

CHAPTER I

Introduction

Languages are complex systems that allow speakers to produce novel grammatical utterances that they have never heard before. Consequently, most linguists agree that the mental grammars of speakers are complex systems that must be more abstract than the input they are exposed to. Yet, linguists differ as to how general and abstract speakers' mental representations have to be to allow this grammatical creativity. In order to shed light on these questions, the present study looks at one specific construction type, English Comparative Correlatives (CCs; Borsley 2004a,b; Culicover and Jackendoff 1999; den Dikken 2005; Fillmore 1987; Kim 2011; Michaelis 1994; Sag 2010) also known as 'Covariational-Conditional construction' (Fillmore, Kay and O'Connor 1988), 'Comparative-Conditional construction' (McCawley 1988) or 'the ... the construction' (Cappelle 2011):

- (1.1) [the [more]_{comparative phrase1} you eat,]_{C1}
 [the [fatter]_{comparative phrase2} you'll get]_{C2}

The construction in (1.1) consists of two clauses (C1: *the more you eat* / C2: *the fatter you'll get*), whereby the second clause C2 can be interpreted as the apodosis/dependent variable for the protasis/independent variable specified by C1 (cf. Goldberg 2003: 220, e.g., *the more you eat* → *the fatter you'll get*; cf. Beck 1997; Cappelle 2011). Note that, as we will see later, not all sentences expressing a comparative correlative meaning necessarily exhibit the clause order in (1.1). Nevertheless, in order to facilitate the comparison of canonical CCs with these non-canonical orders, I will reserve the label C1 for the clause that encodes the semantic protasis and C2 for the clause that provides the semantic apodosis. Continuing for now with our description of the canonical C1C2 CC, we can see that the construction consists of fixed, phonologically specified material ([ðə ...]_{C1} [ðə ...]_{C2}) as well as schematic, open slots which can be filled freely by the speaker to create novel utterances:

- (1.2) [the [older]_{ADJP} the man got,]_{C1}
 [the [longer]_{ADVP} he slept]_{C2}
- (1.3) [the [more money]_{NP} we come across]_{C1}
 [the [more problems]_{NP} we see]_{C2}
 (Notorious B.I.G. – ‘Mo Money Mo Problems’)
- (1.4) [The [more under the weather]_{PP} you are,]_{C1}
 [the [more in pain]_{PP} you are]_{C2}

As examples (1.2)–(1.4) show, both clauses C1 and C2 always need to be introduced by *the*, but subject and predicate vary freely while the comparative phrase can, e.g., be an adjective phrase (ADJP; (1.2)), adverb phrase (ADVP; (1.2)), noun phrase (NP; (1.3)), or prepositional phrase (PP; (1.4)) (see, e.g., McCawley 1988; den Dikken 2005; Fillmore et al. 2007: 20–2; Sag 2010: 493; Section 2.2).

Previous research has largely focussed on the similarities of CCs with other constructions. As the names ‘Covariational-Conditional construction’ and ‘Comparative-Conditional construction’ indicate, conditional constructions (1.5b) can sometimes be partly synonymous with CC constructions (1.5a):

- (1.5) a. The more you eat, the less you want.
 b. If/When/As you eat more, you want correspondingly less.
 (examples from Culicover and Jackendoff 1999: 545)

Yet, as Culicover and Jackendoff (1999: 545) point out, unlike *if*-conditional clauses (1.6a, 1.7a), *as*-clauses and CC constructions can neither be counterfactual (1.6b,c) nor contain superlatives (1.7b,c):

- (1.6) a. If you had eaten more, you would want less.
 b. *As you had eaten more, you would want less.
 c. *The more you would want, the less you would eat.
 (examples from Culicover and Jackendoff 1999: 545)
- (1.7) a. If you eat the most, you want the least.
 b. *As you eat the most, you want the least
 c. *The most you want, the least you eat.
 (examples from Culicover and Jackendoff 1999: 545)

Moreover, CC constructions also exhibit idiosyncratic deletion/truncation phenomena: as McCawley (1988), Culicover and Jackendoff (1999) and Borsley (2004a,b) have pointed out, in contrast to corresponding *if*-clauses (1.8b, 1.9b) or *as*-clauses (1.8c, 1.9c), both C1 and C2 of a CC construction

allow the deletion of the auxiliary BE (1.8a) and even the truncation of comparative correlative clauses down to just their comparative phrase ((1.9a), examples from Huddleston 2002: 1136):

- (1.8) a. The greater the demand **is**, the higher the price **is**.
 b. *If the demand **is** the greater, the price **is** correspondingly higher.
 c. *As the demand **is** the greater, the price **is** correspondingly higher.
- (1.9) a. The greater **the demand is**, the higher **the price is**.
 b. *If **the demand is** the greater, **the price is** correspondingly higher.
 c. *As **the demand is** the greater, **the price is** correspondingly higher.

The deletion in (1.8a) is not entirely unconstrained (for details, see Borsley 2004a: 74; Culicover and Jackendoff 1999: 554; Section 2.2), but, more interestingly, this type of BE-deletion would also be completely ungrammatical in corresponding Standard English declarative clauses (cf. **The demand is greater*). This is therefore a construction-specific property that speakers must also have stored in their mental grammars and which distinguishes CCs from *if*- and *as*-clauses.

Finally, there are also strongly lexicalized instances of truncation patterns such as (1.9) (cf. Croft and Cruse 2004: 234; Fillmore, Kay and O'Connor 1988: 506).

- (1.10) [The [more]]_{C₁}
 [the [merrier]]_{C₂}
- (1.11) [The [sooner]]_{C₁}
 [the [better]]_{C₂}

The existence of strongly lexicalized patterns such as (1.10) and (1.11), construction-specific deletion phenomena as in (1.8a) and (1.9a), and patterns attesting to rule-like behaviour (1.2)–(1.4) raises the question of how the construction (or, more precisely, the various subtypes of this construction) is stored in the mental grammar of speakers. Previous research, which has mostly relied on introspective data, predominantly tried to account for the CC construction using maximally abstract representations (except for (1.10) and (1.11), which are treated as lexicalized idioms). This view is largely based on the fact that it shares several properties with a number of other abstract construction types: just like WH-questions (1.14) or

relative clauses (1.15), comparative correlatives have a clause-initial phrase (the so-called ‘filler’) that in declaratives would be realized in post-verbal position (cf. *tired* in (1.12), whose position is marked by a co-indexed ‘gap’ in (1.13)–(1.15).

(1.12) Declarative clause:

Ben was [tired]

(1.13) Comparative Correlative construction:

[The more tired]_i Ben was _{-i},
 [the more mistakes]_i he made _{-i}

(1.14) WH-question:

[What]_i was Ben _{-i}?
 [What]_i did he make _{-i}?

(1.15) WH-relative clause:

A pilot shouldn’t be tired, [which]_i Ben was _{-i}
 The mistakes [which]_i he made _{-i} ...

In Mainstream Generative Grammar (MGG; cf., e.g., Chomsky 1977, 1981, 1995, 2000, 2001), the structural similarities of (1.13)–(1.15) are explained by a single transformational operation (which has, e.g., been called A-bar movement or WH-movement). Consequently, in this approach the mental representation underlying comparative correlatives is maximally abstract. Den Dikken (2005: 498–9, 2009: 264), for instance, emphasizes the ‘correlative’ nature of CCs and, consequently, proposes an analysis similar to a special type of relative clause found, e.g., in Hindi (1.16), that has been labelled ‘correlative’:

- (1.16) [_{IP} [_{CP} *jo* larRkii khaRii hai] [_{IP} *vo* lambii hai]].
 REL girl standing is DEM tall is
 ‘The girl that is standing is tall.’
 (lit.) ‘Which girl is standing, that (one) is tall.’
 (example from den Dikken 2005: 499)

In (1.16), a relative pronoun *jo* in the initial subordinate clause ‘correlates’ with a demonstrative pronoun *vo* in the main clause. For English CCs, den Dikken (2005) claims that these also developed out of a relative clause structure similar to the one in (1.16). As I will show in Section 2.3, a careful investigation of diachronic evolution of English CCs, however, reveals that this analysis is incorrect. Moreover, as Borsley (2011: 20) notes, den Dikken’s analysis of CI as a relative clause fails to explain why it, in contrast to adjunct relative clauses, is obligatory in Present-day English (PdE;

see also Section 2.2). Besides, such an analysis also fails to provide any explanation for construction-specific deletion and truncation phenomena such as (1.8a) and (1.9a). Thus, it is important to stress that CCs are constructions with two ‘correlating’ and not ‘co-relative’ clauses.

Concerning the analysis of apparently similar constructions such as (1.13)–(1.15), Sag (2010) has pointed out that the various structures accounted for by A-bar/WH-movement (which he labels ‘Filler-Gap constructions’) are characterized by great variation across a number of other parameters (presence of a WH-element, syntactic category of the filler phrase, grammaticality of subject-verb inversion, etc.; cf. Sag 2010: 490). This leads Sag to postulate construction-specific formal representations (for interrogatives, relatives, comparative correlatives as well as other Filler-Gap constructions) on top of an abstract Filler-Head construction (Sag 2010: 536) that captures the common structural properties of these phenomena. Yet, while Sag (2010; drawing heavily on Borsley 2004a) presents a fully formalized and computationally adequate analysis, his account still assumes a fairly schematic mental representation, which only comprises two abstract constraints underlying the CC structures: 1) a ‘*The*-clause construction’ (Sag 2010: 537) that licenses instances of C₁ and C₂ and 2) a ‘Comparative-Correlative construction’ (Sag 2010: 537) that combines the two clauses (and computes the complex semantics of the resulting output; cf. also Section 4.3 for details).

Culicover and Jackendoff, on the other hand, provide a constructional analysis which does not assume that the two CC clauses are licensed separately (1999: 567; building on Fillmore, Kay and O’Connor 1988 and McCawley 1988):

(1.17) [*the* []_{comparative phrase₁} (clause)]_{C₁} [*the* []_{comparative phrase₂} (clause)]_{C₂}

In (1.17), both CC clauses are included in a single constructional template, but as the schematic slots labelled ‘(clause)’ indicate, this analysis is still fairly schematic and assumes that several slots of the construction can be filled freely by speakers.

In contrast to this introspection-based research, the present study will draw on corpus data (from various varieties of English as well as a closely related language, that is German; cf. Sections 1.1 and 1.2) to analyse authentic examples of the construction and to test the various constraints that scholars have postulated based on their intuition alone. Such a corpus approach also allows for the quantitative analysis of variable structures such as (1.8a) or (1.9a) and, in line with sociolinguistic approaches (cf., e.g., Labov 1969, 1973, 1994), enables researchers to describe and explain the envelope of this variation.

1.1 Theoretical Framework: Construction Grammar

The theoretical framework chosen for this study into the diachronic evolution and synchronic variation of English CCs is Construction Grammar (cf., e.g., Bybee 2010; Croft 2001; Goldberg 2006; Hoffmann and Trousdale 2013). This theory recently received substantial support from psycholinguistics (inter alia Bencini 2013; Bencini and Goldberg 2000; Bencini and Valian 2008; Chang 2002; Chang, Bock and Goldberg 2003; Chang et al. 2000; Dominey and Hoen 2006; Konopka and Bock 2008; Wardlow Lane and Ferreira 2010) as well as neurolinguistics (Cappelle, Shtyrov and Pulvermüller 2010; Pulvermüller 1993, 2003, 2010; Pulvermüller and Knoblauch 2009; Pulvermüller, Shtyrov and Cappelle 2013). In addition to this, there is a large emerging body of empirical work on L1 acquisition (inter alia Brooks et al. 1999; Brooks and Tomasello 1999a, b; Clark 1987; Dąbrowska 2000; Dąbrowska and Lieven 2005; Dąbrowska, Rowland and Theakston 2009; Diessel 2004, 2009, 2013; Rowland 2007; Rowland and Pine 2000; Tomasello 1999, 2003; Tomasello and Brooks 1998) as well as L2 acquisition (inter alia Ellis 2002, 2003, 2006, 2013; Gries and Wulff 2005, 2009; McDonough 2006; McDonough and Mackey 2006; McDonough and Trofimovich 2008; Wulff et al. 2009) that provide further evidence that Construction Grammar is a realistic and successful model of mental grammar.

But what are the major tenets of Construction Grammar, and how does this approach differ from other syntactic theories? It is probably uncontroversial to claim that human language is a symbolic system (Deacon 1997; Tomasello 1999; see also Hoffmann 2017a): the central units of any language are linguistic signs, i.e. arbitrary and conventional pairings of form (*signifiant*) and meaning (*signifié*; cf., e.g., Saussure [1916] 2006: 65–70). Most of the words of a language (excluding deictic elements and onomatopoeia, which additionally also exhibit indexical as well as iconic properties) are prototypical linguistic signs: the German word *Mutter* and its Hungarian equivalent *anya*, for example, have the same underlying meaning ‘mother’, but different associated conventional forms ([ˈmʊtər] and [ˈɒɲɒ]). In addition to linguistic signs, many linguistic approaches postulate independent and meaningless syntactic rules that combine words into sentences. In contrast to such ‘items and rules’ grammars, Construction Grammar maintains that arbitrary form-meaning pairings are not only a useful concept for the description of words but that all levels of grammatical description involve such conventionalized form-meaning pairings. This extended notion of the Saussurean sign is labelled ‘construction’ and

encompasses morphemes, words, idioms, as well as abstract phrasal patterns. Instead of entertaining a clear-cut division of lexicon and syntax, Construction Grammarians see all constructions to be part of a lexicon–syntax continuum (a ‘constructicon’, Fillmore 1988; see also Goldberg 2003: 223; Jurafsky 1992).

Employing a fairly informal description of the form and meaning parts (for competing Construction Grammar formalisms, see Hoffmann and Trousdale 2013), exemplary constructions from various points on the lexicon–syntax continuum are given in (1.18)–(1.22) (taken from Hoffmann 2017a):

(1.18) morpheme construction

Un-construction:

FORM: [[ʌn]-X] ↔ MEANING: ‘not X’

(e.g., *unfair*, *untrue*, *unfriendly*)

(1.19) word construction

Apple-construction:

FORM: *apple* [æpl] ↔ MEANING: ‘apple’

(1.20) idiom construction

Take-for-granted construction:

FORM: [X TAKE Y fə ɡɪɑːntɪd]

↔ MEANING: ‘X doesn’t value Y enough’

(e.g., *She took him for granted.*, *Her father takes her mother for granted.*)

(1.21) phrasal construction I

Comparative construction:

FORM: [X BE Adj_{comparative} ðən Y]

↔ MEANING: ‘X is more Adj than Y’

(e.g., *John is taller than you.*, *A mouse is smaller than an elephant.*)

(1.22) phrasal construction I

Resultative construction:

FORM: [X V Y Z]

↔ MEANING: ‘X causes Y to become Z by V-ing’

(e.g., *She rocks the baby to sleep.*; *The firefighters cut the man free.*)

As Hoffmann (2017a) shows, all the constructions in (1.18)–(1.22) are FORM and MEANING pairings (with the bidirectional arrow ‘↔’ expressing the symbolic pairing of the two poles within a construction). The word *apple* in (1.19) is a classic Saussurean sign and consequently

a construction. The idiom in (1.20) also has a FORM ([X TAKE Y fə ɡɹɑːntɪd]) and MEANING pole ('X doesn't value Y enough'), which also qualifies it as a construction. Now, (1.20) is semantically not completely compositional (it does not just mean 'take something as given', but crucially implies that something is not valued enough). Due to this non-compositional property, idioms such as (1.20) would also be stored as lexical items in 'items and rules' approaches. Unlike the word construction in (1.19), the idiom construction in (1.20) is only partly substantive (only parts of its phonological FORM are fixed (namely [fə] and [ɡɹɑːntɪd])). In addition to that, (1.20) also contains 'slots' in its subject and object position that can be filled by various elements (cf. *Children take their parents for granted. / Her boyfriend takes her for granted. / Bill and Ted take each other for granted. / ...*). Constructions exhibiting such slots are said to be schematic and enable creative language use by allowing speakers to fill these templates with appropriate linguistic material. As the examples in (1.21) and (1.22) illustrate, constructions can vary as to the degree of their schematicity: the comparative construction in (1.21) is only slightly more schematic than the idiom in (1.20), since the former only has one substantive element ([ðən]) and several schematic slots (for the subject X, the form of BE, the comparative adjective and Y). Finally, the Resultative construction in (1.22) is a completely schematic construction since it only contains slots for the cause X, the verb V, the affected complement Y and the resulting state Z (and thus licenses such diverse structures as *She made it worse. / They wiped the table clean. / He painted the wall red. / ...*).

Even within Construction Grammar, however, there are different views on the degree of abstractness and schematicity of the mental representation of constructions. As pointed out above, approaches such as, e.g., Sag (2010) advocate the storage of the minimum number of abstract and general constructions required to computationally model speakers' linguistic behaviour (such 'complete inheritance' approaches (Croft and Cruse 2004: 276–8) include Sign-Based Construction Grammar (Boas and Sag 2012; Michaelis 2013; Sag 2010), Head-Driven Phrase Structure Construction Grammar (Ginzburg and Sag 2000) as well as Berkley Construction Grammar (Fillmore 2013; Fillmore and Kay 1993, 1995)). For the CC construction, however, authentic corpus data indicate that Culicover and Jackendoff's (1999) analysis is empirically superior to Sag's (2010) more reductionist approach (see Section 4.3). On top of that, the statistical analysis of the corpus data also reveals many significant associations of schematic slots across the two clauses of the CC construction that cannot be accounted for by any of the previous analyses. Instead, I will therefore

present a usage-based analysis (Barlow and Kemmer 2000; Bybee 2006, 2010) that takes seriously the role of authentic data constituting the input for speakers' generalizations (see also Barðdal 2008, 2011; Croft 2001). As Croft and Barðdal have pointed out, the input that speakers are exposed to does not always automatically lead to maximally abstract mental generalizations but might only lead to partly schematic and partly substantive generalizations. Moreover, following mainstream usage-based approaches I assume that mental representations are stored in taxonomic networks (cf. Croft and Cruse 2004: 262–5; Goldberg 2006: 215): speakers first of all encounter specific, substantive instances of a construction (*the more you eat, the more you have to drink*), which are stored in an exemplar-based fashion. Only structures with a high type frequency, that is, those that have been encountered with many different lexicalizations (*the more Bill earned, the more he spent on clothes | the more Jane laughed, the more he felt uncomfortable | the more they heard, the more they wanted to know, ...*) all of which share a common meaning, contribute to the entrenchment of a more abstract CC construction such as (1.17) (cf. Goldberg 2006: 39, 98–101; see also Bybee 1985, 1995; Croft and Cruse 2004: 308–13).

From a usage-based perspective, type and token frequency thus interact to create a mental construction network that ranges from more specific, substantive constructions at the bottom to more and more schematic constructions at the top. Take, for instance, the partial construction network for the Ditransitive construction (FORM: SBJ₁ V OBJ₂ OBJ₃ ↔ MEANING: 'Agent₁ causes Recipient₂ to receive Patient₃ by V₄-ing') provided in Figure 1.1 (for further details, see Hoffmann 2017b).

At the bottom of Figure 1.1, we see specific utterances (so-called 'constructs') such as *She refused him a kiss*, which a speaker will be exposed to. If such a construct has a high token frequency it can become entrenched as a fully substantive 'micro-construction' in the long-term memory. If, however, different types of the pattern (e.g., *They refused him the answer*, *John refused his parents entry to his room*.) are encountered, schematization will lead to the entrenchment of a slightly more abstract constructional template (a so-called 'meso-construction', cf. the REFUSE. Verb-Specific construction in Figure 1.1). Similarly, input such as *He denied him the answer*. or *She denied him entry to her room*. will lead to a DENY. Verb-Specific meso-construction. After that, schematization can continue further since both the REFUSE. Verb-Specific construction and the DENY. Verb-Specific construction share important FORM and MEANING similarities, which are captured by the slightly more abstract REFUSE. Verb-Class-Specific Ditransitive meso-construction in Figure 1.1 (whose central

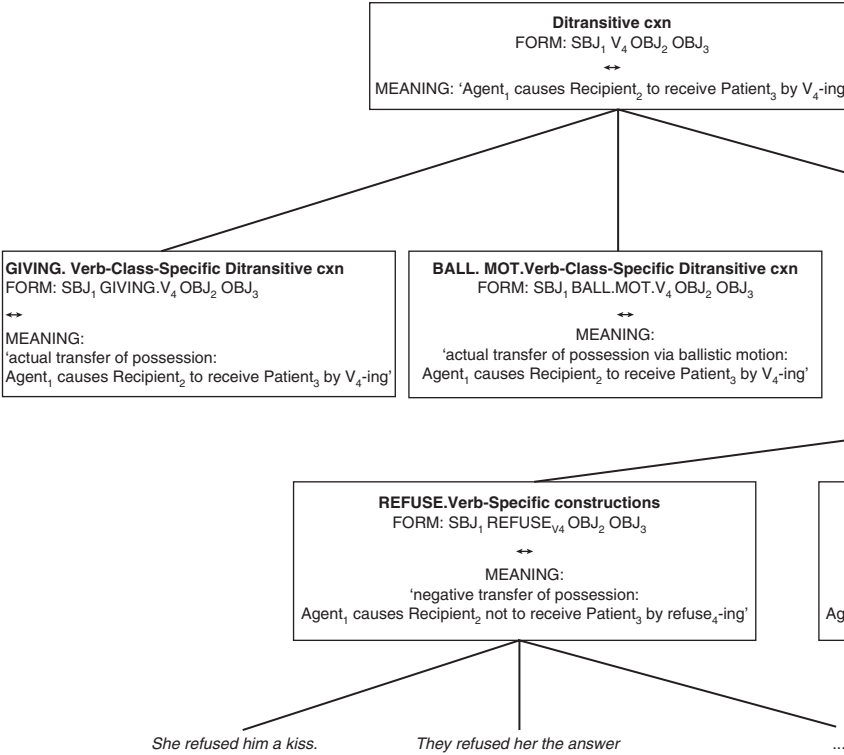


Figure 1.1 Partial construction network for the Ditransitive construction