1 Defining Connectives and Discourse Relations

1.1 INTRODUCTION

When people use language to communicate, their sentences don't follow each other randomly: there is usually a logical link between them that is easily identifiable and that makes the content they try to convey coherent. As Hovy and Maier (1994: 1) note, "One of the first observations that one makes in analyzing discourse is that it exhibits internal structure." Discourse relations and connectives each contribute in their own way to structure discourse and make it a coherent whole. In this first chapter, we will start by defining and illustrating the notions of discourse relations and connectives, showing their connections but also insisting on their differences. We will see that even though the role of discourse connectives is to make discourse relations explicit in discourse, their use is not always needed for a discourse relation to be communicated. Conversely, connectives are not always associated with a specific discourse relation: many of them can convey various relations depending on the context. Another goal of this chapter is to situate discourse relations and connectives within the more general concepts of discourse cohesion and coherence. We will see that connectives represent one type of cohesive tie and that discourse relations are crucial elements ensuring local coherence within a discourse. In the last part of the chapter, we will present some important underlying methodological and theoretical choices that were made when selecting the topics covered in this book and the data presented in each chapter. We will also emphasize that the study of discourse connectives and relations has many interfaces with other domains of linguistic analysis such as semantics, pragmatics and syntax, and will explain how and where these interfaces will be integrated in the book.

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1.2 DEFINING THE MAIN CONSTRUCTS

1.2.1 Discourse Relations

The term 'discourse relations' designates the logical links that hold between discourse segments, and make the succession of discourse segments appear coherent. As a first illustration of their role in discourse, let's consider a short excerpt from a real book review (1) written by an anonymous reader from the United States.

(1) Usually after I finish a book, I write my review immediately while everything is still fresh in my head. This one, I had to stew about overnight while I decided how I wanted to rate it. I won't go into the premise of the book since this novel has been out for quite a while now and there are plenty of other reviews that do.
[Amazon.com]

In this short text, every clause – defined as a grammatical unit containing a subject and a predicate – is logically linked to at least one other clause. For example, the events of finishing a book and writing a review are presented as temporally sequential, whereas the act of stewing overnight is presented as simultaneous to the act of deciding how to rate the book. These two temporal relations describing either synchronous or asynchronous events each represent a specific type of discourse relation that can hold between discourse segments. Another example of discourse relation is causality. This relation is illustrated in the text by the link between the fact that the book has been out for quite a while, which is presented by the author as a reason for not going into its premise in the review. A last example of relation found in this short text is the relation of addition. The two clauses: 'the book has been out for a while' and 'many other reviews already present its content' are listed as two congruent facts that add up and lead to the same conclusion: the premise of the book does not need to be presented again.

This first example illustrates the fact that discourse relations cover different types of meanings such as addition, causality and temporality. This list is, however, far from exhaustive. Other discourse relations include concession, contrast, condition, restatement, exemplification and many others. Even though the notion of discourse relations is quite intuitive, as we observed from our analysis of example (1), there isn't a unanimously accepted list of all possible discourse relations to be found in the literature. In fact, the number of relations varies from 16 in some models (Mann & Thompson, 1988) to over 70 in others

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(Hovy & Maier, 1994). The reason for these wide discrepancies is that the way discourse relations are defined depends a lot on researchers' more general view of what is discourse and how to analyze its structure. Some models take a lexically grounded approach (Prasad et al., 2008) and therefore focus on relations that are conveyed by connectives such as *after* and *while*. Others take a more holistic approach to discourse structure and decide that every discourse segment must be linked to another by a discourse relation, regardless of whether it is explicitly marked by a connective or not (Carlson & Marcu, 2001). Others still take a cognitive approach to discourse relations and focus on the underlying features that make them easier or more complex to read, understand and remember (Sanders, Spooren & Noordman, 1992). In Chapter 2, we will present the lists of discourse relations that are used in major frameworks of discourse coherence such as Segmented Discourse Representation Theory (Asher & Lascarides, 2003), Rhetorical Structure Theory (Mann & Thompson, 1988), the Penn Discourse Tree Bank corpus (Prasad et al., 2008) and the Cognitive Coherence Relations model (Sanders et al., 2018). We will also explain the underlying assumptions that each of these models makes about discourse and analyze the impact of these assumptions on their definition of discourse relations and connectives.

But first of all, we need to explain what exactly we mean by the word 'discourse', a term that we have already used repeatedly without defining it. The important point to emphasize is that this term is used more broadly in linguistics compared to its meaning in everyday conversation, where it tends to focus on spoken and often monological productions. In linguistics, the term 'discourse' is often used to describe any form of linguistic production that goes beyond the level of the sentence, be it spoken or written, monologic or dialogic. Some authors use the term 'text' with a similarly broad meaning. For example, Halliday and Hasan (1976: 1) define a text in the following way: "the word text is used in linguistics to refer to any passage, spoken or written of whatever length, that does form a unified whole." In this book, we will use the word 'discourse' over 'text' for this broad category because it has become more widespread in recent literature, but it is important to bear in mind that it covers the same productions that other authors describe as texts.

Another important element for the analysis of discourse compared to other levels of linguistic analysis is that it focuses on language in use rather than on linguistic forms (Brown & Yule, 1983), even though we will see below that connectives can also be analyzed as linguistic forms that contribute to making a discourse cohesive and therefore form an

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integral part of its analysis. Yet, a discourse should not be defined solely based on its structure. In fact, the fundamental defining feature of a discourse is that it forms a coherent whole. Coherence is a cognitive rather than a linguistic notion, denoting readers' and hearers' ability to interpret it based on linguistic content and inferences linked to context, rather than on its linguistic features alone (see 2.4).

Finally, the linguistic structure and meaning conveyed by a piece of discourse are obviously quite varied depending on whether it is a spoken informal chat between friends, a spoken political address, an email to work colleagues, or a written literary work. This variation is often characterized in terms of the notions of 'genre' and 'register.' Stukker, Spooren and Steen (2016: 9) define the notion of genre as "a conventional way to perform linguistic activities through language" and list novels, speeches, debates, conversations and chats as examples of genres. Additionally, the notion of genre is often linked with the notion of register. In this book, we define register as the degree of formality of the language used in a given genre. For example, the genre of political speeches typically includes language from a high register, whereas the genre of chats involves a low register (but see Conrad & Biber, 2019 for an alternative definition of these notions). We will discuss the use of discourse relations and connectives across various genres and registers in Chapter 7.

Going back to the short excerpt in (1), you may have noticed that the examples we gave of discourse relations were systematically linked to the use of a specific connective: the relation of temporal sequence was indicated by *after*, the relation of temporal simultaneity by *while*, the causal relation by *since*, and the additive relation by *and*. Discourse relations are indeed very often signaled by a connective, and this is the reason why this book includes an analysis of both discourse relations and connectives, as these two concepts are very closely intertwined. In fact, the short excerpt of sixty-six words presented in example (1) contains as many as five occurrences of connectives (*after, while, while, since, and*), which illustrates both the importance of connectives as indicators of discourse relations and their high frequency in discourse. As we will see in Chapter 6, the frequent use of connectives in discourse can be explained by the fact that they play an important role in the way discourse is understood and remembered. They also facilitate the online processing of discourse by speeding up reading.

Yet, despite the importance and prevalence of connectives for the communication of discourse relations, they are not compulsory for a discourse relation to be conveyed between two discourse segments.

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In fact, discourse relations can also be left implicit and recovered by inference. For instance, in excerpt (1), there is a relation of contrast between the usual process described by the author for reviewing a book in the first sentence – "Usually after I finish a book, I write my review immediately while everything is still fresh in my head" – and the second sentence describing how this particular review was performed – "This one, I had to stew about overnight while I decided how I wanted to rate it." Yet, this relation of contrast is not marked by any connective, even though a contrastive connective such as *whereas* could have been inserted between the two sentences, as illustrated in (2).

(2) Usually after I finish a book, I write my review immediately while everything is still fresh in my head, **whereas** this one, I had to stew about overnight while I decided how I wanted to rate it.

[adapted from: Amazon.com]

However, the author of (1) chose not to use a contrastive connective, trusting her audience to recover the intended relation by inference. This example illustrates the fact that connectives are not compulsory for discourse relations to be communicated. We will discuss in Chapter 6 the cognitive differences between relations that are conveyed explicitly with a connective or implicitly. We will see that connectives facilitate the processing of a discourse relation but at the same time add an additional word to the sentence that needs to be decoded and processed. For this reason, speakers usually (unconsciously) decide to use a connective or not by striking a balance between the burden of uttering an additional word and the benefit of a connective facilitating the processing and comprehension of the intended discourse relation.

Finally, let's note that when conveying a discourse relation, the speaker is not faced with a binary choice between using and not using a connective. Depending on the relations, there are an array of alternative signals that they may use to indicate the intended discourse relation (e.g., Das & Taboada, 2018; Hoek, Zufferey, Evers-Vermeul & Sanders, 2019; Crible, 2022). For example, a relation of causality can be conveyed by using a relative clause (3) or even a punctuation mark such as a colon (4).

(3) I won't go into the premise of this book that has been out for quite a while now.

(4) I won't go into the premise of this book: it has been out for quite a while now.

[adapted from: Amazon.com]

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Similarly, a relation of contrast can be conveyed by a lexical contrast between the words used in the two discourse segments. For example, in (2), a contrast could be established thanks to the use of "a book" in the first sentence and "this one" in the second. Usually, discourse relations that can be expressed by various alternative signals are also those that are less frequently conveyed by means of a connective (Das & Taboada, 2013). The availability of such signals is not, however, the only relevant factor. Discourse relations that are cognitively easy to infer because they are highly expected in discourse such as causality and addition (Murray, 1997; Sanders, 2005) are also conveyed implicitly much more frequently compared to relations that are more unexpected and therefore difficult to infer (Hoek, Zufferey, Evers-Vermeul & Sanders, 2017). Crible (2022), on the other hand, found that rather than relational complexity, it is the ambiguity of the connective that influences the use of alternative signals: signals co-occur more with ambiguous connectives than with more informative ones.

In sum, discourse relations are the links that hold sentences together within a discourse and contribute to making it coherent. These links rely both on linguistic elements such as connectives to indicate them, and also on the cognitive ability of the addressees to derive appropriate inferences based on context.

1.2.2 Connectives

Connectives form a functional category of lexical items used to explicitly mark discourse relations between discourse segments. It includes words like *after, while* and *since*, as illustrated in example (1), but also many others like *if*, *when*, *in addition, however*, *but*, etc. In fact, most Indo-European languages possess a vast repertoire of connectives including several hundred different lexical items.[1] For example, the German dictionary of connectives DiMLex contains 275 entries (Stede, Scheffler & Mendes, 2019) and the French database of connectives Lexconn contains 328 entries (Roze, Danlos & Muller, 2012).

The definition of connectives that we just gave is the one we will use in this book. However, this is not the only definition that can be found in the literature, nor is it a unanimously accepted one, as we will see in Chapter 3. As we observed in the case of discourse relations, the definition of connectives can vary depending on the goal of the research and its domain. This variability is first noticeable in the

[1] Lexicons of connectives in many different languages can be found at: http://connective-lex.info/.

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various names given to the same lexical items, for example, discourse markers (Schiffrin, 1987), pragmatic markers (Fraser, 1996) and, somewhat less frequently, cue phrases (Knott & Dale, 1994) and discourse relational devices (Stede, Scheffler & Mendes, 2019). Even though the element of connectivity, mentioned in our definition, is quite widely accepted in most definitions (Crible, 2018), there are important differences in the type of links envisioned across various frameworks. While we focus exclusively on discourse relations such as cause and condition in our definition, other frameworks extend these connections to what Schiffrin (1987) calls other "planes of discourse." For example, the word *so* in (5) links the new utterance to previous ones by introducing a topic shift and acts as a turn-taking device. This example is taken from a real telephone exchange recorded for the Switchboard corpus[2] (Godfrey, Holliman & McDaniel, 1992).

(5) A: I would think so, um seems like these all they all went to uh to leaf and it wasn't until late in the summer they started making fruit so I don't know if my mom would say you planted them in the wrong sign of the moon "you know but I don't".
B: **So**, a lot of times I'd help her with that. I haven't had much opportunity to work on any other craft stuff lately we've been trying to start up a business and then trying to get my garden going.
[sw2093B-ms98-a-0008]

In her work, Schiffrin is interested in the role of discourse markers across these various planes of discourse. For this reason, the lexical items she considered in her analysis are only partly convergent with the items that we include in the category of connectives: elements like *since* and *but* that can signal discourse relations, but also elements like *well, I mean, uh* and *you know* that typically play different roles in discourse. For example, the uses of *um* and *uh* in (5) are linked to discourse planning. Other markers like *you know* and *I mean* are often used for the management of interpersonal relations, as in (6) taken from another excerpt of the same exchange in Switchboard:

(6) No, no, no like that Joe, Jose Canseco [laughter] **you know**, **I mean**, oh.
[sw2105A-ms98-a-0048]

[2] https://catalog.ldc.upenn.edu/LDC97S62.

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For this reason, we will consider in this book that the notion of discourse markers covers a broader category of items from which connectives – defined as markers of discourse relations – represent only one particular subtype.

It is important to note that while the categories of discourse connectives and markers are partially divergent, they cannot be treated as two entirely separate categories. In many cases, the same lexical item can have both connective and marker uses. For example, in addition to its function as a turn-taking device illustrated in (5), *so* can also be used to convey a discourse relation, namely a relation of consequence, as illustrated in another occurrence of this word from the same exchange in (7).

(7) It wasn't until late in the summer they started making fruit **so** I don't know if my mom would say you planted them in the wrong sign of the moon.

[sw2093A-ms98-a-0058]

We will come back to the complex relations existing between the categories of connectives and discourse markers in Chapter 3. In addition to the ambiguity between connective and marker usages, many connectives can also be used in contexts in which they do not play a role in linking discourse segments at any level but rather act as semantic components of the sentence. For example, such non discursive uses are found in yet another occurrence of the word *so* from the Switchboard dialogue (8) and is also illustrated by the use of *while* from the book review presented above (9).

(8) I would think **so**.

[sw2093A-ms98-a-0058]

(9) This novel has been out for quite a **while** now.

[Amazon.com]

We will discuss this kind of ambiguity in more detail in Chapter 4, where we will show how different syntactic distributions may distinguish between connective uses and non-connective uses. Let's note for the time being that the polyfunctionality of words used as connectives and markers is no accident. Historically, connectives evolved through a process of grammaticalization (Hopper & Traugott, 2003) by which lexical words progressively lose their semantic meaning and start incorporating other non-lexical functions. Similarly, connectives that act as linking devices between semantic contents, for example, relating

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facts or events in discourse, progressively take on more pragmatic functions, for example, acting as turn-taking devices or indicators of interpersonal relations through a process sometimes called "pragmaticalization" (Degand & Evers-Vermeul, 2015). We will discuss the grammaticalization and pragmaticalization processes underlying various connective uses across languages in Chapter 5.

At the beginning of this section, we defined connectives as a functional category of words. Indeed, connectives do not form a grammatical class in the same way as adjectives or verbs do. In fact, connectives come from a series of different grammatical categories, comprising mostly coordinating conjunctions (*and, but, so*), subordinating conjunctions (*although, because, if, since, when, while*) and adverbs (*even though, however, nevertheless, therefore*) but also prepositions (*before, after*). In other words, connectives are grouped into a single category not because of their common grammatical features but because they have the same function in discourse: indicating discourse relations. It would thus be tempting to conclude that grammar plays little role in the study of connectives. We will argue in Chapter 4 that this is not the case. The grammatical category to which a connective belongs limits the positions that it can take in the sentence. For example, coordinating conjunctions are not used in sentence final position (or when they are, their function changes, see Chapter 5). Yet, some discourse functions seem to be preferentially communicated in specific syntactic positions within the sentence (Dupont, 2021). For example, interpersonal functions of discourse markers seem to be associated with turn-final positions (Degand, 2014; Degand & Crible, 2021). We will address the syntactic aspects of connectives and, more generally, the interface between syntax and discourse in Chapter 4.

To conclude, it is important to stress that even though connectives and discourse relations are two closely related notions, there are generally no one-to-one mappings that can be established between them. On the one side, most discourse relations can be conveyed by more than one connective. For example, in the Penn Discourse Treebank annotated corpus, the relation of concession is alternatively conveyed by the connectives *although*, *but*, *even if*, *even though*, *however*, *still*, *though* and *while*. On the other side, the connective *although* is used to convey, in addition to a relation of concession, relations of comparison, contrast, and juxtaposition, among others. The connective *but* receives as many as twenty-nine different sense tags (PDTB Research Group, 2008). Thus, the study of connectives as indicators of discourse relations raises many important issues related to the complex form–function mappings that they involve. Throughout this book, we will discuss the

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differences of meanings between several uses of the same connective depending on context, and the subtle meaning and usage differences that exist between different connectives that can be used to express the same discourse relation across various genres and in different languages. We will also discuss the impact of the multifunctionality of some connectives for the way children, learners and adults process, use and understand them.

1.2.3 Cohesion and Cohesive Ties

The related notions of cohesion and coherence play important roles for the analysis of discourse structure. In this section and the next one, we will briefly present them in order to explain what roles connectives and discourse relations play in discourse cohesion and coherence.

The notion of cohesion has been analyzed in some depth in Halliday and Hasan's (1976) seminal book *Cohesion in English*. Halliday and Hasan observe that what makes discourses coherent wholes is that they exhibit "texture", or in other words, the fact that they are made of elements that bind sentences together. For example, in the excerpt of the book review presented in (1), the first sentence mentions "a book". In the second sentence, the author references the book she wants to review by using the expression "this one" and at the end of the sentence simply by "it". These uses of different referential expressions at various points in the discourse are examples of texture. Starting the review with a referent other than "a book" in the first sentence would have made it impossible for the audience to identify which referent was intended. Conversely, later on in the discourse, repeating the first referential expression "a book" or even "this book" would produce an impression of incoherence, as illustrated in (10).

(10) This book, I had to stew about overnight while I decided how I wanted to rate this book.

[adapted from: Amazon.com]

Thus, referential expressions are what Halliday and Hasan call cohesive ties that contribute to giving texture to a discourse. More generally, cohesive ties designate all pairs of elements in a discourse that are cohesively related. We will briefly discuss the different types of cohesive ties in this section. But before that, we still need to provide a more detailed definition for the notion of cohesion.

According to Halliday and Hasan (1976: 4), the notion of cohesion is a semantic one that characterizes the relation of meaning between two elements within a discourse that are linked by a cohesive tie. In other words, there is a cohesive relation between two elements when the

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interpretation of one of them in the discourse presupposes a reference to another element. For example, the interpretation of the pronoun "it" in the example above presupposes access to a full-fledged referential expression earlier in the discourse. In the absence of such a reference, "it" can potentially be used to designate any inanimate object. Thus, cohesion forms an integral part of the system of language, as it is realized by linguistic elements found in the discourse. As we will see in the next section, this is a major difference between cohesion and coherence.

A first category of cohesive ties discussed by Halliday and Hassan is precisely referential expressions, such as the use of "it" in the example above. In this case, the antecedent of the pronoun, the noun phrase "this book" is also part of the discourse. This is a typical case of anaphora. In other cases, the referential expression that needs to be understood in relation to another one can also be placed before the noun phrase in the discourse, forming a cataphora, as in (11), where the reference of the pronoun "it" is linked to the noun phrase "the book" in the second sentence.

(11) I loved it. This book is really well-written.

[constructed example]

In other cases still, the referent to which a referential expression must be linked is not found in the discourse itself but must be retrieved from the context. This is the case for (12), in which the reference of the temporal adverb *today* is not provided in the discourse.

(12) Today, we are going to discuss cohesive ties.

[constructed example]

The common point between these three cases is that there is a second element to which the referential expression must be tied in order to be interpretable. For this reason, this category of referential expressions is also sometimes called non-autonomous expressions, in contrast to autonomous expressions such as "a book" that do not need to be tied to another element in the discourse in order to be interpreted (Milner, 1992).

In addition to reference, a relation of cohesion can also involve a process of substitution. As its name indicates, the relation of substitution involves the replacement of a word or group of words by another one that is equivalent in the discourse. Contrary to reference, the equivalence produced by a substitution is not at the abstract level of meaning but at the level of the words that are used. For this reason, Halliday and Hasan situate the relation of substitution at the lexico-grammatical level rather than at the semantic level. An example of substitution was found in example (1), with the relation between "a

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book" and "this one". Here the use of "one" replaces the word "book" in the second occurrence. A similar case to substitution is an ellipsis, in which a word is substituted by nothing, or in other words not repeated, in the second occurrence. Ellipses are often found in question–answer pairs, as illustrated in (13). Here the subject and the verb are not repeated in the answer. Yet, such omissions give texture to the discourse and make it more cohesive compared to a fully explicit version in which all elements are repeated, as illustrated in (14).

(13) Alice: What do you like to eat?
Barbara: Lasagna.

(14) Alice: What do you like to eat?
Barbara: I like to eat Lasagna.

[constructed examples]

Connectives also represent an important type of cohesive tie in discourse. Contrary to references, ellipses and substitutions, connectives do not rely on an anaphoric relation between two elements in discourse. Their role is to give instructions on how to interpret the intended relation between two discourse segments. As such, they also presuppose the existence of other elements in the discourse. Just like references, they can in some cases be used to anchor a discourse segment to a non-linguistic context. The consequence relation expressed by *so* in (15) represents one such case.

(15) [Context: Anne, who claims to be on a diet, brings herself a plate with a big burger and fries.]
Sascha: So, you think this will help you lose weight?

[constructed example]

Another important difference between connectives and other cohesive ties is that many of the coherence relations they convey are independent of the order in which the two related segments occur in discourse. For example, the causal relation conveyed by *since* remains unchanged when S1 precedes S2, as it was used in the original version of the book review repeated in (16) or when the order is reversed, as in (17).

(16) [I won't go into the premise of the book $_{S1}$] since [this novel has been out for quite a while now $_{S2}$].

[Amazon.com]

(17) Since [this novel has been out for quite a while now $_{S2}$], [I won't go into the premise of the book $_{S1}$].

[adapted from: Amazon.com]

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Finally, connectives also differ from other types of cohesive ties in that the segments they relate to are not always close to them and clearly circumscribed. For example, in (18), the additive relation holds between the bracketed elements rather than those immediately preceding and following the connective *also* in this discourse from a debate at the European Parliament and collected as part of the Europarl Corpus (Koehn, 2005).

(18) [We are concerned, therefore, as others have said, at the number of amendments which seek to exclude even further some of society's most excluded, by aiming for a very narrow definition of "refugee". $_{S1}$] My group will not be supporting those amendments. [We are **also** concerned at the number of amendments which, in seeking to introduce greater flexibility, run the risk perhaps of obscuring responsibility for the management of the EQUAL initiative. $_{S2}$]

[ep-00-02-14]

Another example of *also* used in the European Parliament illustrates the fact that a segment connected by a connective can go beyond the scope of a given sentence, often spanning several sentences as in (19) where the first segment is made of seven rather long sentences.

(19) [Could I thank Commissioner Patten for coming here at short notice to respond to our wish to debate this very critical issue and as others have said, the television pictures that we have seen of the stricken Limpopo valley in Mozambique are absolutely heartbreaking. Children have lost parents, families are bereft, hopeless, helpless and they have lost absolutely everything. But of course, as others have said, this whole thing was predicted and predictable and the slow and very inadequate, woefully slow and woefully inadequate response is something that should dictate now that we actually do invest seriously in disaster preparedness. There is a case as the Commissioner mentioned for the implementation of a rapid response facility and rapid response force in situations like this to deal with crises such as we have there because we simply did not have the strategies or the logistical preparations in place. This morning there were seven helicopters and of course those helicopters are only working in the Gaza region. The Save river has huge flooding problems as well but no one has even been there yet. 85% of the work is within an hour of Maputo so we really have no idea what

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the extent of the problem is. $_{S1}$] **Also** [I would like to say Commissioner that European citizens want to know exactly what ECHO is doing. $_{S2}$]

[ep-00-03-01]

Taken together, these examples illustrate the fact that identifying the segments related by a connective in not always an easy task and forms an integral part of the analysis of discourse relations, as we will see in Chapter 2.

In sum, we have argued in this section that connectives belong to the category of cohesive ties, and therefore contribute to giving texture to a discourse. We will see in the next section that the impression of texture linked to cohesive ties, even though important, is not always enough to make a discourse appear coherent.

1.2.4 Discourse Coherence

While the notion of cohesion is strongly dependent on the linguistic elements contained in a discourse, that of coherence is a cognitive one linked to people's ability to interpret a discourse. Cohesion and coherence are to some extent related, as a discourse that doesn't contain any cohesive tie can hardly be coherent, when it is made of more than a couple of sentences. Compare, for example, the short discourse we presented in the introduction to this chapter with a modified version in which cohesive ties have been removed in (20).

(20) Usually I finish a book, I write a review immediately, everything is still fresh in my head. This book review, I had to stew about overnight, I decided how I wanted to rate the book. I won't go into the premise of the book, this novel has been out for quite a while now, there are plenty of other reviews that go into the premise of the book.

[adapted from: Amazon.com]

Yet, even though they are important in giving texture to a discourse, the use of cohesive ties does not guarantee that a discourse will be perceived as coherent. The mini-discourse in (21) contains as many as five cohesive ties, indicated in bold, yet it does not appear to be highly coherent.

(21) Alex is happy **because his** cloud is green **so he** got a gift from **his** parents.

[constructed example]

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The reason for this apparent lack of coherence is that it is difficult to access a context in which there is a plausible causal relation between having a green cloud and a state of happiness. But imagine now that (21) was uttered by Alex's teacher to the school principal, in order to inform him that one of her students, Alex, is happy because the evaluation that he received, in the form of a cloud that can take several colors (green for very good behavior, yellow when some improvements are needed, etc.) is very good. Alex's parents promised their son a gift if his behavior in school was impeccable and will therefore offer him the model train set that he dreams of. With this context in mind, the logical links between sentences in (21) become perfectly coherent.

In short, this example illustrates that coherence is in the mind of the person interpreting a discourse rather than in the use of specific linguistic devices. Building a coherent discourse thus requires the ability to supply appropriate context in order to form a mental model based on linguistic elements that are always to some extent underspecified.

The ability to infer the appropriate discourse relation is a crucial element of discourse coherence, as these relations represent the logical links uniting discourse segments. For this reason, discourse relations are also called 'coherence relations' in some models of discourse structure. Discourse relations create coherence at a local level: they usually unite only two discourse segments. This is however not enough to ensure that a discourse will be perceived as globally coherent. Consider, for example, the discourse from a patient with schizophrenia in (22) that does not seem to make sense globally, yet a discourse relation can clearly be identified between each discourse segment. The second sentence is an elaboration of an element presented in the first sentence (geography), the third sentence elaborates on another element of sentence two (Prof. August A.) and so on for all other subsequent sentences.

(22) Then, I always liked geography. My last teacher in the subject was Professor August A. He was a man with black eyes. I also like black eyes. There are also blue and grey eyes, and other sorts, too. I have heard it said that snakes have green eyes. All people have eyes. There are some, too, who are blind. These blind people are led by a boy. It must be terrible not to be able to see. There are people who can't see, and, in addition, can't hear. I know some who hear too much. There are many sick people in Burgholzli, they are called patients.

[example from Bleuler, 1913, quoted by Frith, 1992: 95]

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What this short discourse lacks is global coherence, a general topic that holds all the sentences together. The importance of having a general topic accessible when reading a discourse in order to make sense of it was illustrated in a famous experiment by Bransford and Johnson (1972). In this experiment, the authors gave short discourses like (23) to their participants and then asked them to recall them as precisely as possible, and to rate their comprehension.

(23) The procedure is actually quite simple. First you arrange things into different groups... Of course, one pile may be sufficient depending on how much there is to do. If you have to go somewhere else due to lack of facilities that is the next step, otherwise you are pretty well set. It is important not to overdo any particular endeavor. That is, it is better to do too few things at once than too many. In the short run this may not seem important, but complications from doing too many can easily arise. A mistake can be expensive as well... At first the whole procedure will seem complicated. Soon, however, it will become just another facet of life. It is difficult to foresee any end to the necessity for this task in the immediate future, but then one never can tell. After the procedure is completed one arranges the materials into different groups again. Then they can be put into their appropriate places. Eventually they will be used once more and the whole cycle will have to be repeated. However, that is part of life.

[from Bransford & Johnson, 1972: 722]

The important manipulation performed in this experiment is that participants were divided into several groups. One group of participants heard the discourse without any additional information. A second group was given a topic for the discourse they were about to hear, and a third group was given a topic after they had heard it. Results indicated that the group who did have an indication of topic before hearing the discourse gave higher comprehension ratings and had a better recall score compared to the group that heard the discourse without any indication of topic. The group who had an indication of topic after hearing the discourse gave ratings and received recall scores that were similar to those of the group who did not get any information. This experiment thus demonstrated quite clearly the importance of processing a discourse with a topic in mind, ensuring global coherence. In the case of (23), the topic of the discourse was "washing clothes". If you found this discourse hard to follow when you read it, reading it again with the title in mind is likely to give you a very different evaluation of its coherence.

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Having a topic in mind likely made such a big difference for participants' evaluation of their comprehension because it enabled them to activate all their background knowledge about the topic, which in turn enriched the mental representations they had built while hearing the discourse. For example, the mention of "things" that have to be arranged into different groups becomes much more precise with the topic of washing clothes in mind, as it is reduced to clothing items. Even though the passages used in this experiment were kept deliberately vague in order to assess the role of prior knowledge, even discourses that are not as vague contain implicit elements that have to be enriched by inference in order to build mental representations of their meaning. In fact, the role of background knowledge is so important that it even seems to matter more than the level of reading skill as a factor accounting for reading comprehension in young readers. In an experiment, Schneider, Körkel and Weinert (1989) found that 10-year-old children who possessed good prior knowledge about the topic of a text before reading it (in this case soccer) had higher scores on comprehension questions after reading the text compared to 14-year-olds who did not have a similar background knowledge on the topic, even though the second group had four more years of reading practice.

To summarize, we have argued in this section that coherence is a cognitive notion linked to readers' ability to interpret a discourse. Discourse relations are important elements contributing to building a coherent mental model of a discourse. However, their role is limited to linking elements locally, and such local coherence is not sufficient to ensure that the discourse as a whole will be perceived as coherent. Global coherence rests on the identification of the topic of a discourse, and the latter is linked to the ability to reconstruct the speaker's global informative intention (Reboul & Moeschler, 1998).

1.3 KEY CONSIDERATIONS FOR THE STUDY OF DISCOURSE RELATIONS AND CONNECTIVES

The analyses of discourse relations and connectives that we will present throughout this book rely on studies that were performed on empirical data, be it in the form of corpora or controlled experiments. Even though in some research trends, these notions were traditionally analyzed based on invented examples, for example in the context of argumentative discourse as in Anscombre and Ducrot (1977) and within Relevance Theory, for example in Blakemore (1987) and many others, a lot of recent research has demonstrated that such models

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often fall short when confronted with real data. For this reason, we will limit ourselves to briefly discussing the import of these theoretical models in Chapter 3. Conversely, we will discuss at some length the many insights gained from the analysis of corpora in different languages and genres and stress the complementarity of findings coming from corpus studies with those of experiments assessing language processing, comprehension and acquisition. The studies discussed in this book do for the most part rely on a quantitative analysis of data. This is a major difference with other research domains such as conversation analysis that use real data to perform detailed qualitative analyses of interactions (e.g., Sidnell & Stivers, 2012). Even though these analyses are interesting and valuable, they lack the potential for generalization that comes with quantitative analyses and that we strive to give in this book. Such quantitative analyses will enable us to answer many crucial questions about the relations between discourse relations and connectives. Examples of such questions are: How often are connectives used to convey discourse relations? What are the other frequently used strategies to convey discourse relations in the absence of connectives? Does the communication of some discourse relations require the use of a connective more than others?

We will also place great emphasis throughout the book on cognitive issues related to the processing, memorization and understanding of the information conveyed by discourse relations and connectives. These issues are indeed central to better understand why and how they are used in various communicative situations. For example: Are discourse relations processed in the same way whether they contain a connective or not? Can we observe processing differences when the same relation is conveyed by different connectives? Do people better understand the content of a discourse when the relations are explicitly indicated with connectives? These questions will form an essential part of Chapters 6–9 of the book. Studies that have assessed these cognitive issues rely on various experimental protocols that go from simple pen and paper tasks – for example, asking people to fill in blanks with the appropriate connective from a list – to complex eye-tracking experiments and brain studies in the form of event-related potentials and fMRIs. We will strive to present these studies in as simple a way as possible, while enabling readers to understand the key methodological aspects of these methods. We will argue that investigating the same questions through offline methods measuring the product of comprehension, such as fill-in the blank tasks or comprehension tasks and online methods tracking processing as it unfolds – like self-paced reading and eye-tracking – provide complementary results that shed greater

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light on these issues. We will therefore systematically seek to compare results from various types of experiments when they are available and underline the advantages and limitations of each of them.

Another main goal of the book is to compare the use and processing of connectives and discourse relations across different groups of speakers and addressees. We will present data from adults who are native speakers in Chapters 6 and 7, before moving on to data from children and teenagers in Chapter 8 and finally learners in Chapter 9. Considering data from children will provide answers to many important questions, such as: When do children start using connectives in the course of first-language acquisition? Do they first start producing implicit relations before mastering connectives? What is the order of acquisition between different discourse relations and connectives? Are children able to process and understand discourse relations and connectives already when they start reading? How does the ability to master connectives continue to develop during teenage years? Similarly, the integration of data from learners also contributes to giving many important answers to questions such as: Are learners able to use and understand connectives in their second language? Do they use the information conveyed by connectives while processing discourse relations in a similar way as native speakers? Do learners' difficulties with connectives come from negative transfer effects related to their first language, or to more general limitations in proficiency?

Throughout these chapters, we will provide results from studies that have assessed the ability to use, process and understand connectives and discourse relations in different discourse genres and registers. Chapter 7 is more specifically dedicated to investigating the impact of genres and registers on the use of various discourse relations and connectives. This chapter will address questions, such as: Are some connectives specific to some discourse genres or registers? Does the type of discourse relations that people typically use also vary across genres? Another important issue dealt with in Chapter 7 is the variations that exist between languages in the uses of discourse relations and connectives. Taking a cross-linguistic perspective will enable us to address questions like: What differences are there between connectives that are used to convey the same discourse relation in different languages? Are discourse relations typically conveyed differently across languages? Can connectives be easily translated from one language to another? The attention to cross-linguistic matters will not be restricted to Chapter 7. Throughout the book we will strive at illustrating models, descriptions, approaches and findings in a wide variety of languages from different language families. We thus aim to demonstrate that

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discourse connectives and relations and their complex interrelations are at work in any natural language and that their theoretical and methodological accounts should be cross-linguistically valid.

Finally, the study of discourse relations and connectives has many important interfaces with other domains of language, and we will explore them throughout the book. Chapter 3 will explore the interface between semantics and pragmatics in order to analyze the type of meaning conveyed by connectives. This interface will be tackled again from the perspective of language change in Chapter 5, by analyzing the process of grammaticalization involved in the emergence of new meanings and functions for discourse connectives, for example the evolution from temporal to contrastive meaning of the connective *while*, or the use of *so* as an indicator of consequence to its use as a turn-taking device. This analysis of semantic and pragmatic aspects of connectives' meanings will lead to the discussion of several important issues: What is the type of meaning encoded in connectives? How can we account for semantic ambiguity in connectives? How does the meaning of connectives evolve?

The analysis of connectives will not be limited to their meanings and functions. In Chapter 4, we will address the interface between syntax and discourse in order to investigate the role of syntax in the use of connectives, more specifically: Does the grammatical category of a connective have an influence on its meanings and uses? What are the links between syntactic position in the sentence and the type of functions that are typically expressed by connectives? What is the role of syntax in the identification of the discourse segments related by a connective? Can syntactic structures replace the use of connectives for the communication of some discourse relations? In the case of spoken data, this interface extends to the domain of phonology and the analysis of prosodic contours that are associated with various uses of connectives. We will discuss these aspects when comparing the functions of connectives across the spoken and written registers in Chapter 7.

1.4 SUMMARY

The primary goal of this chapter was to introduce the main concepts that will be discussed throughout this book, namely the notions of discourse relations, connectives, cohesion and coherence. We have started by defining the notion of discourse relations, emphasizing their strong links with connectives but also stressing that they can also be conveyed in the absence of them. They should therefore be studied in

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their own right as a cognitive rather than a lexical phenomenon. We have seen that discourse relations are numerous and varied, covering many different types of logical links that can hold between discourse segments, such as causality, temporality and contrast. We have also defined the notion of connectives as linguistic items that are used to make discourse relations explicit in discourse. We have argued that connectives represent a subset of the more generic category of discourse markers that also encompasses non-relational devices involving the management of interpersonal relations and discourse planning. We have seen that drawing a line between connectives and markers is however a difficult task, as the same lexical items can often take the two types of functions depending on context. We have also insisted on the fact that the form–function mappings between connectives and discourse relations are complex and manifold. We have then moved on to defining the related notions of discourse cohesion and coherence. We have defined cohesion as a semantic relation between linguistic elements found in a discourse, such as referential expressions or lexical chains. We have seen that connectives are a specific subtype of cohesive device that are not themselves linked to other elements but rather serve to indicate the link between two external elements in discourse. Moving on to coherence, we have seen that discourse relations are crucial elements to ensure local coherence between discourse segments. We have, however, also argued that such local coherence only represents one aspect of discourse coherence, as a discourse must also be globally coherent. The second aim of this chapter was to introduce the main theoretical and empirical choices made in this book and present the research questions that will be addressed. These choices involve a focus on studies relying on quantitative analyses of empirical data in the form of corpus research or experiments. These studies will encompass various discourse genres, registers and languages. They will also include data from adult native speakers, learners, children and teenagers, and serve to explore the many interfaces between discourse and other domains of linguistic analysis such as semantics, pragmatics and syntax.

DISCUSSION POINTS

- Can you summarize the main arguments justifying that the notions of cohesion and coherence should be kept separate?
- What other elements in addition to connectives ensure the cohesion of discourse?

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- Why do many authors argue that coherence is a psychological rather than a linguistic notion? (See especially the chapter by Zwaan and Rapp for a cognitive perspective on coherence.)

FURTHER READING

The first chapter of Schiffrin's (1987) book on discourse markers, entitled "What is discourse?" provides a very good introduction to the main elements involved in the definition of discourse and its analysis. Similarly, the first chapter of de Beaugrande and Dressler's (1981) book on text linguistics entitled "Basic notions" can be useful to get a grasp on the notions of cohesion and coherence. The subsequent chapters respectively dedicated to cohesion and coherence provide a more in-depth introduction to these notions. The main reference on cohesion and cohesive devices remains Halliday and Hassan's (1976) book entitled *Cohesion in English*. A more recent and concise introduction to cohesion can be found in Martin's (2001) chapter. An accessible introduction to discourse from a psycholinguistic perspective is Zwaan and Rapp's (2006) chapter.

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