Grammatical constructions in Cri du chat syndrome – findings from a case study

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Abstract

The literature on grammatical skills in persons with Cri du chat syndrome (CCS) is very scarce, and the need for more knowledge in this area is thus evident, in particular for speech and language therapists working with individuals with this syndrome. This case study report describes the syntactic skills in a 14-year-old Norwegian girl with CCS. The theoretical framework is Construction Grammar. Data for the study were collected in a diary by the author over a period of 4 months and make up a corpus of 552 utterances. These utterances are described in terms of MLU, diversity of argument structure constructions, proportion and types of complex utterances, use of auxiliaries, as well as deviant word order patterns, types of omissions and use of prefabricated units. The primary aim of the study is to identify strengths and weaknesses in syntactic skills which provide the basis for future research on grammatical skills in persons with CCS.

Keywords: *Cri du chat syndrome, syntactic skills, construction grammar*

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Introduction

Typically developing children generally follow the same course of development in their acquisition of syntactic skills, even though there are considerable individual differences. During the first months of the second year they start communicating by one-word utterances; from around 18 months or so the first two-word combinations appear; and from then on their skills gradually grow more sophisticated toward school age, at which point the basic syntactic skills necessary to communicate in the target language have been acquired (see Tomasello, 2003, and Tomasello and Bates, 2001, for an overview).

Many individuals with genetic disorders, on the other hand, develop syntactic skills in a fashion that is both delayed and deviant in comparison to that of typically developing children. For example, it has been found that individuals with Down syndrome (DS) have shorter mean length of utterance (MLU) than typically developing (TD) controls, and that they omit both function words (e.g. forms of the copula, auxiliaries, determiners, prepositions, pronouns, adverbs, conjunctions and infinitive markers) and bound grammatical markers to an extent that is comparable to far younger TD controls (Chapman, Seung, Schwartz, and Kay-Raining Bird, 1998). In another study (Price et al., 2008) boys with Fragile X syndrome (age range 2.2 – 14.4 years) and Down syndrome (age range 4.3 – 16 years) had a less complex syntax than younger TD children in a control group (age range 2.1 – 6.6 years). Moreover, in a study focussing on production of wh-questions (Joffe and Varlokosta, 2007), it was found that children with both Down syndrome and William syndrome performed significantly poorer than TD developing controls.

In this paper I report on a case study of syntactic skills in Cri du chat syndrome (CCS). CCS is a rare genetic disorder with an estimated incidence between 1:20,000 and 1:50,000 births (Niebuhr, 1978; Wu and Hansen, 2005) and is associated with a partial deletion on the short arm of chromosome 5. The clinical features of CCS include a high-pitched cry in infancy and childhood (Sparks and Hutchinson, 1980; Sohner and Mitchell, 1991), malocclusion, hyper- and hypotonia, delayed motor development (Carlin, 1990), microcephaly (Niebuhr, 1978), mild-to-profound
intellectual disability (Cornish, Bramble, Munir, and Pigram, 1999), a short attention span, hyperactivity, and a stereotypical, aggressive, and self-injurious behaviour pattern (Collins and Cornish, 2002).

Those affected with CCS experience delayed speech and language development (see Kristoffersen (2008) for a review). According to the literature, many (reports vary from 23 to 50 %) do not develop spoken language at all (Wilkins, Brown, and Wolf, 1980; Carlin, 1990; Cornish and Pigram, 1996; Baird, Campbell, Ingram, and Gomez, 2001). When they do develop spoken language, however, receptive language skills have been found to be significantly better than expressive language skills (Cornish and Munir, 1998; Cornish, Bramble, Munir, and Pigram, 1999).

In the literature on CCS, syntactic descriptions are restricted to a few observations on word combinations. Sparks and Hutchinson (1980) described a case study that their subject, a girl learning English, used two-word combinations at the age of three. When this girl was 7;6 she mastered sequences of pronoun+verb, article+noun, verb+object, prepositional phrases, and adjective+noun, cf. the following examples: help me, I go down, I love you, two black eyes, and he is jumping. In other words, there were some signs of both verbal and nominal syntax.

In a parental report study of Italian children with CCS Mainardi et al. (2000) reported on the emergence of two-word combinations in 37 of their 84 participants. By four years of age, 25 % of the children produced two-word combinations; by six years, the figure had risen to 50 %; by eight years it was 75 %; and by 11 years 95 %. Given these figures, it is not to be expected that individuals with CCS will communicate in utterances with very sophisticated syntax. On the other hand, the literature summarized here gives very little information about the specific syntactic skills associated with this disorder. For example, lists of concrete word combinations (Sparks and Hutchinson, 1980) without any further syntactic analysis do not tell us anything about strengths and weaknesses in syntactic skills. Furthermore, we also need to know to what extent these utterances are rote learned or if they are the result of generalizations of syntactic patterns. Finally, no studies of syntactic skills within specific areas (e.g. MLU, types of omissions, production of questions) exist, as is the case for other genetic disorders, like the ones mentioned above.
In sum, far more research on development of syntactic skills in CCS is needed. This study is one small step towards this goal. More specifically, I will provide a description of syntactic patterns in a corpus of utterances produced by one person with CCS, with particular focus on diversity of argument structure constructions, proportion and type of complex utterances, use of auxiliaries, as well as deviant word order patterns, types of omissions and the use of prefabricated units. The primary aim of this paper is thus descriptive. In addition, findings will be discussed within the theoretical framework of Construction grammar and related to more general theoretical issues of first language acquisition.

Theoretical framework

The theoretical framework employed for this study is that of construction grammar (CG) as outlined in e.g. Croft (2001), Dąbrowska (2004), Goldberg (1995; 2006), and, in particular, Tomasello (2003). CG is a usage-based model, where language is seen as an integral part of human cognition. The central descriptive and theoretical units in CG are constructions, i.e. ‘learned pairings of form with semantic or discourse function’ (Goldberg, 2006, p. 6). Constructions are of varying complexity, ranging from morphemes via words and idioms to phrasal and sentential patterns. Thus, a morpheme like the Norwegian indefinite plural marker -er, the word kopp ‘cup’, the idiom i ny og ne ‘now and then’, and the ditransitive sentence Petter gav Jon ei bok ‘Peter gave John a book’ are all instantiations of constructions.

Children appear to follow the same course of development from single word utterances to multi-word utterances, eventually with various degrees of grammatical marking and abstractness. Within the domain of syntax, early utterances can be classified into five categories (Tomasello, 2003): First, there are holophrases (from ca. 12 months) which are single linguistic symbols expressing a communicative intention relating to a specific experiential scene, e.g. more used as a request for some object present in the communicative situation. Second, we have two-word combinations (from ca. 18 months), where both words have equal status (e.g. ball table). Third, pivot schemas (from ca. 18 months), where one word (the pivot) determines the speech act of the utterance as a
whole. Pivot schemas also contain a variable slot (e.g. more ____, I____, where’s _____), but involve no grammatical marking. The fourth category is item-based constructions (from ca. 24 months), where grammatical meaning is expressed by morphology, adpositions or word order. These means of expression are not generalized, but are used on an item-specific basis, as for example when a syntactic pattern is used only with one particular verb and not with others belonging to the same class. Finally, there are abstract constructions (from ca 36 months), which are abstractions over a range of item-based constructions, e.g. the ditransitive construction (based on item-based constructions e.g. involving verbs like give, tell, promise, etc.).

According to this view of language acquisition children learn abstract linguistic constructions in a gradual fashion. To a large extent they base their abstractions on the relative frequency of the language items they encounter. In the same way they gradually learn how to use various constructions, again based on linguistic experience (Tomasello, 2003). To illustrate this process of generalization, we can use figure 1 as a starting point.

*Insert figure 1 about here.*

In figure 1 three item-based locative constructions (involving the verbs henge ‘hang’, ligge ‘lie’ and stå ‘stand’) instantiate a more general (and hence more abstract) intransitive locative construction, which in its turn instantiates an even more general intransitive construction, not only involving locative verbs, but also other intransitive verbs.

Thus, in a constructionist perspective language acquisition is a question of learning pairings of form and meaning/function and making generalizations over these pairings. The acquisition process is grounded both in specific communicative events and in more general cognitive abilities, among them the ability to read other people’s intentions and to share their focus of attention.
Method

Case description
The subject of this study was the author’s daughter, Hanna, who has been raised in a monolingual Norwegian-speaking environment. Her target language is Norwegian, a V2 language belonging to the northern branch of the Germanic languages. Hanna is a second child, and was diagnosed with CCS at 6 weeks of age. Diagnosis was suspected on the basis of her cry, and confirmed by chromosomal analysis, which demonstrated a \textit{de novo} terminal deletion with a breakpoint at 14.2. Hanna received physiotherapy twice a week from 3 through 11 months of age. After that time, she received physiotherapy on a more irregular basis. She was systematically taught Sign support communication – at home, in kindergarten, and at school – from 3 months of age until she was 13 years. She has received speech therapy since she was 8 years old.

Hanna’s hearing has been found to be normal. At 13;6 her cognitive functioning was measured by the municipal pedagogical-psychological service (PPS) using \textit{Raven’s coloured progressive matrices} (Raven, 1962). According to the report issued by the PPS her performance was similar to that of typically developing children aged 7 – 8. At the same age, Hanna’s cognitive functioning was also measured by Bender visual-motor gestalt test (Bender, 1938). Here the report from the PPS says that her performance was variable, similar to that of typically developing children between 4 and 7 years.

Data collection: Diary
Data for this study were collected by the author between January 23 and April 20, 2008, who was then aged between 14;2 and 14;5. Utterances were registered by the author in a diary immediately after Hanna produced them. Within one month after the registration in the diary they were entered into a database.

Data collection was conducted by a procedure adapted from Tomasello (1992). The basic guiding principle was to register as many different constructions occurring in naturally occurring interactions as possible during the period under investigation [1]. By different constructions I mean: (a) different argument structure constructions (e.g. intransitive vs. transitive vs. ditransitive constructions); (b) instantiations of the same argument structure construction involving different lexical verbs (e.g. the transitive
construction with two or more distinct verbs); and (c) different types of speech acts (statements, questions, orders) instantiating the same argument structure construction (e.g. *She gave me the book* vs. *Give me the book!*).

This way of collecting data obviously results in a skewed picture of Hanna’s syntactic productions. Therefore, an additional procedure of data collection was used in order to get a more complete picture. For two days during the data collection period (February 18 and March 8) all utterances were registered for a period of 6 – 7 hours. Information about MLU (word), number of one-word utterances and longest utterance was obtained from the utterances produced on these two days.

**Data analysis**

The basic unit of analysis in the study was the utterance, defined as ‘any stretch of talk, by one person, before and after which there is silence on the part of that person’ (Harris, 1951), and expressing an identifiable speech act. Each utterance produced by Hanna was entered into a database along with the following information: type of speech act expressed by the utterance (statement/question/order/other),[2] the author’s interpretation of the utterance, presence or absence of lexical verb, form of the lexical verb (present/past/infinitive/imperative/past participle), presence/absence of an auxiliary verb, construction type (intransitive, transitive, ditransitive, resultative, predicative, or reflexive), whether the utterance was identical to or different from the target utterance, whether the utterance was simplex or complex, the type of embedded clause (relative, adverbial, nominal, or infinitival), and length of utterance (both in number of words and in number of morphemes). MLU was calculated by dividing number of morphemes by total number of utterances during the two 6- 7 hours sessions.

**Results**

The collected data constitute a corpus of 552 utterances with a total of 1733 words. 226 of these utterances (i.e. exactly 50 %) were produced during the two days with extended data collection. On the first of these two days 107 utterances were recorded, on the
second day 119 utterances were recorded. Table 1 shows some properties of the utterances produced during these two days:

*Insert table 1 about here*

From table 1 we see that Hanna’s utterances can be up to seven words long. Among her longer utterances there are some that agree with syntactic patterns in the target language, for example those in (1):

(1) a. Kan du putte den i sekken?
   can you put it in sack-the
   ‘Can you put it in the rucksack?’

   b. Siv ringte meg i dag.
   Siv called me today
   ‘Siv called me today’

On the other hand, there are also utterances that deviate syntactically from any target pattern, like the ones in (2):

(2) a. Ikke jeg tatt skoa dine.
    not I taken shoes your
    ‘It is not I who have taken your shoes’
    Target: Jeg har ikke tatt skoa dine. [3]

   b. Onsdag ridinga svart katt og hvit.
   Wednesday riding black cat and white
   ‘I saw a black and white cat on the riding course last Wednesday’
   Target: Jeg så en svart og hvit katt på ridinga på onsdag.

In the next sections I first show how four common argument structure constructions are instantiated in the corpus. Next, I present some examples of complex utterances, i.e. utterances with embedded clauses, and utterances with modal auxiliaries. Finally I
present three types of patterns which deviate structurally from the corresponding target forms: omissions, deviant word orders, and extended use of so called prefabricated units.

**Argument structure constructions**

An argument structure construction is a construction type instantiated by utterances with a particular argument structure (i.e. a semantic predicate and one or more semantic arguments or roles, like agent or patient). For example, utterances like *Peter ran* and *Mary laughed* are instantiations of the intransitive construction, whereas *Peter gave Mary a book* and *Mary told Peter a story* are instantiations of the ditransitive construction. In what follows I describe a selection of Hanna’s utterances in terms of four different argument structure constructions; the intransitive construction, the transitive construction, the ditransitive construction, and the predicative complement construction. Utterances (from the corpus) instantiating these four construction types are shown in (3):

(3)  

a. Skjerfet mitt ligger opppe.
scarf my lies upstairs
‘My scarf is upstairs.’

b. Kan du hjelpe meg?
can you help me

c. Koss han lovte meg.[4]
Koss he promised me
‘He promised me [a set of] Koss [earphones]’

Target: *Han lovte meg Koss.*

d. Er jo frisk jeg.
am yes well I
‘I am well’

Not all of these construction types are equally frequent; there are far more examples of utterances with intransitive and transitive verbs than with predicative verbs, and there are
only a few instances of the ditransitive construction. Figure 2 shows type and token frequencies for these four construction types in the corpus.

Insert figure 2 about here

Among the most frequent intransitive verbs we find verbs expressing location (*være* ‘be’ with 30 tokens, *ligge* ‘lie’ with 13 tokens) and movement (*gå* ‘go’ with 21 tokens, *komme* ‘come’ with 9 tokens). Among the transitive verbs, the most frequent ones are the two possessive verbs: *få* ‘get, have’ (17 tokens) and *have* ‘have’ (16 tokens). As figure 2 shows there are only two ditransitive verbs in the corpus. These are *ønske* ‘wish’ (3 tokens) and *love* ‘promise’ (1 token).

**Complex utterances**

I define a complex utterance as an utterance containing either an embedded clause or a coordinated structure. The embedded clause can be relative, nominal, adverbial or infinitival. Even though the share of complex utterances in my data is only 3 %, utterances with all four types of embedded structures are found in the corpus. (4) shows an example with a relative clause, (5) an example with a nominal clause, (6) with an adverbial clause. Finally, (7) shows an example with an infinitival clause.

(4) Kine kjenner noken går der.
Kine knows someone goes there
‘Kine knows someone who goes there.’
Target: *Kine kjenner noen som går der.*

(5) Lurer på mamma handle mat.
wonders mummy buy food
‘Mummy wonders if she should buy food.’

(6) Jeg vil leke snøen kommer hjem.
I will play snow come home
‘I want to play in the snow when we get home.’
Target: Jeg vil leke i snøen når jeg kommer hjem.

(7) Kan du hjelpe meg dele opp?
    can you help me cut up

‘Can you help me to cut it up.’

Target: Kan du hjelpe meg å dele opp.

(4)–(7) are not possible utterances in the target language. One reason is that the complementizers, which are obligatory in the target utterances, are omitted: In (4) it is the relative pronoun som (‘who’), in (5) the nominal complementizer om ‘if’, in (6) the adverbial complementizer når ‘when’, and in (7) the infinitival marker å ‘to’.

Use of modal auxiliaries

Hanna also used auxiliary verbs. In (8) we have two examples involving the verb ha ‘have’ used as an auxiliary combining with a past participle forming the present perfect (8a) and the past perfect (8b):

(8)  a. Har ikke du sett jakka min?
     have not you seen jacket mine
     ‘Haven’t you seen my jacket?’

     b. Jeg hadde vist de fram.
        I had shown them forward
        ‘I had shown them’

She also produced utterances with examples of modal auxiliaries, as in the examples in (9):

(9)  a. Kan du hive den?
     can you throw it
     ‘Can you throw it’

     b. Jeg vil spille golf.
In total Hanna produced 35 utterances (6.3%) with auxiliary verbs. Of these kunne ‘can’ were the most frequent with 17 instances. The verb ville ‘will’ appeared in 8 utterances, and the perfect auxiliary ha ‘have’ in 7 utterances.

Omissions

Above we saw that Hanna regularly omitted complementizers. However, omissions are not restricted to complementizers, but are part of a more general pattern, involving a whole range of grammatical markers, cf. (10):

(10) a. Sove der.
    sleep there
    ‘You must sleep there’
    Target: Du må sove der.

b. Lenge siden vært Stavanger.
    long since been Stavanger
    ‘It is long since we have been to Stavanger’
    Target: Det er lenge siden vi har vært i Stavanger.

In (10a) both a pronominal subject and a modal auxiliary are omitted, whereas in (10b) it is reasonable to assume that a pronoun (det ‘it’), copula (er ‘is’), auxiliary (har ‘have (present)’) and preposition (i ‘in’) have been omitted.[5] Omissions in Hanna’s utterances frequently result in patterns not found in the target language. (11) gives some examples:

(11) a. Har noen gamle ørepropper?
have some old earplugs?
‘Have you got some old earplugs’
Target: Har du noen gamle ørepropper?

b. I dag ha på den.
Today wear this
‘Today I’m going to wear this.’
Target: I dag skal jeg ha på den.

c. Mista.
lost
‘I lost my phone.’
Target: Jeg mista telefonen min.

In (11a) a sentence-internal subject is omitted. Although omissions of subjects are frequent in Norwegian, this is only possible when the subject occurs as the first constituent of a sentence. Thus, the pattern instantiated by (11a) is not possible in the target language. Another type of omission is illustrated in (11b), where both a subject and a modal auxiliary – both sentence internal – are omitted. Finally, (11c) illustrates a pattern where the lexical verb appears alone, without the subject and direct object. Neither of the patterns illustrated by (11a–b) are permitted in the target language.

Word orders deviating from the target language

Many of Hanna’s utterances also deviate syntactically from the target language when it comes to word order. In (12) the order of direct object and adverbial is reversed.

(12) a. Fikk i går mobilen.
got yesterday mobile-the
‘(I) got my cell phone back yesterday.’
Target: Fikk mobilen i går.

b. Så i Bergen fine ørepropper.
saw in Bergen nice earplugs
‘(I) saw some nice earplugs in Bergen.’
Target: Så noen fine ørepropper i Bergen.

The next set of examples show statements with the finite verb as first constituent, a pattern which is reserved for yes/no-questions in the target language:

(13) a. Brant huset.
burned house-the
‘The house was burning.’
Target: Huset brant.

b. Heter Svein sin datter Tuva.
is-called Svein ’s daughter Tuva
‘Svein’s daughter is called Tuva.’
Target: Svein sin datter heter Tuva.

Formulated as questions, both the a- and b-sentence are well formed in Norwegian. However, the context in which these were produced made it clear that they were intended as statements, not questions.

*Use of prefabricated units*

Dąbrowska (2004, p. 18) defines prefabricated units as ‘[…] ready-made sentences and smaller units (phrases, inflected words) that can be combined into sentences with minimum effort’. There are several examples of prefabricated expressions in Hanna’s utterances. One is her version of the idiomatic expression *hvorfor det?*, which in the target language has the meaning ‘why’ when it is used alone. When used in larger expressions *hvorfor* appears without the pronoun *det*. Hanna, on the other hand, uses *hvorfor det* for ‘why’ also in combination with larger expressions, cf. (14):

(14) a. Hvorfor det to sånne?
why two such
‘Why are there two of those?’
Target: Hvorfor er det to sårne?

b. Hvorfor det dyrene lager klappelyd?
why animals-the make clap sound
‘Why do the animals make a clapping sound?’
Target: Hvorfor lager dyrene klappelyd?

c. Hvorfor det gulost?
why yellow cheese
‘Why have you put yellow cheese on the slice of bread?’
Target: Hvorfor har du tatt gulost på brødskiva?

Another prefabricated unit frequently employed by Hanna was vet ikke ‘don’t know’. This expression can be used alone, as Hanna often does. In addition she combines it with other linguistic expressions, cf. (15):

(15)  a. Vet ikke smaker det vannet.
don’t know tastes that water
‘I don’t know what that water tastes like.’
Target: (Jeg) vet ikke hvordan det vannet smaker.

b. Vet ikke heter han.
don’t know is-called he
‘I don’t know his name.’
Target: (jeg) vet ikke hva han heter.

In (15a) vet ikke is combined with an embedded adverbial clause, and in (15b) it is combined with an embedded nominal clause. Once again the complementizers are omitted.
Discussion and conclusion

This paper has presented an account of selected syntactic patterns in the utterances of one Norwegian girl with CCS, Hanna. I found that MLU (morpheme) varied between 2.68 and 3.15, that she had a large proportion of one-word utterances (33/35 %), and that her longest utterance was 7 words long (cf. table 1 above). 3% of Hanna’s utterances were complex, i.e. either containing an embedded relative, nominal, adverbial or infinitival clause, or a coordinated structure. Moreover, her utterances exhibited considerable lexical diversity; she used 39 different verbs (138 tokens) in the intransitive construction, 54 different verbs (166 tokens) in the transitive construction, three different verbs in the predicative complement construction (23 tokens), and two different verbs (4 tokens) in the ditransitive construction, cf. figure 1 above. Hanna also used auxiliary verbs, both the perfect auxiliary ha ‘have’ and the modal auxiliaries ville ‘will’, kunne ‘can’ and skulje ‘shall’.

In spite of the syntactic complexity and lexical diversity, Hanna’s utterances exhibited many non-target like features. One of them was omissions. In colloquial Norwegian certain omissions are quite common, e.g. omission of utterance-initial subject (Nygård, Eide, and Åfarli, 2008). Hanna did omit utterance-initial subjects, but in addition she omitted both grammatical and lexical items in positions where no such omissions were found in the target language. The overall result of these omissions was of course that many of her utterances deviated syntactically from corresponding target utterances. But extensive omissions also resulted in a number of one-word utterances, one of which were given in example (9c) above: mista for jeg mista den ‘I lost it’. These omissions are an important reason for the difficulty of her interlocutors to understand her.

Hanna also used several so-called prefabricated units, of which two (hvorför det ‘why’ and vet ikke ‘don’t know’ were exemplified above). It has been noted that prefabricated expressions play an important role in language production: ‘Without a substantial inventory of prefabricated expressions, fluent real-time speech would hardly be possible’ (Langacker, 2008). Furthermore, prefabricated units also play a role in first language acquisition and are particularly easy to observe in ungrammatical utterances in children’s speech:
Ungrammatical utterances produced by children are often regarded as evidence that they are relying on their own rules rather than merely imitating adults. However, ungrammatical utterances are just as likely to arise when the child attempts to combine rote-learned chunks. (Dąbowska, 2004, p. 162)

The two examples of prefabricated units among Hanna’s utterances, *hvorfør det* ‘why’ and *vet ikke* ‘don’t know’, are both frequent forms in isolation, and are therefore likely members of a usage-based mental lexicon. When Hanna combined these expressions with other linguistic material, and the result deviated from the corresponding target pattern, this may be a result of the process of combining rote-learned chunks described by Dąbowska.

The findings of this study can also be related to the theoretical framework of Construction Grammar outlined in section 2 above. Recall that Tomasello (2003) draws a distinction between five different construction types in the language of children younger than four years: holophrases (from ca. 12 months), early two-word combinations, where both words have equal status (from ca. 18 months), pivot schemas (from ca. 18 months), item-based constructions (from ca. 24 months), and, finally, abstract constructions (from ca 36 months). With reference to this typology, we can ask whether Hanna produced utterances instantiating any of these five construction types.

The one-word utterances resulting from extensive omissions can be characterized as holophrases, e.g. *mista* ‘lost’ = ‘I lost my phone’. Furthermore, utterances with prefabricated units were used in the same way as pivot schemas, with the prefabricated unit functioning as the pivot, connecting to a variety of other linguistic material. She of course also produced many two-word combinations. However, unlike the first two-word combinations of TD children younger than 24 months, where both words have an equal status, Hanna’s two-word combinations frequently had some kind of grammatical structure, most often because of the presence of a particular grammatical marker, making the combination asymmetrical. If a particular grammatical marker – e.g. a past tense marker – was present it was not fully generalized but appeared on some items, but not on others. In other words, Hanna produced item-based constructions.

Finally we may ask whether Hanna generalized from item-based expressions to more abstract constructions. The present study cannot answer this question. However,
we can make the question more precise on the basis of some of her examples. Compare
figure 1 above, which illustrated the process of generalizing over item-based
constructions, with figure 3, which represents three of Hanna’s utterances involving the
same locative verbs.

*Insert figure 3 about here.*

Hanna is able to produce utterances involving locative verbs, as evident from the
examples in the bottom line of figure 3. The question is if she has generalized above these
item-based constructions to a more general locative construction (level 2), or even to the
most general level (level 3), the intransitive construction. Only more research will enable
us to answer that question. However, the range of verbs Hanna uses with the different
constructions might be taken as indicative of where we might plausibly look for such
generalizations. For example, it is far more plausible that she has made generalizations on
the basis of her utterances with intransitive and transitive verbs, than with ditransitive
verbs.

Finally, we can approach the question of abstractions from the perspective of the
contrast between the utterances with target syntax in (1) and those violating target syntax
in (2). If Hanna had generalized all the syntactic patterns (whether in forms of rules, as in
generative approaches, or constructions, as in constructional approaches) we should
expect that her utterances were in accordance with theses patterns across the board. If not,
we should expect that some utterances would be in accordance with a target pattern,
whereas others would not be. Judging from the data collected for this project, it is the
latter situation which is the case. And, interestingly, this is a situation which can only be
accounted for in an approach like construction grammar, which takes into account usage
frequency as a determining factor for the degree of abstractions.

Recall from the introduction that the literature on grammatical skills in persons
with CCS is restricted to a few unsystematic observations on word combinations
produced by one girl with CCS (Sparks and Hutchinson, 1980) and parental report data
on the emergence of two-word utterances produced by Italian children with CCS
(Mainardi et al., 2000). The present study adds to this knowledge by providing a
description of the grammatical skills of one speaker with CCS. We have seen that this speaker was capable of producing utterances with considerably more grammatical complexity than previous research has indicated. At the same time, the study makes it clear that careful linguistic analyses of utterances produced by individuals with CCS are important in a clinical perspective, since such descriptions will provide sufficiently detailed knowledge necessary to develop therapy programs.

In future research we obviously need to move beyond a case study like the present one. However, since the incidence of the syndrome is comparatively low, and there is extensive individual variation in the language skills of speakers with CCS, it is not clear that group studies will be optimal with this diagnosis. Instead, more and more detailed case studies will probably be the best source to expand our knowledge in this area, possibly in combination with parental report studies.

Another unresolved question is to what extent intellectual disability and motor problems contribute to the particular language problems experienced by persons with CCS, and to what extent the structure of the target language (in this case Norwegian) interferes with these two other factors. A further question is to what extent these language problems are unique to CCS, or whether they have features in common with language impairments associated with other conditions. To address these questions we need more case studies of persons with CCS acquiring different languages, as well as comparable case studies focusing on language problems associated with other conditions.

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NOTES

[1] Ideally, these interactions should have been recorded. However, since this would have meant that Hanna would have had to carry recording equipment all waking hours every day for several months, I considered such a procedure difficult to go through with.

[2] The identification of type of speech act was made on the basis of the context the utterance appeared in. In some cases word order and the presence of particular inflected forms also signaled a particular utterance type.

[3] Target utterances are included for comparison in all examples when the syntax of Hanna’s utterance deviate from the target.

[4] (3c) deviates from the target in that the finite verb (lovte ‘promised’) is in third position, and not in the second, as is expected in a verb-second language like Norwegian.

[5] In colloqial Norwegian it is not uncommon to omit det er in (10b).
References


Text for figure captions:

Figure 1: Abstracting from item-based constructions

Figure 2: Argument structure constructions – type and token frequencies

Figure 3: The extent of generalizations