders are argued to have a syntactic function with specific grammatical properties not different from properties exhibited by target grammars (see chapter 8). Thus, their use does not seem to indicate a featural deficit in child grammars.

Finally, the child grammar that results from this proposal is discontinuous from adult grammar. These types of grammars are different because, as mentioned above, the LI that projects the peripheral phrase does not have its categorial feature in child grammar, unlike the adult's counterpart. The account suggests that production is assumed to be a faithful image of abstract representation. That is, since the child does not regularly produce certain morphemes, it is deemed that some feature is missing in the derivation, even in cases where the child does produce target sentences. However, as argued for in several studies (see e.g., Hyams & Safir, 1994 and Montrul 2004), the fact that some overt category is not overt does not mean lack of knowledge of that category.

In conclusion, the Minimal Default Grammar account proposed by Hamann, Penner & Lindner (1998) states that German DLD is a reflection of featural underspecification of lexical items at the CP level. According to them this absence of categorial features account for the non-target sentences produced by the children with DLD whose speech they studied. Nevertheless, the account is deemed unsatisfactory mainly for syntactic reasons (subordinate clauses have to be headed by an element that contains a categorial feature in order to be selected and *wh*-element must be phrases) and for construal reasons (for questions to be interpreted a binding relation between an operator and a variable must be created). Ultimately, it seems that even though the form

of the periphery is not target, subordinate clauses and questions are constructed with a C, i.e., a head containing a categorial [C] feature.

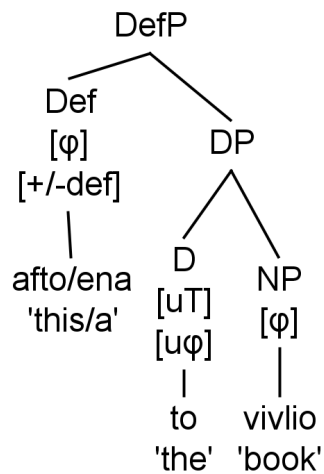
5.4 Absence of Uninterpretable Features

Another account involving a featural deficit in DLD is Tsimpli's (2001) and Tsimpli & Stavrakaki's (1999) proposal for Greek.⁵³ Tsimpli suggests a reformulation of the claim that there is a distinction between lexical and functional categories. This reformulation makes use of the differentiation between interpretable and uninterpretable features and concerns the distinction made between lexical and functional categories carrying interpretable features on the one hand, and functional categories carrying uninterpretable features on the other. Recall that uninterpretable features are those features pertinent only to syntax and have no effect on the semantic interpretation of sentences. Interpretable features are those features relevant both for syntax and semantics. Specifically, DLD in Greek is claimed to be a deficit that affects uninterpretable features included in functional categories. Tsimpli & Stavrakaki's empirical area is the nominal domain (determiners, genitive clitics, strong pronouns and *wh*-words) and the temporal/verbal domain (*phi* features and accusative clitics). Tsimpli (2001) and Tsimpli & Stavrakaki (1999) adopt the following assumptions. Given the morpho-syntactic and semantic properties of the definite determiner in Greek, this category does not host interpretable features, only uninterpretable features (e.g., case, i.e., *uT*, and agreement *phi* features). The interpretable definiteness/indefiniteness feature is hosted by demonstratives and indefinite determiners, and the interpretable *phi* agreement features (person, gender and number) are located in nouns. That is, unlike most other languages, the definiteness feature and the categorial D feature are not located on the same

⁵³ The data in this section are described in Chapter 4, section 4.2.1.1.

head, and the D feature is uninterpretable. Thus, the Greek nominal domain has the following representation (Tsimpli, 2001:436):

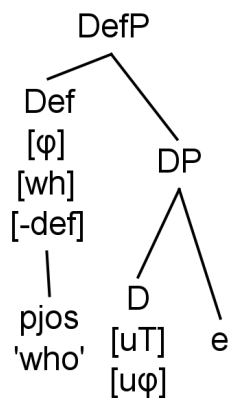
25)



When the Def head is empty the D head undergoes movement due to the Principle of Recoverability for LF-chains, according to which, when a feature is morphophonologically spelt out, its realization must occur on the highest head of the formed dependency (Roberts & Roussou, 2001). Strong pronouns have a structure similar to the one in (25): They are full nominals deploying a full functional structure, according to Tsimpli & Stavrakaki (1999). Weak pronouns, (e.g., accusative clitics) are composed of nominal features (D, case and phi features) that are lodged on the verbal head and as such are uninterpretable. Genitive clitics in nominals, on the contrary, are composed of interpretable features: They are associated to thematic and referential features.

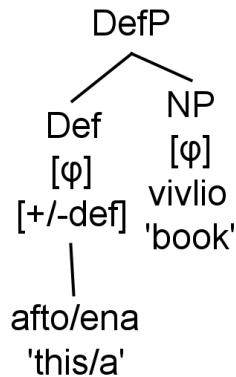
Finally, nominal wh-phrases containing *ti* 'what', *pjos* 'who' and *pjos fititis* 'which student' are assumed to have a structure to similar DefP above: The Def head includes the wh-feature, the D head is specified for uninterpretable T and phi features; the N head can be occupied by a noun functioning as a restrictor (Tsimpli & Stavrakaki 1999:51):

26)



The uninterpretable feature deficit proposal accounts for DLD as follows: Definite determiners are mostly incorrectly used; most of them are omitted, while some of them correctly appear in repetitions and/or imitations of preceding utterances. Tsimpli (2001) and Tsimpli & Stavrakaki (1999) interpret this incorrect use of the definite article as an indication that the D head is missing in the derivation, since it only comprises uninterpretable features. Indefinites and demonstratives are correctly used in most cases, which is expected since these types are composed of interpretable features. Tsimpli & Stavrakaki (1999) propose the following structure for a nominal phrase containing a demonstrative or an indefinite in DLD grammars (Tsimpli & Stavrakaki, 1999:77):

27)



This structure underlies the following sentence produced by the subject studied by Tsimpli & Stavrakaki (1999: 67):

28) DLD response

Ato koritsi kimate
This-neut girl-nom sleep-3p.sg

Target

Afto to koritsi kimate
This-nom the girl-nom sleep-3p.sg
'This girl is sleeping'

Accusative clitics are omitted in most cases. They behave in a manner similar to definite determiners. This is accounted for in terms of their featural composition: Definite determiners and accusative clitics are categorially identical, both having uninterpretable features, i.e., the type that is affected.

Unlike accusative clitics, genitive clitics are used correctly. This behavior is compatible with the assumption that genitive clitics in nominals contain mainly interpretable features.

Likewise, strong pronouns are for the most part used correctly, which is expected given the assumption that they are composed of interpretable definiteness features, just like demonstratives.

As for *wh*-words, it was observed that mainly ‘where’, ‘what’ and ‘how’ appear in DLD production. The former was mostly correctly employed, whereas the latter two tended to be omitted (Tsimpli & Stavrakaki 1999:68):

29) <u>DLD response</u>	<u>Target</u>
— efas?	ti efaghes?
eat-3p-sg	what ate-2p-sg
	‘What did you eat?’

This omission is accounted for in terms of the absence of *D*. That is, the intermediate projection hosting the uninterpretable *D*, case and phi features present in typical grammars is excluded in DLD grammars. However, the high rate of omission of *ti* ‘what’, although not as frequent as the omission of determiners and clitics, seems to pose a problem to this account given the structure of this phrase, namely a DefP with an interpretable feature [indef] and an interpretable *wh*-feature. That is, since the *wh*-feature is interpretable it should be present and reflected by the *wh*-phrase. Tsimpli (2001) proposes that in fact the *wh*-feature is present in the representation and marked at PF, although targetlessly: In cases where *ti* is omitted, the verb appears in clause-initial position and a focal stress falls on the first syllable of the verb. The use of this stress is argued to be a compensatory strategy employed for the requirement for clause-typing as interrogative. The focal stress signals the presence of the interpretable *wh* feature.

One problem with this account involves the repetition of DPs containing the definite article. Tsimpli (2001) seems to dismiss repetitions, as well as self corrections, as an indication of knowledge of the *D*. For her the cases where the children with DLD repeated or imitated an utterance previously produced by the speech therapist with whom the children with DLD interacted for the data collection are not examples reflecting a structure containing *D* and its projection. However, Tsimpli & Stavrakaki (1999) show a different attitude

concerning repetitions and imitations. They state that they are important in the analysis of DLD grammars because functional categories that are absent from grammars tend to be omitted when children try to repeat and imitate adult speech. They go on to mention that repetition can be said to reflect grammatical competence. This implies that correct repetitions and self corrections of utterances containing the definite article indicate presence of D in the structure.

One of the assumptions adopted by Tsimpli & Stavrakaki can also be problematic for this proposal. Definite determiners have clitic-like properties, for instance, the vowel in the determiner marked for the neuter gender is elided when the following LI starts with a vowel (e.g., *t'aghor* 'the boy'). They assume that determiner cliticisation is the result of N-to-D overt movement, which is triggered for semantic interpretation. This assumption implies that, in the absence of the D projection, N will not be able to raise, and DPs in DLD grammars should be interpreted differently from DPs in typical grammars. If this is the case, it is not clear at all what this different interpretation would consist of.

Another problem with this account concerns case assignment of DefP without D: Tsimpli (2001) and Tsimpli & Stavrakaki (1999) propose that the uninterpretable case feature within the nominal phrase is lodged in D. But if DefP does not have the D category, then [uT] is not there either. The prediction should be that for indefinite nominals, for instance, the use of case markers should be faulty. It seems that this prediction is not borne out: Tsimpli & Stavrakaki (1999) analysed the appearance of indefinite articles in subject and object position. The incorrect use of this element does not include wrong case assignment, which seems to indicate that case is correctly assigned, D should then be in the representation.

A fourth problem is the feature specification of 1st and 2nd person clitics. The results concerning these clitics in Tsimpli (2001) indicate mainly an incorrect use of them. Following Cardinaletti & Starke (1994), Tsimpli & Stavrakaki (1999) describe Greek clitics as morphologically, semantically and syntactically deficient. Semantically, they can be expletives, they need a prominent discourse antecedent for interpretation, they can be non-referential and non-human. As mentioned above, syntactically clitics have only uninterpretable features and they lack the functional system proposed for strong pronouns. However, this description can apply only to 3rd person clitics. 1st and 2nd clitics are specified by a semantic feature [+human], they are mainly referential, and they cannot be expletives. This implies that they contain interpretable features. Therefore, the account proposing a lack of uninterpretable features cannot capture these results.

The account for the omission of the wh-phrase *ti* 'what' seems to create an additional difficulty with respect to this proposal. On the one hand, it is claimed that the structure of *ti* wh-phrases in DLD grammars do not contain the intermediate projection D, in which case, the structure should be similar to the one proposed for nominals introduced by demonstratives, as in (25). If that is the case, then the question is why *ti*, since it is generated under Def, is absent and not present, just as demonstratives. On the other hand, Tsimpli (2001) and Tsimpli & Stavrakaki (1999) make the distinction between nominal *ti*, in which case it acts as a DP binding a variable, and predicative *ti*, which functions as an interrogative marker. This distinction has an effect on the DLD results. In most of the questions where *ti* correctly appears, the wh-element is used predicatively. This led Tsimpli & Stavrakaki (1999) to state that these occurrences should not be taken as an indication that the D projection in wh-phrases is part of DLD grammars. The researchers imply that, because few cases of real nominal *ti* wh-phrases were produced, children with DLD lack

knowledge of the relevant structure. However, as mentioned above, absence of some overt grammatical element in production is not a valid reason for the postulation of lack of knowledge. Moreover, they are not explicit as regards the structural difference between nominal and predicative *ti* phrases, that is to say, it is not clear to which syntactic category predicative *ti* belongs to. This omission renders the proposal difficult to evaluate.

Finally, the account claims that, while uninterpretable features are affected, interpretable features are spared. Since absence of some type of feature is an indication that UG is defective, the effects of this absence should be observed in other languages. As will be seen in chapter 7, verbal agreement in person seems not to be affected in French. This account predicts that this type of agreement should be impaired since phi features in verbs in French are uninterpretable (Puskas 2013). Moreover, the account predicts that tense should not be affected since the T in verbs is interpretable; however, as was shown above, the *-ed* morpheme in English DLD tends to be greatly omitted. For all the reasons mentioned above, this account appears to be inadequate.

5.5 Presence of Features

The accounts reported above argue that some formal, categorial or uninterpretable features enabling the projection of functional phrases or involved in agreement relations are absent, which would be an indication that UG does not contain such features. Several pieces of evidence show that this view is misguided. This section shows that the grammar of children with DLD speaking several different languages contain these features. Section 5.5.1 shows that [T] is present: Its occurrence is directly revealed by the infinitive

marker *to*, modals, the auxiliaries *do* and *be* and the scarce but correct use of the 3rd present *-s* and past *-ed* morphemes in English DLD, and by verbal morphology in Spanish and Swedish DLD, as well as indirectly revealed by the presence of negation, inversion in questions and assignment of nominative case in English DLD and by the presence of past participles and infinitives in French DLD. Section 5.5.2 shows that [D] and [Number] are also present: English, French, Spanish, Swedish and Italian children with DLD produce sentences containing determiners, demonstratives or plural morphemes. Finally, section 5.5.3 reveals the presence of [C]: Its occurrence is directly shown by different complementizers in Greek DLD, and relative clauses in Hebrew DLD and indirectly indicated by V2 sentences attested in German and Swedish DLD and questions in English and Greek DLD.

One of these studies is Leonard (1995). He examined the appearance of functional categories in DLD grammars. This scholar studied their presence in the T, D and C domains in English DLD. His goal was to determine whether these domains were developed in DLD children. The interest in his study resides in the fact that he examined not only the grammatical morphemes related to the domains in question that have been profusely examined but also other related morphemes that had been less studied. The evidence for the T domain is the presence of modals, infinitival *to*, the presence of finite forms of *be* and *do*, the presence of tensed verbal forms, the negative marker *n't* and the presence of subjects carrying nominative case. The evidence for projection of the D domain includes definite and indefinite determiners (*a, the*), demonstratives (*this, that, those, these*), the genitive marker 's, possessive determiners and case particle *of*. The development of the C domain is reflected by the presence of overt complementizers (*that, if*), *wh*-constituents lodged in Spec-CP, auxiliaries adjoined to C, and the presence of indirect questions such as *I wonder what Karen will do*. The data examined in that study came from

transcripts of speech from 20 monolingual English-speaking children who had participated in a crosslinguistic study of Leonard et al. (1992). Ten of these children had been diagnosed with DLD. These children ranged in age from 3:8 to 5:7. Their MLUs in words based on 100 spontaneous utterances ranged from 2.7 to 4.2. The data included speech samples ranging from 520 to 1140 spontaneous and intelligible utterances.

The sections previously mentioned provide empirical support for presence of functional features. Section 5.5.4 also provides theoretical support. It is stated that functional categories must be present in order to (i) correctly discriminate the morphemes that realize them from other lexical items, (ii) adequately match the formal features comprised in them with their specific morphophonological realizations and (iii) satisfy selectional requirements.

5.5.1 Presence of T

Modals and the infinitival marker are standardly analysed as T heads. Leonard (1995) found that all his participants (TD and DLD) showed use of modals. The range of use is from 1 to 36. Moreover, nine out of ten children with DLD produced the infinitival marker *to*. Gopnik (1990) also reports the use of *to*. Her DLD subject produced sentences such as the one in (30) (Gopnik 1990:161):

30) I know how to play basketball.

Copulas and auxiliary *be* and auxiliary *do* are finite forms inserted under T in order to mark tense and agreement (Wexler 1994). According to Leonard, all his subjects produced forms of *be*, and almost all of these instances of *be* had the correct morphological form, i.e., they showed correct agreement with their subject. Finite forms of *do* were also observed. Nine children with DLD

and eight TD children produced these forms in an affirmative answer in Leonard's study, the range of use being 1 to 16 by the children with DLD and 1 to 37 by the typical children:

- 31) Question: Do you want this?
Answer from DLD child: Yes, she does!

Although the answer in (30) should be *I do*, the auxiliary is a tensed form, which is taken to signal the presence of T in the representation.

The use of auxiliaries was also observed in French DLD children. Auxiliaries in compound tenses were used intermittently (Paradis & Crago 2001); however, whether the auxiliary was present or absent, the use of the compound past tense and the near future tense was correct according to discourse context: Past participles appeared only in past context and infinitives appeared only in future contexts. That is, the past participles appeared when talking about a past situation, and the infinitives occurred when talking about a future event. This indicates that these forms corresponded with their temporal context. No past participle occurred in future temporal context and no infinitive occurred in past temporal context. This is an indication that the past tense feature and the future tense feature are hosted in T, which means that T is present in the derivation.

All of Leonard's children with DLD showed the use of the present 3rd person singular *-s* morpheme or the past tense *-ed* morpheme; nine of the ten DLD and all TD children produced both morphemes. The usage of the present 3rd person singular morpheme showed an appropriate contextual accuracy of 92% when it appeared. The usage of the past tense morpheme was also accurate, since it never appeared in present or future contexts. The DLD subjects studied by Rice & Wexler (1995) showed the use of tense as well. It was found that, despite the simple past *-ed* morpheme tendency to be absent

in obligatory contexts, it did occur in some instances and importantly it always occurred in the right contexts, that is, it did not appear in sentences interpreted as present but in sentences interpreted as past. Moreover, no substitution of –*ed* for –*s* was observed in sentences interpreted as past. The suffix –*ed* was misapplied with irregular forms like *he goed* but, as Rice & Wexler (1995) states, this cannot be considered an error given the fact that the past morpheme is used for past situations, and it occurs in the right context. Thus, –*s* and –*ed* sometimes appeared in DLD production and were correctly used. This is an indication of the presence of T in the representation.

Tensed verbal forms were also observed in Spanish and Swedish DLD. The Spanish children with DLD studied by Bedore & Leonard (2001) differed from typical children in only three out of nine verbal forms. Most present forms and most past forms were correctly produced by the DLD children. As for tense in Swedish DLD (Håkansson 2001), despite difference in performance between children with DLD and their age peers, the percentage of correct production of verbal forms was very high in DLD grammar, which is another indication of the presence of T in the representations. Moreover, the tense morphemes were used in the right contexts; there was no substitution of the past morpheme for the present or vice-versa. The use of irregular past forms should also confirm the presence of TP since the DLD group did not differ from the control groups in the use of those forms.

The negative marker *n't* is considered a head whose projection is the complement of T. The presence of NegP headed by *n't* implies the presence of TP (Zanuttini 1996, see chapter 8). In Leonard's study, all the children with DLD used forms as *can't*, 8 children produced sentences with *won't*. Negative forms such as *shouldn't* and *wouldn't* were produced by one DLD child. All children showed use of *do* in combination with the negative marker *n't* (e.g., *don't*, *didn't*) and importantly, none of them were confined to common expressions such as *I don't know* (See also chapter 8).

Interrogatives also point to the presence of T in DLD grammars. Rice et al. (1995) observed that children with DLD produced finite forms of *be* and *do* in full questions. Their DLD subjects produced questions such as the examples in (32) and (33):

- 32) a. Are you happy?
b. Is he running?

33) Do you want it?

They pointed out that if *be* and *do* forms undergo movement they must be marked for tense and agreement. Since tense and agreement are realized in T and movement of auxiliaries is analysed as T-to-C, it follows that T must be present in the representation.

As shown in chapter 2, nominative case is assigned by T. All the children with DLD in Leonard's study used nominative case pronouns. The range of use of these forms is 8 to 117. And all these forms were produced in the right contexts, i.e., in positions where the pronouns are in Spec-TP.

All the examples analyzed above concern production. Other studies that examined comprehension show that T is present in the derivation of DLD children's sentences. As reported in chapter 4, the children with DLD studied by Rice et al. (1999) correctly accepted finite sentences as grammatical and, importantly, they did not incorrectly reject grammatical sentences. Moreover, they did reject ungrammatical sentences that they were not likely to produce.

Jakubowicz (2003) found that French children with DLD also had a good performance in comprehension of tense. She carried out a longitudinal three-session experiment. She studied the performance of 11 children with DLD whose mean age was 6;4 at session (S) 1, 7;8 at S2, 9;1 at S3, and 12 typical children whose age was 3;3 at S1, 4;4 at S2 and 5;6 at S3. The experiment consisted in a picture-sentence matching task. Although, the comprehension

of the present and the comprehension of the compound past differed at the beginning, at the last stage of the study, sentences including both tenses were equally understood by both groups of children.

Leonard & Deevy (2010) tested comprehension of tense in English. They recruited 8 children with DLD aged between 4;4 and 5;7 and 8 typical children aged between 3;5 and 4;0. The linguistic material for the experiment included sentences containing the present form *is* and the past form *was*. The task consisted in viewing an event occurring twice, once at a location A along a path and once at a location B along the same path. The event at location A corresponded to the past event and the event at B corresponded to the present event. The experimental sentence heard by the child was uttered while the second event was occurring. The child was asked 'where X is at Y' and he was expected to point to location B; the child was asked 'where X was at Y' and he was expected to point at location A. The results indicated an average of 95,38 % correct on the *is* items and an average of 92,38% correct on the *was* items from the DLD children, and an average of 100% correct the *is* items and 92,38% on the *was* items from the typical children. Leonard & Deevy (2010) reached the conclusion that both groups were able to understand the difference between the different forms of *be* and tense in general.

The data reported above reveals the presence of modals, the infinitive marker, the present tense 3rd person singular morpheme, the past tense morpheme, copulas, auxiliaries, in English, the presence of copulas and auxiliaries in French, and the presence of tensed verbal forms in Spanish and Swedish. All of these lexical items are taken to be the realization of the [Tense] feature. Based on these observations, it can be concluded, in accordance with Leonard (1995), that the appearance of these functional elements, despite being variably used in production, points to the projection of the TP. This is an

indication that T as a categorial feature is present in the derivation.

5.5.2 Presence of D and Num

Number is reflected in the form of determiners (e.g., *that* (singular) and *those* (plural)), in the presence versus the absence of a morpheme (e.g., -s present in nouns indicates plural, while absence of a morpheme indicates singular in English and Spanish;) or in different endings in nouns (e.g., -a and -o indicate singular and -i and -e indicate plural in Italian).

Leonard (1995) found that all his English DLD subjects used definite and indefinite determiners. All children produced the singular demonstratives *this* and *that*, although their plural correspondents were used only by a subset of the sample: *these* appeared in 6 TD children and 4 DLD children; *those* was produced by 7 TD children and 3 DLD children. The range of use of articles is 18 to 290 by the children with DLD and 20 to 289 by the typical children. Possessive determiners were observed in the production of all the children, the range of use being 14 to 53 by the children with DLD and 16 to 65 by the typical children. At least three different types were produced by all but one TD child. The genitive marker was produced by 4 children with DLD (range of use 1 to 8) and by all the typical children (range of use 1 to 9). However, obligatory contexts for this form were observed in every child's speech. Finally, the case particle *of* was produced by all but one DLD child, the range of use being 1 to 12 and by all the typical children, the range of use being 3 to 24.

French children with DLD were likewise found to produce determiners. Jakubowicz et al. (1998) tested the production of definite determiners by 13 children with DLD (age 5;7-13;1; mean 5;7) and 20 typical children (age 5;6-5;11, mean 5;7). The experiment consisted in an elicitation task about actions depicted in pictures. The results indicate that no statistically significant difference was found in the groups: The production of determiners by both

groups amounted to at least 90% in obligatory contexts. Similar results were obtained by Paradis & Crago (2004); they studied DP productions by a group of 10 children with DLD (mean age 7;6; mean MLU-word 3.98), a group of 10 typical children matched for MLU-w (mean 3.67; mean age 3;3) and a group of 10 typical children matched for age (mean 7;3). They reported that all groups provided determiners over 90% of the time and the groups revealed no significant difference. Hamann (2004) reported a very low rate of determiner omission in the 11 children with DLD studied by her.

Data from younger French children with DLD points to the projection of D. Hamann et al. (2002) investigated the production of determiners in a longitudinal study by two children (age 3;10-4;8 and 4;7-5;6). The appearance of determiners at an early stage was very high in one of them and relatively low in the other. However, the incidence was 90% for both children thereafter. Moreover, determiners were produced from the first sample onward by both children and they appeared in different contexts, including complement DPs, isolated nouns and dislocated DPs. And importantly, indefinite and definite determiners were correctly employed from the first recording.

Spanish children with DLD produce determiners as well (see chapter 3). In Bedore & Leonard (2001) determiners appeared in the utterances of all the DLD subjects. Despite the many errors reported, determiners production rate was 80%. Moreover, in general the appearance of singular determiners in correct contexts was above chance. And the response patterns of the children with DLD on the article probes were generally similar to the responses of the MLU control group.

The [number] feature is present in the nominal domain in DLD grammars. Leonard et al. (2001) reported that all their Swedish DLD subjects produced plural forms and their rate of plural production was very high and

similar to that of their MLU peers. Furthermore, the plural inflection task included three singular items, since the researchers wanted to make sure that the children in the three groups were capable of also producing singular forms. The performance of all the groups confirmed this. Mean percentages of correct use of the singular forms were similar for all the groups, which indicates that even children with DLD can produce these forms with no difficulty.

French children with DLD show the presence of the [number] feature. Paradis & Crago (2004) reported a very high accuracy in the production of plural determiners. They calculated the percent correct choice of plural determiner with a noun having a plural referent. The children with DLD showed an accuracy of 100% in number marking. In English DLD, plural marking also appeared (Leonard et al. 1992). Their DLD subjects showed almost 70% of accurate production of plural –s. Moreover, it was found that, contrary to the Gopnik's (1990) findings, plural marking virtually occurred only in the right contexts.

Italian DLD confirms the previous statements concerning number. The study by Leonard et al. (1992) reported that the correct use of plural markers showed a percentage above 80. And the children with DLD performance did not differ from their MLU peers. The DLD Italian subjects by Leonard et al. (1992) were in addition tested for comprehension. Assessment was made through the use of picture probes containing four pictures, depicting the target and three foils. The children were required to point to the correct picture on the page. Accuracy rate was 80% and it did not differ from their typical peers. The results in this study point to the presence of the [number] feature in the nominal representation.

5.5.3 Presence of C

Leonard (1995) observed very few overt complementizers in subordinate clauses. This might be unsurprising due to the fact that English allows null complementizers. However, data from English and other languages indicate that C is present in the derivations of DLD sentences.

The data on subordinate clauses reported in Mastropavlou & Tsimpli (2011) seem to be a clear indication of the presence of C. These researchers examined the production of different complementizers in Greek DLD: *oti* and *pos* ‘that’ (used in declarative complements), *pu* ‘that’ (introducing factive complements of psychological verbs), *an* ‘if/whether’ (introducing interrogative complements, and *na* (a subjunctive mood marker introducing verbal complements frequently equivalent to infinitival or gerundive complement clauses in English) (Roussou 1994). The experimental group comprised a group of 8 children aged between 4;2 and 5;9. The data were collected from spontaneous speech samples. The results indicate that all children with DLD produced complementizers, and the four complementizers were used by (not all) the DLD children. The complementizer *na* introducing verbal complements exhibited the most frequent use in the data (240 utterances). The other three were used more scarcely (*pu* = 51 utterances, *oti* = 4 utterances, *an* = 5 utterances). *Na* and *pu* were produced correctly in most cases whereas the production of *oti* was less accurate:⁵⁴

Table 5-12 Accuracy of complementizer production

Correct Percentage	<i>na</i>	<i>pu</i>	<i>oti</i>
	64,9	94,4	25

⁵⁴ No correct percentages are provided for *an*.

Note, however, that the errors consisted in omission and not in commissions. Since most of the subordinate sentences produced by the Greek DLD studied by Mastropavlou & Tsimpli (2011) contain some complementizer, it can be concluded that categorial C feature is present in their grammars.

Auxiliaries and copulas were observed to have adjoined to C for question production in all children from Leonard (1995). This observation was already reported for the presence of T, that is inversion is analysed as T-to-C movement. Since inversion is reported to occur, then C must be present in the representation.

C seems to be present in declarative sentences as well in the context of the V2 effect in German DLD grammars. Rice et al. (1997) studied the placement of finite and non-finite verbs main clauses. They found that almost all finite lexical verbs were placed in second position, i.e., after the first constituent. As stated above, this position is standardly analysed as the locus of C, therefore C is present in DLD sentential representations. Moreover, Rice et al. (1997) observed that all their subjects used modals, and these were adequately placed: Almost all the produced modals were finite, and they appeared in second position within the sentence, which is an indication that the modals correctly moved from T to C. (34) illustrates this configuration (Rice et al 1997:264):

34) Ich kann den Ball bringen.
I can the ball bring
'I can bring the ball.'

Swedish DLD likewise shows the presence of C in the context of V2 effect in declarative sentences. Hansson et al. (2000) analysed 325 sentences containing a negative particle. In the adult language, the phrase projected from this particle is placed above vP, but in the surface the particle appears post-

verbally. This configuration is analysed as V-to-v-to-T-to-C movement. The children with DLD participating in this study produced 233 out of 243 sentences containing the order SVNeg. At first glance, it would appear that this observation is not conclusive. That is because the surface word order in matrix sentences is SVO whether we apply the V2 rule or not. (35) illustrates this configuration (Hansson et al 2000:852):

35) Bill äter inte glass
 B. eats not ice-cream
 'Bill does not eat ice-cream

However, the children with DLD also produced 74 out of 82 sentences with the order XVSNeg. This configuration makes the relevant differentiation: It shows that the Subject DP is in Spec-TP, since it appears before the negative particle but after the verb. Both the verb and the non-subject phrase are placed in pre-subject position. This is an indication that they appear in a position higher than TP, therefore they must be placed in the C domain. (36) illustrates this configuration (based on Hansson et al. 2000):

36) Glass äter Bill inte
 ice-cream eats B. not
 'Ice-cream, Bill does not eat'

The production of wh-questions shows the presence of C in interrogatives in DLD grammars. Leonard (1995) considered for analysis only those wh-questions that indicated that the wh-phrase was clearly in the Spec-CP position. This criterion was deemed to have been met if the wh-phrase occurred to the left of an overt subject, whether an auxiliary was present or not. All of the children with DLD and 9 TD children produced questions of this sort (Leonard 1995:1277):

- 37) a. What is he making?
 b. What do you have?
 c. Why you scoot this table up?
 d. How seats go back?
 e. What we pretend cook in here?

The data in van der Lely & Battel (2003) also point to the presence of C in English DLD production. The canonical position of wh-elements at the left periphery is Spec-CP. All the questions produced by their subjects contain a wh-element positioned at the left periphery which reveals that CP is projected, and C is present. Moreover, some questions produced by these same children show inversion, a sign of auxiliary movement from T to C.⁵⁵

The production of questions by Greek children with DLD also confirms the presence of a categorial C feature. According to Philippaki-Warbuton (1985), Tsimpli (1990) and Alexiadou (1999), the basic word order in typical Greek is VSO. The word order for subject questions is SVO and for object questions is OVS. The wh-phrase is analysed as being hosted by Spec-CP. The data in Stavrakaki (2006) showed that DLD children's question production comply with this order. Most of their questions exhibited the wh-phrase on the left of the verb (Stavrakaki 2006:390):

38) DLD response

pion xtipise ton rinokero?
 who-acc hit-3s-past the rhino-acc

Target

pion xtipise o rinokeros?
 who-acc hit-3s-past the rhino-nom
 'Who did the rhino hit?'

This is an indication that interrogative phrases are placed at Spec-CP in Greek

⁵⁵ It could be the case that the wh-element is not placed at Spec-CP but adjoined to TP (cf. Hulk, 1995). However, given that some questions contain subject-verb inversion, that inversion is the result of the T to C movement and the wh-element is to the left of the inverted verb, we must conclude that the wh element is in Spec-CP.

DLD. Therefore, C must be present in the representation.

Relative clauses elicited from DLD subjects also point to the presence of C. Novogrodsky & Friedmann (2006) examined the production of subject and object relatives in Hebrew DLD. The participants in the DLD group were 18 Hebrew-speaking children, aged 9;3 to 14;6 years (mean. 12;6, SD. 1;7). Typical relatives in Hebrew have a similar configuration to English relatives:

39) SR ha-yeled she-mekabel matana
 the-child that receives present
 ‘The child that receives a present.’

OR ha-yeled she-ha-aba mesarek
 the-child that-the father combs
 ‘The child who the father combs.’

A second option for ORs, not allowed in typical English, is the presence of resumptive pronouns:

40) ha-yeled she-ha-saba menashek oto
 the-child that-the-grandfather kisses him
 ‘The child that the grandfather kisses him.’

Relative clause production was elicited with the performance of a preference task, in which participants were to choose an option, and with the performance of a picture description task in which participants were to describe a character pointed to by the experimenter. The results indicate that the children with DLD production of SRs was better than the production of ORs:

Table 5-13

Task	Type of relative	
	SR	OR
Preference	94%	60%
Description	83%	46%

Results obtained from 12 questions (6 eliciting SRs and 6 eliciting ORs) for the preference task and 20 questions (10 eliciting SRs and 10 eliciting ORs)

Importantly, the complementizer *she* ‘that’ was present in all the utterances, i.e., no complementizer omission was observed either in SRs or in ORs, which indicates that C is present in the derivation:

41) DLD response

SR ze ha-yeled she-ha-yeled roxec et ha-aba
this the-boy that-the-boy washes ACC the-father

Target

ze ha-yeled she roxec et ha-aba
this the-boy that washed ACC the-father
 ‘This is the boy that washed the father.’

DLD response

OR ha-yeled she-ha-saba menashek yeled exad
the-child that-the-grandfather kisses child one

Target

ha-yeled she-ha-saba menashek
The child that-the-grandfather kisses
 ‘The child that grandfather kisses.’

Moreover, Novogrodsky & Friedmann (2006) mentioned that the non-target responses are not due to a structural deficit.

Comprehension of questions indicates that C is present in DLD syntactic representations. Ebbels & van der Lely (2001) carried out a pilot study for a meta-syntactic therapy for four English children with DLD aged between 11 and 13 years. The study included a pre-therapy initial testing and a therapeutic intervention. In both phases, comprehension of questions was tested. The items included 24 questions: six subject questions and six object questions using *who* and *which* (e.g., *who is following the cow?* or *which pig is the cow following?*). The results indicate that the children with DLD that they studied comprehended questions. At the end of the therapy all participants obtained 100% correct for *who* object questions, all of them except one obtained 100% correct for *who* subject questions; all of them obtained 100% for *which* subject questions and two of them obtained 83% correct for *which* subject and 2 obtained 100% correct for *which* object questions.

Hebrew children with DLD displayed a similar behaviour (Friedmann & Novogrodsky, 2011, described in chapter 4). Like their English peers, they had no difficulty understanding *who* subject and object questions and *which* subject questions. Both groups had some difficulties with *which* object questions. However, since the other types of questions pose no problem, the difficulty with *which* questions does seem not to lie in a structural deficit. Moreover, children with DLD in general performed like their typical peers. As stated in chapter 4, according to the Strong Continuity Hypothesis, typical children are considered to have syntactic representations similar to adults. Since performance by the children with DLD in these tasks is similar to the typical children's performance, it can be deduced that DLD representations are also typical. Therefore, it can be inferred that C is present in DLD representations. Even grammaticality judgements by children with DLD revealed the presence of C. Although they did not perform like their grammar control peers with respect to ungrammatical sentences, they performed correctly on grammatical sentences. If adequate

interpretation of questions implies the presence of C, then DLD children's representations of interrogative sentences contain this category.

Comprehension of relative clauses point to the presence of the categorial C feature as well. Håkansson & Hansson (2000) examined the comprehension of relatives in Swedish DLD. The study was conducted in two stages. No significant difference was found between the groups in any of the comprehension tests for any scoring category at both testing times. And the performance of both groups improved from the first testing time to the second. Swedish children with DLD performed above chance at both testing times. Moreover, the children with DLD results were not significantly different from those from their typical counterparts; in fact, the DLD scores were numerically higher at both testing times. Thus, although the data are not definitely conclusive, they nonetheless indicate a fair knowledge of relatives by the DLD children.

Italian and Hebrew DLD present a similar picture. Contemori & Garraffa (2010) examined the comprehension of relatives in Italian by children with DLD whose age ranged from 4;5 to 5;9; two control groups were included, the first one matched on age (4;6 to 5;5) (TD-A) and the second one matched on language development (TD-L) (age range: 3;6-4;6). They found that the DLD group performed similarly to the TD-A group. Both groups understood SR better than OR. The performance in comprehension of relatives by the DLD group is not significantly different from the performance in comprehension by the TD-A group. Moreover, the DLD group performed better than the TD-L group in SR and equally in OR. The data reported by Friedmann & Novogrodsky (2004) indicate that the children with DLD and the older control group performed similarly for subject relatives in Hebrew. If typical children's subject relative clauses are considered a structure that comprises a

complementizer position, then DLD representations of the same type should also contain one. Note that Friedmann & Novogrodsky (2004) states that children with DLD have difficulties with the comprehension of object relatives, but the difficulty, according to them, is not in the structure, since in production the complementizer is always present in Hebrew DLD. It can be concluded then that comprehension of relative clauses by children with DLD show the presence of C in their representations.

5.5.4 Theoretical Considerations

Some theoretical issues also point to the presence of functional categories in DLD grammars. The first concerns the interpretation of the data described above. Given their relative absence, it could be argued that, despite the evidence provided above, functional categories are not present in DLD representations. Leonard (1995) contemplates two possible views against the deployment of the functional system in DLD children. One view would be the claim that the observed functional categories were merely unanalyzed forms that appear in routinized expressions. He rejects this view by mentioning that most utterances suspected to be routinized (e.g., *What's that?*) were not considered for analysis and that utterances that were appropriate for analysis but could be considered routinized (e.g., *I don't know*) did not constitute the sole evidence for the presence of a functional category. That is, the data analysis was not restricted to the sole presence of morphemes reflecting functional category, since the same morpheme could appear many times in the same contexts (e.g., the negative particle with the same few verbs or a determiner with few same nouns) and thus the utterances in which they appear could be deemed to be routinized expressions. Another criterion used by

Leonard (1995) was diversity of use: the presence of a functional morpheme in different contexts and the appearance of several morphemes realizing the same functional category. The functional morphemes examined by Leonard were observed to be present in diverse contexts. And even the child with the most limited use of functional category elements provided evidence of several different elements for each of the functional categories. This type of data points to the fact that the observed functional morphemes were not merely unanalyzed forms that appeared in routinized expressions.

The second view, based on Radford (1990) and Guilfoyle et al. (1991) (see above), would claim that children with DLD treat functional morphemes as elements that do not deploy their own projection, but elements incorporated within lexical projections, such as NP and VP. For instance, the negative marker *not* would not project its own phrase and it would be adjoined to VP. Children with DLD produce sentences such *Daddy not like cabbage* (Radford 2007:38) along with sentences such as *He can't call his mother* (Radford 2007:33). According to Leonard (1995), this view requires the assumption that forms such as *can't* and *don't* had to have been learned as mere lexical alternatives to *not*⁵⁶, which means that those elements would occupy the same position, might be used interchangeably in any context where negation is required, and would have the same meaning. At the same time, as negation synonyms, it is not clear if the DLD child would consider that forms such as *can't* and *can* are morphologically, syntactically and semantically related. If these forms were not related in the DLD grammar, they would then occupy different positions, and sentences containing *can't* might not necessarily contain the semantic feature [possibility], as this feature is lodged in a

⁵⁶ Actually, Thornton et al (2016) assume that *don't* is an unanalyzed form equivalent to *not* in child language. However, *doesn't* and presumably *didn't* and negated modals are two different LIs (see chapter 8).

functional category. Furthermore, according to this view, instances of regular simple past *-ed* would not be interpreted as indicating past time: If T is absent from the representation, the temporal features that are lodged in it would also be absent. Leonard (1995) states that these forms must have been learned by the child as participles: Because T is absent, utterances such as *Jane pushed me* must have been comparable to *Jane has pushed me* without the auxiliary, and thus were not finite. Moreover, absence of T predicts the impossibility of nominative case assignment, since this is the projection which values the uninterpretable temporal (case) features in subject DPs. Finally, the *wh*-word in questions of the form *Wh + DP + VP* (e.g., *What I put on right here?*) must have been merged as a clausal adjunct of the form shown in (42):

42) [_{VP} What [_{VP} I put on right here]]

The problem with the structure in (42) is that it lacks its clause type feature that determines the force of the sentence (interrogative, declarative or imperative, see chapter 2). This interpretable feature is lodged in C. If this category is not present in the representation, the feature is also absent. As a consequence, the sentential force is undetermined, and the sentence cannot be interpreted as a question.

Leonard (1995) concluded that, even if the assumptions mentioned above were plausible, they leave many of the observed utterances unaccounted for, as the use of the lexical items indicating the presence of functional categories would have to be analyzed as forms that could be introduced in utterances but whose grammatical role was still undetermined. Consequently, Leonard (1995) dismissed these assumptions and concluded that English children with DLD in fact show evidence of the presence of functional categories. Thus, it can be concluded that functional categories are not only present in English DLD but also in the DLD grammars of the languages

reviewed above.

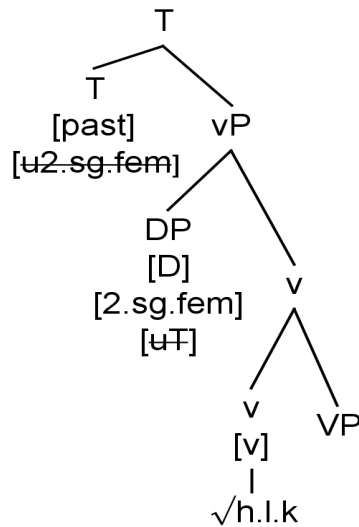
Borer & Rohrbacher's (2002) analysis of typical child acquisition gives additional theoretical support to the interpretation of the data in the previous section, i.e., the representation of DLD sentences include functional categories. Recall that when inflectional morphology is present in the utterances of children with DLD (and typical children), it is correctly used, that is to say, it is not random but adequately used according to the pragmatic conversational context. This morphophonological accuracy could be interpreted as a sign of the presence of functional categories. Borer & Rohrbacher's (2002) claim that functional categories encoding certain grammaticalized semantic notions must pre-exist in the child's grammar: The knowledge of their existence enables the child to look for the information encoded in them in the speech or visual signal; the absence of the knowledge of the grammatical information to be detected in the input would render the extraction of this knowledge mysterious. This prior knowledge of grammatical information guides children, for instance, in the segmentation of a phonological string into a lexical stem and a discreet morpheme reflecting those grammatical notions (Borer & Rohrbacher, 2002). Otherwise, the child would have no reason to segment speech or visual signs the way they do. Montrul (2004) also claims that prior knowledge of functional categories enables children to distinguish, for instance, verbs from tense markers and to attribute semantic notions, such as event, definiteness, etc. respectively to verbs and determiners. According to Borer & Rohrbacher (2002), the pre-existence of functional categories encoding a specific grammatical notion, e.g., tense, would allow children to realize that, given the diversity in the phonological representation of tense in English ([d], [t], [ɪd], umlaut and suppletion), the verbal forms without these markers and the same verbal forms carrying these markers indicate "an inflectional distinction reflecting a difference in tense and not a substantive lexical one, reflecting a

difference in the action denoted” (Borer & Rohrbacher, 2002: 128). That is to say, the pre-existence of T allows the child to know that the presence and absence of those markers on verbs reflect a grammatical difference of time and not a lexical difference, for instance manner in the development of the event (e.g., move vs. move quickly, or run vs. run slowly). They then go on to state that if the child’s grammar contains a functional category encoding tense, then they can be assumed to expect that differences in tense between past and present can be morphologically marked and because of this marking they can attribute to tense the distinction in forms such as *move* and *moved*, *run* and *ran*, and *go* and *went*. Borer & Rohrbacher (2002) mention that the only possibility for the child to adequately implement some semantic notion in the syntax is that they have a prior knowledge of which notion is grammaticalized, i.e., encoded in a syntactic feature. They conclude, then, that the fact that children know that a semantic notion such as tense projects, i.e., it turns into a TP, is an indication that functional categories pre-exist and that they are instrumental in the determination of the function of specific inflectional morphemes. Since children with DLD behave similarly to typical children with respect to functional categories, it can be concluded that they are also pre-existent in DLD grammars.

Now, it is very plausible that not only are functional categories present in DLD grammars but are also fully specified from the beginning of the language-acquisitional process, as claimed by the Strong Continuity Hypothesis for typical language development (Lust 1999 (see chapter 4), Borer & Rohrbacher 2002). Borer & Rohrbacher (2002) argue that functional morphemes, when present in the utterance, are correctly used because of the presence of functional categories and of the formal features which they lodge. They illustrate their claim with Hebrew. In this language (as in French, Spanish, etc.), the T head with its temporal features is realized in the verbal lexical head

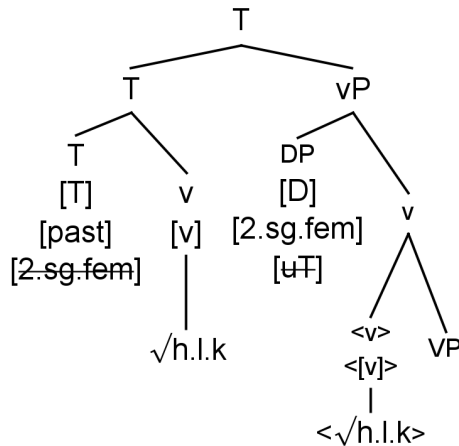
after the application of head-movement, i.e., Internal Merge of a head. The T head first values its uninterpretable phi (person, number and gender) features with their interpretable counterparts hosted in the Subject DP (irrelevant intermediate structure set aside for expository reasons) (based on Borer & Rohrbacher 2002:131):

- 43) a. At halakt
 you walk-past-2sg.fem
 'You walked'
 b.



Then v-to-T head-movement applies:

44)



The syntactic combination of the root verb and the tense and the phi features results in the complex head [$\sqrt{v}h.l.k$]+[past.2sg.fem]. This complex head includes the meaning of the verbal root and the meaning of features plus a phonological index referring to a specific phonological entry. This representation is then sent to the morphophonological component where the complex head is associated to a morphophonological form. This morphophonological form together with all possible feature bundle-root combinations associated to a specific morphophonological form is part of an inflectional paradigm (from Borer & Rohrbacher 2002:132):

45) The inflectional paradigm for [$\sqrt{v}h.l.k$] 'walk':

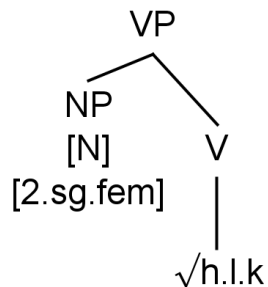
- a. [$\sqrt{v}h.l.k$] + [past.3sg.m] → /halak/
- b. [$\sqrt{v}h.l.k$] + [past.3sg.f] → /halka/
- c. [$\sqrt{v}h.l.k$] + [past.2sg.m] → /halakta/
- d. [$\sqrt{v}h.l.k$] + [past.2sg.f] → /halakt/ ...

...

The morphophonological output of the complex head in (44) would be (45d),

that is, the morphophonological form associated with the combination of the verbal root with the past and 2nd person, singular and feminine features. A representation lacking functional categories cannot yield this result, according to Borer & Rohrbacher (2002):

46)



The morphophonological component would receive the representation [$\sqrt{h.l.k}$] with its meaning and its phonological index referring to the inflectional paradigm associated to the root. The appropriate paradigm member cannot be chosen, since the syntax has sent a form without the specific information that would enable the correct matching. Since in Hebrew phonology a root in and of itself is not a phonological well-formed output, some member of the paradigm must be chosen, so that the verb can be pronounced. In such a scenario, a form such the one in (47) is predicted to surface:

47) *'At halaxta
 2sg.fem walk-past.2sg.masc
 'You walked'

The uninterpretable phi features in the verb cannot be valued since the gender feature does not match the interpretable gender feature in the pronoun. According to Borer & Rohrbacher (2002), absence of functional categories and

its formal features coupled with the necessity to pronounce a suitable phonological unit leads to the random choice of a member of a paradigm. Given the fact that, as stated above, misuse or random use of grammatical morphemes is very rarely seen in typical and DLD grammars, it can be concluded that, when grammatical morphemes are present in the utterance, children can always choose their appropriate form. This implies that their syntactic representations contain functional categories and their formal features. Borer & Rohrbacher (2002) state that since functional categories together with functional features are present in child grammars from the beginning, the combinations of lexical head and functional heads must always be matched with their corresponding member of the paradigm.

The second issue concerns categorial selection. As shown in chapter 2, LIs have selectional properties that determine the type and number of phrases with which they can combine. These properties are formalized in terms of unvalued/uninterpretable selectional features (see chapter 2). Unvalued/uninterpretable categorial features are valued by an LI that hosts its valued/interpretable categorial counterpart. Valuation takes place upon Merge of the selecting category (the category having an uninterpretable categorial feature) with the selected one (the category hosting the corresponding interpretable categorial feature). Merging and valuation enable the satisfaction of the selectional properties of LIs. According to this view all categories, except C in main clauses, are selected by another category. This means that the presence of a certain category implies the presence of another one that selects the former. Thus, N can be present in the derivation because n selects it; n is present because it is selected by D, and so forth (see chapter 2). Since selection is implemented through valuation, it follows then that for a derivation not to crash at the CI interface, all unvalued/uninterpretable selectional features have to be valued, and for valuation to happen, it is necessary that all the relevant functional (and lexical) categories be present in a derivation. This view

appears to be empirically corroborated by the data from the literature on DLD: There is no reported case of incorrect categorial selection, that is, all selecting categories are accompanied only by a category which they select.

5.6 Conclusion

Lack of inflectional morphology in DLD grammars has been taken to be the result of a syntactic impairment, mainly a deficit in the featural composition of LI that these morphemes externalize. One view states that syntactico-semantic features composing functional LIs (number, gender, animacy, (un)countability, proper name, person, tense and aspect) are absent from DLD grammars. The consequence of this absence, according to this account, is lack of agreement between LIs (e.g., between the verb and its Subject DP), misuse of morphemes (e.g., the -s morpheme with singular nouns), non-application of constraints regulating the combination of LI (e.g., the combination of a proper name with a determiner, which is prohibited in English), the expression of grammatical notions not through functional elements but with lexical elements (e.g., number expressed with numerals, and time expressed with temporal adverbials), and the interpretation of pronouns, which are functional categories in typical grammars, as common nouns, which are lexical categories, with the resulting incapacity to establish sentential and inter-sentential reference between pronouns and referential DPs. Nevertheless, this account has been considered deficient. It is not the case that all the results obtained from the tasks performed by the DLD participants lead to the conclusion of absence of syntactico-semantic features from their grammars. In tasks involving plural number, the DLD subjects performed quite well: In a grammatical judgement most responses were correct and in plural formation with non-words the rule was

well applied. This account proposes that [tense] feature is absent as well and that temporality is expressed by means of temporal adverbs and preposition. This would predict that sentences containing no temporal AdvPs and PPs would not be anchored in the timeline, and that ungrammatical sentences containing no overt subjects (since subject DPs would not have their case valued) should be accepted and grammatical sentences should be repeated without their Subject DP. These predictions have not been borne out: In a storytelling, DLD subjects were able to represent and recall events in the timeline and in the right sequential order whether or not the sentences contained the temporal markers, and in the tasks concerning the subject, they accurately judged the grammatical status of sentences and mostly adequately repeated sentences with their subjects. Moreover, this proposal states that pronouns lack formal features, especially the person feature, which is deemed to be problematic. It can predict the absence of other person features (1st and 2nd) with the consequent impossibility for DLD speakers to have self-awareness and talk about themselves, and the inapplicability or the violation of the principles of the Binding theory.

Another account proposes that functional categorial features, and consequently functional projections, are absent from DLD grammars. Since DLD subjects produce few determiners, pronouns or prepositions, and inflectional markers are mostly omitted the conclusion is that they construct their sentences mainly with lexical categories. Despite the absence of functional features, according to this proposal, DLD grammars are consistent with UG because they are similar to typical grammars of languages like Japanese, which was claimed to lack some functional categories. This account is deemed inadequate, though. The view that some languages lack functional categories has been refuted; it has been proposed that all of them, including Japanese, have functional categories. Absence of the functional v category renders this account incompatible with standard views concerning the external,

as subjects are deemed to be merged outside the lexical verbal domain, under Spec-vP. Another problem with this account is that it predicts violation of a UG constraint regulating feature valuation: Determiners and verbs contain uninterpretable features that must be valued by functional categories containing their interpretable counterparts; if the relevant functional categories are not projected, then these uninterpretable features would not be able to be checked and derivations should crash. Finally, according to this proposal, the absence of functional projections should be reflected by the absence of the morphemes that realize them. This claim does not seem to be valid, as not all functional morphemes are absent in DLD utterances; some of them are rarely omitted.

Another view states that the categorial functional feature [C] is missing altogether in DLD grammars. According to this proposal, absence of the [C] feature accounts for wrong placement of the verb in main clauses, absence of the *wh*-element, use of placeholders, use of infinitives and absence of the verb in questions and absence of complementizers in subordinate declarative clauses. The proposal states that there is a projection above TP in DLD grammars, but it does not contain the relevant [C] feature. The consequence of this absence is the suspension of selectional restrictions, the realization of this functional head as null LI and the realization of *wh*-elements as a null LI or a placeholder. Moreover, absence of this categorial feature can result in the generation of three patterns of declarative clauses, namely root infinitives, subject-initial clauses (the subject being placed in Spec-AgrP2) and verb-final constructions. This account has been deemed inadequate, since it predicts (i) blockage of merging between a verb like *hören* 'hear' and a subordinate clause, since the uninterpretable [C] feature in V would not be valued, and (ii) the generation of *wh*-questions in situ, which are not attested in German DLD. In addition, the account states that the use of placeholders is a reflection of the absence of categorial [C] feature, but this does not seem to be the case as it

has been argued that place holders display properties similar to the elements which they replace. Finally, this proposal instantiates a case of discontinuity: Unlike typical adult grammars, in DLD and child typical grammars the LI that projects the peripheral phrase does not have its categorial feature in child grammar. Absence of the overt realization of some category reflects absence of the category from the representation, according to this account. However, this view has been rejected, as non target production in child grammar does not mean absence of the relevant knowledge.

Another account proposes that instead of categorial features, DLD grammars have a deficit concerning uninterpretable features. This account assumes, for typical Greek, a featural configuration in functional categories different from other languages. Specifically, the interpretable definite feature projects its own phrase and has as complement a DP whose categorial feature [D] is uninterpretable. Demonstratives, indefinite articles, strong pronouns and nominal wh-elements all host a definite feature. Definite articles and weak pronouns lodge the [D] and the uninterpretable case and phi features. According to this proposal, Greek DLD grammars lack uninterpretable features and consequently the D projection. This absence accounts for the omission of definite determiners and accusative clitics. This proposal reveals several drawbacks, though. On the one hand repetitions of determiners are not considered evidence of knowledge of the [D] feature; on the other hand, repetitions are relevant for the structural analysis of child utterances, as they reflect grammatical competence. Children with DLD repeated utterances containing definite determiners; it should be concluded then that the [D] is present in the structure. Another problem concerns one of the assumptions adopted by the account. Nouns undergo N-to-D movement for semantic reasons; however, if the D head is missing, the noun cannot raise, and a weird interpretation should be obtained from this configuration. Case assignment is also problematic for this proposal. Since the [uT] feature is absent from the

representation, the use of case markers is predicted to be faulty for indefinite nominals. However, the analysis of these nominals in subject and object position does not reveal any difficulty with case. The proposal predicts that *ti* 'what' should be present in Greek DLD utterances since they have the interpretable [Def] feature. However, *ti* is missing in many questioned produced by the DLD subjects. The proposal includes a distinction between nominal *ti* and predicative *ti* in order to account for the use of this wh-element, but no structural difference is provided that could allow one to understand this behavior. Finally, this account cannot be applied to other languages since it predicts that morphemes realizing uninterpretable features should be omitted and morphemes realizing interpretable features should be present in other DLD grammars. Nevertheless, these predictions are not borne out.

Contrary to the views reported above, section 5.5 shows that formal, categorial, interpretable and uninterpretable features are present in DLD grammars. These grammars contain the [T] feature as directly revealed by the use the infinitive markers modals, auxiliaries and verbal morphology and indirectly revealed by the presence of negation, past participles and infinitives, inversion in questions and assignment of nominative case in several languages such as English, Spanish, Swedish and French. They also contain [D] and [Number] as indicated by the use of determiners, demonstratives or plural morphemes in English, French, Spanish, Swedish and Italian DLD. They contain [C] as well, as directly revealed by the use of different complementizers and relative clauses in Greek and Hebrew DLD and indirectly indicated by V2 sentences and questions attested in German, Swedish English and Greek DLD.

Finally, from a theoretical point of view, the correct discrimination of the morphemes that realize functional categories from other lexical items, and the adequate matching of the formal features lodged in them with their specific morphophonological realizations and the satisfaction of selectional requirements

also point to the presence of all the necessary categorial features. All these findings are deemed to indicate that UG provides these features, just as it is proposed by the model of the FL adopted in this dissertation. The conclusion is then that UG in DLD grammars, just as in typical grammars is intact.

6 AVAILABILITY OF MERGE

As mentioned in chapter (3), Merge is the basic operation consisting in the combination of linguistic elements to form a syntactic object; it comprises two types: external and internal. External Merge takes two separate objects and combines them to integrate them into the derivation. Internal Merge takes one object that has already been formed and merges it again higher up in the structure. Some researchers (e.g., Jakubowicz and van der Lely) have pinpointed Merge as the source of DLD, as evidenced by the intermittent appearance of clitics and auxiliaries and non-target production of questions. One approach claims that DLD consists of a selective deficit in External Merge: The operation is prevented from applying to certain functional categories having a certain grammatical status. Another one claims that the application of Internal Merge is optional, that is it applies in some but not all the derivations requiring it. However, these proposals are inadequate mainly, for the former, due to a misconception about the dimension where the operation applies and to questionable assumptions and wrong predictions for the latter. In this dissertation, it is claimed that Merge is not implicated in the impairment: Both types of Merge are available and active. This chapter presents the proposals mentioned above and highlights their flaws. It then reviews studies that reveal the availability and activity of Merge, as evidenced in the production and comprehension of structures involving hierarchical structures, properties of phrases structure and correct detection of null copies.

6.1 Difficulties with External Merge

Jakubowicz and colleagues (Jakubowicz, Nash, Rigaud & Gérard 1998; Jakubowicz & Nash, 2001; Jakubowicz, 2003) claim that DLD lies in a temporary or persistent deficit with External Merge concerning certain functional categories. According to them, External Merge is affected by the relative complexity of a derivation. This view is couched in the Computational Complexity Hypothesis (CCH): The patterns of impairment versus the relative preservation in DLD children's grammar is a function of the complexity of syntactic computation. For External Merge, they defined complexity in terms of (a) the compulsory presence or non-obligatory presence of functional elements in the derivation and (b) the canonical or non-canonical position that they fill in the structure. The syntactic computation in a given language is less complex when (i) a functional lexical item (LI) must obligatorily Merge in the derivation and must therefore be present in every sentence, or (ii) when a functional LI occupies a canonical position. The syntactic computation is more complex when a functional LI merges in the derivation, but it is not syntactically necessary; it is present only in some sentences and it provides only a semantic contribution. The syntactic computation is also more complex when a functional LI occupies a non-canonical position. According to Jakubowicz and colleagues, the inflectional domain in French is headed by INFL in all clauses.⁵⁷ This head and D, in the nominal domain, belong to the first type in French: Those categories are always obligatory so their presence in the derivation is systematic. The category T expressing the past and the future, and clitics belong to the second type in French: The past and the future tenses express semantic information; clitics are merged in non-canonical positions. Neither LI

⁵⁷ The specific content of INFL in French is Person, according to Jakubowicz & Nash (2001). See section 6.1.2

is always present in the derivation. Jakubowicz and colleagues claim that (a) functional categories can be grouped into two classes: (i) those which are syntactic and indispensable in the derivation; (ii) those that are not obligatory because they only have a semantic contribution and only merge when required by meaning considerations, or those that merge in non-canonical positions; (b) it is easier to compute syntactically necessary categories than semantically modifying functional categories, or functional categories placed in canonical positions than those filling non-canonical positions; (c) Merge is sensitive to this difference: While it may function with no difficulties with categories from class (i), it operates intermittently with categories from class (ii); and (d) the categories in (i) are acquired earlier and are usually not omitted or misused in DLD, those in (ii) emerge later and may be omitted or misused by children with DLD.

6.1.1 Merge of Clitics

It was shown in chapter 3 that clitics are problematic in DLD. The difficulties with them present several manifestations in DLD children. Jakubowicz et al. (1998) studied the production and comprehension of accusative, reflexive and nominative clitics in French DLD. They report that in production accusatives were most frequently elided (1a) or replaced by lexical DPs (1b); they were also replaced by possessives, to a much lesser extent by strong pronouns:

<u>DLD response</u>	<u>Target</u>
1) a. I lave. he washes 'He is washing.'	Il la lave. ⁵⁸ he her washes 'He is washing her'

⁵⁸ Omission of [l] from the *il* pronoun is a common feature in spoken French and it is not part of the DLD condition.

- | | | |
|----|---|---|
| b. | I brosse Kiki.
he combs Kiki
'He is brushing Kiki.' | Il la brosse.
he her combs
'He is combing her.' |
|----|---|---|

Reflexives were mainly omitted and or replaced by possessives:⁵⁹

- | | <u>DLD response</u> | <u>Target</u> |
|----|---|--|
| 2) | I lave ses dents.
he washes his teeth
'He is brushing his teeth.' | Il se lave les dents
he himself washing the teeth |

To a lesser extent they were replaced by lexical DPs, strong pronouns (3a) and the expression *tout seul* 'all alone' (3b):

- | | <u>DLD response</u> | <u>Target</u> |
|-------|--|--|
| 3) a. | Nounours _i éclaire lui.
Nounours shines him
'Nounours is shining (the light) (at) himself.' | Nounours se éclaire
Nounours himself shines |
| b. | Il nettoie tout seul.
he cleans all alone
'He is cleaning all alone.' | Il se nettoie
he himself cleans
'He is cleaning himself' |

Nominatives underwent omission or replacement by lexical DPs. Furthermore, in the DLD group, the use of clitics was not homogenous. The correct occurrence of object clitics was significantly lower than that of reflexives, which in turn was slightly significantly lower than that of subject clitics:

⁵⁹ The example in (2) is an instance of inalienable possession; the non-clitic construction is not ungrammatical in French.

Table 6-1 Percentage Correct in Obligatory Contexts (Based on Jakubowicz et al., 1998: 132)

Conditions	DLD children		Typical children	
	M	SD	M	SD
Accusatives	25.2%	27.7	78.7%	16.3
Reflexives	56.7%	33.8	95.6%	7.0
Nominatives	75.4%	31.5	97.8%	5.8

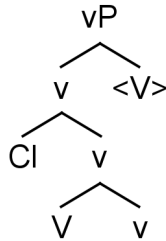
The TD group revealed a relative uniformity: The level of accuracy in the production of reflexives and nominatives, i.e., their correct use according to their syntactic and pragmatic context, was reliably higher than for accusatives, as in the DLD group, but no significant difference was found between reflexives and nominatives. Clitics in DLD showed a dissociation: (i) between nominative and accusative clitic pronouns; (ii) between reflexive and accusative clitic pronouns, and (iii) between nominative and reflexive clitics, although this difference was only marginally significant.

According to Jakubowicz et al. (1998), External Merge in children with DLD has difficulties in operating with clitics due to their featural composition, which leads to their occupation of non-canonical positions. Their claim is that clitics are not specified for any syntactic category. They are not D: Despite the homonymy in Romance languages between clitic pronouns and definite articles, they are semantically different. Determiners restrict or individualize an entity denoted by the selected noun. As a consequence, they have to select a lexical category. Clitics do not have this restricting function and they only directly refer to a nominal previously mentioned in the discourse (Jakubowicz et al 1998: 119). They are also not nouns. Nouns can denote either an animate entity or an inanimate one, which implies that nouns carry the [-/+animate] feature. Clitics can refer to both animate and inanimate entities, they are underspecified for animacy, so the [-/+animate] feature is not part of their featural specification. Since the animacy feature is present in all LIs having the

categorial feature N, i.e., nouns, but it is absent from clitics, the latter do not also have the categorial [N] feature. Clitics do not share categorial features with determiners and nouns. However, they share with these categories phi-features (gender, number and probably person). Jakubowicz et al. (1998) claim that pronouns in general, i.e., non-clitic and clitic pronouns, are universally underspecified with a categorial feature. The categorisation of pronouns is determined parametrically: In some languages, they are endowed with the [N] feature (e.g., English, German) while they do not contain it in others (e.g., French). This parametrization is shown by the fact that, according to Jakubowicz et al. (1998), canonical argument positions can only be filled by phrases containing the [N] feature. Since pronouns in English and German possess this feature, they occupy, for instance, the complement position of a V.

Thus, the inherently featural deficiency of clitics have consequences for the positions that they can occupy. Since clitics in French do not have a categorial feature, they are not externally merged in canonical positions, according to Jakubowicz et al. (1998). The accusative clitic cannot be merged with V in the canonical position of transitive verb complements. Instead, the clitic is merged with the v head, after V has raised to v. The clitic and V are placed at a local environment, where the clitic can be assigned a theta-role. Thus, the clitic acquires its argumenthood and the selectional requirements of the verb are satisfied, as shown in (4) (based on Jakubowicz et al. 1998:120):

4)

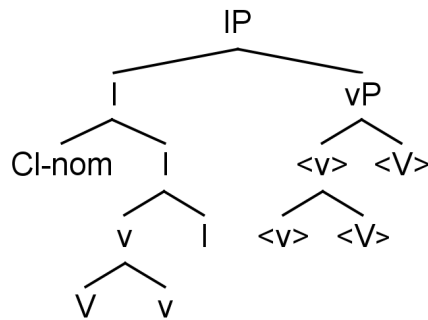


Reflexives have a similar syntactic behavior. They are merged in the same position as accusative clitics, since they are also categorially deficient, and they also receive a theta-role from V after this head has moved to v. The difference between reflexives and accusatives (and nominatives) is that reflexives do not have [gender] and [number] features.⁶⁰ They only have a [person] feature, which, according to Jakubowicz et al. (1998), is neither a lexical categorial feature nor a phi-feature.

Nominative clitics are not merged in a canonical argument position either, i.e., in Spec-vP. Unlike accusative and reflexive clitics, nominatives are present in the structure for syntactic reasons concerning the categorial properties of INFL. According to Jakubowicz et al. (1998), INFL contains a [finiteness] feature, which needs being identified by number-person morphology in Romance languages. These features are provided by the nominative clitic. For this identification to take place, the nominative clitic merges by adjoining to the INFL head (based on Jakubowicz et al. 1998:121):

⁶⁰ Jakubowicz et al. (1998) deal only with 3rd person clitic 'se'; it is the only reflexive that has its own form. The other reflexives share their form with accusatives and presumably have a [number] feature.

5)



The structure in (5) shows that after head movement to I, V is at a local environment with the nominative clitic. It can assign a theta-role to the subject and have its selectional requirements satisfied. Thus, according to Jakubowicz et al. (1998), clitics are categoriless LIs, and this lack of categorial feature triggers the external merging of these LIs in the functional domain, i.e., in non-canonical argument positions.

Thus, Jakubowicz et al. (1998) argue that the problem in children with DLD with clitics is a deficiency with the workings of External Merge with featural-impoverished LIs and their resulting placement in non-canonical positions. According to them, the location of such elements in a non-canonical argument position creates a further computational complexity in the derivation. Such additional complexity is problematic for DLD children. This difficulty with complexity is reflected in the intermittent application of Merge to clitics. That is to say, Merge cannot always apply and therefore clitics, when they are required, do not always enter the derivation. But the effects of this deficient Merge operation are not equal in all clitics. The difference in occurrence between a nominative clitic and an accusative clitic is due to the fact that the former acts as finiteness identification, which implies that it is always

necessary, while the latter is used in pronominalization, a process dependent on discourse factors, and only with transitive verbs, which implies that the presence of accusatives is not compulsory in all sentences. The merging of nominatives creates a lesser degree of complexity than the merging of accusatives. That is why Merge applies more readily to nominatives than to accusatives, according to Jakubowicz et al. (1998). The difference in occurrence between accusative and reflexives is due to their different featural composition. Reflexives contain only a [person] feature and it must be co-referential with the subject. It is c-commanded by the latter and therefore it can be easily retrieved. Moreover, their featural content is not quite dissimilar to the featural content of INFL: [person] is a feature used for the identification of INFL. Jakubowicz et al. (1998) hypothesize that Merge of reflexives in the functional domain can be considered canonical Merge of a LI containing an inflectional feature in the functional domain. It would seem that reflexives have a kind of intermediate status between a syntactically necessary LI and a syntactically unnecessary LI. Therefore, a derivation with a reflexive clitic is less complex than one with an accusative. All in all, for Jakubowicz et al. (1998), External Merge in DLD is deficient when it has to operate on LIs which are feature-impooverished and which must be placed in non-canonical positions.

6.1.2 Merge of Tense.

Chapter 3 discusses difficulty with tense in DLD grammars. Jakubowicz & Nash (2001) examined the production of French tense (present and compound past) in typical and DLD children. In spoken French, the variety to which children are usually exposed, the present time is expressed with a simple tense (see 6); the past time is expressed with a compound tense composed of a verbal past participle and the present tense form of the auxiliaries *avoir* 'have' or *être* 'be', their choice being partly dependent on the valence of the lexical verb (see 7a-b) (Jakubowicz & Nash 2001: 324):

- 6) Guillaume regarde un film
G. watches a film
'Guillaume is watching a film'
- 7) a Il a fermé la porte.
he aux/have close.past-part the door.
'He closed the door.'
- b. Elle est sortie de la salle.
she aux/be leave.past-part from the room.
'She walked out the room.'

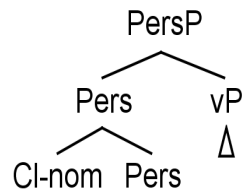
According to Jakubowicz & Nash (2001), INFL is a functional category systematically present in the sentence and it universally carries the content of finiteness. This category has different morphological values across languages. In Romance languages INFL is pronominal and must be identified by the local presence of number-person morphology or by the nominative clitic. So INFL, identified by Jakubowicz & Nash (2001) as Person, is the obligatory inflectional category in Romance. In the Germanic family (except English), INFL is

temporal and must be identified by the present–past morphemes.⁶¹ INFL, identified as Tense, is the necessary inflectional category in Germanic. Moreover, Jakubowicz & Nash (2001) assume, as a general cross-linguistic fact, that present is conveyed through the absence of a temporal morpheme while past is conveyed through an overt temporal morpheme. The present time interpretation arises with the sole presence of the number-person morphology in Romance, while the interpretation of the sentential tense as past in Romance arises through the presence of temporal morphology. The tense morphology in Romance, while overtly expressed and semantically relevant, is not syntactically active, according to Jakubowicz & Nash (2001).

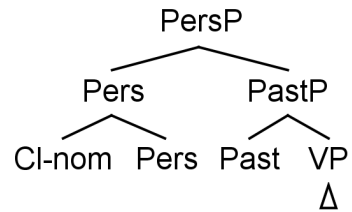
The auxiliaries *avoir* and *être*, being a tense marker in French, are temporal, unlike its English counterpart *have*, which is aspectual, according to Jakubowicz & Nash (2001). As mentioned above, the difference between a simple tense and a compound tense is that the temporal specification is expressed in the verb in simple tenses (either covertly or overtly), and with a separate LI, the auxiliary, in compound tenses. This auxiliary heads its own phrase; it is a head different from the verb and Person. Thus, in French the difference between the structure of a sentence with present construal and a sentence with past construal expressed with a compound tense is that, in the inflectional domain, the former has only the obligatory PersonP, while the latter has both PersonP and an additional temporal projection, PastP, above vP (based on Jakubowicz & Nash, 2001: 326):

⁶¹ Jakubowicz & Nash (2001) do not define the term ‘pronominal’ and ‘temporal’, but it could be inferred that in this context ‘pronominal’ means bearing the interpretable [person] and [number] features and ‘temporal’ means carrying the interpretable [tense] feature.

8) Present



Compound Past



According to the Computational Complexity Hypothesis, sentences in the compound past are more complex than sentences in the present. This is due to the fact that the former contains not only the syntactically active and obligatory PersP, present in all sentences, but also the additional and only semantically relevant PastP.

The experiment carried out by Jakubowicz & Nash (2001) included a TD group of 36 children with a mean age ranging from 3;3 to 6;7 years and an DLD group of 28 children aged between 5;7 to 13 years. The children with DLD were more accurate in the present than in the compound past and the difference was significant. The main type of error in production was omission of the auxiliary. Jakubowicz & Nash (2001) claim that the omission of auxiliaries is due to a deficient application of External Merge. This deficiency is caused by an additional complexity in the structure. As stated above, indispensable LIs are obligatorily merged and are syntactically active. Sentences interpreted as present contain this type of projection and no other semantically-only additional projection. They pose no complexity problems in terms of tense and so their general production by children with DLD is generally accurate. Sentences with a past construal contain an additional projection that is semantically relevant but syntactically unnecessary. They involve a greater degree of complexity,

which is problematic for the workings of Merge. Since Merge has difficulties in its application to non-obligatory heads, a projection headed by this type head may be omitted or misused, according to Jakubowicz & Nash (2001).

6.1.3 Assessment of the Proposal

This complexity proposal involving External Merge suffers from some drawbacks. Jakubowicz and colleagues state that Merge has no problem in operating on obligatory LIs, such as nominative pronouns and Pers; that is why obligatory categories are always present in the derivation. Since nominative clitics are necessary for the identification the (pro)nominal categorial feature of INFL in French, they should always be present in the DLD children's representations, when they contain no full DP in subject position. But this is not the case. The results indicate that nominatives were produced with an accuracy of 75.4% for the children with DLD and 97.8% for the TD children. If Merge had no problems with these obligatory LIs, it would be expected that the correct percentages would be similar in both groups. Moreover, if this proposal was adequate, the incidence of subject omission both in DLD and typical language should be very low. However, according to Hamann et al. (2003), the rate of subject omission by a group of DLD and typical children (n=6; age 3;10–5;0) was 22.5%. This account would also predict that the difference between the accuracy of nominatives and reflexives produced by children with DLD should be wider, not just marginally significant, as the latter are not obligatory in derivations, i.e., they do not appear in all sentences, but they are present in the derivation according to the requirements of the sentential verb.

The proposal implies that it is possible for the lexicon to contain functional LIs without categorial feature and that Merge can apply to

categoriless functional LIs. This seems to be an ad hoc assumption, since it is standardly assumed that all functional LIs have a categorial feature and that External Merge operates on them, not directly on non-categorial features. Furthermore, it is also implied that External Merge has no problem in operating with LI occupying canonical positions while it is explicitly claimed that it has problems with LI occupying non-canonical positions. But the precise link between non-canonical positions and Merge is not established. That is to say, it is not clear why Merge has difficulties in applying to LIs that are categoriless and that have to occupy a non-canonical position so that derivations become more complex.

As regards the [past] feature, the absence of these projections hosting it would imply that this meaning is not conveyed, which would mean that the events described by sentences could not be construed as past. This seems to be theoretically and empirically inadequate. As mentioned in chapter 5, it is standardly assumed that tense is always present in all derivations, since all events must be temporally anchored with respect to speech time in the discourse. And Paradis & Crago (2001) mentioned that, despite the omission of auxiliaries, verbal forms were properly used according to their temporal contexts, that is, sentences containing a past participle but no auxiliary were used in past contexts, and sentences containing an infinitive but no auxiliary were used in future contexts. The production of auxiliary-less sentences in appropriate temporal contexts points to the fact that the sentential temporal meaning is present in the representation. This is an indication that it is not the case that T is optional in French and Merge has problems with its application on it. The proposal also makes the distinction between syntactically active and compulsory categories and semantically relevant but syntactically inactive categories. This classification is ad hoc. While a featural distinction in terms of their semantics is made in the computational system, this distinction is not the

jurisdiction of External Merge. Whenever the numeration contains a LI, External Merge applies to it without considering its grammatical status.

Finally, a misconception concerning External Merge is observed in Jakubowicz et al. (1998). The children with DLD participating in this study were also tested for comprehension of clitics. The results indicate that comprehension of clitics is well preserved, unlike in production. Jakubowicz et al. (1998) state “that the advantage of comprehension over production provides indirect evidence in support of our claim that children with DLD are selectively vulnerable to the operation of merging a pronominal argument underspecified for the [+N] feature in a noncanonical argument position.” (p. 153). But as, Grüter (2005) notes, this claim is misguided. Merge, being part of UG, concerns grammatical competence. So, if Merge is deficient, then competence should be affected. Production and comprehension are processing factors, they concern performance. Since one and the same grammar drives both production and comprehension (Hendricks & Koster, 2010), Merge is involved on all syntactic processing, whether it is in comprehension or production (Grüter 2005). Thus, a deficit in competence should cause problems equally in both performance factors. It could be the case that DLD concerns processing in production, that is the stringing together of syntactic LIs in non-canonical positions in real-time production. If that is the case, the deficit described by Jakubowicz et al. (1998) cannot be equated with an impairment of External Merge, since it is not an issue involving competence (Grüter 2005). In conclusion, the problematic inclusion of clitics and other functional categories in the derivations of DLD grammars does not seem to involve External Merge, so this operation does not seem to be implicated within the linguistic causes of DLD.

6.2 Optional Application of Internal Merge

Van der Lely and collaborators (van der Lely 1998, van der Lely & Battell 2003, van der Lely et al. 2011) explicitly propose that DLD consists in a deficit affecting the computational system. Specifically, children with DLD have an impairment in the establishment of complex dependencies. Complex dependencies are non-local in that they relate pairs of constituents that are not immediately adjacent. As we will see below, these complex dependencies involve tense marking (T-V dependency), A-movement and A'-movement (dependency between two constituents) agreement (subject-verb dependency) and determination of pronominal reference (pronoun-antecedent dependency). Besides the problems with tense and agreement, children with DLD display problems in understanding passives, assigning thematic roles and pronominal reference to DP, with the formation of complex PPs involving embedding a PP inside a PP, with predicate-argument structure, as well as with the production and comprehension of questions and relative clauses (see e.g., Bishop 1982, van der Lely 1996). According to van der Lely (1998), all these problematic configurations are long-distance dependencies established by movement, i.e., instances of Internal Merge. Elementary local dependencies, created by External Merge and checking (or in current terms valuation)⁶², are available in the derivation in DLD grammars, and therefore they do not constitute a challenge to DLD children, but complex long-distance dependencies, created by Internal Merge, are impaired. Van der Lely's account is based on Chomsky (1995), according to whom, long-distance dependencies are established

⁶² Van der Lely (1998) does not provide examples of elementary local dependencies. She only mentions that they are roughly "one-step checking and one-step embedding" configurations.

through movement, which is construed as attraction by an uninterpretable feature in need of checking.⁶³

As the present chapter is concerned with the availability of Internal Merge in UG, only the configurations derived by Internal Merge in current linguistic theory will be considered. A deficit with Internal Merge would indicate that the operation is absent from DLD grammars. However, van der Lely (1998) dismisses this option based on the fact that both incorrect and correct forms are used for the same configuration in similar syntactic contexts across a range of syntactic structures. DLD grammars display movement, but it is optionally used: Some sentences are constructed with all the necessary applications of movement and other ones have only some applications of it. The claim then is that the deficit does not lie in the operation itself, since it is part of the DLD children's computational system, but in its implementation. Thus, unlike the obligatory application of Internal Merge in typical grammars, its application in DLD grammars is not compulsory but optional, according to van der Lely and colleagues.

Tense and Agreement. In adult grammars overt or covert verbal movement can occur from V/v to T, in order for tense marking to obtain. If a V/v complex head moves to T, then they enter a checking relation with the DP in Spec-TP⁶⁴ and the uninterpretable person and number features in T are checked, which in turn results in correct tense and agreement marking in verbs. In contrast, if V/v does

⁶³ In current linguistic theory, it is not the case that all non-local relationships are determined by Internal Merge. Van der Lely (2002) admits this theoretical update and states that, although the theoretical implementation of this type of relationships have changed with the developing linguistic theory, the essence of her account, namely a deficit in the establishment of these relationships in the computational system, remains. Van der Lely et al. (2011) take a neutral stance with respect to this implementation. They state that the disentangling of the deficit location within the computational system is an empirical issue in need of investigation and they do not commit themselves to its precise location within the set of necessary conditions and operations.

⁶⁴ van der Lely (1998) assumes that subject DPs are externally merged in Spec-TP instead of being merged at Spec-vP (see below).

not move to T, then the uninterpretable features in T will not be checked and the verb will have a default marking, which in English is zero-marking. Van der Lely (1998) suggests that unchecked features are compatible with zero-marking or default marking. Thus, according to her, the fact that children with DLD produce correct forms or omit markings at chance levels is expected if movement and feature checking are optional.

Passives and Θ -role assignment. Van der Lely (1998) observed that at least some children with DLD tend to interpret verbal passives (e.g., *The fish is being eaten*) as adjectival passives (e.g., *The eaten fish*).⁶⁵ She argued that difficulties with verbal passives in DLD grammars is due to a deficit in Θ -role assignment. She assumed that Internal Merge is involved in theta assignment, and she proposes that problems with this process are due to the optional application of this operation. Following Borer & Wexler (1987) and Grimshaw (1987), she assumed that in adjectival passives only one Θ -role is assigned, the theme, while both the external and the internal Θ -roles are assigned in verbal passives (Baker, Johnson & Roberts 1989). Following Manzini & Roussou's (1997) proposal for A-movement and control, she also assumed that DPs are merged in the position where they surface and that thematic properties are conveyed to the checking domain of the DPs themselves by Move F(eatures). In transitive active sentences, object DPs are externally merged in the specifier position of the lower V of the VP shell, and subject DPs are externally merged in Spec-TP. Based on Tenny (1994) and Borer (1994), Manzini & Roussou (1997) proposed that Θ -role assignment is the result of pairing DPs with aspectual features (Event Measure (EM) (theme) and

⁶⁵ van der Lely (1998) ran an experiment involving a sentence-picture choice task. The pictures contained images depicting an adjectival passive interpretation (e.g., *The eaten fish*) and images depicting a verbal passive interpretation (*The fish is being eaten by the man*). For a sentence such as *The fish is being eaten*, her subject chose the picture depicting an adjectival passive interpretation 58% of the time, choosing the correct picture depicting a verbal passive interpretation only 42% of the time.

Originator (OR) (agent)) hosted by the verb. The EM feature is checked in the lower layer of the VP shell, so the internal argument is construed as the theme. Then V raises up to v. The OR is checked through V/v-to-T movement and so the external argument is interpreted as the agent. Passive sentences, according to Manzini & Roussou (1997), also have both aspectual features (EM, OR) associated with the arguments of the verb. Both features move from V/v to T. The OR feature is assigned to the passive morphology and EM feature is attracted and checked by the DP in Spec-TP.

According to van der Lely (1998), verbal passives are problematic for children with DLD because V/v-to-T movement, being optional, does not apply in all verbal passives in DLD grammars, as it does in typical grammars. Absence of V/v-to-T movement prevents checking of aspectual/thematic features. However, van der Lely (1998) does not specify if the difficulty with verbal passives is due to the lack of checking of both features or only one of them and how this prevention leads children with DLD to interpret verbal passives as adjectival passives. Consequently, her account does not clearly explicit the link between her theoretical proposal and the data obtained from children with DLD concerning passive sentences.

Wh-questions. As shown in chapter 3, children with DLD also display difficulties with question formation. According to van der Lely & Battell (2003), children with DLD fail to master the syntax of the two types of Internal Merge operation involved in wh-questions: wh-movement and T-to-C head movement. They argue that this is the result of the deficit which they have in establishing distant dependencies because Internal Merge does not apply consistently, i.e., it operates optionally in DLD grammars.

DLD children's faulty production of wh-questions has been characterized by van der Lely & Battell (2003) as (i) problems only with T-to-C

movement (see 9) or (ii) problems with both T-to-C movement and wh-movement (see 10). For the (i) cases, DLD interrogatives showed no difficulty with the wh-phrase but absence of auxiliary and presence of an uninflected verb (9a), absence of auxiliary and presence of an inflected verb (9b) or double tense marking, i.e., tense marked in the auxiliary and in the verb, (9c):

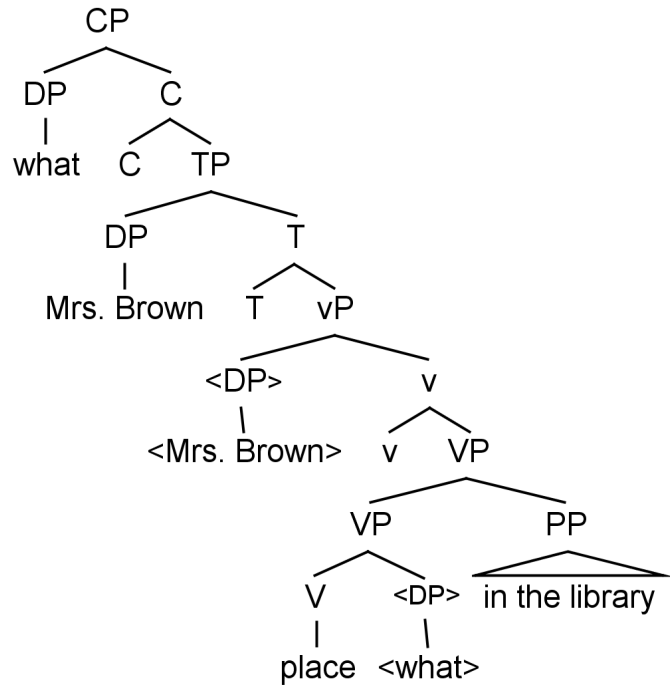
- 9) a. What Mrs. Brown place in the library?
b. What cat Mrs. White stroked?
c. What did they drank?

Van der Lely & Battell (2003) analyze these cases as structures lacking T-to-C movement. No V/v movement takes place in (9a), hence no tense marking on the verb (see 10a). V/v moves to T in (9b); the verb is marked for tense (see 10b). C has no dummy auxiliary coming from T, it stays null both in (9a) and (9b) (see the structures in 10a and 10b). In (9c) V/v-to-T movement occurs; tense is marked on the verb.⁶⁶ C is occupied by a dummy auxiliary. Since V/v is placed in T, this dummy auxiliary is not externally merged in T and then internally merged in C. In fact, the dummy *did* is externally merged directly under C (see 10c).⁶⁷

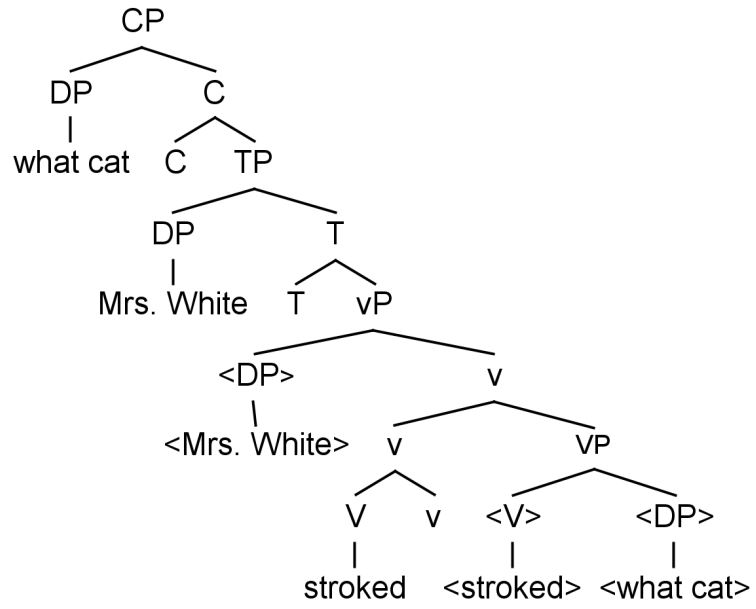
⁶⁶ Verbal movement is covert in English according to van der Lely.

⁶⁷ The structures in (10) are based on van der Lely & Battell's (2003) assumptions. That is why lower T and intermediate movement of the wh-phrase are not included in them.

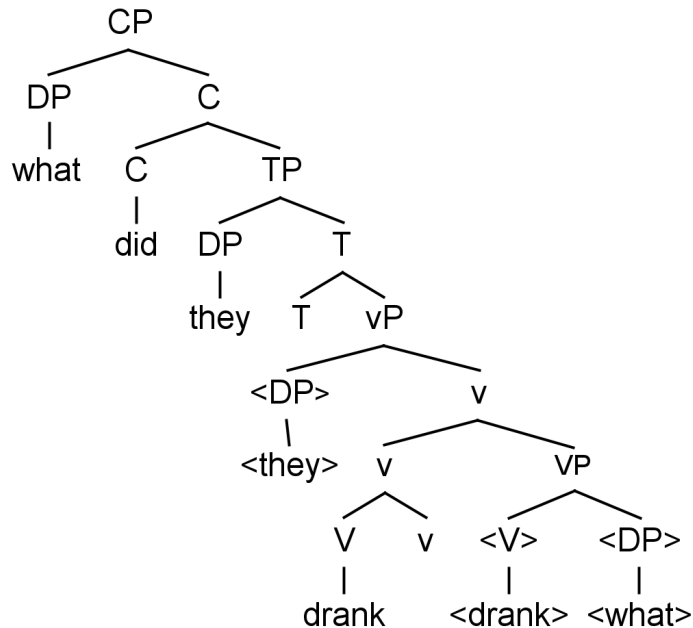
10) a.



b.



c.



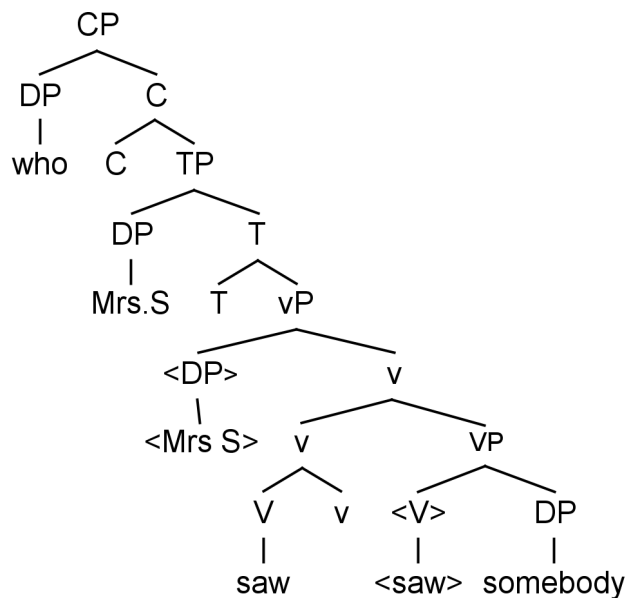
For the (ii) cases, the problem in question formation resides both in T-to-C movement and wh-movement:

- 11) a. Which Reverend Green open a door?
- b. Who Mrs. Scarlett saw somebody?
- c. What did Colonel Mustard had something in his pocket?

Van der Lely & Battell (2003) also analyse these examples as a structure lacking both types of Internal Merge. The behavior of the heads involved here is similar to the one described in (9). As for wh-movement, the wh-phrase cannot have been externally merged in the object position and then internally merged in Spec-CP: The base position is occupied by the lexical DP (11a) or a quantifier (11b,c) (see the structure in 12). The wh-phrase is externally

merged directly in Spec-CP; it surfaces at the left periphery of the sentence. Van der Lely & Battell (2003) suggest that the presence of the DP in the lexical gap in the object base position may be a means of satisfying the Θ -criterion.

12)



Thus, the claims advanced by van der Lely and colleagues are the following. Early typical grammars and DLD grammars are similar in terms of the establishment of elementary dependencies, enabled by External Merge, but distinct in terms of the establishment of long-distance relationships, enabled by Internal Merge. Moreover, they consider that this deficit cannot be construed as a delay in normal language acquisition. Van der Lely et al. (2011) tested children with DLD in their teenage years for grammaticality judgements of grammatical and ungrammatical questions. Van der Lely et al. (2011) chose this range of age because younger children with DLD do not have the computational capacities that enable them to consistently form hierarchical

structures in the syntactic component that typical children develop between 3 and 6;6 years. Their results indicate that their DLD subjects accept grammatical and ungrammatical sentences. According to them, some children with DLD were still far from a level of competence which would be expected of 6–8-year-olds in the core aspects of grammar that feature syntactic DLD. In addition, since Internal Merge together with feature-valuing basically constrains the possible derivations in a grammar, its non-application will result in a broader grammar in children with DLD than in typical speakers. That is, children with DLD produce and accept a wider set of sentences than are grammatical in their target language. Therefore, both derivations that are possible in typical grammars and derivations prior to movement and feature-valuing will be possible in DLD grammars. Finally, the computational system can transfer structures with unvalued features to the CI interface. Consequently, these will not be interpreted at the semantic interface. Van der Lely (1998) explicitly departs from Chomsky's view concerning the Full Interpretation Principle by which the input for semantic interface rules must not contain uninterpretable features. According to her, the lack of valuation of uninterpretable feature does not cause the derivation to crash at the CI interface.

This last claim is seriously questionable. According to van der Lely's (1998) analysis, a result of non-application of V/v-to-I movement is the lack of valuation of uninterpretable verbal and aspectual features in these heads. She sustains that the CI system can ignore these unvalued uninterpretable features and the derivation converges despite their presence in the semantic representation. However, valuation of uninterpretable features is one of the core assumptions within minimalism. And van der Lely provides no independent evidence that the CI system can receive representations with unvalued features. She proposes this theoretical departure only as a justification of her proposal.

In addition, in this account, the location of DLD in the computational system is deemed a competence deficit. Van der Lely and colleagues claim that Internal Merge is optional, which implies that in some DLD derivations interrogatives are constructed by application of both External and Internal Merge while other in other derivations questions are built solely via the application of External Merge. The analysis of non-target DLD interrogatives as optional application of Internal Merge is dubious on both empirical and theoretical grounds. Van der Lely and colleagues claim that when Internal Merge of wh-phrases does not occur, wh-phrases are directly externally merged at Spec-CP. That is why they always appear in this position. However, the account seems to wrongly predict the occurrence of wh-phrases in-situ (cf. Radford 2007):

13) Reverend Green opened which door?

Since in typical language, wh-phrases in English are usually externally merged in their base position and then are internally merged into Spec-CP, it could be the case that a similar device operates in DLD grammars except that only one of the two operations applies, namely External Merge. Thus, for derivations in which Internal Merge does not apply, it is predicted that the wh-phrase would be spelled-out in its base position. This prediction is also not borne out in DLD grammars of other languages. As shown in chapter 5, Stavrakaki (2006) examine the production of interrogatives by Greek children with DLD (Stavrakaki 2006:390):

14) a. DLD response

pion xtipise ton rinokero?
who-acc hit-3s-past the rhino-acc

Target

pion xtipise o rinokeros?
who-acc hit-3s-past the rhino-nom
'Who did the rhino hit?'

b. DLD response

pia kamila esproxo ton rinokero?
Who camel-nom push-3s-past the-rhino-acc
'Which camel pushed the rhino?'

Target

pion esproxo i kamila?
Who-acc-push-3s-past-the-camel-nom
'Who did the camel push?'

If Internal Merge was optional then the following forms should be expected:

15) a. xtipise ton rinokero pion?
hit-3s-past the rino-acc who-acc

b. esproxo pia kamila ton rinokero
push-3s-past which camel the rino-acc

The examples in (15) show the wh-constituents in their base position, where it would be spelt-out. Interrogatives illustrated in (13 and 15), however, have not been attested. Moreover, van der Lely & Batell (2003) account provides no syntactic mechanism in this account that bans such a representation.

Van der Lely & Battell (2003) state that the non-occurrence of in-situ questions in English DLD could be due to two extra-grammatical factors: the pragmatic/contextual components of the experimental task and the effects of therapy. According to them, it is possible that failure of Internal Merge application could have been compensated for by these factors. That is, the pragmatic/contextual components could have induced children with DLD to start their responses with a *wh*-word, so that External Merge of the *wh*-word in Spec-CP was facilitated. Or the effects of therapy, in which question formation was explicitly taught, could have enabled these children to use non-grammatical cognitive reasoning in the construction of interrogatives. Nevertheless, this explanation does not seem satisfactory: van der Lely & Battell (2003) admit that these factors cannot account for the External Merge of *do*-support and the use of lexical DPs and quantifiers in the *wh*-phrase base position, and, since it can be presumed that at therapy children with DLD were taught interrogatives constructed with both types of Merge, there seems to be no reason why its effects have not also facilitated the application of Internal Merge.

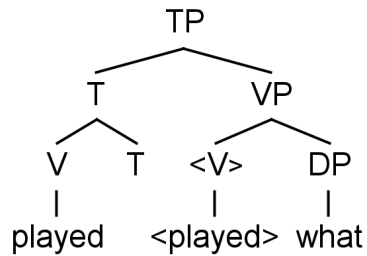
From a theoretical point of view, it seems that the DLD derivations of questions should be doomed to crash at CI. A comparison between the derivation of interrogatives in typical grammars and those in DLD grammars can contribute to the development of this claim.

An interrogative sentence from a typical grammar can have the following derivation:

- 16) a. What have you played?
 b. Numeration = {C [Clause Type, uT, uwh], T[uv, uD[EPP] [uφ], {you [D, φ,uT] what [D, wh, φ, uT], v[uT, uD], T[uV, uD, uφ], V[uD]}}

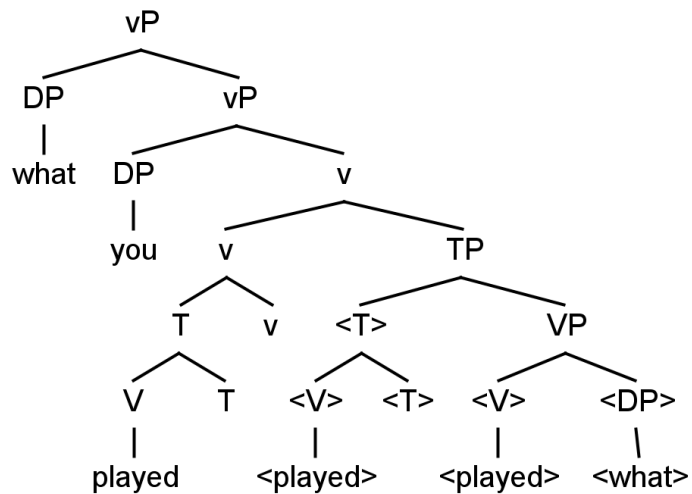
It starts with the External Merge of the wh-constituent with the lexical verb (based on Radford 2009:391):

17)



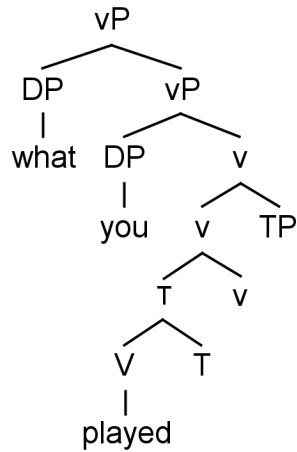
The VP then merges with low T. Then T merges with the phase head v. The external argument DP *you* merges with v and is placed in Spec-vP. Little v, by virtue of its status as a phase head, is said to have an edge feature that attracts the wh-constituent to the phase edge (see (18) below and chapter 2):

18)



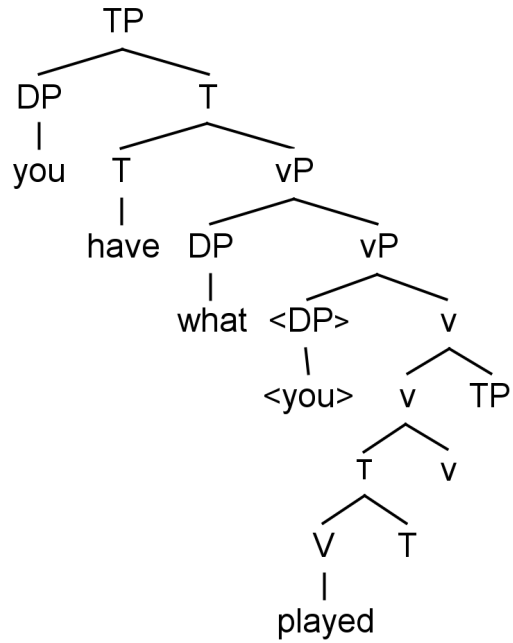
As the transitive vP is a phase, its TP complement undergoes transfer at the end of the phase:

19)



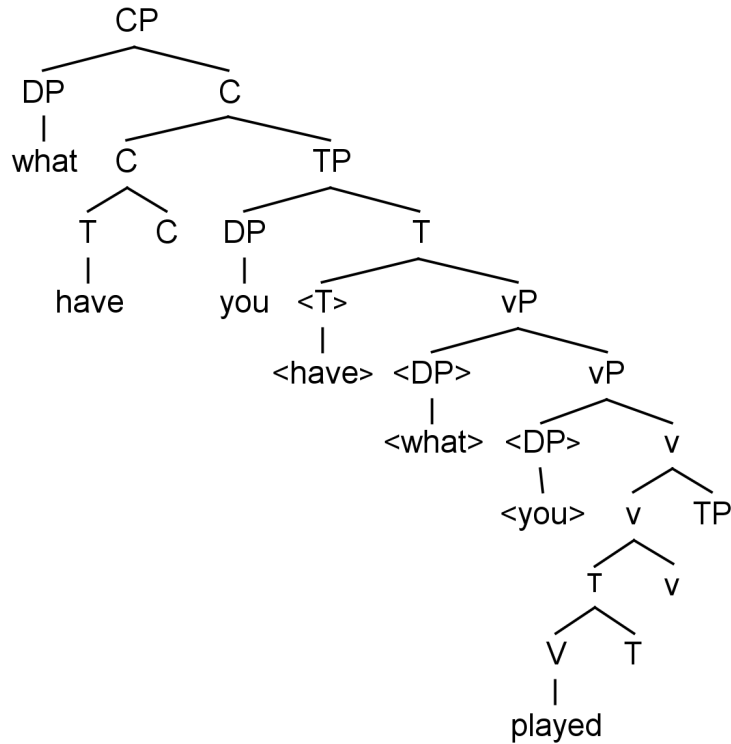
The attraction of the wh-constituent to the phase edge is necessary for this constituent to be targeted for further Internal Merge. If this movement does not take place, then in accordance with the PIC, the wh-constituent would not be able to move to the next phase edge. vP then combines with higher T and the external DP internally merges in Spec-TP:

20)



Higher T merges with C, it raises to and adjoins it (T-to-C movement), and the edge feature of C attracts the wh-constituent to its specifier, since it is also a phase head.

21)



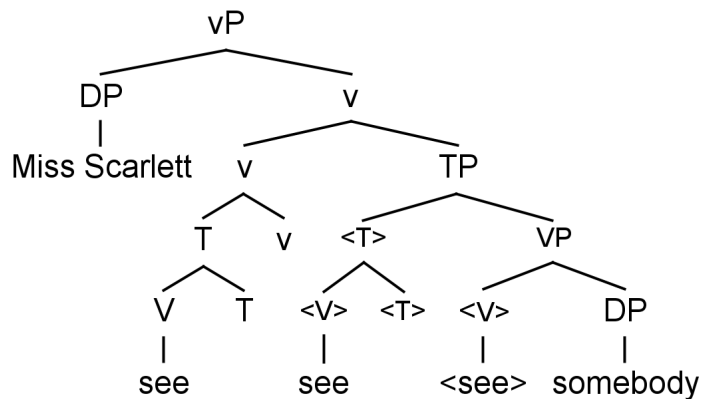
Finally, at the end of the CP phase, TP is transferred to the interfaces and subsequently the constituents at the phase edge are also transferred.

Contrastively, an interrogative sentence from an DLD grammar, where Internal Merge of the wh-constituent fails to apply, would have the following derivation (based on Radford 2007: 50):

- 22) a. Who Miss Scarlett saw somebody?
 b. Numeration = {C[Clause Type, uT, uwh], T[uv, uD [EPP], uφ], {miss Scarlett[D, φ, uT], who[D, wh, φ, uT], somebody[D, uT, φ] v[uT, uD], T[uV, uD, uφ], V[uD]}}

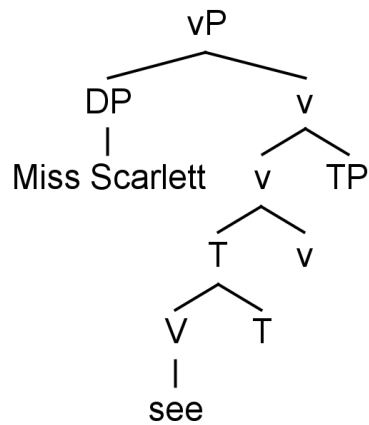
The V *see* merges with the DP quantifier *somebody*. Then the lower T head merges with the lexical VP, and v merges with TP. The DP *Miss Scarlett* (derived in a different workspace) enters the derivation, at the Spec-vP:

23)



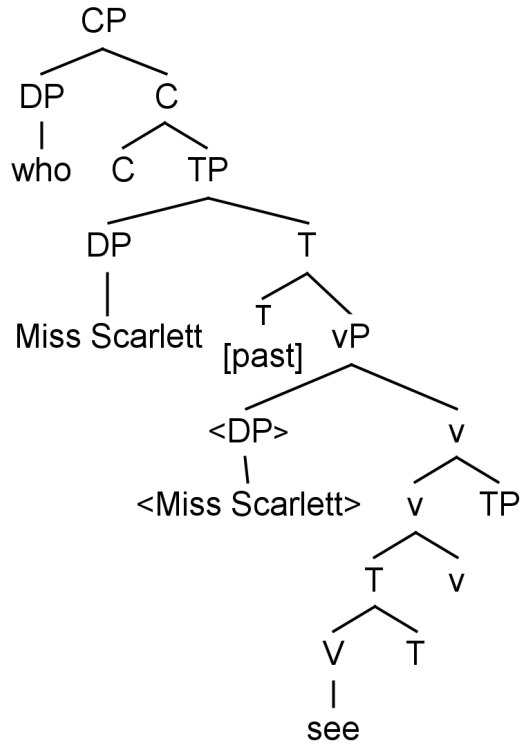
Crucially, the edge feature of the phase head has to attract a *wh*-phrase, i.e., a phrase whose head contains a *wh*-feature. The DP *somebody* is not such a phrase. Since the structure does not contain the relevant *wh*-feature, Internal Merge does not apply to the object DP. Then the VP domain undergoes transfer. The object DP now is unavailable for further operations.

24)



The merging of higher T is similar to the one described for the typical grammar. T has a tense value which is realised in the verb by virtue of the application of a PF operation, Affix hopping. The Subject DP Miss Scarlett externally merged at Spec-vP undergoes Internal Merge and is placed at Spec-TP. After higher T has entered the derivation, C merges with TP. Since the derivation contains no auxiliary, C remains null: It does not attract T, since Internal Merge of T does not apply, nor does it have an Aux directly externally merged. Then the DP *who* directly merges at Spec-CP. This constituent checks the edge feature of C:

25)



This derivation should crash at CI, for the following reason: For the interpretation of questions, the CI component needs an operator-variable relation (cf. chapter 5). In derivations via Internal Merge, this relation is built through a syntactic dependency: The two copies of the wh-constituent form a chain where the higher copy of the wh-constituent is interpreted as the operator and the lower copy as the variable. It is this dependency that is not established when Internal Merge fails to operate in DLD grammars, according to van der Lely & Battell (2003). But if this dependency is not established, the structure derived via External Merge of both members of the chain is uninterpretable for the CI component. The operator-variable relation cannot be established. Since

the quantifier *somebody* undergoes transfer after being merged at the V complement position, and therefore it is syntactically unavailable, a wh-constituent cannot apply any operation, e.g., Agree, in order to create a chain (cf. Adger & Ramchand 2005). The consequence of this is the lack of theta role for *who* (which in a derivation via Internal Merge it would receive it from the foot of the chain) and the impossibility for the quantifier to be interpreted as a variable.

Since DLD questions are interpretable, just as typical questions, it can be deduced that they contain an operator-variable relation, and no crashing of their derivations occurs in the CI component. Van der Lely & Battell's (2003) analysis is thus rejected. We will argue in Chapter 8 that the questions produced by their DLD subjects are indeed derived via Internal Merge. Therefore, we will be led to conclude that although they are not language-target, i.e., their surface form is not acceptable in typical language, they are compliant with UG.

In summary, the Merge operation has been proposed to be the culprit in DLD grammars. Although it is available, its application is problematic on some LIs or optional for the derivation of certain constructions. Thus, DLD grammars are deemed to be different from typical grammars and consequently non-compatible with UG. It is argued that these proposals are inadequate, for one seems to evince a misconception in terms of the dimension where Merge operates and the other seems to predict derivations that should be semantically uninterpretable, either because of the transfer of uninterpretable features to the CI component or the impossibility for this same component to establish a necessary relation between constituents. The conclusion is that Merge, external and internal, is not involved in the account of the data analysed by Jakubowicz and colleagues and van der Lely & Batell. In fact, it is claimed in

this dissertation that Merge is available in DLD grammars and so DLD grammars concerning this operation are guided by UG. The rest of the chapter provides support for this claim.

6.3 Activeness of External Merge

As mentioned above, Merge is active in DLD grammars. This means that DLD grammars construct derivations of sentences in the same way as typical grammars, so that DLD grammars in terms of this operation is also UG-compliant. This section presents studies which show that DLD sentences have the same properties as sentences derived in typical grammars, namely constituency and hierarchical structure.

6.3.1 Constituency and Phrase Structure

It was mentioned in chapter 1 that one property of human syntax is the grouping of LI in constituents. This means that External Merge assembles LI and forms constituents, whose format is a hierarchical structure called phrase. It was also stated that computations, and any process reflecting computations, operate in terms of structure-dependency, that is, syntactic processes target, not sequences of words, but the structures constructed by Merge, i.e., constituents. The formation of constituents can be detected with certain syntactic processes, for instance, pronominalization, coordination and binding (see chapter 2). DLD grammars seem to apply these processes according to structure-dependency.

6.3.1.1 Pronominalisation

This process consists of the replacement of a constituent with a pronoun. The following data from Bedore & Leonard (2001:924) show this:

- 26) Experimenter: El niño compra el helado
 'The boy buys the ice cream'
DLD response: y luego **lo** come
and then it eats '...and then he eats it'

The child uses the object clitic to replace the object DP. The sequence *e/ helado* 'the ice-cream' forms a constituent, i.e., a DP. The pronoun replaces both items and only them. Likewise with a subject pronoun (Jakubowicz et al. 1998: 138):

- 27) a. Experimenter: Que fait Minnie à Mimi Cracra?
 'What is Minnie doing to Mimi Cracra?'
DLD response: **Elle** montre le doigt vers elle.
 'She is pointing the finger towards her.'
- b. Experimenter : Que fait Barbie à Schtroumpfette?
 'What is Barbie doing to Schtroumpfette?'
DLD response: Elle **se=la**⁶⁸ peigne.
 'She is combing her.'

The first pronoun *elle* replaces a constituent, namely the DP *Minnie* and the second pronoun *se=la* replaces *à Schtroumpfette*, which is another constituent, a PP. Both examples above show that pronominalisation targets constituents.

If pronominalization did not target constituents in DLD grammars, then sentences such as the in (28) could be produced by DLD children:

- 28) *Elle se peigne à
 she herself combs to

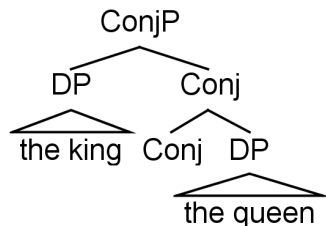
Sentence (28) is ungrammatical because pronominalization does not replace the whole constituent *à Schtroumpfette*. Since this type of sentences has never been attested, it can be inferred that pronominalization in DLD grammars applies only to constituents.

⁶⁸ The target form is *la* 'her'.

6.3.1.2 Coordination

This test results in the conjunction of groups of words, usually having the same syntactic category and each of them forming a constituent. The outcome is also a constituent. (29) shows an example of coordination by an English DLD (Gopnik 1990: 150):

- 29) a. **The king and the queen** they look at the tree.
b.



Gopnik's subject coordinates two constituents, namely two DPs, the result being a ConjP. Children with DLD can coordinate not only lower constituents but also sentences (Gopnik 1990: 150 (b), 157 (a)):

- 30) a. All the girls sing and they are dancing,
b. He don't know so he look at the other side of the tree.

Each sentence in (30) is composed of simple clauses which are coordinated. In (30a) coordination is established with the conjunction *and*, and in the (30b) with the conjunction *so*. The sentences in (30) are correctly coordinated and so the complex sentences are adequately constructed.⁶⁹

⁶⁹ The complex sentences are not target-like but for reasons independent from coordination. The aspectual specification of the two sentences in (30a) do not coincide: The main verb in both sentences should be marked with the progressive *-ing* morpheme, but only the second

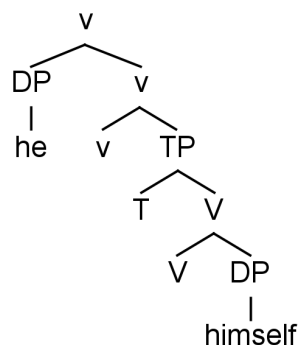
6.3.1.3 Binding

In chapter 2, it was stated that binding depended on the asymmetrical c-command relation. For two elements to be in a c-command relation, neither one can dominate the other, and for both of them to satisfy the condition on dominance, both elements must form different constituents:

31) He washes himself.

The DP *he* can bind DP *himself* because *he* asymmetrically c-commands *himself*, which means that neither DP dominates the other:

32)



The fact that the pronoun can bind the anaphor is an indication that each of them forms a separate constituent.⁷⁰ Data from Gopnik & Crago (1991) (see

one is. Agreement marking is not adequate in (30b), since the negative auxiliary in the first sentence should be *doesn't* and the main verb in the second sentence should carry the -s morpheme.

⁷⁰ For an anaphor to be bound, it must be coreferential with a c-commanding antecedent. For its antecedent to c-command the anaphor, it must be placed in a higher position in the

chapter 5) show that English DLD correctly apply binding. In one of their tests, DLD subjects were provided with sentences containing an anaphor, like the one in (31), and sentences containing a pronoun (e.g., *he washes him*) (see chapter 5). The task consisted in pointing to the picture that corresponded to the meaning of the sentence. The results indicate good performance and no significant difference between typical children and their DLD subject (typical children = 5.5/6; children with DLD 5.67/6). This is an indication that constituents are formed in DLD grammars.

6.3.1.4 Phrase Structure Properties

By the same token, DLD grammars display a property attributable to phrase structure, i.e., endocentricity. This property specifies that phrases must have a head and that the category of phrases must be the same as the category of their heads (Radford 1988). This property is revealed by the distribution of constituents. Single verb constituents and complex verbal constituents appear in the same sentential framework:

- 33) a. David wants to [vP eat].
b. David wants to [vP eat cake].
c. David wants to [vP eat cake with his friends].

All the vPs in (33) are predicates of the sentences in which they appear. Moreover, the three of them occupy the same position, namely they are placed after the infinitival 'to'. Thus, the three vPs have the same distribution. Single verbs and complex verbal constituents in DLD grammars have a similar distribution as in typical grammars (King 1994: 90):

hierarchy. Since the antecedent and the anaphor are simultaneously placed in different positions, they must form different constituents.

34) a. Some dogs [vP bite].

b. He is just [vP looking at the mother horsie eating].

Both bracketed constituents behave in a similar way: In (34) they are the predicate of their respective sentence. They are verbal phrases, which indicates that they are headed by a verb. Endocentricity is also shown in categorial selection (c-selection). C-selection is achieved in terms of phrasal head. In chapter 2, it was stated that, for a head to merge with a phrase, it has to select it. For selection to take place, the selecting head needs to contain an uninterpretable categorial feature and the selected head needs to have the same categorial feature in its interpretable version:

35) a. The [nP pianist]

b. The pianist should [vP play the sonata]

In (35a) the selecting head is the determiner *the*; it selects an nP, a phrase whose head is an n. This means that D hosts an uninterpretable categorial [n] feature and the head of nP has an interpretable categorial [n] feature. In (35b) the selecting head is the modal *should* and it selects a vP, a phrase whose head is a v, so both heads have a [v] feature. DLD grammars seem to correctly display this endocentricity property, as the example from King (1994: 90) shows:

36) When I'm very very good I can [vP move].

In this example the selecting head is the modal *can*; its complement is a vP, a phrase headed by a verb. The selection of the vP by the modal *can* in (36) is similar to the selection of the modal on (35b). The literature seems to have never reported a complement to modals other than vPs in DLD grammars; as mentioned in chapter 5, in fact, the literature seems to have never reported

inadequate selection of complements for any head. Based on this, it can be tentatively deduced that c-selection is correct and endocentricity is satisfied in DLD grammars.

Another property attributed to phrases is binarity, derived from Merge: This operation takes two elements at each step of its application so that every new syntactic object contains two elements. Binarity has been justified in terms of pronominalization and binding (see chapter 2). The fact that in the previous examples these processes are correctly applied to constituents is a reflection of binarity.

DLD grammar shows that pronominalization, coordination and binding target the right groups of LI, namely constituents. The correct manipulation of structure for syntactic processes is an indication that DLD grammars construct constituents via the use of the Merge operation. Thus, this operation is available in DLD grammars, as mandated by UG.

6.3.2 Hierarchical Structure

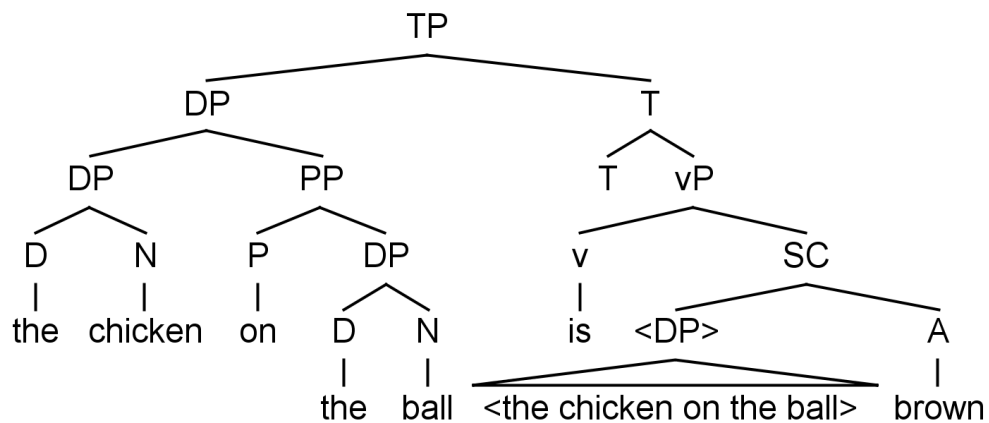
As mentioned in chapter 2, the application of Merge on LI results in a hierarchical structure. Having a hierarchically structural representation for sentences means that constituents are constructed in an arrangement in which LIs are placed “above”, “below”, or “at the same level as” one another, so that LIs in a tree establish dependencies among them. Dependencies are defined in terms of dominance, sisterhood and c-command. The latter is the crucial relationship for the detection of hierarchical structure in sentences.

6.3.2.1 Nominal modification and binding

C-command enables a predicative adjective to modify a noun within a DP (Fortunato-Tavares et al. 2012: 1098) :

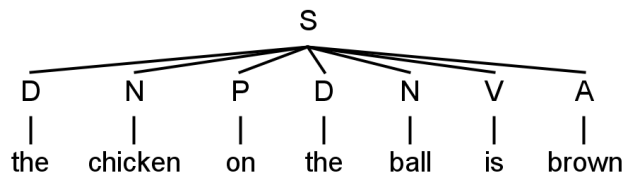
37) a. The chicken on the ball is brown.

b.



The predicative adjective *brown* modifies the noun *chicken*, not the noun *ball*. This is revealed by the interpretation of the sentence. The sentence means that the chicken is on the ball and it is brown. The noun *chicken* is positioned higher in the hierarchy, so the DP containing that noun can c-command the adjective and adjective modification applies to that noun. In contrast, the noun *ball* does not c-command the adjective and so the adjective does not modify it. The sentence does not mean that the chicken is on the ball and the ball is brown. If, as stated by Fortunato-Tavares et al. (2012), the structure were flat, then the modification would be ambiguous between both readings:

38)



Modification in the structure in (38) can be ambiguous because no c-command relation can be established, since the LIs are all at the same level and not in a dominance relationship (except with the S node). Fortunato-Tavares et al. (2012) examined the type of sentential structure (hierarchical or flat) that children with DLD speaking Brazilian Portuguese showed. They recruited a group of 16 children with DLD aged between 8;4 and 10;6 (mean 9;4) and with an MLU of 4.84, and a group of 16 typical children matched for age (range 8;5-10;6, mean 9;4). They carried out two comprehension experiments requiring picture-pointing. The first one employed sentences displaying predicate-DP relations like the one in (37). Each trial consisted in a context sentence and the target sentence accompanied with an array of pictures. The context sentences were used to introduce the entities represented by the nouns involved in the target sentences. The target sentences contained nouns denoting different objects, prepositions denoting different spatial relations and adjectives denoting different colours, as the example in (39) shows (Fortunato-Tavares et al. 2012: 1103):

39) A **galhina** acima da bola é **marron**.

the hen on the ball is brown
'The hen on the ball is brown.'

The visual stimuli included four types of pictures: (1) correct picture, i.e. correct attachment and correct spatial relation (the hen is on the ball and is brown), (2) hierarchical error picture, i.e. incorrect attachment (the hen is on the ball but the ball is brown), (3) preposition change error picture, i.e. correct attachment with lexical error on the prepositional relation (the hen is brown but is in front of the ball) and (4) reverse error picture, i.e. incorrect attachment and spatial relation reversed (the ball is on the hen and is brown).

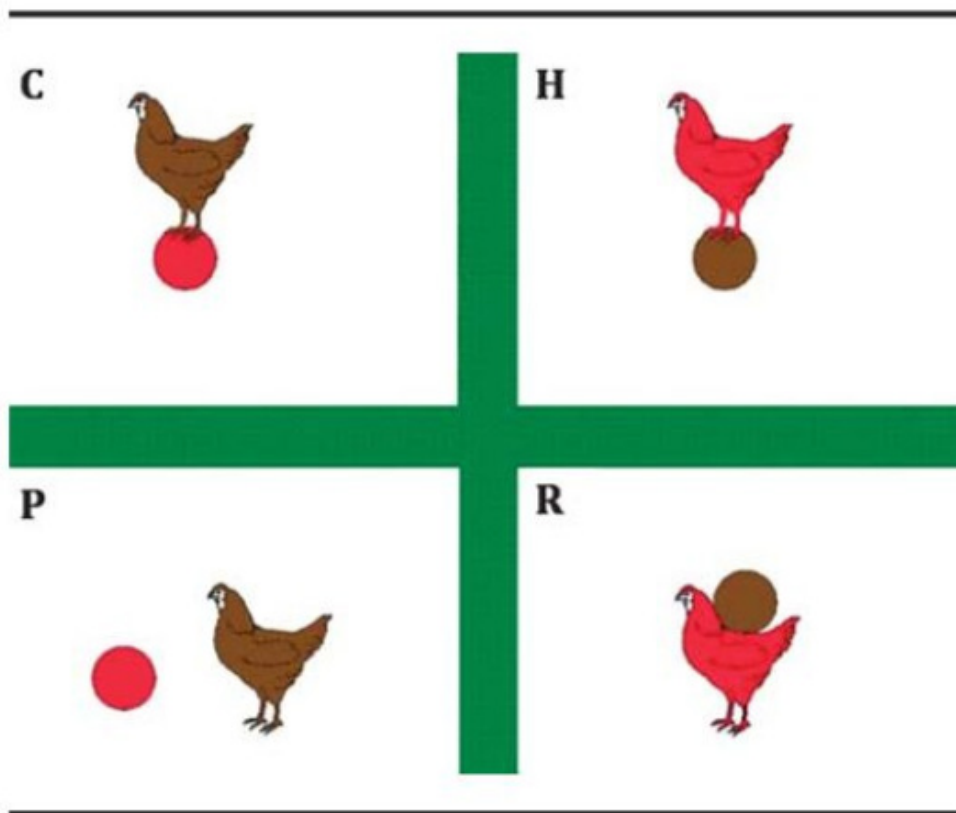


Figure 6-1 The four drawings used for the sentence *A galhina acima da bola é marron* 'The hen on the ball is brown' (Fortunato-Tavares et al. 2012:1103)

Fortunato-Tavares et al. (2012) hypothesized that if children with DLD did not construct hierarchical structures, and built flat structures, then they would exhibit lower accuracy and select more erroneous pictures than their typical peers. The results indicate an accuracy of 60% for the children with DLD and an accuracy of 93% for the TD children. This means that the children with DLD selected fewer correct pictures and more erroneous pictures than the TD children. This difference is significant. However, there were no significant difference between the groups in the selection of the three error response types. Neither group exhibited a dominant error type. According to the researchers, the difference between both groups is not an indication of lack of hierarchical structure in DLD grammars. The fact that (a) no difference in the selection of error types between the groups was found and (b), importantly, no preference for the hierarchical error type by the DLD group was observed, does not allow to infer this absence. Lack of hierarchical structure in DLD grammars, i.e., a representation of sentences with a flat structure, should have resulted in a selection of more errors of non-hierarchical constructions by children with DLD than typical children. Moreover, the DLD group performed above chance level, which can be taken to be an indication of the presence of hierarchical structure.

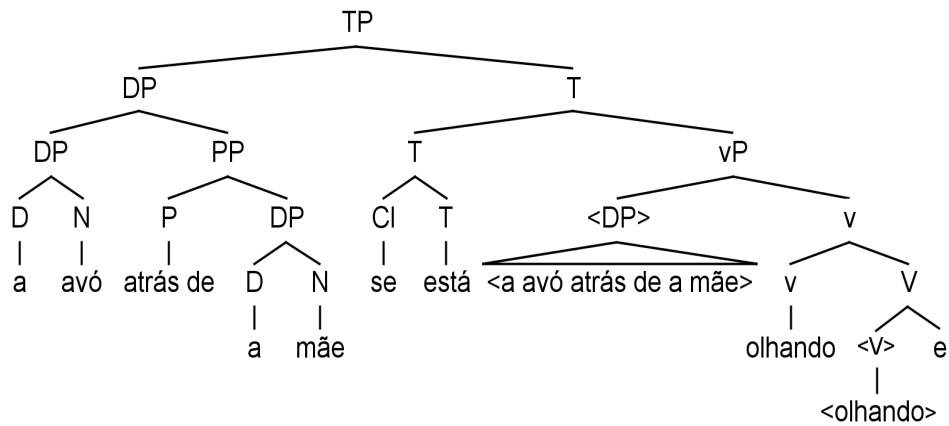
The second experiment is similar to the first but differs in the target sentences. This task employed reflexive pronouns. Portuguese reflexives, as in the other romance languages, are clitics (Fortunato-Tavares et al. 2012:1105):⁷¹

40) a. **A avó** atrás da mãe **se** está olhando

⁷¹ The structure in (40) is based on base-generation analysis of clitics (Aoun, 1979; Borer, 1983, among others). Other analyses (e.g., Kayne 1975) propose that the clitic generates in the complement position and then moves outside the vP. Since the configuration where the antecedent c-commands the clitic obtains in both approaches, these differences in the analysis are not relevant.

The grand.mother behind.of.the mother herself is watching
 'The grandma behind the mom is looking at herself.'

b.



The reflexive has two potential antecedents, the DP *a avó* or the DP *a mãe*. Presence of hierarchical structure must lead the children with DLD to select the hierarchical higher antecedent, i.e., the grandma. As in the first experiment, four types of pictures accompanied the stimulus sentence: (1) correct picture, i.e. correct attachment and correct antecedent (the grandma is behind the mom and is looking at herself), (2) hierarchical error picture, i.e. incorrect antecedent (the grandma is behind the mom but the mom is looking at herself), (3) preposition change error picture, i.e. correct antecedent with lexical error on the prepositional relation (the grandma is looking at herself but is beside the mom) and (4) reverse error picture, i.e. incorrect antecedent and spatial relation reversed (the mom is looking at herself and the grandma is in front of the mom). The same hypothesis is operative here.

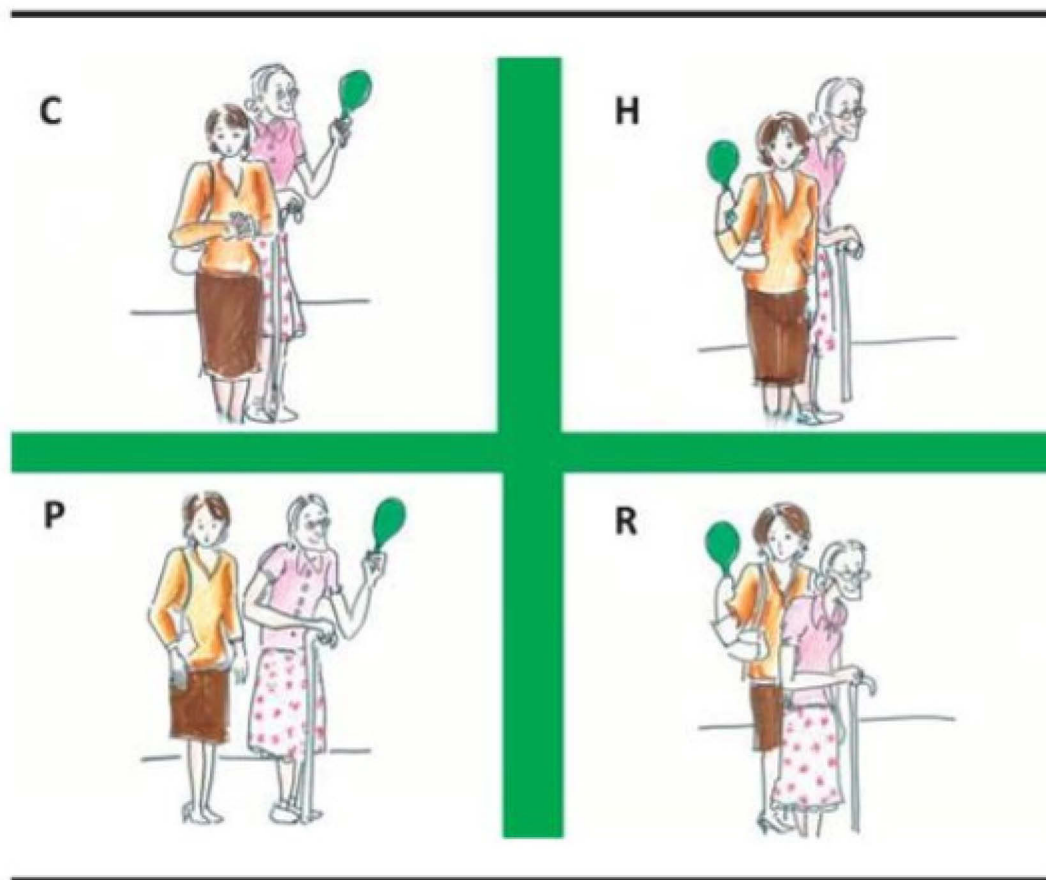


Figure 6-2 The four drawings used for the sentence 'A avó atrás da mãe se está olhando' 'The grandma behind the mom is looking at herself.' (Fortunato-Tavares et al. 2012:1101)

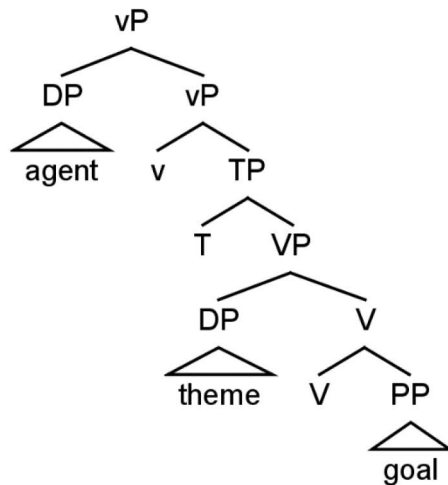
The results indicate that children with DLD performed with an accuracy of 60% whereas the TD children performed with an accuracy of 83%. This difference is statistically significant. The DLD results in this experiment are similar to the ones in the first one: Most of the responses were correct and they did not exhibit a dominant error response. The TD group showed differences within the error categories. Fortunato-Tavares et al. (2012) also looked for preferences for errors involving syntactic assignment. They combined, on the one hand, the correct responses with the preposition change error responses, which both

represent choices in which the child has constructed a hierarchical structure, and on the other, hierarchical error responses with reverse error responses, which represent incorrect syntactic assignment. They found that both groups preferred responses with correct structural assignments. Again, their data do not indicate absence of hierarchical structure. Thus, the fact that children with DLD also performed above chance level and with preference for correct structural assignments points to the presence of hierarchical structure in their grammars. This evidence of hierarchical structure indicates the correct working of Merge.

6.3.2.2 Theta Roles

Verbs differ in their argument structure, that is, in the number of arguments that each of them license. They are also differentiated by the semantic type of their arguments. These semantic types are defined as the thematic roles assigned to verbal arguments. Theta role assignment is applied structurally. That is, the theta role which an argument receives depends on the position where the argument is placed in the syntactic structure. Thus, theta assignment is tightly related to phrase structure. This relation is expressed by the Uniformity of Theta Assignment Hypothesis (Baker 1988) which states that “identical thematic relationships between predicates and their arguments are represented syntactically by identical structural relationships at Merge” (Adger 2003: 110). Assuming this hypothesis and taking into account the interpretation of the role played by the arguments in, for instance, a ditransitive sentence, it is possible to state that DPs which are daughters of vPs are construed as agents, DPs which are daughters of VPs are construed as themes and PPs which are daughters of intermediate Vs are construed as goals (Adger 2003):

41)



This structure shows that each role is assigned at different positions within the structural hierarchy, so the interpretation of the role of arguments depends on the position occupied by them. This is the explicit content of the statement that theta roles are structurally assigned.

If children with DLD construe simple sentences (e.g., transitives) in the same manner as typical children, that is, they interpret that the DP placed in Spec-vP fulfills the thematic role typically assigned to this position (e.g., agent) and the DP placed in Spec-VP fulfills the role also typically assigned to this position (e.g., theme), then it can be claimed DLD grammars construct sentential structures that are hierarchical in nature. This is so because the construal of thematic roles depends on a hierarchical structure in which the relevant constituents are located. A study carried out by Muñoz et al. (2014) with Spanish-speaking children with DLD gives support to this claim. These researchers administered a Grammatical Structures Comprehension Test. The test was taken by 14 children with DLD, 14 children composing the

chronological control group (TD-A) and 14 children making up the linguistic control group (TD-L). Two sets of transitive sentences were part of this test. The sets were formed in terms of sentence reversibility. A reversible sentence is one where the subject (e.g., the boy) and the object (e.g., the girl) can be reversed, i.e., the original object DP occupies the subject position, and the original Subject DP occupies the object position (e.g., *The boy is watching the girl*). The sentence resulting from the reversal (*The girl is watching the boy*) is as meaningful as the original one, although its meaning has been modified (for instance the person performing the watching is changed). A non-reversible sentence is one where the reversal of the subject (e.g., the boy) and the object (e.g., tv) (e.g., *The boy is watching tv*) produces a sentence with an implausible meaning in the real world (*The tv is watching the boy*) (Richardson et al. 2010).

The participants in Muñoz et al. (2014) were shown four pictures and had to choose the one that best represented the sentence read out by the examiner. The first set contained non-reversible transitive sentences:

42) El gato come un plátano
the cat eats a banana
'The cat is eating a banana.'

The second set contained reversible transitive sentences:

43) El ratón persigue al gato.
The mouse chases to-the cat
'The mouse chasing the cat.'

The results indicate that the three groups performed at ceiling level and showed no difference in the interpretation of non-reversible sentences. For the reversible transitive sentences, the DLD group performed (84% of accuracy)

as well as the TD-A (94.75 %) group and the TD-L group (73.25%), though the TD-L group, but not the DLD group, differed from the TD-A group.

Leonard et al. (2013) carried out an experiment testing the comprehension of transitive sentences by English-speaking DLD children. They recruited 57 children divided in three groups of 19 participants: a group of children with DLD whose age ranged between 4;0 to 6;6, a control group matched in age (between 4;0 and 6;8) and a younger control group (aged between 3;1 and 3;11) matched in language level. The task was picture-pointing and consisted in finding the picture out of an array of two or four that depicted the event expressed by the sentence heard by the participants. The procedure was divided in two steps. In the first step, the participants were shown screening items designed to ensure that they understood the vocabulary and syntactic structures to be used in the experimental task. The stimuli comprised simple reversible transitive sentences involving the same nouns and verbs used in the experiment:

44) The horse kicks the cow.

The array included two drawings, one that corresponded to the test sentence (e.g., a horse kicking a cow), the other to the reverse (a cow kicking a horse). The second step was the experiment proper. The experimental stimuli also comprised simple reversible transitive sentences (e.g., *The bunny chases the cat*). The array included four drawings: (1) the target picture, (2) a picture depicting the reversed relationship (e.g., a cat chasing a bunny), (3) a picture showing the correct subject acting on an object not named in the test sentence (e.g., a bunny chasing a chicken), and a picture showing a subject not named in the test sentence acting on the correct object (e.g., a chicken chasing a cat).

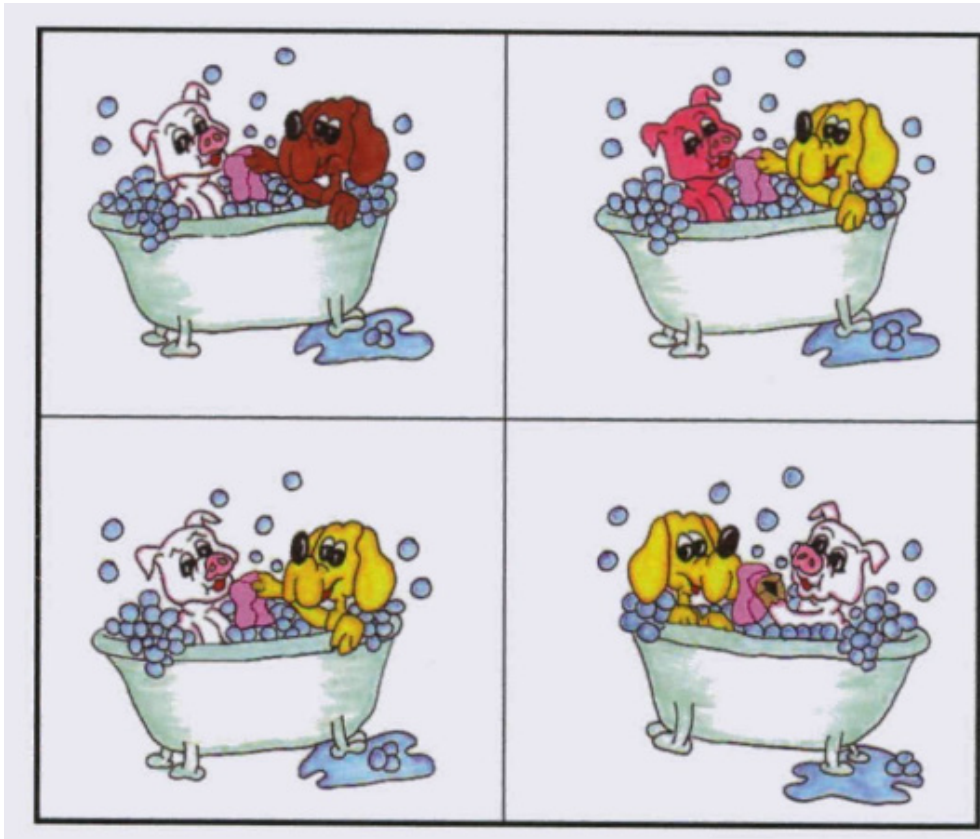


Figure 6-3 The four drawings for the sentence 'The dog washes the pig'. (Leonard et al, 2013:579)

The results for the screening test indicate an accuracy of 91.1% for the DLD group, 91.6% for the TD-A group and 84.2% for the TD-L group. The authors do not specify any significant difference, but it can be seen that the DLD and the TD-A performed almost equally well and almost at ceiling level. The results for the experiment test indicate an accuracy of 78.4% for the DLD group, 92.6% for the TD-A group and 82.1% for the TD-L. The DLD and the TD-L children did not seem to differ but both groups differ from the TD-A children. Despite this difference, both groups performed above chance, which in this case is 25%. The data from this experiment points to the fact that in general children with DLD correctly interpreted reversible transitive sentences since they attributed

the right theta role to each DP argument. That is, the object DP merged with V in the lower part of the hierarchy is construed as the theme, and the Subject DP merged at the Spec-vP, and so higher in the hierarchy, is construed as the agent. This general correct interpretation indicates that children with DLD represent sentences in a hierarchical structure.

6.4 Activeness of Internal Merge

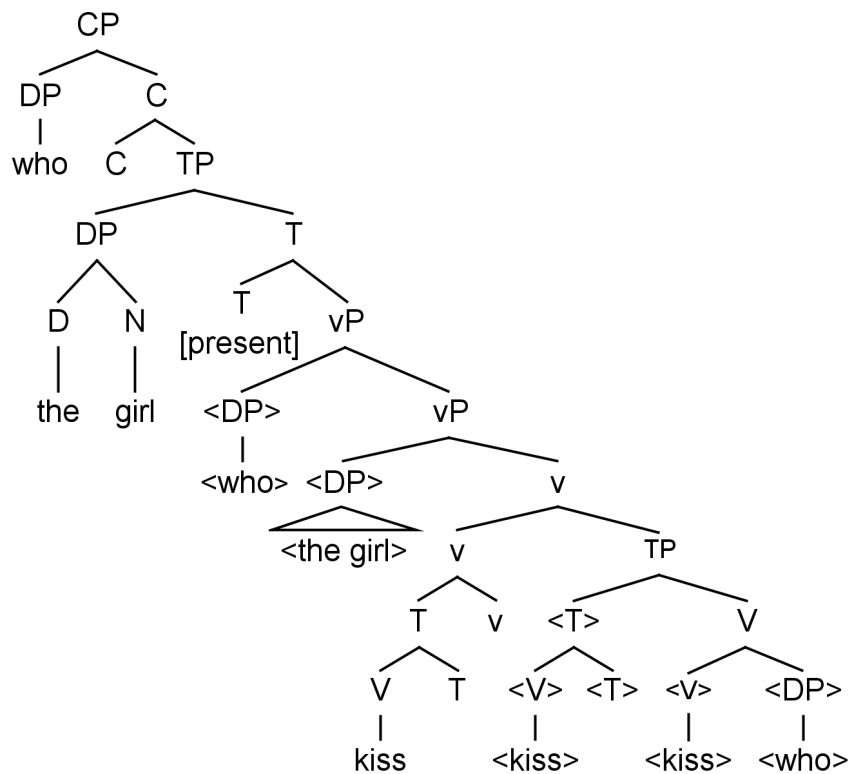
Structures which share the syntactic property of being derived via Internal Merge of a phrase and which result in a non-canonical order of the arguments in the sentence have been observed to pose difficulties for children with DLD in production and comprehension (e.g., object relative clauses Friedmann & Novogrodsky, 2004; referential object questions Ebbels & van der Lely, 2001; object topicalization in Hebrew, Friedmann & Novogrodsky, 2003; and topicalized prepositional phrases in English, van der Lely & Harris, 1990). Two aspects can be involved in the impairment: movement of the relevant constituent and assignment of its theta role from the copy in the argument position to the one in the surface position. Friedmann & Novogrodsky (2007) carried out a study of the comprehension of relative clauses by Hebrew children with DLD in order to determine whether DLD concerning these configurations obtains because of a deficit in the operation that builds the construction with the copies, i.e., Internal Merge, or whether the structure is derived correctly but the transmission of thematic roles is impaired.

Relative clauses are CPs that modify nouns. As such they are embedded in the NP whose head is modified, the noun *grandmother* in (45):

45) [The [grandmother [CP who the girl kisses]]]
 Head Relative clause

Essentially, the derivation of relatives is similar to the one for interrogatives, that is, the *wh*-phrase undergoes movement from its base position to the intermediate Spec-*vP* position to the final Spec-CP position. The main difference between the two constructions is the lack of T-to-C movement in the relatives:

46)



At the CI interface, the deleted copy of *wh*-phrase receives its theta role, which is transmitted to the pronounced copy at Spec-CP.⁷² The derivation of relatives in Hebrew is comparable to those of English.

In order to disentangle the source of the impairment, Friedmann & Novogrodsky (2007) created an ingenious task involving the reading aloud of heterophonic homographs (LI that have the same spelling but different phonetic form, e.g., ‘tears’ [tærz] (a noun), [tɛərz] (a verb)). When reading homographs in a sentence, their appropriate pronunciation depends on the analysis of their syntactic position (Friedmann & Novogrodsky 2007: 52):

- 47) a. I saw the tears in the little boy's eyes.
b. The little boy tears the gift wrap.

In (47a) *tears* is located in the object position, therefore it is read as a noun, while in (47b) it is the verbal head, therefore it is read as a verb. In relative clauses the same requirement applies (Friedmann & Novogrodsky 2007: 52):

- 48) The puppy [that the little boy saw ___] tears the gift wrap.

The appropriate pronunciation of the homograph in (48) and the consequent comprehension of the configuration require the interpretation of the gap as the position of the null copy and the identification of the homograph as the main clause verb.

⁷² The analysis sketched in (46) is not the only one that has been put forth for relatives. Other analyses propose that the relative head itself moves from within the embedded clause to Spec-CP and subsequently to the relative head position above CP (see Bianchi 2002 for discussion of all these possibilities). As Friedmann & Novogrodsky (2007) state, since all these analyses share the common assumption that relative clauses are derived by some Internal Merge and a thematic role has to be transmitted to the copy at Spec-CP, the differences between these proposals are not relevant to the discussion here.

Hebrew has numerous heterophonic homographs due to the fact that it usually does not represent vowels, and some consonant letters are ambiguous. Many of these homographs represent distinct syntactic categories like nouns and verbs (e.g., *ALH* [ala] (a verb) ‘climbed’, or [ale] (a noun) ‘leaf’). As in English, the suitable pronunciation of the homograph depends on its syntactic position:

- 49) Ha-madrix [she-ha-yeled ra’a ___] ALH al ha-har
The-guide that-the-boy saw ___ climbed on the-mountain
‘The guide that the boy saw climbed the mountain’

Since the form *ALH* appears in the V position of the main clause and is located after the gap, then it is a verb, and it is pronounced [ala].

Friedmann & Novogrodsky (2007) explain that the rationale behind this task is that if the reader can identify the gap and so the null copy, then they should construe the null copy as the internal argument of the embedded verb and the appropriate pronunciation of the main verb is expected. If, on the contrary, the reader cannot detect the gap at the required position, the embedded verb *ra’a* ‘saw’ would seem to be missing an argument. Consequently, the homograph would be interpreted as the object of the embedded verb, it would be identified as a noun and pronounced [ale] ‘leaf’. Friedmann & Novogrodsky (2007) hypothesize that if movement is involved in DLD, that is, comprehension problems in DLD are caused by an inability to identify the null copy, it is expected that the performance in the reading task will be poor, with a tendency to read the homographic verb as the object noun.⁷³

The participants in this study were divided in three groups: the experimental group, 15 children with DLD aged 9.3 to 14.6 years (mean age

⁷³ Since the issue of interest in this section is the availability of Internal Merge in DLD grammars, the task examining theta assignment is not described.

11.7 years, SD = 1.8 years), and two control groups, 25 children with a mean age = 9.8, SD = 0.5 and 25 children with a mean age = 11.8, SD = 0.5. The participants had to read the sentences aloud; demands on memory were reduced by keeping the written sentence in front of the participant until the end of reading and not setting a time limit.

The sentences were designed in such a manner as to avoid any bias towards the reading of the homograph as a verb. The relative clauses included, in its inappropriate noun reading, homographs that would be semantically and syntactically appropriate complements to the embedded verb. And the selection of homographs included some that were either biased towards the inappropriate, noun meaning, or some that similarly frequently represented nouns or verbs.

The results reveal that the DLD children's performance is similar to their control peers'. The younger children with DLD and the younger typical children performed differently from the older children with DLD and older typical children. The younger groups made more errors of reading the homograph verb as a noun than the older groups. This is an indication that a chronological effect, but no group effect, was observed in the homograph reading, so that the DLD groups did not differ from their typical groups. Despite the bias toward the inappropriate noun reading, the homographs were read as verbs in most cases by the children in all groups, with a reading error rate below 10%.

Friedmann & Novogrodsky (2007) conclude that, even though children with DLD evince miscomprehension of relatives, this difficulty is not due to an impairment in the application of Internal Merge. Children with DLD do not have a deficit in the construction of relatives and the position of the null copy. The correct reading of homographs show that this position is created. If relatives were not properly constructed, the children with DLD would have tended to read the homograph as a noun, especially due to the fact that the homographs could have been construed as the object of embedded verb and the

homographs were more familiar in their nominal reading. Thus, the children with DLD are able to derive the syntactic structures of the sentences in question and correctly represent the null copy in its argument position. The correct performance in this task evinces the activeness of Internal Merge in DLD grammars, in compliance with the workings of UG.

6.5 Conclusion

The Merge operation, external and internal, has been proposed to be faulty in DLD grammars. According to one account, External Merge can normally operate on compulsorily present functional categories or on categories that are placed in canonical positions, while it cannot properly operate on non-compulsory categories or on categories that fill non-canonical positions. This view is deemed inadequate mainly because of wrong predictions concerning the presence of nominative and reflexive pronouns, the implication of the existence of LIs without a categorial feature, the lack of link between supposedly categoriless LIs, their non-canonical position and Merge, the implication that French sentences can be built without the T node, an inappropriate distinction between syntactically active and compulsory categories and semantically relevant but syntactically inactive categories, and a misconception of External Merge. Another account states that Internal Merge operates intermittently and therefore children with DLD have difficulties in establishing long-distances dependencies. This proposal is also unsatisfactory mainly because of a questionable claim concerning the transfer of uninterpretable features to the CI component and the convergence of derivations containing this type of features, wrong predictions concerning the position of *wh*-constituents, and a theoretically dubious analysis of DLD interrogatives.

This chapter shows that, despite appearances, the Merge operation is always available in DLD grammars, and it does not seem to be implicated in the impairment. Application of External Merge is shown in (a) the grouping of LI in constituents, as revealed by pronominalization, coordination and binding, and (b) properties of phrase structure such as endocentricity and binarity. Moreover, the construction of hierarchical structures also points to the activeness of External Merge, as seen in nominal modification, binding and theta assignment in reversible simple sentences. Finally, Internal Merge also appear to be active in DLD grammars, as demonstrated by the correct performance in the reading of homographs inserted in Hebrew relative clauses. All these facts once more indicate that UG in DLD grammars provides the same operations which it provides in typical grammars. It can then be concluded that UG guides DLD grammars.

7 AVAILABILITY OF AGREE

Chapter 3 contains examples showing lack of inflectional morphology or absence of some functional words in DLD grammars. According to Clahsen et al. (1997), this absence reflects problems in the establishment of grammatical relationships between different elements of a phrase or a clause. Thus, DLD has been taken to be a difficulty with a relation that is essential in natural language, (Clahsen, 1989, 1999), and, as stated in chapter 2, that is enabled by UG, the agreement relation. Section 7.1 illustrates the view that, based in production by DLD children, agreement is impaired. One possibility is that the difficulty in the agreement relation underlies a serious problem in the computational system, the lack of the Agree operation. That is, agreement would not be established because Agree does not apply. Empirical and theoretical arguments, however, point to a contrary stance. Even though the realization of LIs involved in agreement is inconsistent, the data reported in section 7.2 show that Agree is active.

7.1 Agreement Deficit

Clahsen (1989) reports a study on German DLD in which he observed non-target utterances concerning morphemes involved in agreement (see examples below). He claims that the agreement relation is missing from DLD grammars. According to this agreement deficit account, DLD grammars are faulty in (Clahsen 1999):

1. *Subject-verb agreement*: inflectional markers (e.g., English -s or person and number morphemes in German) on verbs can be omitted or substituted;
2. *Auxiliaries and copulas*: finite forms that appear with participles and gerunds can be omitted;
3. *Case markers*: they can undergo omission or substitution;
4. *Gender marking within the DP*: they can also undergo substitution or omission.

Clahsen (1999) interprets the notion of agreement in terms of general phrase structure grammar (GPSG, Gazdar et al 1985). In this theory, agreement is a relation between two categories, a functor and an argument, regulated by the control-agreement principle (CAP), which stipulates that for agreement to be established the argument asymmetrically controls the functor. This principle is the precursor of the Agree operation described in chapter 2. The control is established through the provision of features by the argument and the morphological reflection of those features in both the argument and functor, only in the argument or only in the functor. For subject-verb agreement, the argument is the Subject DP and the functor is the verb or the auxiliary. For case (nominative and accusative), the arguments are V and T, and the functors are the Subject DP and the object DP, and for nominal gender the argument is N and the functors are determiners and adjectives. Since the CAP is not operative in DLD grammars, and especially when the functor reflects the agreement relation, children with DLD have difficulties in acquiring the relevant markers (Clahsen 1999).

Clahsen (1999) claims that tense, number and definiteness features in nominals, and participle inflection are not regulated by CAP, since in current terms they are interpretable, that is to say they are part of the feature bundle of the relevant LI specified in the lexicon and contribute to meaning. Therefore, it is expected that children with DLD would not have problems with these features.

The following German sentences are provided as examples of lack of verbal agreement (Clahsen 1989: 907):

1) <u>DLD response</u>	<u>Target</u>
a. Majo mann warten <i>M. man wait-inf</i>	Mario wartet das mann <i>M. waits the man</i> 'Mario is waiting for the man'
b. Ich auch ein auto fahr <i>I too a car drive</i>	Ich fahre auch ein auto <i>I drive-1p.sg too a car</i> 'I am driving with a car'
c. Du auch ein haus mach <i>you too a house make</i>	Du machst auch ein haus <i>you make-2p.sg too a house</i> 'You are making a house'

The verbal forms in these examples either carry the infinitive marker *-en* (1a) or are uninflected (1b,c). These are default forms used irrespective of the person or number of the subject. Clahsen (1989) states that none but 1 of the 10 children which he examined acquired the correct verbal paradigm, which is an indication that verbal agreement is not established, according to him.

Clahsen (1999) states that studies have found that children with DLD tend to omit auxiliaries and copulas more often than their typical peers. In English DLD, Leonard et al (1992) found that copulas correctly appear in 41% of obligatory context and the difference between the DLD and the typical children is statistically significant. Bol & de Jong (1992) studied Dutch DLD. They found that out of DLD 16 children, 6 tended to omit auxiliaries in 40% of the obligatory contexts, whereas the other 10 did not omit them. German children with DLD also have difficulties with auxiliaries and copulas. In Clahsen (1989), these LIs were rare and omitted in most obligatory contexts by all the 10 children whose performance he examined. Moreover, during the period of observation carried out in this study, the rate of omission of auxiliaries and copulas remained high, over 50%.

Case is also problematic in DLD. According to Clahsen (1989), a binary case system with only nominative and either accusative or dative is found in German DLD children. None of the 10 children that he studied produced both accusatives and datives. Thus, nominatives can replace datives (2a) or accusatives (2b); accusatives can be used instead of datives (2c) and datives can replace accusatives (2d); (Clahsen 1989: 905-906):

2) DLD response

Target

a. Du besser helf ich
you-nom better help I-nom

dir helfe ich besser
you-dat help I-nom better
 'I better help you'

b. Aber ich der hund spiel
but I-nom the-nom dog play

aber ich spiele den hund
but I-nom play the-acc dog
 'But I play the dog.'

c. Wat machen mit den tab?
what do with the-acc stick

was machen wir mit dem stab?
what do we with the-dat stick
 'What can we do with the stick?'

d. Ich dir hinführen
I you-dat lead-there

Ich führen dich hin
I lead you-acc there
'I will lead you there.'

Clahseh (1999) cites Collings (1989) who found that, out of the 12 German children with DLD that he studied, 5 produced some examples of case markers within full DPs, although all of them produced accusative and dative pronouns. This is an indication for Clahsen that children with DLD have difficulties with case marking.

Finally, for gender marking, Clahsen (1999) cites cases observed in Italian children with DLD examined by Leonard et al (1992). These researchers found that children with DLD speaking Italian committed more error in determiners and in the use of clitic object pronouns than their typical peers. Clahsen (1999) attributes these errors to the difficulties with gender and/or number. However, both groups performed equally well in adjective + nouns configuration, and no significant difference was found between the two groups. Most of the German-speaking children studied by Clahsen (1989) neutralized gender distinctions in their full DPs: *de* was used for definites and *ein* for indefinites. These errors seem to persist during language development. In Collings (1989) intra-nominal gender agreement was faulty: Adjectives within DP were left uninflected (Collings 1989, cited by Clahsen 1999):

3) DLD response

Schön tisch
Nice-neut table

Target

Schöner tisch
Nice-masc table

Agreement in gender also seems to be affected by the linguistic impairment.

In Clahsen et al (1997), the agreement deficit hypothesis was modified. They propose that DLD is a more selective impairment. Instead of claiming that all types of agreement relations are affected, they narrow down Clahsen's original proposal to the claim that in DLD grammars the deficit lies in the agreement relation between subjects and verbs. Adopting Chomky's (1995) conception of features in terms of interpretability, Clahsen et al (1997) classify phi features as uninterpretable in V/T and as interpretable in DPs. [tense] in V/T is interpretable, and [case] in subject DPs assigned by T is

uninterpretable. According to Clahsen et al (1997), agreement cannot be established between the [person] and [number] phi features present in V/T and subject DPs. Subject-V/T agreement cannot be established due to a deficit in the uninterpretable phi features in V/T. That is, [person] and [number] features being uninterpretable in V/T are impaired. The result of the deficit concerning uninterpretable features is the absence of agreement markers or the combination of verbs with the wrong agreement marker. Since [tense] in T is interpretable, it is spared. [person], [number] and [gender], being interpretable on DPs, are also unaffected. Therefore, these features are correctly realized morphophonologically. As mentioned, the [case] feature in subject DPs assigned by T is uninterpretable but it is not a phi feature; it is also spared and thus DPs subjects surface marked with nominative case. Thus, there is a dissociation in the workings of formal phi features according to their interpretability status. The uninterpretable instances of phi features in V/T are impaired and as a consequence verbal agreement is not operative.

According to Clahsen et al (1997), their hypothesis is supported by the data obtained from the English and the German children with DLD that they examined. The English-speaking group performed an elicitation task to produce 3.sg present tense forms and another task to produce past tense forms. The children were scored for their percentage of correct case-marking on subjects and tense and verbal agreement. The results indicate relatively high percentages for past tense (76%) but low percentages for 3.sg present forms (49%). Clahsen et al. (1997) also report that all the sentential subjects produced by the DLD were assigned nominative case; therefore, they obtained a perfect score on nominative case marking.

Similar results were obtained from German DLD children. Tense marking was produced with an almost perfect accuracy (99%), while verbal agreement was just 64% correct. Case, gender and number marking on subject nouns and pronouns were generally accurate. Thus, the children with DLD produced many more correct forms with the past tense morpheme than correct forms comprising agreement morphemes. This difference between both types of marking is statistically significant.

According to Clahsen et al. (1997), children with DLD achieve very low correctness scores for subject-verb agreement because the features entertaining such a relation, being uninterpretable phi features on the verb, are faulty and so the relation is defective.

[tense] is interpretable, so it is spared. Nominative case is also unimpaired due to the fact that case is not a phi feature and checking is independent of verbal agreement.

However, this account presents some drawbacks. One of them concerns the use of modals in German DLD. Clahsen (1989) mentions that simple verbs, prefix verbs and modals are used by the children with DLD that he studied. Modals can be used on their own (4a) and in sentences containing an infinitive (4b), just as they are employed in typical language (Clahsen 1989: 905):

- 4) a. möchte nen arztkoffer
want a doctor's case
'I want a doctor's case'
- b. Ich will was spielen
I want what play
'I want to play something'

Modals in German inflect, just as lexical verbs. The question then is, if verbal agreements is not active in DLD grammars, why do modals not surface uninflected or why are they not omitted, just as *sein* and *haben*, when used as auxiliaries, are excluded?

Moreover, Clahsen (1989) states that the use of uninflected forms is an indication that an impairment in agreement prevents children with DLD from distinguishing finite from non-finite verbal forms. He illustrates this with the examples in (1), where the children with DLD placed his non-finite verbal forms in final position. The distinction is crucial for verb placement: In German finite verbs in main clauses are placed under C and non-finite verbs stay in their base position. However, the fact that non-finite verbs do not occupy a wrong position and stay under v is an indication of knowledge of agreement. That is, although children with DLD do not use finite forms in all main sentences, when they use an inflected form or an uninflected verb, they correctly place them in their corresponding positions. This observation is confirmed by the data obtained in Clahsen et al (1997). They found that 87% of finite forms produced by their DLD subject were placed under C and 89.5% of their non-finite verbal forms stayed under v.

The following examples are also deemed an indication of lack of knowledge of agreement (Clahsen et al 1997: 155):

- 5) a. They was.

- b. He don't know.
- c. She (sometimes) do (some plays).

However, these sentences involve agreement in auxiliaries. The use of *be* in the singular with plural subjects and of *do* in the non-singular with a singular subject have been attested in typical adult English. The use of *don't* with singular subject is used in many varieties, for instance in pop songs. Thus, it could be the case that these examples are not instances of lack of agreement, but instead forms taken from the ambient dialect to which the children with DLD are exposed (see also below).

Another drawback concerns gender. It was mentioned above that while German children with DLD do not mark gender in all adjectives and nouns within the DP, Italian children with DLD mark them correctly. Clahsen (1999) suggests that the reason why Italian children with DLD do not omit gender markers on the adjective + noun configuration could be that leaving out these markers would violate word-structure properties, namely the impossibility for lexical categories to appear as bare stems. Clahsen's (1999) suggestion implies that word-final [a/o] vowels present in nouns and adjectives do not have a morphosyntactic role in Italian DLD. It is the case that Italian native words, other than functional words, cannot end in consonants (Passino, 2005), so that lexical consonant-final stems must have a vowel attached to them:

- 6) a. [alber-o] 'tree' b. [kjet-o] 'quiet' c. [priv-o] 'lacking' d. [sil:ab-a] 'syllable'

However, according to Repetti (2012), the choice of final vowels is determined by the morphology: [a] and [o] are used to assign an inflection class to words. If no morphological factor intervenes in word endings, then final vowel is mainly [e]. The data from Italian DLD show that [a] and [o] are used just as in typical language: [a] is used in feminine words and [o] is used in masculine words. If gender marking was not involved in nouns and adjectives, it would be predicted that children with DLD should comply with the phonological word final constrain with the insertion of [e]. Since gender marking is correctly used and this adequate use is not a mere coincidence, the presence of agreement vocalic markers in this configuration is an indication that the agreement relation is established in Italian DLD.

The account also involves a theoretical drawback in the adoption of the narrow view concerning a featural deficiency. Since not all uninterpretable features are affected, and for empirical reasons, Clahsen et al. (1997) narrowed down their hypothesis to include only verbal (and adjectival) phi features. In order to separate affected uninterpretable features from spared uninterpretable ones, the researchers adopt a division based on Chomsky (1995) between optional and inherent features, each class in turn subdivided in interpretable and uninterpretable features. Only optional uninterpretable features are problematic in DLD, according to Clahsen et al. (1997). This assumption is not valid since, while the division between interpretable and uninterpretable features has theoretical status, the separation between optional and inherent features is not included in the theory. Clahsen et al. (1997) use a classification which is proposed only to account for their findings but which is not independently motivated.

7.2 Activeness of Agree

Clahsen et al. (1997) and Clahsen (1999) state that DLD involves an impairment with uninterpretable features and the consequent lack of the establishment of the agreement relation. However, their proposal is imprecise as they do not specify the exact nature of the deficit within UG. The data reported by them may lead one to propose that the cause of DLD is the inactivity of Agree. That is, Agree is absent from DLD grammars, which implies that DLD grammars are unlike typical grammars in that they would not conform to UG. Clahsen (2008) argues against this option. According to him, the inactivity of Agree would imply that the unvalued/uninterpretable features comprised in the LIs forming a derivation would not be valued and consequently would not delete. They would have to be ignored for interpretation by the semantic component. As a consequence, according to Clahsen (2008), an DLD grammar would be free to use any person and number morpheme for a given verb, which in turn leads to various types of agreement errors (cf. Borer & Rohrbacher (2002) and see chapter 5). He dismisses this possibility since it has not been corroborated. Although children with DLD do produce some verbal forms that do not match their subjects in person and number, the majority of finite forms are correctly

inflected, so that most finite verbs show accurate agreement with their subject. For Clahsen (2008) this is an indication that Agree is unlikely to be absent from the computational system. Moreover, inactivity of Agree would imply a categorical agreement deficit, that is, all verbal forms would be agreement-less, even those that show some correspondence in person and number features with their subject (cf. Gopnik (1990), see chapter 5). However, it has been observed that not all agreement features are affected. Some DLD grammars have the second person (sg and pl) forms impaired but the other forms are intact whereas others have the third plural forms affected but the other forms spared. Clahsen (2008) claims that these findings indicate that agreement is not completely absent in DLD grammars but paradigm constructions of verbal forms might be incomplete. Clahsen's (2008) dismissal of the claim that Agree is absent from DLD grammars is completely reasonable, since uninterpretable/unvalued features cannot be transferred to the semantic component. One of the central assumptions in current linguistic theory is that the semantic component does not receive unchecked uninterpretable features. Unvalued/uninterpretable features cannot be ignored by the semantic component if they are undeleted. They have to be deleted in order to satisfy the Full Interpretation principle, and deletion takes place after Agree applies. Clahsen's (2008) view concerning the Agree operation is utterly consistent with the hypothesis advanced in this dissertation, namely that Agree is present in DLD grammar, as it is provided by UG, which means that DLD grammars are guided by UG. The rest of this section gives supplemental empirical and theoretical support to this claim.

7.2.1 Agreement in TP

In contrast to Clahsen and colleagues' claim, Rice, Noll & Grimm (1997) sustain that agreement is established in children with DLD speaking German. These researchers studied the linguistic behaviour of young German-speaking children with DLD, aged from 4;0 to 4;8, with an MLU of 2.67, and a control group of 8 younger typically developing children, aged from 2;1 to 2;7, with an MLU of 2.76. The study was conducted in two different sessions. The data were collected from spontaneous speech. They mainly studied agreement in lexical verbs, the copula and auxiliary *sein* 'be'. The researchers

focused their study on the *-st* and *-t* morphemes, which unambiguously mark singular 2nd person and singular 3rd person features. The findings in Clahsen and colleagues' studies and those in Rice, Noll & Grimm (1997) are similar in terms of finiteness: The children with DLD are more likely to use non-finite forms than the typical children. However, the conclusions concerning agreement at which each group of researchers arrived are different mainly because of the ways of scoring children's percent correct use of an agreement-marker. In order to determine knowledge of agreement, Clahsen and colleagues observed the obligatory contexts for a specific agreement morpheme in verbs and measured the probability of occurrence of that morpheme in its corresponding context. Since in many contexts, the verbal form did not contain any agreement morpheme, Clahsen and colleagues concluded that DLD lack knowledge of agreement. Poeppel & Wexler (1993) deem this method inappropriate. Following Poeppel & Wexler (1993), Rice, Noll & Grimm (1997) took the opposite direction: They observed the agreement morphemes in verbs and measured the possibility of finding the appropriate kind of subject used with the agreement morpheme.

Thus, the results in Rice et al (1997) indicate that children with DLD reached high levels of agreement in each session. In session 1, *-t* correctly appears in 88% of occurrences, and in session 2 it was used in 100% of occurrences. The forms with *-st* occurred less frequently than the forms with *-t*, but the DLD group performed correctly in 71% of occurrences in session 1 and 100% in session 2. When lexical verbs carried the *-st* and *-t* markers, they appeared with agreeing subject in the right contexts, that is, respectively with 2nd and 3rd person subjects. Thus, when finite forms were present in DLD children's productions, they were used appropriately.

Concerning *sein*, Rice, Noll & Grimm (1997) report that, unlike the case of lexical verbs, children with DLD did not reach adult-like levels of accuracy in its use, (i.e., 90% correct in obligatory contexts). Children with DLD showed an accuracy of 69% at session 1 and 88% at session 2. Errors consisted in omissions. However, agreement marking is strong. According to Rice, Noll & Grimm (1997), the paradigm of *sein* was used, especially the 3rd person singular *ist* and 1st person singular *bin* forms. The percentage of correct use was 97%. When the copula and auxiliary *sein* 'be' appeared in sentences, their use was correct.

Despite the relatively high percentage of non-finite forms in DLD children's main sentences, agreement is not faulty in their grammar. When a finite verb was used, it appeared with a form corresponding with its subject. From these findings, Rice, Noll & Grimm (1997) conclude that German children with DLD have knowledge of subject-verb agreement.

Rice, Wexler & Cleave (1995), mentioned in chapter 4, also observed that, despite the frequent use of uninflected forms in main clauses, English children with DLD showed to have agreement. This is mainly viewed in the absence of misapplication of the 3rd person singular morpheme. Misapplications of this morpheme in contexts that the grammar does not authorise were not attested. Sentences with the form **They walks* are not existent in Rice, Wexler & Cleave's (1995) data. When the -s morpheme was used, it appeared in the right context, i.e., with singular 3rd person subjects. Moreover, the morpheme was employed only in present contexts, never in past contexts. Examples of the type **He walkeds* were also not attested. This observation leads them to infer that children with DLD do not make positive agreement errors and there are no other ways in which they can be wrong.

Rice, Wexler & Cleave (1995) also found that children with DLD have a proper knowledge of agreement with *be* and *do*. That is, when these forms were employed in finite contexts, children with DLD provided the correct agreeing forms. They neither used infinitival forms of these verbs in finite contexts nor did they use a finite form not agreeing with the subject. Thus, English children with DLD use the correct form matching the subject with *be*: *am* was always used with *I*, *is* was always employed with a singular 3rd person subject, *are* was produced with *you* or *they*, and they never matched the verbal form with an incorrect subject, e.g., **you is* or **they is*. The findings just reported were obtained from the elicitation data. Spontaneous productions also showed appropriate choice of forms. They produced 333 correct forms out of 342. Interestingly, they also produced correct agreement forms even with less frequent *be* forms, such as *am*. In order to eliminate the possibility that children with DLD perform correctly with *be* because they never hear the infinitival form of *be* in that context, Rice & Wexler (1995) studied the behaviour of *do*. The infinitival form of the latter is used with all persons except for the singular 3rd person form, for which *does* is used. It could then be the case that children

with DLD use the infinitival form if they lack knowledge of finiteness. The results indicate that, again, they are sensitive to marking of finiteness. That is, the form *does* was correctly used in appropriate contexts. Children with DLD produced in elicitation tasks two questions with the form *Do he want a blanket* but they never produced ungrammatical forms like **does you* or **does they*. In spontaneous data Rice & Wexler (1996) report that a number of non-standard singular 3rd person uses occurred, e.g., *he don't*, *it don't*. However, these forms were not deemed incorrect because they are acceptable dialectal variants for many speakers in the region of the children with DLD studied by them. They cannot be deemed agreement errors. DLD English resembles typical developing language and so tend to be similar to the target language: No non-finite of *be* and *do* appear in contexts of finiteness and no verbal forms are used with incorrect subjects. This is an indication that agreement is established.

French DLD present a similar picture. Paradis & Crago (2001), mentioned in chapter 4, analyzed the use of *être* 'be' and *avoir* 'have', by way of a comparison with Rice, Wexler & Cleave's (1995) study. The examination of these forms is a reliable indicator of the accuracy of subject-verb agreement in Quebec French DLD, according to Paradis & Crago (2001). The calculation of the percentage of correct use of 1st person singular verbal forms in obligatory contexts for *avoir* and *être* and the percentage of correct matches between subject clitics and lexical subjects in subject-doubled constructions (sentences where a lexical subject occurs with a subject clitic) resulted in a very high accuracy: 97.9 % for the former and of 98.8 % for the latter. Paradis & Crago (2001) conclude that, as English DLD children, Quebec French children with DLD have knowledge of subject-verb agreement.

Number agreement in French verbs appears to be less accurate but also points to manifestation of knowledge of agreement (Prévost 2009). Franck et al. (2004) observed that number agreement can be problematic in French DLD. They tested 8 children with DLD (aged 5;4-9;4) and 4 control groups of children with varying mean ages (5, 6, 7 and 8;5 years old). The task consisted in completing a sentence containing a singular or a plural subject using the verb *faire* 'do', which has a 3rd person singular form different from the 3rd person plural form. The sentential subjects were linearly separated from the verb by a modifier (a phrase included in the subject DP) or an adjunct (a phrase structurally

outside the subject DP). The post-subject material contained a noun either matching (6a,d and 7a,d) or not matching (6b,c and 7b,c) the subject DP head in number (S = singular; P = plural):

6) Postmodifier condition

- a. SS La gagnante du dernier championnat...
The winner of the last championship
- b. SP La gagnante des derniers championnats...
The winner of the last championships
- c. PS Les habitants du petit village...
The inhabitants of the small village
- d. PP Les habitants des petits villages...
The inhabitants of the small villages

7) Adjunct condition

- a. SS La grand-mère, en parlant à la fille,...
The grandmother, while talking to the girl
- b. SP La grand-mère, en parlant aux filles,...
The grandmother, while talking to the girls
- c. PS Les garçons, en suivant le moniteur,...
The boys, while following the instructor
- d. PP Les garçons, en suivant les moniteurs,...
The boys, while following the instructors

Franck et al. (2004) report some errors with plural marking. The children with DLD exhibited an error rate of 36.3%, whereas the TD children's error rate was 23.3%. The difference is significant. The errors mainly consisted in the use of singular verbal forms instead of plural verbal forms, that is, some plural subjects occurred with singular verbal forms. The pattern of errors is non-random and unidirectional: When plural verbs were used, they were used correctly, i.e., only with plural nouns, never with singular nouns. Moreover, the structural status of the phrase separating the subject from the verb had no

effect in the results. This crucially indicates that, although plural marking seems variable, when plural forms are provided, they are produced correctly and conversely, singular subjects never occurred with plural verbs. Prévost (2009) concluded from these findings that children with DLD have knowledge of agreement.

Roulet-Amiot's (2008) results, mentioned in chapter 4, from the testing of agreement in French DLD corroborate the findings reported by Franck et al. (2004). All the errors occurred with a plural subject, verbal plural forms being substituted by singular forms. Importantly, her study of perception reveals DLD children's knowledge of syntax in a more accurate manner. The perception task consisted in the measurement of reaction times after hearing sentences containing subject and verb matching in agreement or subject and verb mismatching in agreement. Reaction time was longer in the number mismatching condition than in the matching condition. That is, children with DLD took longer to process the discrepant sentences than the congruous sentences. As Prévost (2009) states, the results from the Roulet-Amiot's (2008) study suggest that DLD are sensitive to number agreement. This sensitivity in turn indicates that French children with DLD have agreement, which in turn shows that Agree is available in these children's grammar.

Spanish children with DLD also provide evidence about knowledge of agreement. Bedore & Leonard (2001), mentioned in chapter 4, analysed a set of data which included past and present forms, third singulars and plurals and first singular and plural person forms. Bedore & Leonard (2001) found that out of 9 forms only 3 were problematic: the present 3rd person plural, the past 3rd person singular and the past 3rd person plural. The performance of the TD-A group with these forms was significantly better than the that of the TD-MLU group and the DLD group. The analysis of the scores of the DLD group and the MLU group revealed no significant difference. No other verb inflections revealed a significant difference. Despite this difference in the results, the mean score obtained from the performance of Spanish children with DLD in this study is still very high: 81%. That is, most of the verbal forms, including infinitives, given by Spanish children with DLD are correct. Moreover, contrary to the findings in English DLD, which show that children often omit 3rd person singular –s, Bedore & Leonard (2001) found that Spanish children with DLD use even the most difficult inflections at least 65% in their obligatory contexts.

Spanish children with DLD also seem to show knowledge of agreement.

7.2.2 Agreement in DP

Leonard (1995) (mentioned in chapter 5) found that number agreement in the DP was available in English DLD. The determiners *that* and *this* were employed by all his subjects. The determiners *these* and *those* were respectively used by 6 TD children and 4 children with DLD and by 7 TD children and 3 children with DLD. Both groups showed correct number agreement between these determiners and the noun contained within the DP in the great majority of the produced items (mean of 98%). That is to say, *this* and *that* mainly appeared with singular nouns and *these* and *those* mainly occurred with plural nouns.

Jakubowicz & Roulet (2010) found that nominal agreement in French DLD was also correct. They carried out a comprehension study involving gender in French. They found that French children with DLD are as sensitive as TD children to gender agreement. The participants were a group of 18 children with DLD whose age ranged from 6:11 to 11:3 and a group of 18 TD children whose age ranged from 6;5 to 6;7. Jakubowicz & Roulet (2010) ran a perception experiment consisting of a semantic categorization task. The child heard a DP headed by the definite feminine determiner *la* or the definite masculine determiner *le* and had to decide whether the object described by the DP belonged to the semantic category, for instance, food or animals. Two conditions were considered: an agreeing condition (8) and a non-agreeing condition (9):

- 8) a. *la* *banane*
 the-fem banana-fem
 b. *le* *bonbon*
 the-masc candy-masc
- 9) a. **le* *banane*
 the-masc banana-fem
 b. **la* *bonbon*
 the-fem candy-masc

In the first condition (8a,b), the determiner and the noun agree, whereas in the second condition (9a,b) the determiner disagrees with the noun. Jakubowicz & Roulet (2010) analysed the results obtained from the children's decision times and their accuracy in the classification of objects. For the first measure, the results indicate that decision latencies were faster for the agreeing condition than for the disagreeing condition. This difference in decision time was significant. The faster decision time for the agreeing condition was observed in both groups. But the children with DLD were, in general, faster than the TD children. Moreover, there was no significant gender effect; that is to say, it is not the case that the effect was more important for one gender than the other. In fact, Jakubowicz & Roulet (2010) found that a significant effect for agreement. More precisely, both the use of a feminine determiner with a masculine noun and the use of a masculine determiner with a feminine noun led to an agreement effect. For the second measure, few classification errors were detected and remarkably their distribution was not arbitrary. According to Jakubowicz & Roulet (2010), the mean number of errors was higher in the disagreement condition than in the agreeing condition for both groups. Furthermore, the mean number of errors made by each group in each condition was nearly the same. From these findings, Jakubowicz & Roulet (2010) conclude that if children with DLD had difficulties with the operation Agree, then they would perform differently from TD children. That is, it would be expected that the agreement effect would be observed only in the TD group: The effect arises because Agree is active in both DLD and typical children and therefore they can detect agreement violations. If Agree was not active in DLD grammars, then children with DLD would be insensitive to agreement violations and the agreement effect would not arise in them. The agreement effect is an inhibitory effect on categorization decisions, that is, feature mismatching causes a delay and inaccuracies in the classification task; hence the difference in the response times and the number of errors in categorization. Jakubowicz & Roulet (2010) state that this difference would not be observed if Agree were not operative. Quite the opposite, their results indicate that processing agreement is effective and undoubtedly unavoidable. In fact, this operation is active independently of semantic categorisation, i.e., agreement is computed even though it is not necessary for this task.

In another experiment on French gender agreement, Roulet & Jakubowicz (2006), similar results were found. The difference between this new experiment and the previous one consisted mainly in the form of the stimulus. In this new experiment, the heard DP contained not only a determiner and a noun but also an adjective, placed pre- or post-nominally, both positions being possible in French, (although the post-nominal position is much more common) (Roulet & Jakubowicz, 2006:337):

- 10) a. Une table ronde
a-fem *table round-fem*
A round table
- b. Un grand chapeau
a-masc *big-masc hat*
A big hat

The study aimed to determine whether or not such a DP would prevent sensitivity to agreement violations in perception, given the fact that these DPs are more complex. The recruited groups of subjects were an DLD group (14 children aged 6;10 to 12;6 years (9;5 SD = 1;7), a TD group of 14 children 6-year-olds aged 6;4 to 6;11 years (6;7 SD = 0;2), and a group of adults (7 female undergraduate students aged 20;9 to 29;2).⁷⁴ The material comprised DPs where both the determiner and the adjective agrees with the noun (agreeing condition, see 11a) and DPs where either only the determiner or only the adjective agrees with the noun (disagreeing condition, see 11b,c) (Roulet & Jakubowicz, 2006:341):

- 11) a. Une grande cuillère
a-fem *big-fem spoon*
'A big spoon'
- b. *Un grande cuillère
a-masc *large-fem spoon*
- c. Une *grand cuillère
a-fem *large-masc spoon*

⁷⁴ A younger group of TD children was also recruited but was excluded from the perception data analysis.

The experiment measured response times and semantic categorization. The results of the response time indicate that the children with DLD performed slower than the adult group but faster than TD group. This effect of group was significant. As in the previous study, the grammaticality of the stimuli clearly influenced response times. They were shorter in the agreement condition than in the disagreeing one. A significant interaction between condition and disagreeing element was observed. All the groups showed slower decision latencies in the disagreeing condition than in the agreeing condition when the disagreeing element was the determiner. The adult group and the TD were slower than the DLD group in the disagreeing condition when the disagreeing element was the adjective. As for categorization, the analysis also revealed a group effect: The DLD group produced significantly more errors than the other groups. A significant condition effect was also found, the grammaticality of the DPs exerting an influence again. More errors were produced by the 3 groups in the disagreeing condition than in the agreeing condition. Roulet & Jakubowicz (2006) conclude that despite the higher number of grammatical elements compared to the previous study, children with DLD perception of disagreement in gender was adequate, which implies that they were still sensitive to agreement violations. The fact that the disagreement effect showed up in the DLD group as in the control groups as well indicates that children with DLD do not have a deficit of the operation Agree since they are able to use this operation to detect gender violations. DLD children's linguistic difficulties then do not lie in a deficit in UG, in this case a damage in the properties and/or modes of functioning of the syntactic component.

In conclusion, despite the fact that DLD children, as typical children, do not fully instantiate verbal or nominal agreement paradigms, they do have knowledge of agreement, **which means that Agree is operative**. As mentioned in chapter 5, lack of use of some morpheme does not mean lack of knowledge. According to Guasti (2016), lack of agreement could be revealed by a substantial number of agreement errors or non-adherence to the structural conditions necessary for the application of Agree (see chapter 2). However, as the data have shown, when agreement morphemes appear in the representation, agreement in DLD grammars is consistently accurate. This is an indication that the structural conditions for Agree are met, which implies that the operation can apply. This is shown in the next section.

7.2.3 Theoretical Considerations

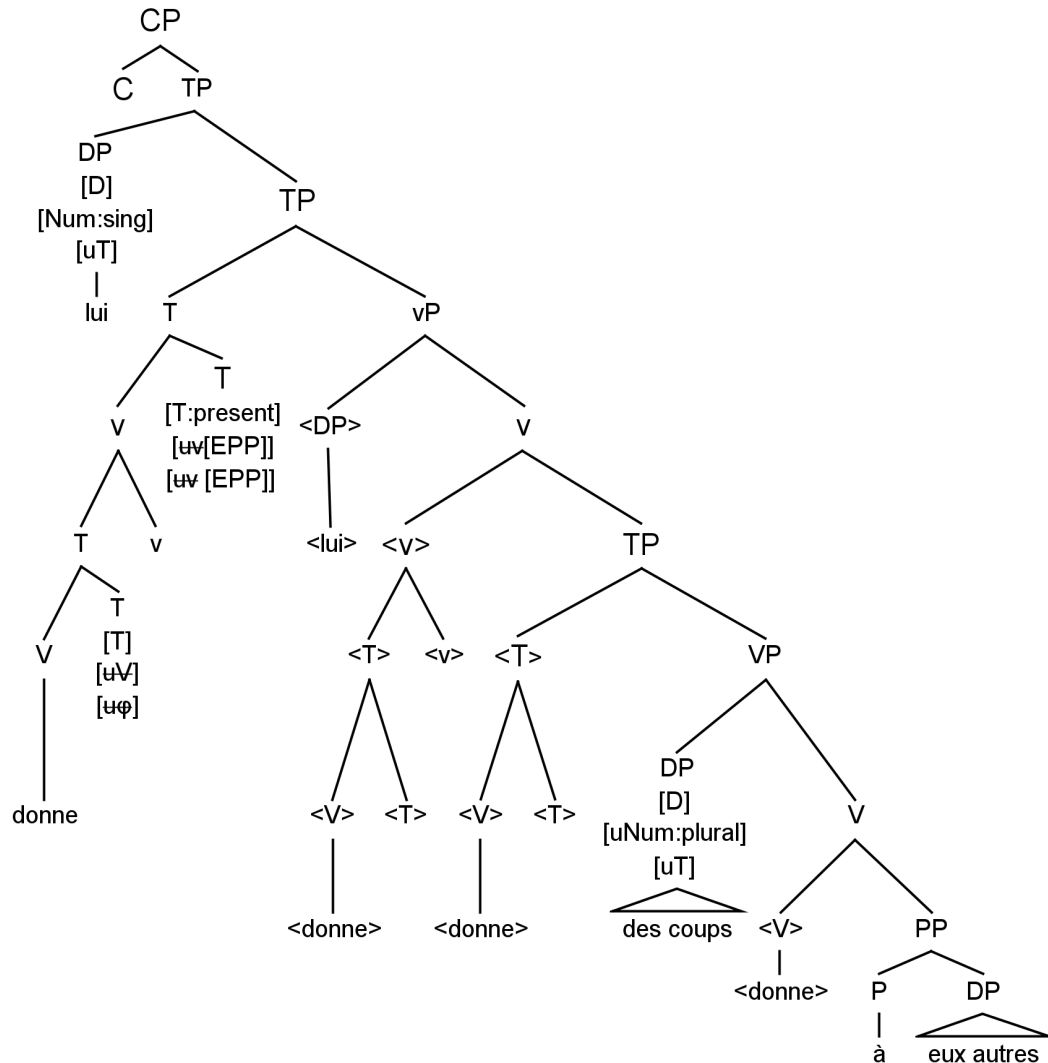
It has been mentioned in chapter 2 that agreement is a relation that holds between LIs sharing some feature; one LI has the unvalued/uninterpretable version of the feature, and the other LI has the interpretable counterpart. Agreement is established through the Agree operation, which consists of the scanning by a probe of its c-command domain for a goal. The c-command relation was defined in terms of hierarchical structure. And hierarchical structure is a characteristic of the computational system. Thus, a sentence such as that shown in (12), produced by a French DLD speaker, can be said to have been constructed according to the workings of this syntactic system (example from Paradis & Crago, 2001: 284):

French

- 12) a. Lui il⁷⁵ donne des coups à eux-autres
 him he(clit-3p.sg.masc) give some blows to them
 ‘He’s hitting them.’

⁷⁵ According to Paradis & Crago (2001) and references therein, (at least Québécois) French subject weak pronouns are inflectional markers of person and number. Within this view strong pronouns would occupy Spec-TP and therefore should be marked with nominative case.

b.



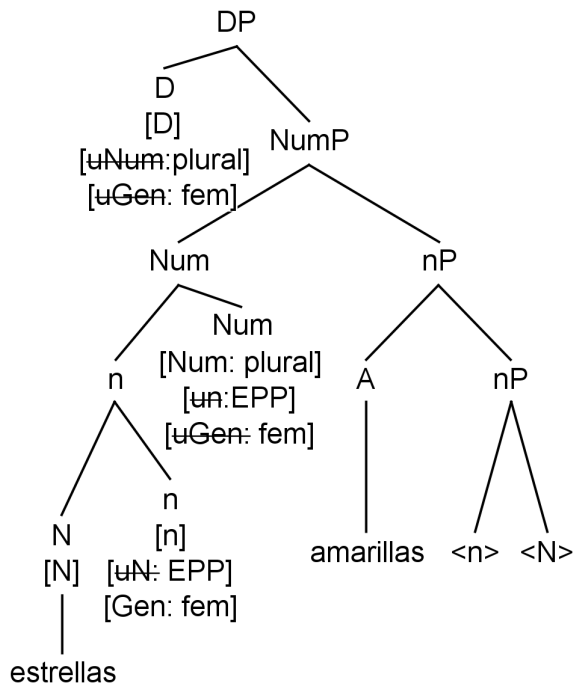
After the merger of the preposition and the DP, the formed PP merges with the verb. Then the second DP merges with V. Lower T enters the derivation and Agree applies: T, being a probe, peruses its c-command domain; it finds its goal in the object DP. T's ϕ features are valued at the same time that uninterpretable [T] in DP is valued. This agreement relation allows the object DP to surface with accusative case. Subsequently v merges with lower T and then with the third DP. Higher T then enters the derivation and Agrees operates again: T probes its complement and finds a goal in the subject DP. The same procedure described above applies, but this time between higher T and the Subject DP.

Once more the agreement relation between these two elements allows the subject DP to surface with nominative case.

Another example of a structure constructed according to the workings of the computational system in terms of agreement is the following (Bedore & Leonard, 2001: 924):

- 13) a. ...*(aquí hay)* *estrell-a-s* *amarill-a-s*
 here there-be-3p-sg *star-fem-pl* *yellow-fem-pl*
 ‘...(here are) yellow stars.’

b.



Spanish DPs are similar in structure to the ones in French. The uninterpretable Gen feature in A, Num and D probes for a goal containing its valued/interpretable counterpart. They find it in *n* and their Gen feature is valued against the interpretable Gen feature in this head. Likewise, the uninterpretable Num feature in D probes for a goal and finds it in Num. Thus, [unNum] in D gets valued by [Num] in Num.

7.3 Conclusion

It is clear that children with DLD encounter difficulties with agreement morphology. The main reflex of this difficulty is the variable absence of LIs involved in agreement. According to Clahsen and colleagues, this lack of agreement morphemes involves a deficit in the establishment of the agreement relation, which could mean a serious problem in the computational system, namely the inactivity of the Agree operation. The additional data reported in this chapter show that agreement relations are in fact established. This is mainly revealed by the fact that, when the agreement morphemes are present, they mostly appear in the right syntactic contexts. Moreover, although verbal agreement morphology can be faulty in German and English, in other languages, such as Spanish, it seems to be spared. Most studies concerning agreement obtained their generalizations from production tasks. However, it was considered by Roulet-Amiot and Jakubowicz that evidence beyond production was necessary in order to determine if agreement was actually affected. Indeed, comprehension studies on DPs in French show that children with DLD are sensitive to agreement. This is an indication that a lack of agreement morphology in production does not mean absence of knowledge of this relation. In fact, the data provided by children with DLD seem to point to the correct application of agreement, as shown in the representations above in which the probes find their goals and their uninterpretable features are valued. The conclusion from these findings is that agreement is established, the operation Agree is then available in DLD grammars. Since Agree is one of the core operations provided by UG, it can be claimed that DLD grammars are consistent with the content of UG.

8 NON-TARGET BUT UG-COMPLIANT GRAMMARS

In the previous chapters we posed that DLD grammars have the same linguistic traits as typical grammars. DLD grammars contain formal features and display the functioning of the Merge and the Agree operations, i.e., they are UG-compliant. Nonetheless, children with DLD's linguistic behavior revealed significant differences from their typical peers matched in age and in many cases from their language controls. That is, many, if not most, of their utterances are not language-target, i.e., they are not acceptable forms in the language spoken by the DLD child. This chapter shows that, despite these quantitative differences, these DLD non-target forms also reflect a normal grammar at the syntactic (qualitative) level. Most examples are taken from the previous chapters, especially chapter 3. As we saw in chapter 4, in some cases, some forms produced by children with DLD are not target in the language to which they are exposed, but these same forms resemble target forms of other languages. This observation is similar to the one made by Crain and colleagues for typical children. The crucial point is that even though the forms analysed in this chapter are non-target, they are in accordance with UG.

8.1 Absence of Complementizers

Subordinate clauses usually introduced by a complementizer in typical language have been observed to contain either no overt complementizer (1a,b) or a dummy one in DLD grammars (2a,b):⁷⁶

1) a. DLD response (German)

Gehört hab-i Ø der Zwackelmann gut zaubern kann.
heard have-I comp the Zwackelmann well witch can
'I have heard that the Zwackelmann can witch well.'

⁷⁶ (1a) from Hamann, Penner & Lindner 1998:211; (1b) from Prévost (2009:382); (2a) from Håkansson & Hansson (2000:327); (2b) from Cantemori & Garrafa (2010:1948).

Target

Ich habe gehört, dass der Zwackelmann gut zaubern kan
I have heard that the Zwackelmann well witch can

b. DLD Response

(French)

Je pense Ø on va faire des jeux.
I think comp we will do some games
'I think we're going to play games.'

Target

Je pense (qu') on va faire des jeux.
I think (that) we will do some games

2) a. DLD response

(Swedish)

Jag känner en flicka [m] inte äter äppel
I know a girl [m] not eats apple
'I know a girl who doesn't eat apple'

Target

Jag känner en flicka some inte äter äppel
I know a girl that not eats apple

b. DLD response

(Italian)

Il bambino [e] lava il pinguino
the child [e] washes the penguin
'The child that is washing the penguin'

Target

Il bambino che lava il pinguino
the child that washes the penguin

Concerning (1a,b), the overt complementizer is obligatory in typical German and can be optional in typical colloquial French (under certain conditions (see Hamann et al. 2007)). The question is whether or not these DLD sentences contain a C in the subordinate clause. The claim in this dissertation is that they do. This means that the main verbs

gehört 'heard' and *pense* 'think' do not directly merge with a TP but with a functional projection above TP. As for the nature of this projection Hamann, Penner & Lindner (1998) analysed German DLD complementizerless subordinate clauses as a projection from some LI functioning as a complementizer but this LI is feature-deficient: It has no categorial feature (see chapter 5). The head of these clauses then is a LI lacking the [C] feature. This featural deficiency results in a grammar that freely omits complementizers, according to Hamann, Penner & Lindner (1998). However, the analysis is deemed inadequate since a syntactic category is needed for the subordinate clause to be able to be selected by the main verb. That is, verbs as *hear* and *think* selects for a CP. If these verbs do not merge with a CP, then their uninterpretable [C] feature will remain unvalued, and the derivation should crash since Full Interpretation will be violated. Moreover, as argued for in several studies (e.g., Montrul 2004), the fact that some category is not overt does not mean lack of knowledge of it, that is, absence of an overt LI realizing a complementizer does not imply that the category C is absent from the representation or that a feature-deficient LI fills the head position of the subordinate clause. Thus, the subordinate clauses in (1a,b) can be analyzed as CPs, whose head C is occupied by a null complementizer. Subordinate clauses in (1a,b) are analogous to subordinate clauses with no overt complementizer in typical adult English:

3) I have heard the Zwackelmann can witch well.

This sentence is standardly analysed as containing a subordinate clause with a null C. Sentences (1a,b) can receive a similar analysis.

The examples in (2a,b) can be analysed as containing a filler or a placeholder. Based on Bottari, Cipriani & Chilosi (1993/1994) and Liéo (1998), this filler can be considered the realization of a complementizer. As such, it fulfills a syntactic function with specific grammatical properties not different from properties exhibited by C in typical grammars. Its occurrence is not random; in fact, it appears before a TP, a position that is usually occupied by a complementizer in subordinate clauses. This placeholder then marks the syntactic position filled by a C. The phonological realization of the placeholder and that of the complementizer are linked and this link is not a coincidence. The

consonant *m* in (2a) and the vowel *e* in (2b) are part of the complementizers used in the target language. These fillers have the shape of the complementizers *some* and *che*.

The conclusion is that, despite their imperfect realisation, the sentences in (1) and (2), are introduced by a C and so have their projection completely deployed up to CP.

8.2 Absence of Verbal Inflexion

The realization of verbal morphemes in DLD has been observed to be variable in that they appear in some sentences but they are omitted or substituted in others, depending on the language.⁷⁷ This is a common situation observed with the same verb and within the same children's production (Jakubowicz 2003). This results in inconstant marking of tense and agreement in obligatory finite contexts:⁷⁸

- 4) a. Long time ago, I go camp and hiking at the same time.
 b. He making a mess.
 c. I got on my shirt and have trouble doing my back.
 d. He like Danny talking like that.

e. <u>DLD response</u>	<u>Target</u>	(French)
Il sorti le bain	Il est sorti du bain	
<i>he got the bath</i>	<i>he is got out of the bath</i>	
'He got out of the bath'		

f. <u>DLD Response</u>	<u>Target</u>
Les filles [bwa] une bouteille de sirop	Les filles [bwav] une bouteille de sirop
<i>the girls drink-3sg one bottle of syrup</i>	<i>the girls drink-3pl one bottle of syrup</i>
'The girls are drinking a syrup bottle'	

In (4a) the verb is not marked for tense; (4b,c,e) involve lack of auxiliaries; in (4d) the verb is not marked for agreement and in (4f) the singular form replaces the plural form. The question here is: Is there an inflectional node in the representation of these sentences? The answer is yes.

⁷⁷ An account compatible with the hypothesis developed in this dissertation is Lin (2006), according to which non-target verbal forms can be spell-out errors.

⁷⁸ (4a-d) from Radford & Ramos 2001; (4e), from Jakubowicz 2003:52; (4f) from Roulet 2008:147.

The data in (4) contain non-finite forms, i.e., forms lacking tense and/or agreement marking. Wexler (1994) claims that English verbs that carry the relevant marking are finite whereas those devoid of it are non-finite. The child's grammar, whether typical or DLD, allows both finite forms and non-finite forms of the verb in contexts where the adult grammar requires only finite forms. Moreover, he claims that the bare non-finite form in English is the infinitive form, based on the observation that in some languages (e.g., German, Dutch) equivalent sentences can contain an infinitive (considered an inflected form since it is marked with a specific morpheme). Since verbs can appear in the infinitival form in root sentences, this phenomenon has been labelled Root Infinitive (RI) (Wexler 1994). Wexler (1998) claims that sentences even with non-finite verbal forms produced in child language, i.e., RIs, contain an inflexion node. He justified his claim by invoking case assignment and word order. Adopting standard assumptions about case assignment, he stated that subjects are assigned nominative case by this inflectional node. That is, although tense is not overtly realized in a sentence like (4), the subject surfaced with nominative case, which was assigned by the inflectional node (from Wexler 1998:42):

5) She paint pictures.

Thus, the inflectional node must be present in the representation.

Moreover, RIs containing negation, according to him, have the configuration in (6a) (adapted from Wexler 1998:48). Examples are presented in (6b,c) (Thornton et al. 2016:8):

- 6) a. DP [NEG [~~vP~~ DP v/V[-finite] [VP [V[-finite]- . . .]]]
 b. He no bite you.
 c. I not want apple.

NEG is merged above vP and the subject is merged in the specifier of vP. The subject surfaces at the left of NEG, which means that it raised to some position merged above NEG. In adult syntax, this position is the specifier of some INFL node. Wexler (1998) asserted that in child language the subject is in the same position as in adult language.

The sentence in (4d) has a form similar to the one in (5) and negated sentences produced by children with DLD have a form similar to the one in (5) (see 8.4.1 in this chapter). It can be concluded then that sentences in (4) also have an inflectional node.

Interestingly, it is not the case, however, that an obligatory finite form in adult language is always replaced by an infinitive in child language. Paradis & Crago (2001) claim that in many child languages sentences are equivalent to RIs, but the substituting form can be a minimally inflected finite verb form: It is a form considered finite both morphologically and distributionally in the target language and is often morphophonologically closest to the verb root in the non-past paradigm. They proposed to call sentences containing these replacing forms *root defaults* (RD) instead of RI.

Greek has no true infinitive form: All verb forms are minimally marked for person, and all non-present-tense forms are also marked for both tense and aspect. The present-tense paradigm is the least inflected as it contains just person suffixes and no overt tense and aspectual marking. Greek also has two non-finite forms: the perfective and imperfective participles (Clahsen & Dalalakis, 1999; Varlokosta et al., 1998). The third-person present-tense form and imperfective participle are homophonous and consist of the verb stem + *i*. This non-finite form and a minimally inflected finite form are not distinguishable. This form is precisely the one which tends to replace finite forms across tense and person contexts in Greek-speaking TD and DLD children's production (Varlokosta et al. 1998; Clahsen & Dalalakis, 1999).

Kim & Phillips (1998) and Lakshmanan & Ito (1999) suggested that Korean and Japanese TD children produce RD through the overuse of the basic non-past verb form ([verb+0+e (default mood marker)] in Korean and [verb+*ru*] in Japanese) in several temporal contexts. Paradis & Crago (2001) state that since the non-past verb form in Japanese can appear as the only verb in a root clause in the adult language, the form used by children can also be considered finite.

Arabic children with DLD behave in a way similar to their Greek peers. Arabic has neither infinitives nor participles. The root is composed only of consonants and it is never a surface form. The various verbal forms are composed by the root and infixes, prefixes and suffixes that mark tense, aspect, gender, number and person. Abdalla (2000) found that whereas TD children were very accurate in the production of verbal inflection, DLD

used the masculine imperative (e.g., *u-ktub* 'write'; root = *k-t-b*) and first-person singular present-tense (e.g., *ʔa-ktub* 'we write') forms repeatedly and erroneously across person and tense contexts. These two forms involve the smallest number of morpheme additions to the root and thus can be considered closest to the root morphophonologically. According to him, these finite verb forms might be the Arabic equivalent of RDs.

Even in languages that have inflected infinitives, children use minimally inflected finite forms. Norwegian TD and DLD usually substitute the present form (verb stem+er)⁷⁹ for the past form in past contexts, although the infinitive is sometimes used in elicitation tasks (Meyer Bjerkan, 1999). TD and children with DLD speaking German were found to use both the infinitive and the finite verb stem as erroneous verbal forms (Roberts & Leonard, 1997; Clahsen et al., 1997). Dutch DLD use both the infinitive and the present tense (verb stem) as errors in past context (de Jong, 1999; Wexler, Schaeffer & Bol 2004).

Paradis & Crago (2001) suggest that even child English can make use of RDs. It is well known that the verb stem in English functions as the infinitive, but it also functions as a finite form in present-time contexts for non-3rd singular person forms (e.g., *they work every day; I want a cake*). Paradis & Crago (2001) state that verbal forms without the *-ed* morpheme in past-time contexts could be considered a finite form as well. Verbal finite forms are assumed to be placed under the inflectional node, so again this node must be present in the representation.

Since finite and non-finite forms are substituted repeatedly for correctly inflected forms across verbal inflectional contexts, subjects surface with nominative case, even though tense is not realised, and sentences containing negation can have forms analysed as in (5) in DLD, following Wexler (1998), the root sentences in (3) are analysed as containing an inflectional node.

As for the content of this node, Wexler (1998) assumes that the inflectional domain is divided in two projections, AGRs and T. They are optionally present in typical child and DLD grammars so that either category can project a phrasal constituent. However, the syntactic realization of agreement as a categorial projection has been discarded. Chomsky (1995) argues that agreement is a relation and does not contribute to meaning. According to him, only categories that are semantically relevant for the CI component

⁷⁹ Norwegian verbs are not marked for person and number agreement.

have a phrasal projection. In that sense agreement is not a categorial feature. In contrast, tense contributes to the semantic interpretation of sentence. It is a categorial feature and as such it is linguistically essential. It defines a syntactic category, it is relevant for External Merge (see Di Sciullo & Isac 2008), it has to be present for c-selection, and it is necessary for the anchoring of the event in the timeline. Despite the absence of tense markers in them, DLD sentences contain an inflectional node and this is T. This view is in line with Borer & Rohrbacher's (2002) for typical child grammars.

Note that typical adult grammars also exhibit sentences without temporal markers (Borer & Rohrbacher, 2002: 152):

- 7) a. Pyè vann bèf. (Haitian Creole)
P. sell beef
 'Pyè sells cattle.'
- b. Pyè vann bèf yo
P. sell beef Det
 'Pyè sold the cattle.'
- c. Sisi renmen chat.
S. like cat
 'Sisi likes cats.'
- 8) a. Jingqi chi pingguo. (Mandarin)
J. eat apple
 'Jingqi eats apples.'
- b. Jingqi chi *(le) nei ge pingguo.
J. eat asp dem cl apple
 'Jingqi ate that apple.'
- c. Jingqi xihuan mianbao.
J. like bread
 'Jingqi likes bread.'

These sentences do not have an overt tense marker, that is, the verb is not inflected, and no overt auxiliary instantiates T. Nevertheless, Dechaine (1993) (cited by Borer & Rohrbacher, 2002) pointed out that they are temporally interpretable. The sentences containing a bare plural object are interpreted as generic (7a; 8a); the ones with a definite direct object (marked through the aspectual marker *le* in Mandarin) and a telic VP are

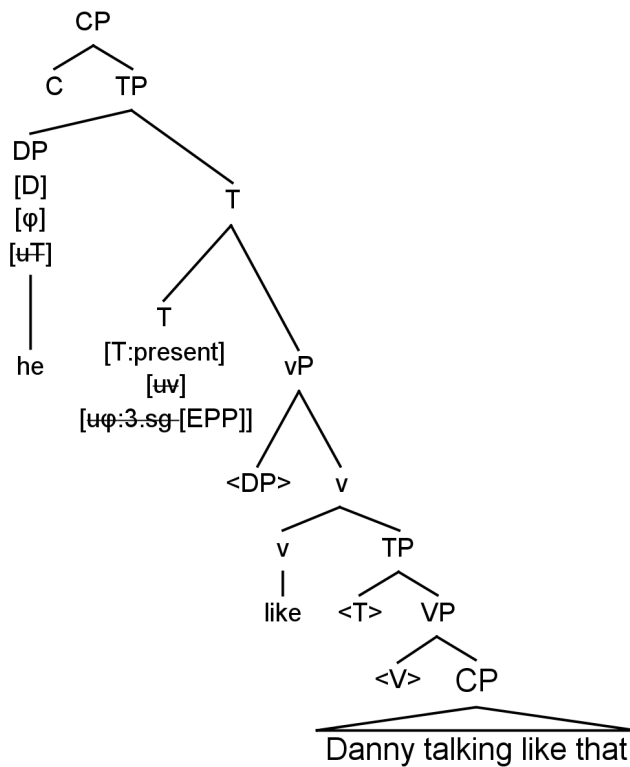
interpreted as past (7b; 8b), and the sentences containing a stative verb are interpreted as present tense (7c; 8c). Lin (2015) extensively argues that Mandarin has a T projection⁸⁰ without phonological realization that is interpreted as a pronoun whose reference is a “time salient in the context, which then serves as the reference time that is used to determine the temporal interpretation of the sentence.” (Lin 2015: 336). Thus, it seems that T is present despite its null phonological realization and the sentences in (7) and (8) are finite.

The non-target forms concerning tense and agreement marking in DLD can receive a similar treatment as the one for complementizers. Since it is proposed that in typical adult language with no overt tense, such as Mandarin and Haitian Creole, T is present but is null, thus it receives no pronunciation at PF, the sentences with no overt tense and agreement marking produced by children with DLD can be analysed analogously. This is the route taken by Radford & Ramos (2001) for English DLD. As stated above, the sentence in (4d) contains a nominative pronoun. Since case assignment is the result of the valuation of an uninterpretable tense feature in D by T, the latter has to be present in the derivation. Radford & Ramos (2001) propose that lack of the -s marker in (4d) can be due to a lexical gap. They justify this position with the fact that the DLD subject that they examined seems to have not acquired the relevant morpheme, since he has not produced a single -s inflected form and his verb systematically surfaces with a bare form in present contexts containing 3rdsg subjects. Accordingly, they suggest the following (simplified) structure for the sentence in (4d):⁸¹

⁸⁰ Several and sometime opposing analyses were proposed for the finiteness system in Mandarin. See Grano (2016) and references therein.

⁸¹ V-to-T-to-v movement is not indicated.

9)



The derivation is complete in that it has all the necessary projections with all the necessary features and all the uninterpretable features are valued. The only difference between an DLD grammar and its typical counterpart is the spell-out of the present 3rdsg morpheme: Whereas in typical grammars it is realized as -s, in DLD grammars it can be realized as \emptyset , i.e., it receives no pronunciation.

The sentence in (4f) is an example of lack of knowledge of a verbal paradigm. Most verbs in oral French have only two forms in the present tense (root + \emptyset for 1st singular and plural, 2nd singular, 3rd singular and plural and root + ez for 2nd plural). It is possible that the DLD child does not know that some verbs have three forms, one for singular and plural 1st, 2nd and 3rd singular, one for 2nd plural and one for 3rd plural. He might apply the same type of paradigm for most verbal forms.

Auxiliary-drop can also be accounted for in terms of null realization (cf. 4b,c,e). That is, the tense and phi uninterpretable features are present in the derivation but the

auxiliaries receive no pronunciation at PF. Radford & Ramos (2001) mention that a null realization of auxiliaries is plausible in English DLD since it is analogous to the standard analysis for the equivalent sentences in typical African American English (Radford & Ramos 2001:19):

10) He makin' a mess.

For their DLD subject, they suggest that auxiliary omission is phonologically conditioned. Typical English exhibits this situation, for instance in questions (Radford & Ramos 2001:20):

11) a. What (are) you doing?
b. Where (have) you been?

The auxiliaries in (11) are prosodically in a weak position. This weakening allows vowel reduction to schwa, which can optionally lead to total deletion. Interestingly, this auxiliary-drop seems to reflect a more general schwa deletion (Johnson p.c. cited by Radford & Ramos 2001): The schwa in *there* in cases like *there are* or the final vowel in *gonna* in cases like *I'm gonna go home* can be deleted to [ðrə] and [gɒn]. Such cases are said to be phonologically conditioned. Accordingly, it is possible that auxiliaries having a reduced variant comprising a fricative are completely deleted before a consonant-initial LI. This null realization can be viewed as a solution to the difficulties that children have with the articulation of consonant clusters (Templin 1957, cited by Radford & Ramos 2001). Thus, it is possible, according to Radford & Ramos (2001), that these auxiliary drops in English DLD fall within this general phenomenon.

The French sentence in (4e) can also be analyzed as a case of a null auxiliary. The sentence was uttered in a past context and contains a past participle. The past participle is the verbal LI used in compound past in French. Paradis & Crago (2001) observed that sentences with no auxiliaries and past part participles produced by their French DLD subjects were restricted to past contexts. This is an indication that T is present and it has the feature [+past] so that it has the right interpretation at the corresponding context. The children with DLD studied by Paradis & Crago (2001) also

produced sentences containing infinitives mostly restricted to future contexts. Infinitives in adult language are used with the auxiliary *aller* 'go' in the analytic future. This type of sentences can contain a null T with the [+fut] feature so that again it has the right interpretation at the corresponding context.

Finally, sentences containing a bare verb in past contexts are analyzed by Radford & Ramos (2001) as sentences with a functional inflectional category, but it is not T. In line with Wexler, Schütze & Rice (1998), they propose that a sentence like (10a) contains INFL with phi uninterpretable features but is underspecified for tense features. That is why it is tenseless in the sense that it contains no morphological marking of tense. They also propose that case feature in D is valued not by interpretable T but an interpretable mood feature. The tenseless sentences acquire their temporal interpretation through discursive or linguistic context (Radford & Ramos 2001:23):

- 12) a. No, took it off of...then he eat it
b. Long time ago, I go camp and hiking at the same time
c. He shoveled him truck, and then he dump it
d. Because he want to put it (Reply to 'Why did he do that?')

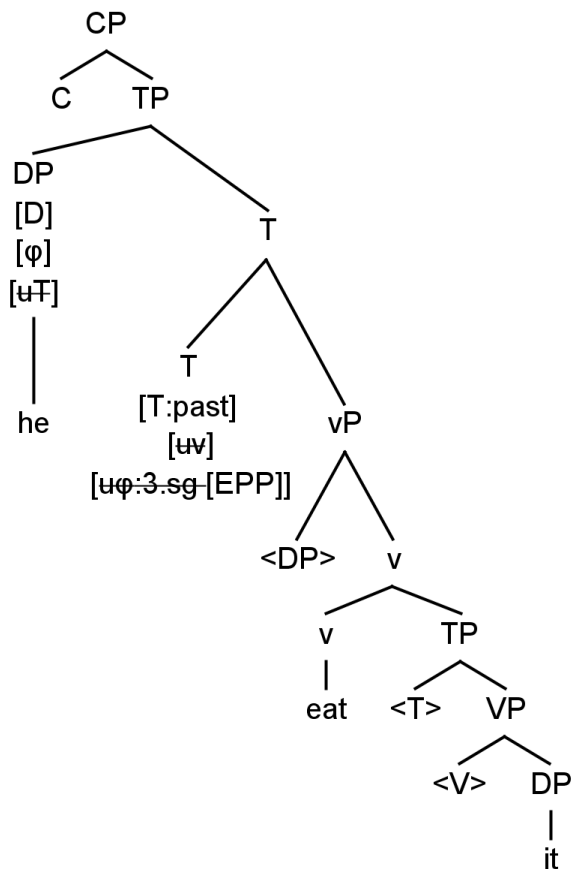
The temporal adverbs *then* in (12a) and *long time ago* in (12b) mark the temporal reference of the event. (12c) contains a tenseless clause coordinated with an overtly tensed clause; the tensed verb transmits its temporal reference to the bare verb. (12d) is a reply to a past-tense question; the tense in the questions provide the temporal reference to the reply. Radford & Ramos (2001) state that it is possible that their DLD subject omits the tense feature in those cases. However, it does not seem that the tense morpheme is dropped only in these contexts. Radford (2007) provides examples where the clause is uttered in other past contexts (Radford 2007: 76):

- 13) a. He burn heself here ['He burned/burnt himself there']
b. He eat it ['He ate it']
c. Some wake up middle of night ['Some people woke up in the middle of the night']

These sentences contain no temporal adverb and they are not coordinated to a sentence with a tensed verb. Moreover, the transcriptions do not indicate that these sentences are

reply to past-tense questions. It seems then that no linguistic past context is provided for their temporal construal. If so, then they must include a tense feature for adequate semantic interpretation. Therefore, sentences containing bare verbs in past contexts can also be analyzed as having the interpretable tense feature which is null, i.e., it is not spelled-out at PF. A sentence like (13b) can have a representation similar to (4d):

14)



The representation in (14) is morphophonologically non-target, but syntactically complete so it is convergent, as in typical language.

Thus, despite the fact that some sentences produced by children with DLD lack tense and agreement markers, they can be analysed as containing a TP. That is, whether

DLD sentences lack tense and agreement markers or not their structure contains the T node. This indicates that that they are UG-compliant.

8.3 Verb Placement Commissions

As mentioned in chapter 3, children with DLD evince commissions with respect to verbal word order. For instance, in German (15a-b, from Hamann, Penner & Lindner 1998:209) and Swedish (15c, from Håkansson 2001:93-94), two V2 languages, the verb may not be placed in second position in DLD grammars, in contrast with target grammars in certain contexts:

15) DLD response

Target

a. Jetzt grosse drache kommt.
now big dragon comes

Jetzt kommt der grosse Drache
now comes the big dragon

‘Now the big dragon comes.’

b. Bei mir federmapppchen weg war.
at me pencil-satchel gone was

[Bei mir] war das Federmäppchen weg
at me was the pencil-satchel gone

‘My satchel was gone.’

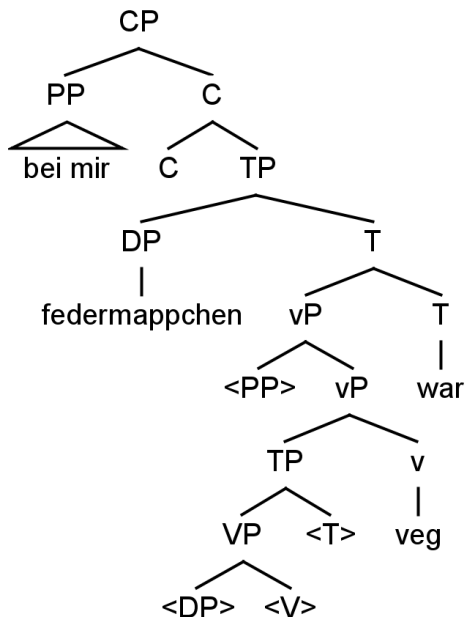
c. Sen han trilla här
then he fall here

Sen trilla han här
then fall he here

‘Then he fell here’

Even though, these forms are not target, the LIs appear in their correct position according to the grammar of the languages in question. In typical German main clauses, when a phrase is placed at Spec-CP, and the verb is placed at C, the word order is XV/TSO for simple tenses and XTSOV for compound tenses. The German underlying word order is

SOVT, that is, the V/v complements and the T complements are placed to the left of their respective phrasal heads to which they are sisters (based on Poeppel & Wexler 1993):⁸²
16)



The verb in (15a,b) is correctly conjugated, it has the appropriate tense and agreement markers, i.e., the verbal form corresponds to the 3rdp.sg subject DP. It is placed under higher T (Hamann et al. 2001). Although the SOVT order is not target in German main clauses, it is the usual order in subordinate clauses:

17) Ich sagte, dass der glückliche Mann gegangen ist
I said that the happy man gone is
 'I said that the happy man has left'

Since C is already occupied by *dass* 'that', the auxiliary stays in T and the V2 effect does not arise. If the clause contains a simple tense, the verb raises from V up to higher T. The

⁸² Following Pesetsky & Torrego (2004), it is assumed that lower T is also present in unaccusative clauses, but it is defective: Just as T in infinitival complements of raising verbs is unable to value the nominative uT in D of the external argument (Chomsky 2000), lower T in unaccusatives is also defective in that it fails to value the accusative uT in D of the internal argument.

SOVT word order in main clauses in German DLD is similar to the order in typical Japanese (18a) and typical Basque (18b) main clauses:

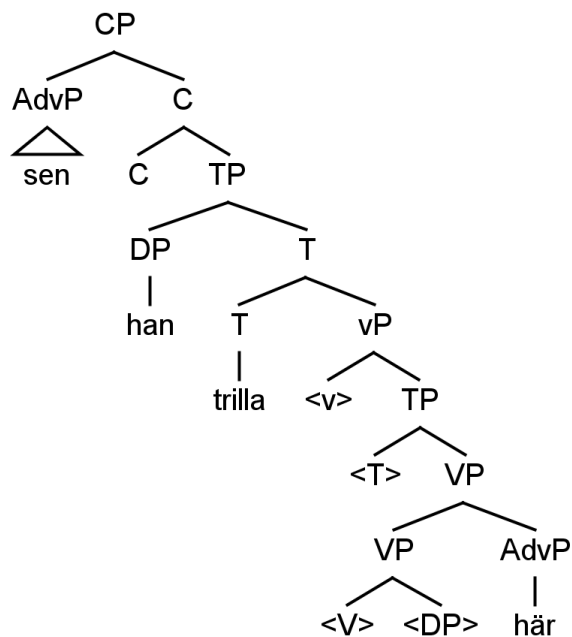
18) a. John-ga tegami-o yon-da.
John- nom letter-acc read-past
'John read the letter.'

b. Gizon-a-Ø etorri da
child-the-abs come aux.3sg.abs
'The man has come'

The auxiliary appears at the right of its complement and that is why in the surface form T appears at the end of the sentence, just as in the case of main clauses in German DLD.

In typical Swedish main clauses, when a phrase is placed at Spec-CP, and the verb is placed at C, the word order is XV/TSO for simple tenses and XTSVO for compound tenses. The Swedish underlying word order is STVO, a word order similar to the one in English and Romance, that is, heads are placed to the left of their complements. This is the order that is displayed in (15c):

19)



T in this main clause does not raise up to C, so again the V2 effect is not observed. As stated in chapter 4, this order is the regular order in main sentences with a topicalized constituent in English and Romance, e.g., Spanish, where the topicalized constituent precedes the subject (when it is overt):

20) Entonces él se cayó aquí
 Then he refl fell here
 'Then he fell here.'

The sentence in (20) can be considered to be derived analogously as the one in (16c) with the order XSTV(O). The verb stays in T and C is null. Thus, it can be seen that, even though the German and Swedish sentences in (15) are not target-like in that some elements surface in places different from the ones authorized by the target language, they conform to grammars of other natural languages. Since these other grammars conform to UG, so do DLD grammars.

8.4 Doublings

A doubling is the appearance of a LI more than once.⁸³ Concerning sentential positions in DLD grammars, it is a case where a morpheme or a word overtly surfaces in more positions than are allowed in typical language. As stated in chapter 3, Southwood and colleagues observed doublings in Afrikaans DLD (Southwood 2007:209, 227):

21)	<u>DLD response</u>	<u>Target</u>
a.	nou reën hulle nat reën <i>now rain they wet rain</i> 'Now they are getting wet in the rain'	nou reën hulle nat <i>now rain they wet</i>
b.	gaan hulle hamers gaan nou kry <i>will their hammers will now get</i> '(They) will now get their hammers'	gaan hulle hamers nou kry <i>will their hammers now get</i>

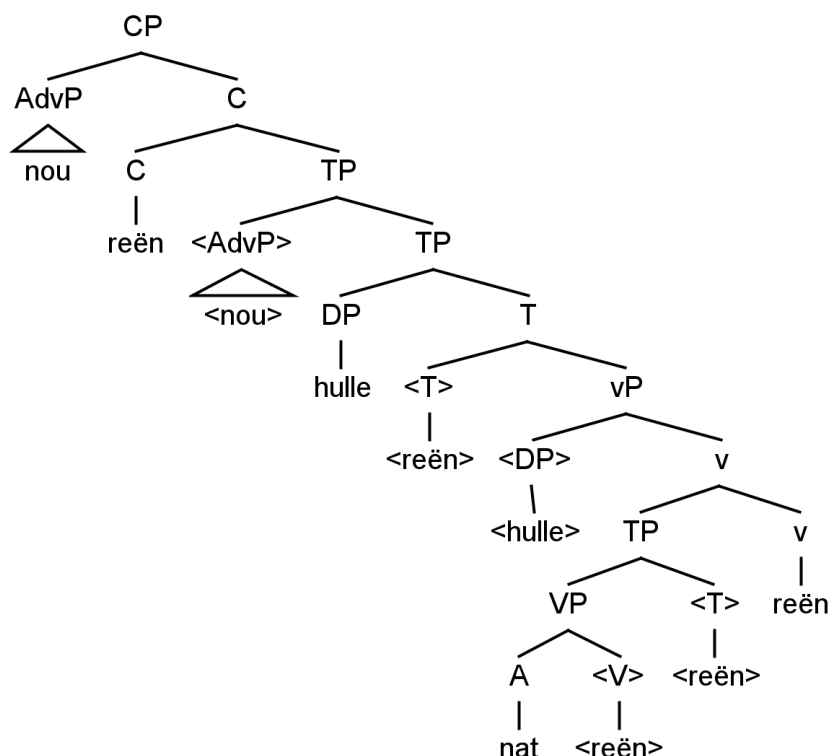
Corver, Southwood & van Hout (2012) note that these doublings, while they comply with computational demands, have no syntactic, semantic or pragmatic motivation. Only one argument structure is introduced, not two, i.e., the DP argument *hulle* 'they' functions as the argument of both occurrences. No supplementary descriptive meaning is added to the sentences; each instance contributes semantically to it. Thus, both the DLD response and the target sentence in (20a) have the same meaning. And doublings do not also introduce extra expressive or discourse-related meaning. These sentences do not contain affective-emphatic or contrastive-emphatic meaning expressing either a surprise because of the rain or a contrast between rain and snow, for instance.

Corver et al. (2012) claim that these doublings are copies of the same LI. Copies are created as a result of Internal Merge. In this case, verbs undergo head-movement, and each position occupied by the verb leaves a copy. In typical language only one copy

⁸³ Doublings seem to apply mainly to verbs and functional categories: Corver, Southwood & van Hout (2012) mention main verbs, hendiadyses (see chapter 4), auxiliaries, pronouns and negative markers.

is pronounced but in DLD two of them are externalized (based on Corver et al. (2012: 78)).⁸⁴

22)



Whereas in the target language only the head of the chain is phonetically realized, in DLD both the head and the foot of the chain are realized.⁸⁵ Thus, the LI in question are externalized in more places than it is allowed in the target language, which results in multiple instantiations of one and the same LI. Note that the copies are not randomly placed within the tree: They are pronounced in the right positions, i.e. positions in which

⁸⁴ Corver et al. (2012) note that under the assumption that V, lower T and v are head final, it is difficult to determine which copy in the v phase is pronounced. The importance here is to formalize the fact both the one low copy and one high copy are externalized.

⁸⁵ The pronunciation of intermediate copies might not be theoretically forbidden; however, the data do not display such a case.

the relevant heads are postulated to be externally merged. This is an indication that, despite this defect in externalization, the structure is UG-compliant.

8.5 Mixed Cases

Some DLD productions exhibiting a mixture of omissions and commissions were found in DLD productions, as shown in chapter 3. Mixed cases include sentential negation and interrogatives in English DLD. These cases represent a slightly different but continuous trend in DLD production with respect to affirmative sentences. Whereas, in affirmative sentences, the general picture is the omission of tense and/or agreement morphemes, in negative and interrogative sentences, they tend to be omitted but they also appear more often than in affirmative sentences and in more places than are authorized in typical adult language.

8.5.1 Negation

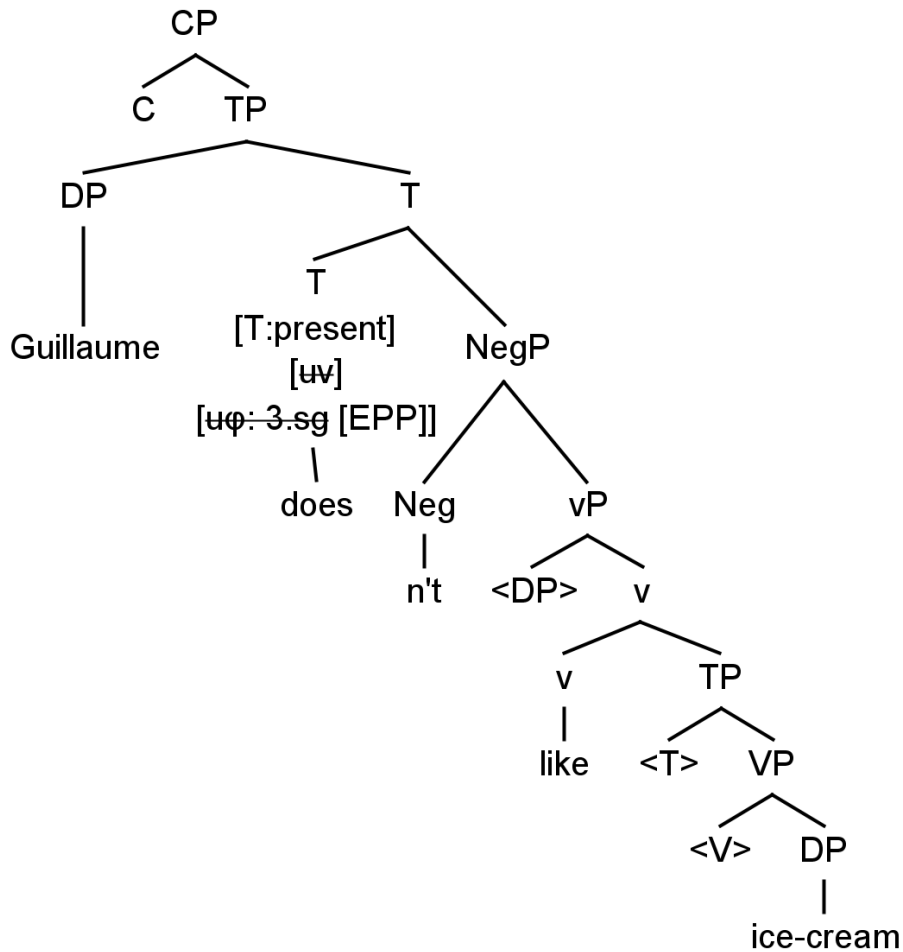
Sentential negation in English is constructed with auxiliaries or modals and two types of negative IIs: the clitic head *n't* and the adverb *not* (Haegeman, 1995; Zanuttini, 1996, 2001; Zeijlstra, 2004, 2008). The clitic form is analyzed as a head (Neg), since it combines with the morphemes *do* and *-s*, which realize features forming the featural bundle of a head (Thornton et al 2016).⁸⁶ It projects its own phrase (NegP), which is merged with T and takes vP as complement:⁸⁷

23) a. Guillaume doesn't like ice-cream

⁸⁶ According to Laka (1990) and others (see Di Sciullo & Isac, 2008), Neg is in a fact a value bore by a polarity feature, which can also carry the Affirmative value. This polarity feature projects a phrase called SigmaP.

⁸⁷ Zanuttini (1996) claims that TP is the complement of NegP; however, Laka (1990) and Di Sciullo & Isac (2008) take T to select NegP (SigmaP). This is the position taken by Thornton et al. (2016) for their analysis of DLD negative sentences. Their decision is based on the sentences in (26) in the text, where the agreement marker *-s* appears at the left of the negation marker. Agreement is computed in T, so TP must be placed at a position higher than NegP and the AdvP hosting *not*.

b.

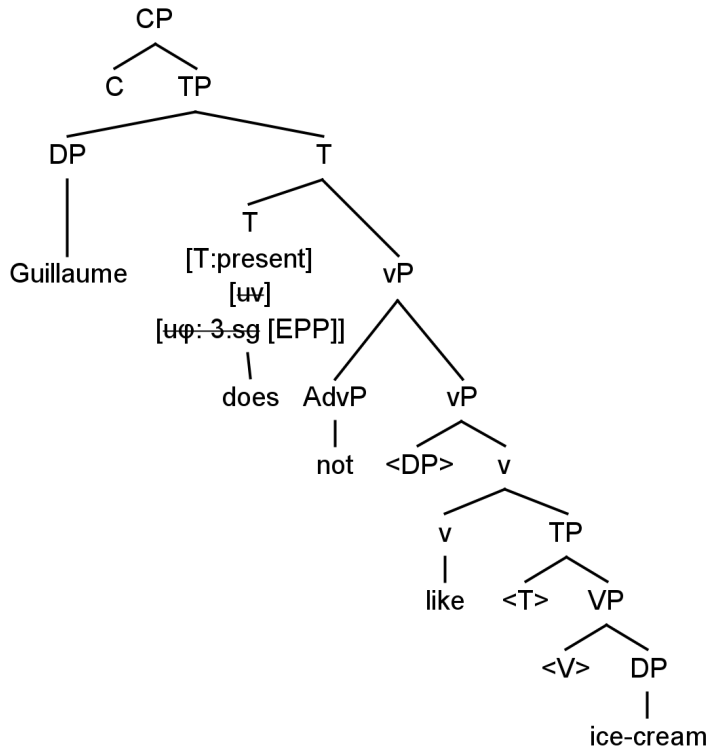


TP and NegP are intimately related in that NegP phrase can only appear when T is present in the derivation. This means that presence of NegP headed by *n't* implies the presence of TP (Zanuttini 1996). According to Zanuttini (1996), *n't*, as a head within the hierarchal structure, has selectional requirements and is selected by another head. No such requirement is imposed on the adverb *not*: It appears in an adjoined position, it does not have selectional requirements, is not selected by any head, it can be present in the structure with TP (24a) or without it (24b):

- 24) a. Guillaume does not like ice-cream.
 b. A: Have you seen 'Brokeback Mountain'?
 B: Not yet.

The adverb heads an AdvP which is merged as an adjunct to vP:

25).



Thornton et al (2016) studied the production of negative sentences by English children with DLD with a mean age of 5;5. Their findings concerning non-target negative sentences reveal the following results (Thornton et al. 2016:19):

- 26) a. It don't work.
 b. It not work.
 c. i. It not works.
 ii. It don't works.
 iii. It's not work.
 iv. It's not works.
 v. It doesn't works.

Following Beluggi's (1967) claim for typical children, Thornton et al (2016), assume that *don't* is an unanalyzed form, equivalent to the adverb *not*. Accordingly, *don't* in the sentences in (26) is not a word formed from the heads *do+n't*. It is rather an adverb that occupies the adjunct position proposed for *not*.⁸⁸ According to this analysis, all the sentences in (26) but (26c.v) show an absence of the morpheme realizing tense. The sentences in (26a,b) involves absence of both agreement and tense marking; in (26c.i-iv) agreement is marked but tense marking is absent. In (26c.i-ii) agreement is realized on the verb; in (26c.iii) agreement is realized as a clitic attached to the subject pronoun; (26c.iv) agreement is doubly marked as a clitic and on the verb; (25c.v) contains tense marking and double agreement marking, once on the auxiliary and once on the verb.

Once again, although most of these DLD children's negative sentences were not target, they are in accordance with UG. The difference between typical adult language and DLD seems to reside at the PF component, that is, although the morphemes in question are not realized target-like, their occurrence is not arbitrary: They appear in positions otherwise authorized by the target language. Concerning the -s agreement morpheme in the upper position, i.e., before negation and without the auxiliary (23c.iii-iv), it is realized in T and it cliticizes onto the subject DP (Thornton et al. 2016). Interestingly, these researchers argue against an alternative analysis, i.e., the view that these examples, together with examples like *that's not fit*, are cases of rote-learning by which forms like *that's* and *it's* are unanalyzed forms inserted in negative sentences containing a non-finite form (26c.iii) or a finite form (26c.iv). There are reasons to believe that such an analysis is on the wrong track. First, the -s morpheme appeared not only with DPs

⁸⁸ Thornton et al. (2016) considered Harris and Wexler's (1996) study of typical children's negative sentences. These researchers analyse 'not' as a head, not as an adverb. This analysis predicts that sentences as the one in (i) will not occur in child language (Thornton et al 2016:9):

- (i) This marker not works.

This sentence displays a combination of *not* and an inflected verb, as in (26c.i) in the text. According to Harris and Wexler's (1996), this sentence is not possible because it would violate the Head Movement Constraint (HMC) (Travis 1984). Nevertheless, sentences as in (i) were attested by Thornton & Rombough (2015). An analysis of 'not' as an adverb allows this type of sentences, where no constraint on heads is transgressed. This is the reasons why Harris and Wexler (1996) was not adopted by Thornton et al (2016). Moreover, Thornton et al. (2016) preferred Beluggi's position because of sentences like (26c.ii): The analysis of *don't* as an adverb, just as *not*, also avoids the problem of the violation of the HMC.

containing just a pronoun or a demonstrative, but also with full DPs containing a demonstrative + proform (Thornton et al. 2016: 21):

- 27) a. This one's don't jump.
b. That one's not jumps.

These full DPs are not considered rote-learned LIs. Second, if a DP such as *this one's* was considered an unanalyzed form along with *that's*, then these forms would be expected to be part of the child's lexicon, together with forms like *this one* and *that one*, and would also be expected to have a similar distribution throughout the set of negative sentences produced by DLD children. Accordingly, forms containing modals such as *Thats can't drive* or *This ones won't spin* should be possible. However, Thornton et al. (2016) mention that such forms were not attested. Therefore, the sentences being examined are analyzed by the children with DLD as containing the -s agreement morpheme cliticized onto the subject DP. Concerning the -s morpheme in the low position, i.e., attached to the verb (23c.i-ii-v), Thornton et al (2016) consider the possibility that these forms might have been the result of an artifact of the experimental task, in which case knowledge of agreement could not be claimed to be evinced by the DLD children. For example, the appearance of -s could be the effect of some kind of priming effect induced by the lead-in phrase in the elicitation task. More precisely, affirmative sentences were used for the creation of the adequate context for negation. These sentences could have primed the agreement morpheme in the subsequent negative sentences produced by the DLD children. Nevertheless, Thornton et al (2016) judge this possibility unlikely. Thornton and Rombough (2015) carried out a study on negation by typical 2–3-year-old typical children. These children produced negative sentences similar to the ones produced by the DLD children. Thornton et al (2016) claim that if the realization of the 3sg morpheme on the verb was due to a priming effect, then priming should prompt both the young typical children and the children with DLD and, moreover, it would be expected that the effect should occurred in all children. Their findings indicate that only 5 out of 21 children with DLD pronounced the agreement morpheme in the low position, whereas the rest opted for its realization in the upper position. Thus, Thornton et al (2016) conclude that the examined forms do not suggest an input effect that could have influenced the

occurrence of the agreement morpheme in the negative sentences produced by the DLD children. Instead, they claim that, since the 3sg morpheme fills different positions in the derivation, the data should be given a grammatical account. This view is in accordance with this dissertation. The claim here, then, is that the sentences in (26) are syntactically adequate but not target from the point of view of PF.

8.5.2 Interrogatives

This section examines the wh-questions produced by English children with DLD reported in van der Lely & Battell (2003). The examples in (a) will inform the case of subject-auxiliary inversion and the examples in (b) serve to analyse both inversion and the mechanism that places wh-phrases in Spec-CP (from van der Lely & Battell 2003:162-163).

- 28) a. i What cat Mrs White stroked?
 ii What did they drank?
 iii Who Mrs Brown see?
 b. i. Which Reverend Green open a door?
 ii. Who Mrs. Scarlett saw somebody?
 iii. What did Colonel Mustard had something in his pocket?

In (28a.i) tense is marked on the verb, not on the auxiliary; in (28a.ii) tense is doubly marked, once on the auxiliary and once on the verb; in (28a.iii) tense marking is completely absent. In (28b.i) tense is not marked; it also contains a split phrase: The wh-D is on Spec-CP, but its complement is at the base position. In (28b.ii) tense is marked on the verb and not in the auxiliary; Spec-CP is occupied with a wh-phrase but the complement position that would be its base site in typical language is also occupied by a quantifier. (28b.iii) is similar to (28b.ii) with respect to wh-movement, the difference being that tense is doubly marked, once in the auxiliary and once in the verb. As mentioned in chapter 6, van der Lely and Battell (2003) analyze these forms as lacking head movement from T to C for the (a) examples, and both lack of T-to-C movement and lack of Internal Merge of the wh-phase in (b). However, this claim has been rejected in chapter 6, so a different account can be provided for these cases. The proposal presented in this subsection is the development of some suggestions offered in Radford (2007).

The effect of lack of inversion can be accounted for in terms of the copy theory of movement. For typical language, a copy of the auxiliary occupying T is created and then placed in the C head position. The copy left in T receives a null spell-out at PF and the copy in C is the one that is pronounced. Radford (2007) proposes that, in DLD grammars, the same mechanism applies, but the spell-out conditions are not mastered. That is, it is possible that the children with DLD do not know that (a) only one copy can be pronounced, (b) at least one copy must be spelt-out, (c) the copy to be pronounced is the one in C, not the one on T, and (d) tense in questions is not to be realized on the verb. Radford (2007) suggests that input can also have an influence on inversion. As shown above, contracted auxiliaries can be given a null spell-out in adult speech. Typical children aged 1;8-2;4 are exposed to questions formed by adults in which the auxiliary is omitted (from the Bates files on the CHILDES data-base):

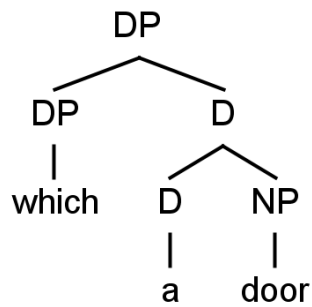
- 29) a. Where you going?
b. What she doing?
c. What they got in them?
d. How they sit?
e. Then what she do?

It is possible that children with DLD are also exposed to this type of data. These may contribute to the lack of control in the spell-out of tense. Thus, children with DLD seem to have difficulties with the realizations of copies but they can operate Internal Merge targeting heads. This is another indication that DLD grammar are syntactically similar to typical grammars and therefore they are UG-compliant.

The sentences in (28b) can receive a treatment similar to the ones in (28a) with respect to head movement. As for *wh*-movement, Radford (2007) hints at an analysis of (28b.i) in line with the structure proposed for *wh*-phrase in exclamatives such as *what a goal!* or *how good a goal!*. According to him, these phrases are headed by an indefinite D and the *wh*-phrase is placed at Spec-DP.⁸⁹

⁸⁹ Different analyses have been proposed for *what a N* and *how A a N* configurations. See Corver (2017) and Leu (2015) and references therein.

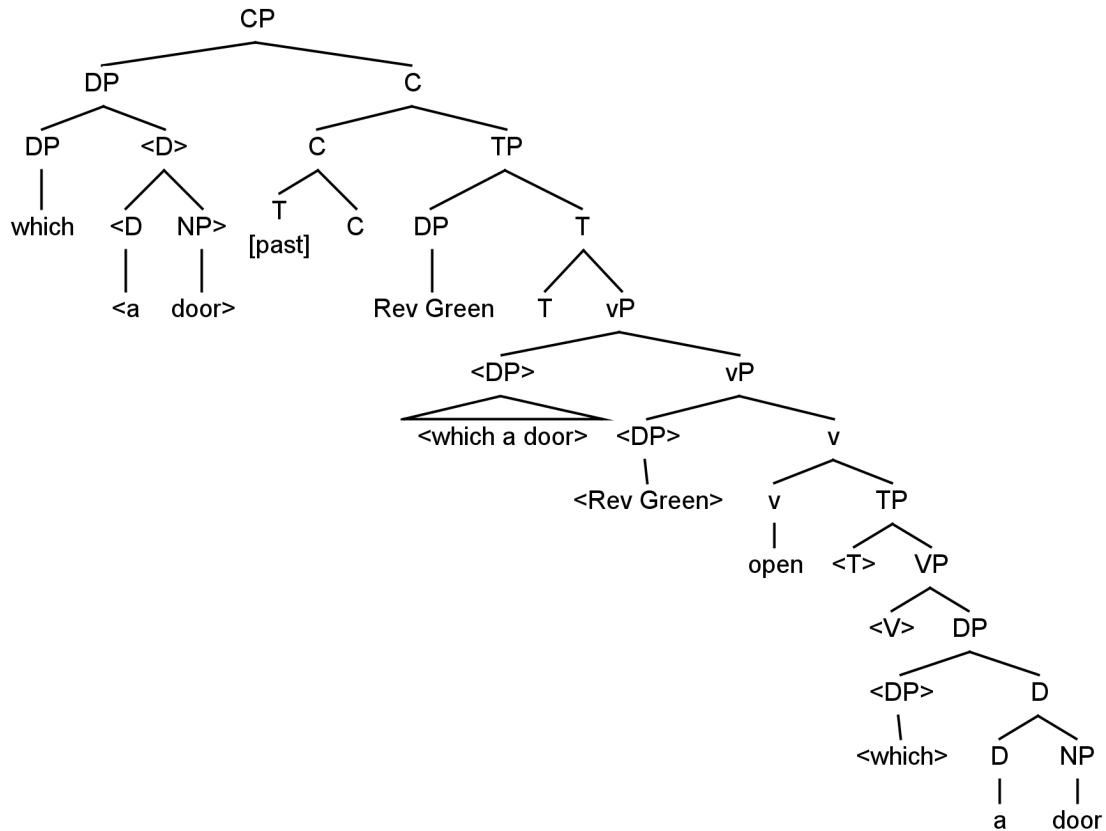
30)



Sentence (28b.i) can be analysed as a ‘split construction’ (see Fanselow & Ćavar (2002) and references therein). A ‘split construction’ is a discontinuous constituent: Part of the constituent appears in its base position (or an intermediate position) and part of it appears at the sentential periphery. Sentence (28b.i, repeated in 31) can have the following derivation:

31) a. Which Reverend Green open a door?

b.



According to Copy Theory (see chapter 2), after Internal Merge has applied, the copy in the base position is generally erased entirely and the copy in the left periphery is the one that is phonetically realized. However, split constructions are cases where copies are scattered (Fanselow & Ćavar, 2002): Material can be deleted both in the foot of the chain and in the head of the chain. Scattered deletion results in discontinuous constituents. Sentence (28b.i) illustrates a case where copies are scattered.⁹⁰ The DP *a door* merges with the DP *which*; this whole DP in turn merges with the V *open*; the wh-phrase undergoes Internal Merge at Spec-vP and then it moves again up to Spec-CP. After Transfer applies, the phonological component determines that the non-quantificational material, i.e., the DP *a door*, is pronounced at the lower copy. The intermediate copy does not receive phonological realization, and the quantificational material, i.e., the wh-phrase,

⁹⁰ See Fanselow & Ćavar (2002) for the conditions under which scattered deletion can apply.

is spelt-out at the higher copy. Note that it can be assumed that the whole DP *which a door* raises since this type of sentence was produced alongside sentences with the whole DP overtly placed at Spec-CP (28a.i repeated in 32b):

- 32) a. Which one door creaked?
b. What cat Mrs White stroked?

In these examples, the wh-phrase is externally merged at the complement position to the verb and then internally merged in its scope position, and only the high copy is pronounced. Furthermore, as Radford (2007) suggests, the examples in (28) are reminiscent of long-distance interrogatives produced by typical children examined by Gavrusseva and Thornton (2001:251):

- 33) Whose do you think lunch the baboon made?

These researchers analyze this sentence with the wh-phrase *whose lunch* externally merged at the complement position to the V *made*, it is internally merged at the intermediary Spec-CP and the wh-phrase *whose* continues up to the matrix Spec-CP and the non-quantification material stays at the intermediate Spec-CP. In terms of the copy theory of movement, the analysis can be restated so that the whole wh-phrase undergoes Internal Merge up to the matrix Spec-CP. At PF, the sentence undergoes scattered deletion: The lower copy is not phonologically realized, the non-quantificational phrase is realized at the intermediate Spec-CP and the wh-element is pronounced at the matrix Spec-CP:

- 34) [CP [DP Whose <lunch>] [C] do you think [CP [<whose> lunch] [C] the baboon made [<DP whose lunch>]]]?

The sentential derivation is syntactically adult-like, **but it differs on the PF component**, since in adult English only the higher copy is realized.

The sentence in (28b.i) can receive a similar account, with the obvious difference that in the case of the DLD questions no intermediate Spec-CP is involved. True to the

analysis proposed here, it can be surmised that a chain is formed, and that the wh-constituent at the head, i.e., the higher copy, is interpreted as the operator, and the non-quantificational overt material at the tail, i.e., lower copy, as the variable. Interestingly, the interrogatives produced by the children with DLD appear to overtly reflect the way that interrogative chains are interpreted in general. According to Hornstein et al. (2005), the semantics of questions is assumed to be obtained from the adequate answers which they elicit. A sentence such as the one in (35b) is an appropriate answer to the question in (28b.i) repeated in (35a):

- 35) a. Which Reverend Green open a door? [Which door did Reverend Green open?]
b. Reverend Green opened the green door.

‘...the form of an appropriate response is provided by the logical form of a sentence, as the set of appropriate answers is determined by “filling” in the gap left by wh-movement.’ (Hornstein et al. 2005: 261). The material crucial for the answer, *the green*, is in the base position of the wh-phrase, i.e., the gap, that is why (35b) is an adequate answer to (35a). Accordingly, the logical form of (35a) is (36):

- 36) which_x Reverend Green opened x door

There is some isomorphism between the PF in (35a) and the logical form in (36), so the PF of the sentences in (28b) can be said to mirror the logical forms of questions.

The sentences in (28b.ii-iii) can receive a treatment in terms of pronunciation of lower copies along the lines proposed by Pesetsky (1997, 1998), as suggested by Radford (2007). According to Pesetsky, wh-movement in some cases results in an overt copy of an internally merged wh-constituent pronounced in some position from which it moved (Radford 2007: 53):

- 37) He’s someone [CP who you are never sure [CP if he is paying attention to you or not]]

The internally merged wh-constituent is *who* and its copy is *he*. The wh-constituent moved from Spec-vP, through Spec-TP, then through the intermediate Spec-CP up to the Spec-

CP at the left edge of the relative clause. The copy that is pronounced is the one at Spec-TP. The copy is partial in that it contains the same features (person/number/gender/(in)definiteness) but not the [wh] feature. It is a resumptive pronoun; that is why it does not have the same spell-out as the wh-phrase. Pesetsky (1997, 1998) proposes that non-high copies of internally merged constituents are generally not pronounced by virtue of a constraint applying in the PF component determining that only the highest copy, i.e., the chain head, can be phonologically realized. In certain cases, like the one in (28b.ii-iii), the constraint can be overridden, so that not only the highest copy is pronounced, but at least another one. In turn, this constraint can be partially satisfied if the non-high copy that is pronounced does not contain the same features that are present in the chain head, since the non-high copy being not completely identical to the high copy is as close to the unpronounced one as possible (Pesetsky 1998:32). A resumptive pronoun contains fewer features than the wh-constituent, so it is closer to an unpronounced copy than a full copy; that is why it is used to partially satisfy the constraint against the pronunciation of non-high copies.

The example in (28b.ii-iii) is similar to the one in (37) in that a partial copy of the wh-constituent is pronounced at the chain tail. An indefinite wh-pronoun is internally merged and it leaves a copy whose pronunciation realizes all its feature but the [wh] feature. The copy of each wh-pronoun is not full, it is not spelt-out identically to the wh-pronoun. Since the features that are realized by the non-high copies are presumably [3p], [sg], [indefinite] and [animate] in (28.ii) and [3p], [sg], [indefinite], and [inanimate] in (28b.iii), the non-high copies are respectively realized as the indefinite pronouns *somebody* and *something*. The constraint targeting non-high copies then is also partially satisfied in (25b.ii-iii). It seems that the children with DLD producing those interrogatives do not implement the constraint completely, as it is done in typical language.

The logical forms of the interrogatives in (28b.ii-iii) can be the following:

- 38) a. who_x Mrs Scalett saw x person
b. what_x Colonel Mustard had x thing in his pocket

The interrogatives in (35) also appear to reflect some isomorphism between their PF and the logical forms, so that in the case at hand the constituents that are visible at LF are likely to be overtly expressed at PF in child grammar. This tendency for PF representations to mirror LF representations as closely as possible has also been observed in typical language. Gavruseva and Thornton (2001) argue that the cases involving *whose* is an instantiation of this propensity. Likewise, van Kampen (1996, 1997) argues that the typical children who she studied also tend to reduce the discrepancy between PF and LF. She found constructions containing overt PF material in positions that are unpronounced in adult grammar: *do*-insertion in a tense chain, split constructions, intermediate *wh*-pronouns, etc. (van Kampen 1996:154):

39) Child response

welke wil jij liedje zingen?
 which want you song sing?
 'Which song do you want to sing?'

Target

welke zingen will jij zinger
 which song want you sing

The example in (39) is a case of split construction. It has a configuration similar to the one in (28.b.i). The quantification material is pronounced at the higher position and the non-quantificational material is pronounced at its base position. The sentence also has a logical form similar to the in (28.b.i):

40) $welke_x$ jij wil x liedje zingen

This is another case where the categories that are visible at LF can be overtly expressed at PF in child grammar, just as in DLD grammar. Thus, DLD grammar once more are shown to be similar to typical grammar and compliant with UG.

8.6 Conclusion

This chapter shows that, despite discrepancies between target grammar and DLD grammars, the latter appear to be normal in the sense that they are constrained by UG. Although sentences produced by children with DLD are not language-target, they are

compatible with sentences which are possible in other natural languages or with sentences produced by typical children.

Children with DLD can produce subordinate clauses without a complementizer or a with a dummy placeholder in languages where complementizers are generally obligatory. These sentences were analyzed as being a CP although the surface forms of these projections are not target-like. Subordinate clauses without overt complementizers are allowed in other typical languages and are analyzed as CP introduced by a null complementizer. Null complementizers in DLD grammars, then, can be unduly licensed in the target language but they are allowed in others. Complementizers can also be substituted by placeholders, but these are also used by typical children and were argued to have a syntactic function with grammatical properties very similar to properties exhibited by equivalent functional LIs in target grammars. Thus, DLD subordinate clauses, whether target-like or not, are sanctioned by UG.

Tense and agreement marking can also be absent in DLD sentences when they are obligatory in the language to which children with DLD are exposed. Despite this absence of marking, this type of sentences was analyzed as having a tense node. Several arguments were advanced to justify this position. Some subjects appear in the nominative case and at the left of NEG. Nominative case is assigned by the inflectional node of the sentence and NEG is the complement of T, an indication that TP is present in the representation. Furthermore, DLD and typical child sentences unmarked for tense and agreement can contain a non-finite or a minimally inflected finite form, depending on the language. Sentences including finite forms in typical language are argued to have T node, so do DLD sentences. Verbal forms in languages such as Mandarin and Haitian Creole are bare, i.e., with no marking. However, sentences containing these forms are temporally interpretable, i.e., despite lacking tense markers, they are semantically equivalent with respect to time construal to sentences including verbs inflected for tense. DLD tenseless sentences have a form and an interpretation similar to sentences in the languages just mentioned, which indicates that they must also have a T projection. These facts point to the conclusion that DLD sentences, despite not having a target form, include a TP and so are UG-compliant.

The previous cases are considered instances of omissions. Two cases of commissions were also analyzed in this chapter: verbal placement and doublings. In DLD, verbs tend to be placed in positions different from where they appear in typical language. Verbs in main sentences produced by children with DLD acquiring German can surface in final position instead of second position. The final position is the location of the verb in typical subordinate sentences in German and also its location in Japanese and Basque main sentences. The verb can also occur in a non-second position in main sentences in Swedish DLD. The surface form of these sentences is not target in Swedish, but it resembles the sentential order in languages such as English, French and Spanish. Thus, although the verb in German and Swedish DLD in main sentences may appear in non-target positions, it can be positioned in locations authorized in other configurations of the acquired language or in other languages, that is, verb placement in DLD is limited to what UG generally allows.

Doublings are overt occurrences of a morpheme or a word in more positions than are allowed in typical language. They are analyzed as the externalization of more than one copy of a LI. This phenomenon is atypical in terms of PF in that a LI is pronounced more than once but it is typical in syntactic terms since the doubled LI is externalized in the positions which they occupy in the syntactic tree.

This chapter also shows cases of a mixture of omissions and commissions. The first case involves the English agreement marker *-s* in interaction with the negative markers *n't*, *not* and *don't*. In negative sentences produced by DLD children, the agreement marker can be omitted, or it can appear without the auxiliary *do* and cliticized to the subject, or it can surface on the verb, or both attached to the subject and the verb. Once more, although DLD negative sentences can be non-target-like, they are constrained by UG since the agreement marker is placed in the same positions where it appears in typical language, that is, either in T or in v.

The second case of mixture concerns question formation. Observations similar to the ones in negative sentences were made for questions in English DLD. The tense marker in these sentences can be omitted, attached to the verb, or both with the auxiliary *do* and in the verb. Nevertheless, as in the case of agreement marking in negated sentences, the tense marker appears only in positions where it can be placed in typical

language. Wh-phrases can appear in positions different from where they surface in the target language. DLD questions are considered to be syntactically adequate but non-target from a PF point of view, with respect to the language to which children with DLD are exposed. Some questions containing a wh-element and an NP are formed with a discontinuous constituent: The wh-element is pronounced at the chain head and the restriction is pronounced at the chain tail. However, the same type of questions can also be formed with the whole wh-phase pronounced at the chain head and not phonetically realized at the chain tail. Other questions were formed with a partial copy of the wh-constituent. This partial copy is a resumptive pronoun pronounced at the chain tail. Interestingly, split constituent questions and partial copy questions can be deemed to be a reflection of a certain isomorphism between LF and PF: The wh-element is pronounced at the same position where it is interpreted, i.e., the higher copy, which is the chain head, and the non-quantificational element is also pronounced at the same position where it is interpreted, i.e., the lower copy, which is the chain tail. Note that this tendency to isomorphism is not exclusive to DLD children. It has also been observed in typical children.

Thus, the DLD data examined here reveal that (a) although some surface forms produced by children with DLD are not target at PF, their syntax is typical: The sentences produced by children with DLD display the same syntactic structures as the sentences produced by typical children; (b) they are not idiosyncratic, that is, it is not the case they are not found in any other linguistic realizations: Structures that are not target in the language to which DLD are exposed are grammatical in other languages; (c) they do not reflect a grammar that in terms of Goodluck (1986) would be wild, so that the LIs composing them would be randomly placed: All elements in DLD sentences appear in the same positions where they are placed in typical language; (d) they are another illustration of Crain and colleagues' version of the Continuity Hypothesis, i.e. DLD grammars can differ from the target grammars in ways adult grammars differ from each other. Once again, all this point to the conclusion that DLD grammars are UG-compliant.

9 CONCLUSION

This dissertation undertook the study of the Faculty of Language (FL) from the point of Developmental Language Disorder (DLD), a condition affecting production and comprehension and consisting in a non-target-like grammar in regard to what is both allowed and disallowed in the language(s) being acquired. This atypical linguistic situation is shown by some young children and seems to pose a significant limitation in language development. The main research question was to which extent the underlying linguistic competence of children with DLD is determined by the same features, operations and principles that regulate natural language in general.

Current linguistic theory standardly assumes that language, as a cognitive faculty, is underlain by Universal Grammar (UG), a set of phonological, semantic and syntactic features and operations (Select, Merge, Transfer and Agree). It also comprises constraints on the kind of acquirable languages and parameters which allow for variation from language to language. UG, having those properties, restrains the range of possible grammars that can be built.

UG is also said to guide language acquisition in different acquisitional contexts: first language acquisition and second language acquisition. During the development of the first language, the child constructs intermediate grammars before attaining his/her final steady grammar. These intermediate grammars may be restructured as the child is responsive to the different properties of the input. These intermediate grammars are constrained by UG so that the developing grammar reflect the properties of the FL during all the acquisition period. The role of UG in L2 acquisition is not consensual. However, the predominant view states that L2 acquisition is also controlled by UG, and the learner's first language is attributed a variable role. From this point of view, L2 acquisition is fundamentally similar to first language acquisition although the final state might not be similar to that of the target language.

DLD reveals many differences from but also some resemblance to first and second language acquisition. DLD children's linguistic behavior is mainly characterized as the result of omissions, i.e., the absence of obligatory LIs in relevant contexts, and/or

commissions, i.e., the replacement of some form with another form, or the use of a LI in an inappropriate position, and doublings, that is, the appearance of a LI in more positions than allowed in the target language, and mixed cases of omissions and commissions. The question about the nature of DLD then is whether UG also regulates language acquisition in an atypical acquisitional context, either completely or partially, so that it can be known whether the FL in children with DLD is similar to the one in typical children or distinct from it. Most linguistic accounts explicitly or implicitly propose that the impairment in DLD grammars is due to a deficit in UG in terms of syntactic features or operations. They sustain that core language abilities, determined by UG, are affected. This deficit in UG causes a disorder in the syntactic component, since lack of features or inactivity of operations or constraints would prevent the syntactic engine from deriving proper linguistic expressions. Contrarily to this view, the hypothesis advanced in this dissertation states that UG in DLD grammars also contains the same features and operations that are present in typical grammars. Therefore, UG also guides and constrains DLD grammars and their development; this view implies that the syntactic engine necessary for the derivation of sentences is not affected. Thus, despite the fact the linguistic behavior of DLD is atypical, the core properties of the FL are not disturbed and so linguistic representations in DLD grammars are constructed in terms of hierarchical structure, recursion, structure-dependence and constraints.

It was firstly argued that DLD share some traits with typical language acquisition. Typical first language acquisition and second language acquisition have been assumed to be UG-constrained, and so the developed grammars reveal continuity from onset of language development up to the grammar end-state. Developing grammars are continuous in that they are essentially similar to adult grammars: The same grammatical features, operations and constraints present in adult grammars are also present in child grammars. Despite obvious differences between children with DLD and typical children, children with DLD have been shown to be able to perform as well as their (especially MLU) typical peers and to produce qualitatively resembling outputs. This seems to be an indication that DLD grammars are also UG-regulated, and so the FL in children with DLD is comparable in certain respects to the FL in speakers found in the other acquisitional situations.

Secondly, it was claimed that the set of syntactic features was present and syntactic operations were active in DLD grammars. Due to the absence of inflectional morphology in DLD grammars, some researchers determined that this absence reflects a syntactic impairment, mainly a deficit in the featural composition of the LIs that these morphemes realize. For the approaches proposing this featural difficulty, either some functional features and/or uninterpretable features are unavailable. Exclusion of these features predicts the random use of the morphological markers that realize them and multiple errors involving overt inflectional marking are expected. DLD grammars would be qualitatively different from the typical grammars with respect to UG since there is no natural language whose lexicon does not include functional features. However, it has been observed that randomness is not a trait in DLD grammars and in fact features are available. The presence of features was evinced empirically and conceptually. Data from different languages show that these features are morphologically marked, and they appear in the nominal, the temporal/verbal and the propositional domains. That is, features appear to occur in nominals, in simple clauses, questions and relative clauses. In terms of theory, the presence of a certain head implies the presence of the head that is selected by the former. This indicates that UG provides the relevant features.

Instead of features, a problem with the Merge operation has been identified as the cause of DLD. DLD has been considered a selective deficit targeting (a) External Merge causing the prevention of certain functional categories from being integrated to the clausal structure and (b) Internal Merge being optional, so that it applies in some but not all the derivations requiring it. These accounts appear to be unsuitable mainly due to a misconception about the dimension where the operation applies and to questionable assumptions and wrong predictions. These observations led to the conclusion that Merge, not only, is not implicated in the impairment, but is active: Children with DLD can appropriately perform in the production and comprehension of structures involving hierarchical structures, properties of phrases structure and correct detection of null copies. This has been taken as a sign that UG also provides the operation Merge in DLD grammars.

Another view proposed that the difficulty encountered with inflectional morphology by children with DLD is the result in deficit in the establishment of the agreement relation,

which could mean a serious problem in the computational system, namely the inactivity of the Agree operation. Nevertheless, it has been shown that agreement relations are in fact established: When the agreement morphemes are present, they mostly appear in the right contexts, and it is not the case that agreement is faulty in all languages; in some of them it appeared to be appropriately working. Moreover, agreement in DLD grammars manifests its activity not only in production but also in comprehension. This is taken as an indication that a lack of agreement morphology in production does not mean absence of knowledge of this relation. It was concluded then that agreement is established, so the operation Agree is available in DLD grammars. Since Agree is one of the core operations provided by UG, and Agree is active in DLD grammars, they are claimed to be consistent with the content of UG.

Finally, the compliance with UG by DLD grammars is revealed not only with respect to target forms but also with respect to non-target forms. It was shown that, despite the production of forms that are unacceptable in the language to which children with DLD are exposed, children with DLD produce sentences which are compatible with sentences which are possible in other natural languages or with non-target sentences produced by typical children. Some LIs were positioned in places not allowed in the target grammar but authorised in other natural languages. Other LIs were omitted in languages where they are obligatory overt and/or substituted by placeholders. Forms of this type are also produced by typical children and considered syntactically adequate. Misplacement or doubling of LIs is considered the reflection a certain isomorphism between PF and LF. It was concluded that even non-target forms reflect typical syntax, DLD sentences are not idiosyncratic, and they can differ from the target grammars in ways adult grammars differ from each other. This means that features and operations provided by UG are available in DLD grammars, which in turn indicates that they are accessible to these particular grammars. Thus, the conclusion is that UG in DLD grammars seems to be intact.

The linguistic accounts reviewed in the previous chapters appear to interpret the non-convergence of DLD grammars into target languages as implying partial or total absence of UG (cf. White 2003). DLD children's grammatical knowledge has been compared to the typical children's with respect to some UG property. Typical children's knowledge provides the reference point for assessing UG access in DLD children. If the

latter perform equally to typical children, then that UG property is considered to be available; if they differ in performance, the property is deemed to be absent. Under this view, differences in knowledge between both populations indicate that DLD grammars are not only divergent from target grammars but also not subject to UG. As in the case of L2 acquisition (White 2003), this stance, at least in most of its proponents, presupposes that, for a grammar to be considered UG-constrained, it must absolutely show convergence. However, in this dissertation, it is argued that non-target-like grammars are consistent with the claim that DLD grammars are guided by UG, as shown in chapter 8.

Now, although this stance implies that DLD grammars are qualitatively similar to typical grammars with respect to UG, it is also compatible with the view that they can be qualitatively different with respect to language-specific properties. Children with DLD differ from typical peers in terms of the target forms of the language to which the children are exposed and they can also differ from each other within the same language and cross-linguistically. DLD stays a far-reaching problem in need of treating in order to help these children to perform as close to typical children as possible. Thus, with the combination of the theoretical position defended here and the continuing investigation comparing DLD to the other acquisitional situations, it could be possible to deepen our knowledge of its nature and to design more effective assistance to these children.

REFERENCES

- Abdalla, F.** (2000). Verbal Inflection in Arabic-Speaking Children with Specific Language Impairment. Manuscript, McGill University.
- Adger, D.** (2003). *Core Syntax: A Minimalist Approach*. Oxford, UK: Oxford University Press.
- Adger, D., Ramchand, G.** (2005). Merge and Move: Wh-Dependencies Revisited. *Linguistic Inquiry* 36: 2, 161-193.
- Adger, D., Svenonius, P.** (2011). Features in Minimalist Syntax. In C. Boeckx (ed.), *The Oxford Handbook of Linguistic Minimalism*. Oxford, UK: Oxford University Press. 27-51.
- Agüero-Bautista, C.** (2012). Non-native Acquisition and Language Design. In A.M. Di Sciullo (ed.), *Towards a Bilingual Understanding of Grammar*. Amsterdam/Philadelphia: Benjamins. 217-237.
- Alexiadou, A.** (1999). On the Properties of Some Greek Word Order Patterns. In A. Alexiadou, G. Horrocks, & M. Stavrou (eds.), *Studies in Greek syntax*. Dordrecht, The Netherlands: Kluwer. 45-65.
- Arosio F., Branchini, C., Barbieri, L., Guasti, M.T.** (2014). Failure to Produce Direct Object Clitic Pronouns as a Clinical Marker of SLI in School-Aged Italian Speaking Children. *Clinical Linguistics & Phonetics* 28: 9, 639–663.
- Baddeley, A. D.** (2003). Working Memory and Language: An Overview. *Journal of Communication Disorders* 36, 189-208.
- Baker, M.** (1988). *Incorporation: A Theory of Grammatical Function Changing*. Chicago: University of Chicago Press.
- Baker, M., Johnson K., Roberts I.** (1989). Passive Arguments Raised. *Linguistic Inquiry* 20, 219-252.
- Barss, A., Lasnik, H.** 1986. A note on anaphora and double objects. *Linguistic Inquiry* 17, 347–354.
- Beck, M.L.** (1998). L2 Acquisition and Obligatory Head Movement: English Speakers of German and the Local Impairment Hypothesis. *Studies in Second Language Acquisition* 20, 311-348.
- Bedore, L.M., Leonard, L.** (2001). Grammatical Morphology Deficits in Spanish-Speaking Children with Specific Language Impairment. *Journal of Speech, Language, and Hearing Research* 44, 905–924.

- Bedore, L.M., Leonard, L.** (2005). Verb Inflections and Noun Phrase Morphology in the Spontaneous Speech of Spanish-Speaking Children with Specific Language Impairment. *Applied Psycholinguistics* 26, 195–225.
- Bellugi, U.** (1967). *The Acquisition of the System of Negation in Children's Speech*. (Doctoral dissertation). Harvard University.
- Bishop, D. V. M.** (1982). Comprehension of Spoken, Written and Signed Sentences in Childhood Language Disorders. *Journal of Child Psychology and Psychiatry* 23, 1-20.
- Bishop, D.V.M.** (1997). *Uncommon Understanding: Comprehension in Specific Language Impairment*. Hove, U.K.: Psychological Press.
- Bishop, D.V.M.** (2006) What Causes Specific Language Impairment in Children? *Current Directions in Psychological Science* 15, 217-221.
- Bishop, D.V.M.** (2014). Ten questions about terminology for children with unexplained language problems. *International Journal of Language & Communication* 49:4, 381-415.
- Bishop, D.V.M., Snowling, M.J., Thompson, P.A., Greenhalgh, T., the CATALISE-2 consortium.** (2017). Phase 2 of CATALISE: a multinational and multidisciplinary Delphi consensus study of problems with language development: Terminology. *Journal of Child Psychology and Psychiatry* 58:10, 1068-1080.
- Bol, G., de Jong, J.** (1992). Auxiliary Verbs in Dutch SLI Children. Manuscript, University of Groningen.
- Bonneau, D., VERNY, C., Uzé, J.** (2004). Les facteurs génétiques dans les troubles spécifiques du langage oral. *Archives de pédiatrie* 11, 1213–1216.
- Borer, H.** (1994). The Projection of Arguments. *University of Massachusetts Occasional Papers in Linguistics* 17.
- Borer, H., Rohrbacher, B.** (2002). Minding the Absent: Arguments for the Full Competence Hypothesis. *Language Acquisition* 70:2, 123-175.
- Borer, H., Wexler, K.** (1987) The maturation of syntax. T. Roeper, E. Williams (eds.), *Parameter-setting and language acquisition*, Reidel, Dordrecht.
- Bortolini, U., Caselli, M.C., Leonard, L.** (1997). Grammatical Deficits in Italian-Speaking Children With Specific Language Impairment. *Journal of Speech, Language, and Hearing Research* 40, 809–820.
- Bortolini, U., Arfé, B., Caselli, M.C., Degasperi, L., Deevy, P., Leonard, L.** (2006). Clinical Markers for Specific Language Impairment in Italian: The Contribution of Clitics

and Non-word Repetition. *International Journal of Language and Communication Disorders* 41: 6, 695-712.

Boser, K., Lust, B., Santelmann, L., Whitman, J. (1992). The Syntax of CP and V-2 in Early Child German (ECG): The Strong Continuity Hypothesis. *Proceedings of NELS 22*, 51-65.

Bottari, P., Cipriani, P., Chilosi, A.M. (1993/1994). Proto-Syntactic Devices in the Acquisition of Italian Free Morphology. *Language Acquisition* 3, 327-369.

Bottari, P., Cipriani, P., Chilosi, A.M., Pfanner, L. (1998). The Determiner System in a Group of Italian Children with SLI. *Language Acquisition* 7: 2-4, 285-315.

Büring, D. (1995) *The 59th Street Bridge Accent: The Meaning of Focus and Topic*, (Doctoral dissertation), University of Köln.

Cantemori, C., Garrafa, M. (2010). Comparison of Modalities in SLI Syntax: A Study on the Comprehension and Production of Non-canonical Sentences. *Lingua* 120, 1940–1955.

Cardinaletti, A., Starke, M. (1994). The Typology of Structural Deficiency. On the Three Grammatical Classes. *Working Papers in Linguistics, University of Venice* 4, 41–109.

Chomsky, N. (1981). *Lectures on Government and Binding: The Pisa Lectures*. Holland: Foris Publications.

Chomsky, N. (1986). *Knowledge of Language: Its Nature, Origine and Use*. New York: Praeger.

Chomsky, N. (1988). *Language and Problems of Knowledge*. Cambridge, MA: MIT Press.

Chomsky, N. (1995). *The Minimalist Program*. Cambridge, MA: MIT Press.

Chomsky, N. (2000). Minimalist inquiries. The framework. In R. Martin, D. Michaeli, J. Uriagereka (eds.), *Steps by Steps: Essays in Minimalist Syntax in Honor of Howard Lasnik*. Cambridge, MA: MIT Press, 89-155

Chomsky, N. (2001). Derivation by Phase. Dans M. Kenstowicz (ed.), *Ken Hale, A Life in Language*. Cambridge, MA: MIT Press, 1–52.

Chomsky, N. (2004). Beyond Explanatory Adequacy. In A. Belletti (ed.) *The Cartography of Syntactic Structures: Structures and Beyond* Vol. 3. Oxford, UK: Oxford University Press. 104-31.

Chomsky, N. (2005). Three Factors in Language Design. *Linguistic Inquiry* 36, 1-22.

- Chomsky, N.** (2008). On Phases. In C. Otero & M.L. Zubizarreta, *Fundamental Issues in Linguistic Theory: Essays in Honor of Jean-Roger Vergnaud*. Cambridge, MA: MIT Press. 133-166.
- Citko, B.** (2014). *Phase Theory: An Introduction*. Cambridge, UK: Cambridge University Press.
- Clahsen, H.** (1988) *Normale und gestorte Kindersprache* [Normal and Impaired Child Language], Amsterdam, The Netherlands : John Benjamins.
- Clahsen, H.** (1989). The Grammatical Characterization of Developmental Dysphasia. *Linguistics* 27, 897-920.
- Clahsen, H.** (1999). Linguistic Perspective in Specific Language Impairment. In W. C. Ritchie, T.K. Bhatia (eds.), *Handbook of Child Language Acquisition*. San Diego, CA: Academic Press. 675-704.
- Clahsen, H.** (2008). Chomskyan Syntactic Theory and Language Disorders. In M. J. Ball, M. Perkins, N. Mueller, S. Howard (eds.), *The Handbook of Clinical Linguistics*. Oxford, UK: Blackwell.165-183.
- Clahsen, H., Bartket, S., Göllner, S.** (1997). Formal Features in Impaired Grammars: A Comparison of English and German SLI Children. *Journal of Neurolinguistics* 10: 2/3, 151-171.
- Clahsen, H., Dalalakis, J.** (1999). Tense and Agreement in Greek SLI: A Case Study. *Essex Research Reports in Linguistics* 24, 1-25.
- Collings, A.** (1989). Zum Kasuserwerb beim Dysgrammatismus. Manuscript, University of Düsserdolf.
- Collins, C., Stabler, E.** (2016). A Formalization of Minimalist Syntax. *Syntax* 19:1, 43–78.
- Corrêa, L.M.S.** (2006). *Aquisição da Linguagem e Problemas do Desenvolvimento Lingüístico*. Brazil: Loyola.
- Corver, N.** (2017). Subextraction. In M. Everaert & H. Van Riemsdijk (eds.), *The Wiley-Blackwell Companion to Syntax*, 4139-4189). Oxford.
- Corver, N., Southwood, F., van Hout, R.** (2012). Specific Language Impairment as a Syntax-Phonology (PF) Interface Problem: Evidence from Afrikaans. *Stellenbosch Papers in Linguistics* 41, 71-89.
- Crain, S.** (1991). Language acquisition in the absence of experience. *Behavioral and Brain Sciences* 14, 597–650.

Crain, S., Goro, T., Thornton, R. (2006). Language Acquisition is Language Change. *Journal of Psycholinguistic Research* 35:1, 31-49.

Crain, S., Pietroski, P. (2002). Why language acquisition is a snap. *The Linguistic Review* 19, 163–183.

Curtiss, S., Katz, W., Tallal, P. (1992). Delay Versus Deviance in the Language Acquisition of Language-Impaired Children. *Journal of Speech and Hearing Research* 35, 373-383.

Dechaine, R.M. (1993) *Predicates Across Categories* (Doctoral dissertation) University of Massachusetts, Amherst.

Déchaine, R.-M., Wiltschko, M. (2017). Bound variable anaphora. In: Henk van Riemsdijk & Martin Everett (eds.) *The Wiley Blackwell Companion of Syntax*, 2nd edition 1–33. DOI: 10.1002/9781118358733.wbsyncom099

de Jong, J. (1999) *Specific Language Impairment in Dutch: Inflectional Morphology and Argument Structure*. Enschede, The Netherlands: Print Partners Ipskamp.

Demuth, K. (1994). On the Underspecification of Functional Categories in Early Grammars. In B. Lust, M. Suñer, J. Whitman (eds.), *Syntactic Theory and First Language Acquisition : Cross-linguistic Perspectives, Heads, Projections and Learnability* Vol 3. Mahwah, NJ: LEA.

Déprez, V. & Pierce, A. (1993). Negation and functional projections in early grammar. *Linguistic Inquiry* 24: 25–67.

Di Sciullo, Anna Maria & Isac, Daniela (2008). The Asymmetry of Merge. *Biolinguistics* 2:4, 260-290.

Ebbels, S., van der Lely, H.K.J. (2001). Meta-Syntactic Therapy Using Visual Coding for Children with Severe Persistent SLI. *International Journal of Language & Communication Disorders* 36 (supplement), 345-350.

Epstein, S., Flynn, S., Martohardjono, G. (1996). Second Language Acquisition: Theoretical and Experimental Issues in Contemporary Research. *Behavioral and Brain Sciences* 19, 677–714.

Epstein, S., Flynn, S., Martohardjono, G. (1998). The Strong Continuity Hypothesis. Some Evidence Concerning Functional Categories in L2 Acquisition. In S. Flynn, G. Martohardjono, W. O'Neil, *The Generative Study of Second Language Acquisition*. Mahwah, NJ: Lawrence Erlbaum.

Eubank, L. (1994). Towards an Explanation for the Late Acquisition of Agreement in L2 English. *Second Language Research* 10, 83-94.

Eubank, L. (1996). Negation in Early German-English Interlanguage: More Valueless Features in the L2 Initial State. *Second Language Research* 12, 73-106.

Fanselow, G., Ćavar D. (2002). Distributed Deletion. In: A. Alexiadou (ed.), *Theoretical Approaches to Universals*, 65-107. Amsterdam: John Benjamins

Flynn, S., Lust, B. (2002). A Minimalist Approach to L2 Solves a Dilemma of UG. In V. Cook (ed.), *Portraits of the L2 User*. Clevedon/Toronto: Multilingual Matters.

Flynn, S., Martohardjono, G. (1994). Mapping from the Initial State to the Final State: The Separation of Universal Principles from Language Specific Principles. In B. Lust, M. Suñer, J. Whitman (eds.), *Syntactic Theory and First Language Acquisition : Cross-linguistic Perspectives, Heads, Projections and Learnability* Vol 3. Mahwah, NJ: LEA.

Fortunato-Tavares, T., de Andrade, C., Befi-Lopes-, D., Hestvik, A., Epstein, B., Tornyova, L., Schwartz, R. (2012). Syntactic Structural Assignment in Brazilian Portuguese-speaking Children with Specific Language Impairment. *Journal of Speech, Language and Hearing Research* 55, 1097-1111.

Franck, J., Cronel-Ohayon, S., Chillier, L., Frauenfelder, U, Hamann, C., Rizzi, L., Zesiger, P. (2004). Normal and Pathological Development of Subject-Verb Agreement in Speech Production: A study on French Children. *Journal of Neurolinguistics* 17: 147-180.

Friedmann, N., Novogrodsky, R. (2003). *Syntactic movement in Hebrew-speaking children with G-SLI*. Presented at EUCLIDES meeting, Wales, UK.

Friedmann, N., Novogrodsky, R. (2004). The Acquisition of Relative Clause Comprehension in Hebrew: A Study of SLI and Normal Development. *Journal of Child Language* 31: 3, 661-681.

Friedmann, N., Novogrodsky, R. (2007). Is the Movement Deficit in Syntactic SLI Related to Traces or to Thematic Role Transfer? *Brain and Language* 101, 50-63.

Friedmann, N., Novogrodsky, R. (2011). Which questions are most difficult to understand? The comprehension of Wh-questions in three subtypes of SLI. *Lingua* 121, 367–382.

Fukui, N. (1986). *A Theory of Category Projection and its Applications* (Doctoral dissertation), MIT.

Fukui, N., Speas, M. (1986). Specifiers and Projections. In N Fukui, T.R. Rappaport , E. Sagey, *MIT Working Papers in Linguistics* 8, 128-172.

Gallagher, A. (2014). What's in a name? Some thoughts on Reilly et al. (2014). Commentary on Reilly, S., Tomblin, B., Law, J., McKean, C., Mensah, F. K., Morgan, A., Goldfeld, S., Nicholson, J. M. and Wake, M., 2014, Specific language impairment: a

convenient label for whom? *International Journal of Language and Communication Disorders* 49:4, 416-451.

Gallon, N. (2007). *An Investigation into the Semantic-Syntactic Interface in Typically Developing Children and Children with Grammatical Specific Language Impairment* (Doctoral dissertation). University College London.

Gathercole S., Baddeley A. (1990). Phonological Memory Deficits in Language Disordered Children: Is There a Causal Connection?. *Journal of Memory and Language*, 29, 336-360.

Gavarró, A. (2012). Third Person Clitic Production and Omission in Romance SLI. In P. Guijarro-Fuentes & P. Larrañaga (eds.) *Pronouns and Clitics in Early Language*, Berlin/New York: De Gruyter/Mouton, 79–104.

Gavrusseva, E., Thornton, R. (2001). Getting It Right: Acquisition of *Whose*-Questions in Child English. *Language Acquisition* 9: 3, 229-267.

Goodluck, H. (1986). Language Acquisition and Linguistic Theory. In P. Fletcher, M. Garman (eds.), *Language Acquisition*. Cambridge/London: Cambridge University Press.

Gopnik, M. (1990b). Feature Blindness: A Case Study. *Language Acquisition*, 7(2), 139-164.

Gopnik, M., Crago, M. (1991). Familial Aggregation of a Developmental Language Disorder. *Cognition* 39, 1-50.

Grano, T. (2016). Finiteness Contrasts without Tense? A View from Mandarin Chinese. Manuscript, Indiana University.

Grimshaw, J. (1990) "ArgumentStructure", *Linguistic Inquiry Monographs* 18

Grinstead, J., Cantú, M., Flores, B. (2008). Canonical and Epenthetic Plural Marking in Spanish-Speaking Children with Specific Language Impairment. *Language Acquisition: A Journal of Developmental Linguistics* 15, 329–349.

Grüter, T. (2005). Comprehension and Production of French Object Clitics by Child Second Language Learners and Children with Specific Language Impairment. *Applied Psycholinguistics* 26, 363–391.

Guasti, M. (1993/1994). Verb Syntax in Italian Child Grammar: Finite and Nonfinite Verbs. *Language Acquisition* 3, 1-40.

Guasti, M.T. (2016). *Language Acquisition, Second Edition*. Cambridge, MA: MIT.

Guilfoyle E., Allen, S. Moss, S. (1991). Specific Language Impairment and the Maturation of Functional Categories, paper presented at the Boston Conference on Language Development, Boston.

Guilfoyle E., Noonan M. (1992). Functional Categories and Language Acquisition. *Canadian Journal of Linguistics* 37(2), 241-272.

Haegeman, L. (1995). *The Syntax of Negation*. Cambridge, UK: Cambridge University Press.

Haffner, U. (1995) Gut Reden kann ich [Well Speak Can I], Verlag Modernes Lernen, Dortmund, Germany.

Håkansson, G. (2001). Tense Morphology and Verb-Second in Swedish L1 Children, L2 Children and Children with SLI. *Bilingualism: Language and Cognition* 4:1, 85-99.

Håkansson, G., Hansson, K. (2000). Comprehension and Production of Relative Clauses: A Comparison between Swedish Impaired and Unimpaired Children. *Journal of Child Language*, Volume 27: 2, 313-333.

Håkansson, G., Nettelblatt, U. (1993). Developmental Sequences in L1 (Normal and Impaired) and L2 Acquisition of Swedish Syntax. *International Journal of Applied Linguistics* 3: 2, 131-155.

Hale, K., Keyser, S. (1993). On Argument Structure and the Lexical Expression of Syntactic Relations. In K. Hale, S. Keyser (eds.), *The View from Building 20*. Cambridge, Mass.: MIT Press.

Hamann, C. (2004). Comparing the Development of the Nominal and the Verbal Functional Domain in French Language Impairment. In P. Prévost & J. Paradis, *The Acquisition of French in Different Contexts. Focus on Functional Categories*. Amsterdam/Philadelphia: Benjamins.

Hamann, C., Arabatzi, M., Baranzini, L., Cronel-Ohayon, S., Chillier, L., Dubé, S., Franck, J., Frauenfelder, U., Rizzi, L., Starke, M., Zesiger, P. (2002). On the Dissociation of The Nominal and the Verbal Functional Domains in French Language Impairment. In B. Skarabela, S. Fish & A.H.-J. Do (eds.), *Proceedings of the 26th Annual Boston University Conference on Language Development*. Somerville MA: Cascadilla Press. 267–277.

Hamann, C., Lindner, K., Penner, Z. (2001). Tense, Reference Time and Language Impairment in German Children. In C. Fery & W. Sternefeld (eds.), *Audiatur Vox Sapientiae*, 182–213. Berlin: Akademie Verlag.

Hamann, C., Ohayon, S., Dubé, S., Frauenfelder, U.H., Rizzi, L., Starke, M. & Zesiger, P. (2003). Aspects of grammatical development in young French children with SLI. *Developmental Science* 6: 151–158

Hamann, C., Penner, Z., Lindner, K. (1998). German Impaired Grammar: The Clause Structure Revisited. *Language Acquisition* 7: 2-4, 193-245.

Hansen, D. (1994) “Zur Wirksamkeit und Effizienz einer psycholinguistisch begründeten Methode der Sprachtherapie bei kindlichem Dysgrammatismus” [On the Efficiency of a Psycholinguistics Based Method of Speech Therapy in Dysphasic Children], *Sprache-Stimme-Gehdir* 18, 25-33

Hansson, K., Nettelblatt, U., Leonard, L. (2000). Specific Language Impairment in Swedish: The Status of Verb Morphology and Word Order. *Journal of Speech, Language and Hearing Research* 43, 848-864.

Harley, H., Noyer, R. (1999). Distributed Morphology. *Glott International* 4: 4, 3-9.

Harris, A., & Wexler, K. (1996). The optional-infinitive stage in child language: Evidence from negation. In H. Clahsen (ed.), *Generative perspectives on language acquisition* 1–42. Amsterdam, The Netherlands: John Benjamins.

Hauser, M., Chomsky, N., Finch, W.T. (2002). The Faculty of Language: What is It, Who Has It and How did It Evolve?. *Science* 298.

Hendricks, P., Koster, C. (2010). Production/Comprehension Asymmetries in Language Acquisition. *Lingua* 120,1887-1897.

Hinzen, W., Sheehan, M. (2014). *The Philosophy of Universal Grammar*. Oxford, UK: Oxford University Press.

Hornstein, N., Nunes, J., Grohmann, K. (2005). *Understanding Minimalism*. Cambridge, UK : Cambridge University Press.

Hulk, A. (1995). L’acquisition du sujet en français. *Recherches Linguistiques de Vincennes* 24: 33–53.

Hyams, N. (1984). Semantically-based Child Grammar: Some Empirical Inadequacies. *Papers and Reports on Child Language Development* 23, 58-65.

Hyams, N. (1996). The Underspecification of Functional Categories in Early Grammars. In H. Clahsen (ed.), *Generative Perspectives on Language Acquisition*. Amsterdam: Benjamins. 91-128.

Hyams, N., Safir, K. (1994). Evidence, Analogy and Passive Knowledge: Comments on Lakshmanan. In L. Eubank, *Point Counterpoint. Universal Grammar in the Second Language*. Amsterdam/Philadelphia: Benjamins.

Jakubowicz, C. (2003). Hypothèses Psycholinguistiques sur la Nature du Déficit Dysphasique. In C. Gérard & V. Brun (eds.), *Les Dysphasies*. Paris: Masson.

Jakubowicz, C., Nash, L. (2001). Functional Categories and Syntactic Operations in (Ab)normal Language Acquisition. *Brain and Language* 77, 321–339.

Jakubowicz, C., Nash, L., Rigaut, C., Gérard, C. (1998). Determiners and clitic pronouns in French-speaking children with SLI. *Language Acquisition* 7, 113–160.

Jakubowicz, C., Roulet, L. (2010). Narrow Syntax or Interface Deficit?. In J. Liceras, H. Zobl & H. Goodluck, *The Role of Formal Features in Second Language Acquisition*. New Jersey: Lawrence Erlbaum. 184-225.

Junyent, A., Levorato, M., Denes, G. (2010). Verbal inflection, articles and object clitics in Italian specific language impairment. *Clinical Linguistics & Phonetics* 24:11, 941-954.

Kail, R. (1994). A Method for Studying the Generalized Slowing Hypothesis in Children with Specific Language Impairment. *Journal of Speech & Hearing Research* 37, 418-421.

Kayne, R. (1984). *Connectedness and Binary Branching*. Dordrecht.

Kim, M., Phillips, C. (1998). Complex Verb Constructions in Child Korean: Overt Markers of Covert Functional Structure. In A. Greenhill, M. Hughes, H. Littlefield, H. Walsh, (eds.), *BUCLD 22 Proceedings*. Somerville, Massachusetts: Cascadilla Press.

King, G. (1994). Verb Complementation in Language Impaired School Age Children. In M. Aldridge (ed.), *Child Language*. Clevedon/Philadelphia: Multilingual Matters. 84-91.

Klein, W. (1994). *Time in Language*. London: Routledge.

Koenenman, O., Zeijlstra, H. (2017). *Introducing Syntax*. Cambridge, UK: Cambridge University Press.

Laka Mugarza, M. I. (1990). *Negation in syntax-on the nature of functional categories and projections* (Doctoral dissertation, Massachusetts Institute of Technology).

Lakshmanan, U., Ito Y. (1999). Root Infinitives in the Bilingual First Language Acquisition of English and Japanese. Paper presented at the annual meeting of the American Association for Applied Linguistics, Stanford, Connecticut.

Labelle, M. & Valois, D. (1996). The status of post-verbal subjects in French child language. *Probus* 8: 53–80.

Lange, S., Larsson, K. (1973) Syntactical development of a Swedish girl, Embla, between 20 and 42 months of age. Part 1. Age 20-25 mo. Report no. 1. Stockholm University: Institute for the Nordic languages.

Lange, S., Larsson, K. (1977). Studier i det tidiga barnspråkets grammatik [Studies in Early Child Grammar]. Dissertation, Department of Scandinavian Languages, Stockholm University.

Legate, J. (2003). Some interface properties of the phase. *Linguistic Inquiry* 34, 506-516.

Leonard, L. (1989). Language Learnability and Specific Language Impairment in Children. *Applied Psycholinguistics* 10, 179-202.

Leonard, L. (1995). Functional Categories in the Grammars of Children with Specific Language Impairment. *Journal of Speech and Hearing Research* 38, 1270-1283.

Leonard, L. (1996). Characterizing specific language impairment: A crosslinguistic perspective. In M. Rice (ed.), *Toward a genetics of language* Hillsdale, NJ: Lawrence Erlbaum Associates. 243-256.

Leonard, L. (1998). *Children with Specific Language Impairment*. Cambridge, MA: MIT Press.

Leonard, L. (2009). Language Symptoms and their Possible Sources in Specific Language Impairment. In E. L. Bavin, *The Cambridge Handbook of Child Language*. Cambridge, UK: Cambridge University Press. 433-446.

Leonard, L. (2013). Specific Language Impairment Across Languages. *Child Development Perspectives* 8, 1-5.

Leonard, L. (2014a). Children with Specific Language Impairment and their Contribution to the Study of Language Development. *Journal of Child Language* 41, 38-47.

Leonard, L. (2014b). *Children with Specific Language Impairment* (second edition). Cambridge, MA: MIT Press.

Leonard, L., Bortolini, U., Caselli, M.A., McGregor, K., Sabbadini, L. (1992). Morphological Deficits in Children with Specific Language Impairment: The Status of Features in the Underlying Grammar. *Language Acquisition* 2: 2, 151-179.

Leonard, L., Deevy, P. (2010). Tense and Aspect in Sentence Interpretation by Children with Specific Language Impairment. *Journal of Child Language* 37, 395-418.

Leonard, L., Deevy, P., Fey, M.E., Bredin-Oja, S.L. (2013). Sentence Comprehension in Specific Language Impairment: A Task Designed to Distinguish Between Cognitive

Capacity and Syntactic Complexity. *Journal of Speech, Language, and Hearing Research* 56, 577-589.

Leonard, L., Eyer, J. A., Bedore, L. M., Grela, B. G. (1997). Three Accounts of the Grammatical Morpheme Difficulties of English-Speaking Children with Specific Language Impairment. *Journal of Speech, Language, and Hearing Research* 40, 741-753.

Leonard, L., Salameh, E.K., Hansson, K. (2001). Noun Phrase Morphology in Swedish-Speaking Children with Specific Language Impairment. *Applied Psycholinguistics* 22, 619–639.

Leu, T. (2015). *The Architecture of Determiners*. New York: Oxford.

Lin, T.H.J. (2015). Tense in Mandarin Chinese Sentences. *Syntax* 18: 3, 320–342.

Lindner, K. (1995) "The Development of Sentence Interpretation Strategies: A Comparison of Monolingual German-Speaking Normal and Language-Impaired Children," ms., Munchen.

Lleó, C. (1998). Proto-articles in the acquisition of Spanish: Interface between phonology and syntax. In R. Fabri, A. Ortman and T. Parodi (eds.), *Models of InXection*, 175–195. Tübingen: Max Niemeyer Verlag.

Lohndal, T., Uriagereka, J. (2017). Third-factor Explanations and Universal Grammar. In I. Roberts (ed.), *The Oxford Handbook of Universal Grammar*. Oxford, UK: Oxford University Press.

Lorenzo, G. (2013). *Biolingüística. La nueva síntesis*. Oviedo: OpenLibra.

Lorenzo, G. & Longa, V. (2009). Beyond generative geneticism: Rethinking language acquisition from a developmentalist point of view. *Lingua* 119. 1300-1315.

Ludlow, P. (2017). Universal Grammar and Philosophy of Language. In I. Roberts (ed.), *The Oxford Handbook of Universal Grammar*. Oxford, UK: Oxford University Press.

Lust, B. (1999). Universal Grammar: The Strong Continuity Hypothesis in First Language Acquisition. In W. C. Ritchie, T.K. Bhatia (eds.), *Handbook of Child Language Acquisition*. San Diego, CA: Academic Press. 111–155.

Lust, B. (2006). *Child Language*. Cambridge, UK: Cambridge University Press.

Lust, B., Foley, C., Dye, C.D. (2009). The First Language Acquisition of Complex Sentences. In E. L. Bavin, *The Cambridge Handbook of Child Language*. Cambridge, UK: Cambridge University Press. 237-258.

Manzini, R., Roussou, A. (1997). A Minimalist Theory of A-Movement and Control, manuscript, University College, London, and University of Bangor, Wales.

Marantz, A. (1997). No Escape from Syntax. Don't Try Morphological Analysis in the Privacy of your Own Lexicon. In A. Dimitriadis, L. Siegel, et al., (eds.) *University of Pennsylvania Working Papers in Linguistics 4:2*, Proceedings of the 21st Annual Penn Linguistics Colloquium. 201-225.

Marcus, G., Fisher, S. (2003). FOXP2 in focus: what can genes tell us about speech and language?. *Trends in Cognitive Sciences 7:6*, 257-262.

Marton, K., Schwartz, R. (2003). Working Memory Capacity and Language Processes in Children with Specific Language Impairment. *Journal of Speech, Language and Hearing Research 46*, 1138-1153.

Mastropavlou, M., Tsimpli, I. (2011). Complementizers and Subordination in Typical Language Acquisition and SLI. *Lingua 121*, 442–462.

Matthews, S. Yip, V. (1994). *Cantonese: A Comprehensive Grammar*. London: Routledge.

McDaniel, D. (1986). *Conditions on Wh-Chains* (Doctoral Dissertation). City University of New York.

McDaniel, D., Chiu, B., Maxfield, T. (1995). Parameters for Wh-movement Types. *Natural Language and Linguistic Theory 13*, 709–753.

McNeill, D. (1966). Developmental psycholinguistics. In F. Smith & G. A. Miller (eds.), *The genesis of language: A psycholinguistic approach* (pp. 15–84). Cambridge, MA: MIT Press

Meisel, J. (1997). The Acquisition of the Syntax of Negation in French and German. Contrasting First and Second Language Development. *Second Language Research 13*, 227-263.

Mendivil-Giró, J.L. (2018). Is Universal Grammar Ready for Retirement? A Short Review of a Longstanding Misinterpretation. *Journal of Linguistics 4*, 859 – 888.

Montgomery, J. (1995). Examination of Phonological Working Memory in Specifically Language-impaired Children. *Applied Psycholinguistics 16*, 355-378.

Montgomery, J. (2002). Examining the Nature of Lexical Processing in Children with Specific Language Impairment: Temporal Processing or Processing Capacity Deficit. *Applied Psycholinguistics 23*, 447-470.

Montrul, S. (2004). *The Acquisition of Spanish*. Amsterdam/Philadelphia: Benjamins.

- Moore, M.E.** (2001). Third Person Pronoun Errors by Children with and without Language Impairment. *Journal of Communication Disorders* 34, 207-228.
- Muñoz, J. Carballo, G., Fresneda M. D., Mendoza, E.** (2014). Grammatical Comprehension in Spanish-speaking Children with Specific Language Impairment (SLI). *Spanish Journal of Psychology* 17, e45, 1-12.
- Newbury, D., Bishop, D.V.M., Monaco, A.** (2005) Genetic Influences on Language Impairment and Phonological Short-term Memory. *Trends in Cognitive Sciences* 9, 528-534.
- Nieddu, P.** (1997). The Object Agreement Rule in *Passato Prossimo* of Young Italian Children. In S. Someshekar et al. (eds.) *CUWPL* 15, papers on Language Acquisition. 141-159.
- Nippold, M., Schwarz, I.** (2002). Do Children Recover from Specific Language Impairment?. *Advances in Speech-language Pathology* 4:1, 41-49.
- Novogrodsky, R., Friedmann, N.** (2006). The Production of Relative Clauses in Syntactic SLI: A Window to the Nature of the Impairment. *Advances in Speech–Language Pathology* 8:4, 364-375.
- Paradis, J.** (2004). The Relevance of Specific Language Impairment in Understanding the Role of Transfer in Second Language Acquisition. *Applied Psycholinguistics* 25, 67–82.
- Paradis, J., Crago, M.** (2000). Tense and Temporality: A Comparison between Children Learning a Second Language and Children with SLI. *Journal of Speech and Hearing Research* 43, 834-847.
- Paradis, J., Crago, M.** (2001). The Morphosyntax of Specific Language Impairment in French: An Extended Optional Default Account. *Language Acquisition* 9: 4, 269-300.
- Paradis, J., Crago, M.** (2004). Comparing L2 and SLI grammars in child French. In P. Prévost & J. Paradis (eds.) *The Acquisition of French in Different Contexts: Focus on Functional Projections*. Amsterdam/Philadelphia: Benjamin.
- Passino, D.** (2005). Aspects of consonantal lengthening in Italian. University of Padua, PhD dissertation.
- Pérez-Leroux, A. T., Glass, W.** (1997). OPC effects in the L2 acquisition of Spanish. In A. T. Pérez-Leroux and W. Glass (eds.), *Contemporary perspectives on the acquisition of Spanish. Vol. 1: Developing grammars*, 149–65. Somerville, MA: Cascadilla Press

- Pesetsky, D.** (1997). Optimality Theory and Syntax: Movement and Pronunciation. In D. Archangeli, D.T. Langendoen (eds.) *Optimality Theory: An Overview*. Oxford, UK: Blackwell. 134-170.
- Pesetsky, D.** (1998). Some Optimality Principles of Sentence Pronunciation. In P. Barbosa, D. Fox, P. Hagstrom, M. McGinnis, D. Pesetsky (eds.), *Is the Best Good Enough?* Cambridge, MA: MIT Press. 337-383.
- Pesetsky, D., Torrego, E.** (2001) T-to-C Movement: Causes and Consequences. In Michael Kenstowicz (ed.), *Ken Hale: A Life on Language*. Cambridge, MA: MIT Press.
- Pesetsky, D., Torrego, E.** (2004) Tense, Case, and The Nature of Syntactic Categories. In J. Guéron & J. Lecarme (eds.), *The Syntax of Time*. Cambridge, MA: MIT Press. 495-537.
- Pesetsky, D., Torrego, E.** (2007) The Syntax of Valuation and the Interpretability of Features. In S. Karimi, V. Samiiian and W.Wilkins, (eds.) *Phrasal and Clausal Architecture: Syntactic Derivation and Interpretation*. Amsterdam: Benjamins.
- Philippaki-Warburton, I.** (1985). Word order in Modern Greek. *Transactions of the Philological Society*.113-143
- Pierce, A.** (1992). *Language Acquisition and Syntactic Theory. A Comparative Analysis of French and English Child Grammars*. Kluwer, Dordrecht, The Netherlands.
- Plante, E., Swisher, L., Kiernan, B., & Restrepo, M. A.** (1993). Language matches: Illuminating or confounding? *Journal of Speech and Hearing Research*, 36, 772–776.
- Poeppel, D., Wexler, K.** (1993). The Full Competence Hypothesis of Clause Structure in Early German. *Language* 69:1. 1-33.
- Prévost, P.** (2009). *The Acquisition of French*. Amsterdam/Philadelphia: Benjamins.
- Puskas, G.** (2013). *Initiation au Programme Minimaliste. Éléments de Syntaxe Comparative*. Bern : Peter Lang.
- Radford, A** (1988). *Transformational Grammar*. Cambridge, UK: Cambridge
- Radford A.** (1990). *Syntactic Theory and the Acquisition of English Syntax*. Oxford, UK: Blackwell.
- Radford, A.** (2007). Grammatical Aspects of Specific Language Impairment in English-Speaking Children: A Linguistic Perspective. Manuscript, University of Essex.
- Radford, A.** (2009). *Analysing English Sentences. A Minimalist Approach*. Cambridge, UK: Cambridge University Press.

Radford, A., Atkinson, M., Britain, D., Clahsen, H., Spencer, A. (2009). *Linguistics: An Introduction*. Cambridge, UK: Cambridge University Press.

Radford, A., Ramos, E. (2001). Case, Agreement and EPP: Evidence from an English-speaking child with SLI. *Essex Research Reports in Linguistics* 36: 42-81.

Raghavendra, P., Leonard, L. (1989). The acquisition of Agglutinating Languages: Converging Evidence from Tamil. *Journal of Child Language* 16, 313-322.

Reilly, S., Tomblin, B., Law, J., McKean, C., Mensah, F. K., Morgan, A., Goldfeld, S., Nicholson, J.M., Wake, M. (2014a). Specific language impairment: a convenient label for whom?. *International Journal of Language & Communication Disorders* 49:4, 416-451.

Reilly, S., Bishop, D.V.M., Tomblin, B. (2014b). Terminological debate over language impairment in children: forward movement and sticking points. *International Journal of Language & Communication* 49:4, 452-462.

Repetti, L. (2012). Consonant-Final Loanwords and Epenthetic Vowels in Italian. *Catalan Journal of Linguistics* 11, 167-188.

Rice, M. (2003). A Unified Model of Specific and General Language Delay: Grammatical Tense as a Clinical Marker of Unexpected Variation. In Y. Levy & J. Schaeffer (eds.) *Towards a Definition of Specific Language Impairment*. Lawrence Erlbaum, 63-95.

Rice, M. L. (2014). Advocating for SLI. Commentary on Bishop, D. V. M., Ten questions about terminology for children with unexplained language problems. *International Journal of Language and Communication Disorders* 49:4, 381-415.

Rice, M., Noll, K.R., Grimm, H. (1997). An Extended Optional Infinitive Stage in German-Speaking Children with Specific Language Impairment. *Language Acquisition* 6, 255-295.

Rice, M., Oetting, J.B. (1993). Morphological Deficits of Children with SLI: Evaluation of Number Marking and Agreement. *Journal of Speech And Hearing Research* 36: 6. 1249-57.

Rice, M., Redmond, S., Hoffman, L. (2006) Mean Length of Utterance in Children with Specific Language Impairment and in Younger Control Children Shows Concurrent Validity and Stable and Parallel Growth Trajectories. *Journal of Speech, Language and Hearing Research*, 49, 793-808.

Rice, M., Wexler, K. (1996). Toward Tense as a Clinical Marker of Specific Language Impairment. *Journal of Speech, Language and Hearing Research* 39, 1236-1257.

Rice, M., Wexler, K., Cleave, P. (1995). Specific Language Impairment as a Period of Extended Optional Infinitive.

- Rice, M., Wexler, K., Redmond, S.M.** (1999). Grammaticality Judgments of an Extended Optional Infinitive Grammar: Evidence from English-Speaking Children with Specific Language Impairment. *Journal of Speech, Language, and Hearing Research* 42, 943-961.
- Roberge, P.** (1994). On the origins of the Afrikaans verbal hendiadys. *Stellenbosch Papers in Linguistics* 28, 45-81.
- Robert, I.** (2017). Introduction. *The Oxford Handbook of Universal Grammar*. Oxford, UK: Oxford University Press.
- Roberts, I., Roussou, A.** (1998). Interface Interpretation. Manuscript, University of Stuttgart and University of Cyprus.
- Roberts, I., Roussou, A.** (2001). The EPP as a condition on the tense-dependency. In P. Svenonius (ed.), *Subjects, expletives and the EPP*. Oxford: Oxford University Press.
- Roberts, S., Leonard, L.** (1997). Grammatical Deficits in German and English: A Crosslinguistic Study of Children with Specific Language Impairment. *First Language* 17, 131-150.
- Roeper, T.** (1996). The Role of Merger Theory and Formal Features in Acquisition. In H. Clahsen, (ed.), *Generative Perspectives on Language Acquisition*. Amsterdam: Benjamins.
- Roeper, T.** (2011). The Acquisition of Recursion: How Formalism Articulates the Child's Path. *Biolinguistics* 5: 1-2, 57-86.
- Roulet-Amiot, L.** (2008). *Traitement de l'Accord Grammatical chez des Enfants Atteints d'un Trouble Spécifique du Développement du Langage* (Doctoral dissertation). Université Paris Descartes.
- Roulet-Amiot, L., Jakubowicz, C.** (2006). Production and Perception of Gender Agreement in French SLI. *Advances in Speech-Language Pathology* 8:4, 335-346.
- Roussou, A.** (1994). *The Syntax of Complementizers* (Doctoral dissertation), University College, London.
- Royle, P., Toupina J., Bourguignon, N., Trudeau, N., Valois, D.** (2010). L'accord de l'adjectif chez les Enfants Francophones avec un Trouble Spécifique du Langage. *Spectrum* 2, 1-18.
- Scarborough, H.** (1990). Index of productive syntax. *Applied Psycholinguistics*, 11, 1–22.

Schaeffer, J. (2012). *Specific Language Impairment. Evidence for the division of labor and interaction between grammar and pragmatics*. Saarbrücken, Germany: LAP Lambert.

Schütze, C.T., Wexler, K. (1996). Subject Case Licensing and English Root Infinitives. In A. Stringfellow, D. Cahana-Amitay, E. Hughes and A. Zukowsky (eds), *BUCLD 20, Proceedings*, Somerville, MA: Cascadilla Press.

Schwartz, B. & Sprouse, R. (1994). Word Order and Nominative Case in Non-native Language Acquisition. In T. Hoekstra & B. Schwartz (eds.), *Language Acquisition Studies in Generative Grammar*, 317–368. Amsterdam: Benjamins.

Schwartz, B. & Sprouse, R. (1996). L2 Cognitive States and the Full Transfer/Full Access Model. *Second Language Research* 12, 40–72.

Smith, C.S. (1997). *The Parameter of Aspect*. Dordrecht: Kluwer. 2nd ed.

Southwood, F. (2007). *Specific Language Impairment in Afrikaans. Providing a Minimalist Account for Problems with Grammatical Features and Word Order* (Doctoral Dissertation). Radboud University Nijmegen.

Stavrakaki, S. (2006). Developmental Perspectives on Specific Language Impairment: Evidence from the Production of Wh-Questions by Greek SLI Children Over Time. *Advances in Speech–Language Pathology* 8:4, 384-396.

Stephany, U. (1997). The acquisition of Greek. In D. I. Slobin (ed.), *The crosslinguistic study of language acquisition* (Vol. 4, pp. 183–331). Hillsdale, NJ: Erlbaum.

Stokes, S. F., Fletcher, P. (2003). Aspectual forms in Cantonese children with specific language impairment. *Linguistics* 41, 381–406.

Svenonius, P. (2006). Interpreting Uninterpretable Features. *Linguistic Analysis* 33: 3-4, 475-505.

Tallal, P., Piercy, M. (1973). Defects of Non-verbal Auditory Perception in Children with Developmental Aphasia. *Nature*, 241, 468-469.

Tallerman, M. (2020). *Understanding Syntax*. London: Routledge.

Templin, M. (1957). *Certain Language Skills in Children*. Minneapolis: University of Minnesota Press.

Tenny, C. (1994) *Aspectual Roles and the Syntax-Semantics Interface*. Dordrecht, The Netherlands: Kluwer.

Thornton, R. (1990). *Adventures in Long-Distance Moving: The Acquisition of Complex Wh-Questions* (Doctoral dissertation), University of Connecticut.

- Thornton, R., Rombough, K.** (2015). The Syntax-PF Interface in Children's Negative Sentences. *Language Acquisition* 22, 132-157.
- Thornton, R., Rombough, K., Martin, J., Orton, L.** (2016). Negative Sentences in Children with Specific Language Impairment. *First Language*, 1-37.
- Tomblin, J.B., Records, N.L., Buckwalter, P., Zhang, X., Smith, E., & O'Brien, M.** (1997). Prevalence of specific language impairment in kindergarten children. *Journal of Speech and Hearing Research*, 40, 1245-1260.
- Trauner, D., Wulfeck, B., Tallal, P., & Hesselink, J.** (2000). Neurological and MRI profiles of children with developmental language impairment. *Developmental Medicine and Child Neurology*, 42, 470-475.
- Travis, L.** (1991). Parameters of Phrase Structure and V2 Phenomena. In R. Freidin (ed.), *Principles and Parameters in Comparative Grammar*, Cambridge, MA: MIT Press.
- Travis, L.** (2010). The Role of Features in Syntactic Theory and Language Variation. In J. Liceras, H. Zobl & H. Goodluck, *The Role of Formal Features in Second Language Acquisition*. New Jersey: Lawrence Erlbaum. 22-47.
- Tsimpli, I.** (1990). The clause structure and word order of Modern Greek. *UCL Working Papers in Linguistics* 2, 226-255.
- Tsimpli, I.** (2001). LF-Interpretability and Language Development: A Study of Verbal and Nominal Features in Greek Normally Developing and SLI Children. *Brain and Language* 77, 432-448.
- Tsimpli, I., Stavrakaki, S.** (1999). The Effects of a Morpho-Syntactic Deficit in the Determiner System: The Case of a Greek SLI Child. *Lingua* 108, 31-85.
- Ullman, M., Gopnik, M.** (1999). The Production of Inflectional Morphology in Hereditary Specific Language Impairment. *Applied Psycholinguistics* 20, 51-117.
- Ullman, M., Pierpont, E.** (2005). Specific language impairment is not specific to language: the procedural deficit hypothesis, *Cortex* 41, 399-433.
- Valian, V.** (2009). Innateness and learnability. In E. L. Bavin, *The Cambridge Handbook of Child Language*. Cambridge, UK: Cambridge University Press. 16-34.
- van der Lely, H.K.J.** (1996). Specifically Language Impaired and Normally Developing Children: Verbal Passive versus Adjectival Passive Interpretation. *Lingua* 98, 243-272.
- van der Lely, H.K.J.** (1998). SLI in children: Movement, Economy and Deficits in the Computational Syntactic System. *Language Acquisition* 72, 161-192.

- van der Lely, H.K.J.** (2002). SLI and Deficits in the Computational Syntactic System: Control and Cross-domain Mental Computations: Evidence from Language Breakdown. *Computational Intelligence* 18, 39-42.
- van der Lely, H.K.J., Battell, J.** (2003). *Wh*-movement in Children with Grammatical SLI: A Test for the RDDR Hypothesis. *Language* 79:1, 153-181.
- van der Lely, H. K. J., Harris, M.** (1990). Comprehension of Reversible Sentences in Specifically Language Impaired Children. *Journal of Speech and Hearing Disorders* 55, 101–117.
- van der Lely, H.K.J., Jones, M., Marshall, C. R.** (2011). Who did Buzz See Someone? Grammaticality Judgement of *Wh*-Questions in Typically Developing Children and Children with Grammatical-SLI. *Lingua* 121, 408–422.
- van Kampen, J.** (1996). PF/LF Convergence in Acquisition. *Proceedings of the North East Linguistics Society* 26: 149-163.
- van Kampen, J.** (1997) *First Steps in Wh-Movement* (Doctoral dissertation), Utrecht University.
- Varlokosta, S., Vainikka, A., Rohrbacher, B.** (1998). Functional Projections, Markedness, and 'Root Infinitives' in Early Child Greek. *Linguistic Review* 15, 187-207.
- Watanabe, A.** (2006). Functional Projections of Nominals in Japanese Syntax of Classifiers. *Natural Language and Linguistic Theory*, 214-306.
- Wexler, K.** (1994). Optional Infinitives, Head Movement and Economy of Derivation. In N. Hornstein, D. Lightfoot (eds.), *Verb Movement*. Cambridge, UK: Cambridge University Press. 305-350.
- Wexler, K.** (1998). Very Early Parameter Setting and the Unique Checking Constraint: A New Explanation of the Optional Infinitive Stage. *Lingua* 106, 23-79.
- Wexler, K.** (2003). Lenneberg's dream: Learning, Normal Language Development, and Specific Language Impairment. In Y. Levy and J. Schaeffer (eds.), *Language Competence across Populations: Towards a Definition of Specific Language Impairment*. Mahwah, NJ: Erlbaum. 11-61.
- Wexler, K.** (2014). The Unique Checking Constraint as the Explanation of Clitic Omission in Normal and SLI Development.
- Wexler, K., Schaeffer, J., Bol, G.** (2004). Verbal Syntax and Morphology in Dutch Normal and SLI Children: How Developmental Data Can Play an Important Role in Morphological Theory. *Syntax* 7:2, 148-198.

Wexler, K., Schütze, C., Rice, M. (1998). Subject Case in Children With SLI and Unaffected Controls: Evidence for the Agr/Tns Omission Model. *Language Acquisition* 7, 317-344.

White, L. (2003). *Second Language Acquisition and Universal Grammar*. Cambridge, UK: Cambridge University Press.

Yang, C., (2011). Computational Models of Language Acquisition. In J. de Villiers and T. Roeper (eds.), *Handbook of Generative Approaches to Language Acquisition*, Studies in Theoretical Psycholinguistics 41. Springer Science+Business Media B.V.

Zagona, K. (1990). Times as Temporal Argument Structure. Manuscript, University of Washington. Paper presented at the conference "Time in Language", Cambridge, Mass., March 1990.

Zanuttini, R. (1996). On the Relevance of Tense for Sentential Negation. In A. Belletti L. Rizzi (eds.), *Parameters and Functional Heads: Essays in Comparative Syntax*. New York, NY: Oxford University Press. 181-207.

Zeijlstra, H. (2004). *Sentential Negation and Negative Concord*. Utrecht, The Netherlands: Lot Publications.

Zeijlstra, H. (2008). On the Syntactic Flexibility of Formal Features. In T. Biberauer (ed.), *The Limits of Syntactic Variation*. Amsterdam, The Netherlands: John Benjamins. 143-173.

Zwart, J. (1997). *Morphosyntax of Verb Movement: A Minimalist Approach to the Syntax of Dutch*. Dordrecht, The Netherlands: Kluwer.