THE ARCHITECTURE OF RESULT RELATIONS: CORPUS AND EXPERIMENTAL APPROACHES TO RESULT COHERENCE RELATIONS IN ENGLISH

Marta Andersson
Abstract

Two fundamental components of causality are the CAUSE and the RESULT. In linguistic work the distinction between these aspects is commonly blurred, presumably because the primary research focus has been on describing how language encodes causality. The semantic nature of the component events and the constraints on their relationship are seldom discussed; however, the current work aims to shed light on a broader spectrum of features that underlie the concept. This is an essential foundation for understanding how language communicates RESULT. The present discussion explores and illuminates the nature of this concept focusing on a relatively open-ended set of linguistic elements that can play a role in shaping a discourse relation in addition to discourse connectives. This is in contrast to the majority of the previous research, which has been quite intensely concerned with investigating a limited collection of well-established causality markers. Also, despite the fact that English has been used in studies on causality both as a control language and a metalanguage, there is surprisingly little work on the semantics of the relations that occur specifically in English, let alone RESULT relations.

By borrowing from several cognitive-oriented approaches and combining empirical data from two written corpora (British National Corpus and the Penn Discourse Treebank) with experimental work, the current study systematically investigates the conceptual and linguistic properties of several closely related RESULT relation types (including PURPOSE), along with the joint role of discourse connectives and other discourse elements in conveying the intended sense. The findings indicate that linguistic signals of the conceptual structure of the relation seem to play a more significant role in the interpretation than explicit marking. Two factors emerged as more vital cues than the presence of the ambiguous connective so. In PURPOSE relations, a modal auxiliary conveying an intended effect, and in RESULT relations the presence/absence of an intentionally acting actor are crucial for disambiguation. The multifunctional connective therefore seems to merely satisfy the mandatory marking requirement related to the intrinsically unrealized (‘nonveridical’) nature of PURPOSE. In RESULT the presence of an ambiguous marker is to a great extent optional in English.

However, discourse markers can also reflect how language users categorize causal event types. This claim has been confirmed in several cross-linguistic analyses, but the lexicon of English connectives has not been sys-
tematically investigated from this vantage point. The few existing studies found that the uses of English connectives are quite unconstrained across causal categories. The present work contributes to this line of research and suggests that two unambiguous markers, *as a result* and *for this reason*, indeed cover a wide range of causal event types; however, they also exhibit significant tendencies to occur prototypically in certain relation types. The presence and role of an intentionally acting discourse participant behind both real-world and linguistic causally-related events contributes to these tendencies. The contexts that include such a participant are regarded as intrinsically subjective and have been found to manifest surface expressions of subjectivity in previous work on other languages. The current study confirms similar tendencies in the linguistic construal and marking of RESULT relations in English, which proves that certain language elements partake in establishing the intended interpretation on a par with discourse connectives. What emerges as a result of this discussion, is therefore an account on how English utilizes the broad category of RESULT and what linguistic elements are used to convey the array of resultative events.

**Keywords**: RESULT, PURPOSE, discourse connectives, disambiguation, subjectivity, nonveridicality.
The architecture of Result relations

Corpus and experimental approaches to Result coherence relations in English

Marta Andersson
To Harry, Sasza and Tony
(in alphabetical order)
One of the greatest challenges I have had to face while undertaking this work was in dealing with my inborn inclination to wordiness. As they say, if you have done your research correctly, you should have no difficulty staying concise. I do not feel I can argue that point with a clear conscience when reflecting back upon the entire content of this book. However, the evidence I have at my disposal when writing up the current section is so clear and so easy to analyze that there is virtually no reason to indulge in verbosity and circumlocution. As a result,\(^1\) the only thing I feel I would like to and probably should be saying is: thank you, all! Thank you for helping me out in the not-always-so-enjoyable process of laying the foundation of this architecture. I want to express my heartfelt gratitude to each and every of you who have supported and guided me through these years as my advisors, my work colleagues, my friends and my family members. Without your contribution, I would never have had the fortitude or the will to persevere and ultimately finish this piece of writing.

In fact, so many people have been interested, involved and willing to help me achieve this great success that it would be almost impossible to mention everybody here. Hence, I offer the above concise approach to this dilemma. There are, however, three people who have had the greatest influence on my finishing this work, for they have helped me, encouraged me, supported me and believed in me more than I often did myself. I am thinking first of all about my external advisor (and hopefully I can also say: friend), Jennifer Spenader from the University of Groningen in the Netherlands, without whom I would have never become a PhD student in the first place. You were one of the first people to tell me that I should try and you were right! And you definitely are one of the principal architects of this project. Thank you so much! Also, Professor Elizabeth Traugott from Stanford University, whom I was extremely lucky to meet several years ago at Stockholm and who has since then devoted her not-so-abundant spare time to reading and advising me on my (euphemistically speaking) preliminary ideas, always asserting that they had potential. Apparently, you were also right! Thank you! And last, but not least, my husband - Tony, who has long argued that I should write a book. Although I am not fully sure if the following is exactly

\(^1\) Please note the non-prototypical use of the RESULT connective (see Chapter 6 for a detailed discussion).
the sort of a book you have had in mind, nevertheless, you were right as well, my dear, for here it comes – the book that I indeed wrote! With all of my heart, thank you!

Special thanks also go to my advisor in Sweden, Annelie Ädel, for all her insightful comments and feedback; to my mock-opponent, Ninke Stukker from the University of Groningen, who put a lot of work and effort into helping me improve this piece of research; to Nils-Lennart Johannesson for his careful proofreading, and to the great Polish artist, Małgorzata Lazarek, for designing the cover picture for me.
Contents

Abstract ...................................................................................................................................................... iii

Abbreviations ............................................................................................................................................ xiv

1 Introduction ........................................................................................................................................... 1
  1.2 Aims and research questions of the present study .............................................................................. 6
  1.3 Overview of the thesis. .......................................................................................................................... 8

2 Background .......................................................................................................................................... 10
  2.1 RESULT in taxonomies of coherence relations ................................................................................... 11
    2.1.1 RESULT relation in RST and Sanders et al.’s cognitive primitives approach ......................... 12
    2.1.2 Sweetser’s (1990) taxonomy of discourse domains ................................................................... 16
    2.1.3 Empirical studies on connectives and coherence relations effect on text comprehension ....... 19
    2.1.4 A note on the distinction between CAUSE and RESULT connectives ................................. 24
  2.2 Intention and volitionality in RESULT relations ................................................................................ 26
  2.3 Veridicality and nonveridicality in RESULT relations ........................................................................ 32
  2.4 Subjectivity in RESULT relations .................................................................................................... 34

3 Data and Methods ............................................................................................................................. 37
  3.1 Corpus study ..................................................................................................................................... 38
    3.1.1 British National Corpus ............................................................................................................. 38
    3.1.2 Penn Discourse Treebank ......................................................................................................... 40
    3.1.3 BNC sample extraction ............................................................................................................. 42
  3.2 Experimental work ............................................................................................................................. 52
    3.2.1 Amazon Mechanical Turk ......................................................................................................... 52
    3.2.2 AMT-related solutions in the current work .............................................................................. 55
    3.2.3 Additional methodological considerations ................................................................................. 56

4 RESULT and PURPOSE coherence relations ................................................................................. 57
  4.1 PURPOSE as a special case of RESULT ............................................................................................ 61
  4.2 Features marking differences between RESULT and PURPOSE relations ..................................... 64
    4.2.1 Intentionality and agentivity as obligatory components of PURPOSE relations ...................... 65
    4.2.2 Modality ..................................................................................................................................... 68
    4.2.3 Nonveridicality and explicit marking requirement for PURPOSE relations ............................. 71
  4.2.4 Summary ..................................................................................................................................... 74
6.4 (Non)veridicality in the RESULT relations .............................................................183
6.4.1 Quantitative analysis of (non)veridicality in the RESULT relations. ...............186
6.5 Discussion and conclusions ................................................................................188

7 Conclusions and future work.............................................................................197

Appendices ...........................................................................................................209
Appendix 1 ..............................................................................................................209
The prompts used in Experiments 4.1a and 4.1b - PURPOSE relations and fillers (CONTRAST relations, 17-32). The same fillers were used in every experiment throughout the study. .................................................................209
The prompts used in Experiment 4.2. Relations ambiguous between RESULT and PURPOSE .................................................................................................................214
The prompts used in Experiments 4.3a and 4.3b. Unambiguous RESULT (items a and b) vs PURPOSE (items c and d) ................................................................................217
Appendix 2 ..............................................................................................................221
The prompts used in Experiment 5.1 Items (a) and (b) convey RESULT without a volitional participant. Items (c) and (d) convey RESULT with a volitional participant. ....................................................................................221
Appendix 3 ..............................................................................................................225
The remaining part of the analysis of Volitional RESULT relations with as a result and for this reason in section 6.3.4 (chapter 6). ......................................................................................225

References ..........................................................................................................227

Sammanfattning på svenska ..............................................................................239
Abbreviations

AMT     Amazon Mechanical Turks
BNC     British National Corpus
NVR     Non-volitional RESULT
R      RESULT
RN     REASON
P      PURPOSE
PDTB   Penn Discourse Treebank Corpus
RST    Rhetorical Structure Theory
SDRT   Segmented Discourse Representation Theory
SoC    Subject of Consciousness
VR     Volitional RESULT
If we knew what it was we were doing, it would not be called research, would it?

Albert Einstein
1 Introduction

The focus of the current study is the conceptual and linguistic domain of RESULT\(^2\) as a part of a causal coherence relation in English. The RESULT relation can be described as linking two events, where the first event causes the second one, for instance:

(1) It rained all night and *as a result* the streets are wet.

The goal of the present investigation is to describe how speakers encode and organize information about ‘what happened next’ and how this information may prompt hearers to update their discourse representation of this information. The analysis concentrates on RESULT relations in the naturally produced written English discourse and three resultative\(^3\) connectives: *so, as a result and for this reason*.

Causality is not a primarily linguistic notion. Most studies emphasize its crucial role in human experience, cognition and understanding of the world, because events in the world are related by causes, purposes, effects and results (Meyer, 2000:27; Wierzbicka, 1988, Talmy, 1985). Many researchers treat causal structures proper as cognitively basic, which is likely the reason why many existing taxonomies of both coherence relations and discourse connectives focus on more broadly defined causal relations, simply overlooking/disregarding the distinction between CAUSE and RESULT relations. This distinction could be formally illustrated as follows:

(i) (Result) *A, and as a result, B.*
(ii) (Cause) *B because, A.*

As indicated above, in RESULT relations CAUSE precedes RESULT; therefore they are sometimes described as ‘forward’. In CAUSE relations this order is inverted and so this type is referred to as ‘backward’ relations (Stukker &

---

\(^2\) A distinction has to be made in the current study between the more general notions such as result, cause and purpose and the technical labels of the instantiations of these notions, i.e. RESULT relations, and their aspects, i.e. CAUSE and RESULT (this applies also to other coherence relations). These terms will all be written in small caps in the following. Also, the connectives under investigation will be italicized.

\(^3\) Expressing or related to the effect of an event/action.
Sanders, 2102). According to Sanders, Spooren and Noordman (1992:12ff; see also Sanders, Sanders & Sweetser, 2012), despite the differences in the order of the presentation of causal events, CAUSE and RESULT relations share the same conceptual properties. While this is undeniably true, the order of presentation has certain consequences. First, in RESULT relations the attention is focused on the end of state of an event, while in CAUSE relations that role is assigned to the motivation of the main event (i.e. cause) (cf. Stevenson, Knott, Oberlander & McDonald, 2000:227). Importantly, this order is obligatory for RESULT and cannot be changed, but is optional for CAUSE:

(iii) (Cause) Because A, B.
(iv) *(Result) As a result B, A

This means that CAUSE can be “a point of departure as a message” (Halliday, 1967:212), or “what the sentence is about” (Lambrecht, 1994:125), which is a role not accessible for RESULT. Second, the order of presentation of causal events also influences the connective choice. Even though CAUSE and RESULT relations have both been discussed as causal, they do not share the same discourse connectives. So despite their conceptual closeness, CAUSE and RESULT are two different aspects of the same relation, which cannot be signaled in the same way (see Chapter 2, section 2.1.3 for further discussion). It is therefore somewhat surprising that descriptions of causality (and discourse connectives) very often try to capture all its various aspects, RESULT included, under the term ‘Cause’. This fact involves not only an obvious terminological confusion, but probably also a certain conceptual bias, since the boundaries between different relation types and their signals are often blurred in the literature. This problem will be addressed in a greater detail in Chapter 2 (section 2.1.4 below), but a point to note is that the common lack of the distinction between the two different aspects of causality and backgrounding the role of the RESULT relation in the literature provide strong motivations for the present study.

Admittedly, the nature of the CAUSE aspect of the causal relationship can be perceived as particularly complex in comparison to that of the RESULT. As Meyer argues (2000:12), it may be quite difficult to single out the actual ‘cause’ of a certain event, for causality is located not only in the teleological world of purposes and functions, but also in a socially constructed universe of justifications, reasons or motivations. Needless to say, it is conceivable to create faux ‘causes’ of genuine effects. Pinning down the features of a CAUSE is therefore not only interesting but also quite a challenging enterprise, which is probably why the notion has been studied from various perspectives: logical, philosophical, cognitive and linguistic. However, usually there is more to say about a topic than what can be expressed in just one clause, so the most natural strategy is to add more information with another. The added clause(s) has to be in some way related to the prior context and so
even upon encountering an asyndetic sequence such as (2) below, most readers will try to make a bridging inference:

(2) It rained all night. The streets are wet.

The implicature that the streets are wet because of the rain is certainly more informative than one arising from a temporal sequence (also implied by the causal relation, as first there was rain and after that the streets got wet), which can simply add information without really explicating anything (Kortmann, 1991:118ff; Meyer, 2002:27).

Causal inferences are so basic to the human mind that relations can be established not only between the events in the real world (as in (2)), but also between those that hold on the level of reasoning. One of the most influential approaches to this question was proposed by Sweetser (1990), whose discussion of causality in three different ‘discourse domains’ is rooted in the knowledge of human cognition and behavioral patterns (1990:77):

(3) John came back, because he loved her. (real-word)

(4) John loved her, because he came back. (epistemic)

(5) What are you doing tonight, because there’s a good movie on. (speech act)

The above relations have different interpretations: (3) conveys a factual relationship between two events in the physical world and can be interpreted based on world knowledge. By contrast, both (4) and (5) relate linguistic events – (4) conveys a conclusion drawn from prior evidence, whereas in (5) the question asked in S14 is motivated by the existing circumstances. The relations are thus very different, but share the form and conceptual property of causality.

Several other questions emerge at this point as essentially important in the current investigation. The distinction between different types of discourse relations illustrated above is in cognitive-oriented approaches crucially associated with the presence of an animate protagonist, Subject of Consciousness (henceforth: SoC), whose intentional actions in the real world or on the level of linguistic events are considered the source of causality in the relation (Pander Maat & Sanders, 2001:251). Relations such as (2), which lack an SoC, are regarded as non-volitional. By contrast, in (3)–(5) an SoC is present, but his/her role spans from a doer responsible for the real-world volitional result in (3) and an implicit speaker in the epistemic (4) and speech act (5) domains. These differences in the SoC’s involvement in the causality

---

4 S1 is used to label the first segment of the relation, whereas S2 labels the second segment.
have been proposed to be associated with discourse subjectivity. The non-volitional relations, which intrinsically lack an SoC, are regarded as objective; the relations that have an SoC involve different degrees of subjectivity. These are further related to differences in relation construal and signaling. Admittedly, quite a number of previous studies on causality, both theoretical and empirical, have already addressed these questions; however, relatively little attention has been paid to the characteristics of RESULT as part of the causal relations in the English language. Also, even though forward causal connectives have been investigated in several other languages (see Chapter 6 for details), the focus of these studies is commonly on the role of connectives in discourse and more general problems related to causality construal. As a consequence, the descriptions of the nature and linguistic realizations of RESULT and its arguments lack precision and clear focus on the relation *per se*. This refers in particular to the distinction between volitional and non-volitional events, which is often treated quite intuitively. As Chapter 5 in the current study indicates, the ‘split’ between Volitional and Non-volitional RESULT is both interesting and not always straightforward to analyze.

The current investigation therefore seeks to fill in several gaps in our knowledge of the RESULT coherence relations. Importantly, this attempt includes not only the above fine-grained distinctions between the types of RESULT, but also its special subtype, namely: PURPOSE. Consider:

(6) Carrie always buys high-end designer clothes *so* she can impress her friends.

(7) Carrie always buys high-end designer clothes, *so* she impresses her friends.

The PURPOSE relation in (6) and the RESULT (7) are very similar, which is why they can be marked with the same connective. This suggests that they share certain conceptual properties (Schmidtke-Bode, 2009), one of which is an intentionally acting participant. Recall that this type of participant can often be involved in RESULT, but is not a mandatory element of the relation in contrast with PURPOSE, where it is indispensable. The current discussion zooms in on the idea of intentional action and argues that the notions of volition and intentionality figure not only in disambiguation between PURPOSE and RESULT, but can also account for subtler distinctions between the different types of RESULT relations. An important aspect of this investigation is its attention to the discourse features and linguistic elements, which can signal such distinctions.

This brings us to the last concern of the current inquiry, which is relation marking. One particular challenge to studying discourse relations in corpora

---

5 Only technical labels (e.g. Volitional RESULT) are capitalized in the following.
is that they are not all marked with an explicit connective. PURPOSE and RESULT differ in this respect, since an overt connective is optional for RESULT, but mandatory in the PURPOSE relation. This requirement is believed to stem from the feature called veridicality, related to the truth entailment of the involved arguments (Jasinskaja, 2007; Andersson & Spenader, 2014). Prototypically, the relation arguments are entailed in RESULT (veridical) and intrinsically un-entailed in PURPOSE (nonveridical). The correct interpretation of nonveridical relations has been argued to be impossible without a connective (Jasinskaja, 2007). However, as Chapter 4 indicates, the linguistic marking of modality and intentionality may figure more importantly in disambiguation between PURPOSE and RESULT than an overt connective. This finding is counter to the mainstream view that coherence relations can only be signaled by discourse connectives and other elements traditionally described as cohesive devices (e.g. anaphora, ellipsis, repetitions etc.). In fact, coherence can be realized and recognized also on the basis of other language features, both lexico-grammatical and discourse-related, such as verbs, nouns, prepositions, adverbial clauses, clausal complements, tense, mood, modality, thematic progression etc. (Martin, 2002; Taboada 2006:3).

However, discourse connectives offer a very convenient way to study at least a subset of the coherence relations which hold in the text. Needless to say, inferring relations from unmarked spans of text can be a rather complex task (Stede, 2008; Prasad, Webber & Joshi, 2014: 923), which is the likely reason why work on coherence relations is commonly connective-based. As discussed in Chapter 2 (section 2.1), the view pursued here is that coherence relations are the product of both conceptual categories and language signaling and that these components both contribute to discourse interpretation (see Sanders & Spooren, 2010). Consequently, the current study in its aspiration to differentiate between various types of the coherence relation of RESULT and tease apart the features of these differences, will also shed light on the patterns of usage of several discourse connectives and their contribution to the construal of RESULT. A point to make is that the connective expressions are not treated as sole determinants of the relations types in the following discussion. The investigation instead attempts to establish mappings of the relations onto their other lexico-grammatical realizations. The features thus identified can serve as cues for recognition of the relations which lack an overt connective or are ambiguously marked, with the caveat that that a certain consensus is needed as to which of them are so strongly indicative of the CAUSE-RESULT categories as to be viewed as relevant by all humans.

Such an approach is particularly suitable for disambiguation between two closely associated coherence relations marked either with a multifunctional connective or not overtly marked at all, or when no one-to-one mapping between the connective and the relation type is expected. The first case is discussed in Chapter 4 in the context of RESULT and PURPOSE in unmarked and relations marked with ambiguous so. The second case applies to the
fine-grained distinctions between RESULT relations marked with *for this reason* and *as a result* (Chapters 5 and 6). This is where the connective role and its contribution to the relation context become the most prominent part of the discussion. The idea investigated in several studies on Dutch, French and German, that discourse connectives reflect how the speakers categorize and perceive different causality types, is tested for English in Chapter 6. As a result, a detailed analysis of the semantic features present in RESULT relations is provided.

The present study is therefore an important addition to the existing knowledge of coherence relations, particularly because the relations investigated here are underresearched in English. Most of the previous work uses English merely as the target language or the metalanguage of constructed examples, whereas the peculiarities of the RESULT (and PURPOSE) relations in naturally produced discourse have not been studied in detail before. Further, the methodology adopted here is a quite innovative combination of corpus analysis and experimental studies (with a few notable exceptions, such as Li, 2014). While corpus investigation is the most commonly used and very efficient methodology in discourse studies, it obviously has its limitations (see Chapter 3 for details). One of those limitations relates to the aforementioned need for a consensus about the features indicative of the coherence relation type. Further, since the collection of texts in every corpus has a limited number of authors, certain patterns related to practitioners’ conventions can be anticipated. Therefore, the optimal solution is to obtain more diverse data. This is why the current study adopts an experimental approach in order to investigate the ways of disambiguation between the different RESULT relations types, both unmarked and marked (with either a connective or another cue deemed as potentially relevant). Combining the two methods is hoped to add a new and enriching perspective to the endeavor to answer the same questions on the basis of corpus data alone.

### 1.2 Aims and research questions of the present study

The overall aim of the current study is to analyze the conceptual nature and the linguistic realizations of the coherence relation of RESULT in English. The following are the main research questions that will be investigated here:

I. How can we differentiate between RESULT and PURPOSE relations in English?

II. How can we differentiate between different types of RESULT in English?

Several other questions will also be relevant in the discussion:
(i) To what extent is connective presence relevant for the distinction between the two relations analyzed?

This question will be particularly important in Chapter 4, where the relations of PURPOSE and RESULT are compared. As mentioned, it is believed that PURPOSE requires overt marking, while RESULT can be left implicit. This requirement is partly based on the property of nonveridicality, which on the mainstream view is intrinsic only to a few relations, including PURPOSE but not RESULT. Yet Volitional RESULT has also been claimed to be related to nonveridical interpretations (Trnavac & Taboada, 2012). Chapter 6 provides insights into this problem.

(ii) What other explicit linguistic signals of the relation types apart from the connectives can be found in the relation segments and how do they affect the relation character/disambiguation?

This question will be relevant for the entire study. Since all RESULT relations can be marked with the multifunctional connective so, the presence of other linguistic means as signals of different types of coherence is anticipated. Also, due to the highly constrained character of the semantics of the PURPOSE clauses, specific discourse signals of PURPOSE relations found in the present corpus material and suggested in the literature are discussed in Chapter 4. Finally, the differences between RESULT relation types, which pertain to the distinctions between domains of discourse interpretation and discourse subjectivity, can also be signaled by specific linguistic elements. This discussion follows in Chapters 5 and 6.

(iii) What is the role of the logical property of nonveridicality in the relations of RESULT and PURPOSE?

This question is particularly relevant for Chapter 4, as on the mainstream view it is only the PURPOSE relation that is nonveridical. Apart from the purported marking requirement, the feature of nonveridicality involves an intrinsically hypothetical and future-oriented character of the relation. Since RESULT is believed to be veridical, the simple conclusion is that these features could help disambiguate between PURPOSE and RESULT. As Chapters 4 and 6 will demonstrate, this is indeed the case; however, this fact does not preclude the relation of RESULT from nonveridical interpretations.

(iv) What kind of semantic features contribute to the construal of the RESULT relations? Are some of them more common with certain relation types?
This question will be discussed in detail in Chapter 6 and concerns the linguistic realizations of different types of RESULT relations. The answer includes discourse connectives in focus of this part of the analysis (i.e. as a result and for this reason) and their contribution to subjectivity/objectivity construal alongside with other linguistic means that can mark subjectivity in discourse. As will be indicated, linguistic realizations of subjectivity are more frequently encountered in the real-world volitional, epistemic and speech act RESULT relations marked with for this reason, than in Non-volitional RESULT signaled with as a result.

1.3 Overview of the thesis.

The current thesis is organized as follows:

I. Chapter 2 below provides an overview of several theoretical approaches to coherence relations which are (at least partly) relevant for the current goals. Subsequently, the attention is directed to the notions of intentionality, agentivity and volition, as well as veridicality and subjectivity, which all contribute to the construal of RESULT relations.

II. Chapter 3 discusses the methods and materials used in the current analysis: the British National Corpus (BNC) and the Penn Discourse Treebank (PDTB), as well as the crowdsourcing marketplace used in the experimental part of the study – Amazon Mechanical Turk (AMT). The discussion is concerned with all aspects and potential problems related with corpus sampling, identification of relevant features and interpretation of experimental findings.

III. Chapter 4 provides an extensive discussion of the similarities and differences between the RESULT and PURPOSE relations based on a corpus study of explicitly marked relations in the BNC and PDTB and unmarked relations in the PDTB. The main goal of this chapter is to prove that PURPOSE is a type of RESULT, but the differences in the conceptual structures of the two relations result in the requirement for overt marking that applies to PURPOSE but is optional for RESULT. This question is also tested experimentally.

IV. Chapter 5 sets out to describe the difference between the Volitional and Non-volitional RESULT relations types in English. The discussion sheds light on the types of active participants, potential agency and volitionality construal in certain events types. Also, this chapter
identifies the preferences in marking the investigated RESULT types as well as the significance of the features of agency and volition for the resultative event and connective identification (experimental study).

V. Chapter 6 provides a detailed analysis of how both discourse connectives and other linguistic features commonly believed to be related to subjectivity in discourse contribute to the construal of the different RESULT types (both with an SoC involved in causality and without an SoC). This chapter will also discuss the potential of the RESULT relations to be nonveridical – the property intrinsic to PURPOSE and, on the mainstream approach, irrelevant to RESULT.

VI. Chapter 7 provides a summary and conclusions.
2 Background

The general view of coherence adopted in the current study is that the connectedness of discourse is a mental phenomenon. Coherence is thus not treated as a property intrinsic to the text, but as a product of text interpretation. On this approach, discourse relations between information units are seen as conceptual categories, which do not have to be explicitly signaled via language expressions (see also Mann & Thompson, 1988; Sanders, Spooren & Noordman, 1992; Sanders & Spooren, 2010; 2015). In fact, the notorious problem associated with linguistic signaling is that a stretch of discourse can be coherent even without any overt cohesive ties (the example borrowed from Sanders & Spooren, 2010:919):

(1) John was happy. It was Saturday.

The correct understanding of this sequence depends on world knowledge and not linguistic marking. However, a text inherently contains signals facilitating the interpretation process (Sanders & Spooren, 2010:919). These signals guide the reader towards the intended interpretation and help her establish a relevant discourse representation; yet they differ as to the levels of their entrenchment as actual signals of coherence: whereas certain features have a well-established status as cohesive devices (e.g. ellipsis, anaphora, etc. Halliday and Hasan, 1976), others acquire this function in the context, owing to the inference induced. In (1) above the inference that Saturday can make a person happy stems from real-world human experience, but it is guided by the presence of the expressions happy and Saturday, which contribute to the creation of the relevant ‘mental representation’ (Hobbs, 1979) in the user’s mind. One of the central questions in the current investigation is what language signals other than the standard cohesive devices contribute to the intended interpretation of different relation types.

The present approach combines a linguistic inquiry with a cognitively-rooted view on coherence, in line with the argument that (Stede, 2008a:222; see also Polanyi et al. 2004):

(…) coherence should be explained as the interplay of different levels of description (possibly partial), such as referential and thematic structure, intentional structure, and a level of local coherence analysis (…)

(10)
The common focus of the linguistic studies in causality, however, has been either on defining the types of causal relations between events (Halliday & Hasan, 1976; Martin & Rose, 2007; Sanders et al. 1992) or on describing the meanings and functions of discourse connectives (Schiffrin, 1987; Frazer, 1999; Knott & Dale, 1994). The accounts focused on describing the nature of coherence are very important for our understanding of the concept, but they do not provide a full picture of the local encoding of the relations. On these approaches connectives are dissociated from the definitions of coherence relations. By contrast, the analyses of only discourse connectives can be detrimental to the recognition of relevant semantic features of the relations. There are several reasons for that. First, a single expression, particularly with as little propositional meaning as a connective, cannot convey all intricacies of a causal relation. Second, underspecified connectives (e.g. so) typically do not signal fine-grained distinctions between different types of coherence. As a consequence, a great deal of the semantics and pragmatics of the analyzed relations remains intuitive. The current study, by contrast, involves both the macrostructure of the relation types and also the microlevel environment of the linguistic means used to convey them. Importantly, this level is not confined to the analysis of discourse connectives. This brings us to more specific considerations on how the levels of analysis can be fruitfully integrated in the study of the coherence relation of RESULT.

2.1 RESULT in taxonomies of coherence relations

The present analysis borrows from several taxonomies of coherence relations exploiting their explanatory potential in the area under scrutiny. As mentioned earlier, the study investigates three types of RESULT coherence relations primarily categorized in Mann and Thompson’s (1988) Rhetorical Structure Theory (RST): Volitional RESULT and Non-volitional RESULT and the coherence relation of PURPOSE, categorized in Mann and Thompson’s (1988) taxonomy as a type of causal relation and here considered as a special subtype of RESULT.

The following sections first provide a synopsis of how the RESULT relation has been classified in two relevant taxonomies: the aforementioned RST and Sanders et al.’s (1992) taxonomy based on cognitive primitives. Finally, Sweetser’s (1990) tripartite taxonomy of multiple senses within the same relation type is discussed in detail in 2.1.2 below.
2.1.1 RESULT relation in RST and Sanders et al.’s cognitive primitives approach

One of the most detailed taxonomies of the RESULT relations (and coherence relations in general) is Mann and Thompson’s (1988) Rhetorical Structure Theory (RST). RST is also one of the most influential theories of text organization by means of ‘relational propositions’ (i.e. coherence relations) holding between its parts. The theory defines a set of relational structures which are aimed to provide a complete coverage of coherence relations in natural texts. This is, certainly, one of the undeniable strengths of the framework. The relations included in the original RST model are: ELABORATION, SOLUTIONHOOD, EVIDENCE, SEQUENCE and CAUSE, which were later on extended to include over 30 other types (Mann, 2005). Most importantly for the present investigation, the CAUSE category in RST distinguishes between five types of relational subcategories: Volitional RESULT, Non-volitional RESULT, PURPOSE, Volitional CAUSE and Non-volitional CAUSE. Consider examples of Volitional RESULT (2) and Non-Volitional RESULT (3) borrowed from RST (1988:275):

(2) Writing has become almost impossible so we had our typewriter serviced and I may learn to type decently after all these years.

(3) The blast, the worst industrial accident in Mexico’s history, destroyed the plant and most of the surrounding suburbs. Several thousand people were injured, and about 300 are still in hospital.

As Mann and Thompson explain it, S2 in (2) conveys a volitional action (or a situation that has arisen from a volitional action), while S1 presents a situation that could have caused the event in S2. In (3) S1 presents a situation that could have caused the non-volitional situation in S2. RST seems to be the only taxonomy that covers the distinction between volitional and non-volitional causal event types, which, as the authors argue, stems from the inherent ability of causal relations to convey both intended and unintended actions (Mann & Thompson, 1988: 274).

One important implication that emerges from the RST-based analysis is the saliency of the RESULT part of the causal relation for the interpretation/categorization of the causal events as CAUSE or REASON. Apparently some types of arguments convey a reason or motivation for the Subject to act in a certain way (2), whereas others express causes (3). Crucially, it seems that this distinction can be posited according to the type of RESULT the given

---

6 Recall that S1 is used to label the first segment of the relation, whereas S2 labels the second segment.
causal event brings about or, more specifically, how the RESULT event involves the participant in the previous discourse (see also Verstraete, 2008: 761). Mann and Thompson’s categories of Volitional (2) and Non-volitional CAUSE (3) are in fact suggestive of the difference between the more abstract notions of REASON and CAUSE – Non-volitional CAUSE is an event that causes a Non-volitional RESULT and Volitional CAUSE is an event that is the reason of a Volitional RESULT. However, if we assume that the character of the causal argument is determined by the RESULT type that follows, then RST Non-Volitional CAUSE could be labelled CAUSE, whereas Volitional CAUSE – REASON. The details of the technical distinction between CAUSE and REASON will not be investigated further here (but see also section 2.2 below), but the terms are used for clarity of discussion in certain cases.

Another important advantage of the RST framework is that it allows for identification of discourse structure in the absence of overt signals. Mann and Thompson (1988) leave the connectives out of their definitions of coherence relations and do not explicitly associate relations with specific discourse markers. Recall that the current investigation also does not treat connectives as unambiguous signals of coherence relations. Further, while RST analysis is tied to the language in text, in this approach the investigations can draw upon shared knowledge and knowledge of the conventions of the language (Mann & Thompson, 2001:8ff). Consequently, knowledge of the culture, situations, and language that the texts may represent enables the analyst to find more structure to the relations than what is explicitly marked (Taboada, 2006:571).

Despite its undeniable advantages, RST is one of the taxonomies that overlooks the fact that some relations are affiliated and form families of ‘relations between relations’ (Sanders et al., 1992: 5). As discussed in Chapter 1 (see (3), (4) and (5)), certain relations share the same semantics of causality, although their segments are related on different premises, linking either propositions (locutions) or speech acts (illocutions) (Stede & Peldszus, 2012:214). This dimension of analysis has been captured by many researchers under numerous labels: Semantic-Pragmatic by van Dijk (1981); External-Internal relations by Halliday and Hasan (1976); Martin, (1992); Subject-matter and Presentational by Mann and Thompson (1988); Ideational and Pragmatic relations by Redeker (1990), Semantic and Pragmatic by Sanders et al. (1992). As Sanders (1997:125) explains it:

Prototypical (…) pragmatic (…) relations are cases in which the author argues for something she claims to be true. (…) Prototypical (…) semantic (…) relations concern something that has already taken place (…) so that there can be no dispute about the ‘truth’ of the statement.

A similar view is sometimes held in computational work on discourse (even though this work often focuses on a coarser level of description). For in-
stance, as Webber et al. (2001:8) argue, the lower-level discourse relations hold either between the semantic content of two units of discourse, or between the semantic content of one unit and the speech act conveyed in another one.

This important aspect is treated quite perfunctorily in Mann and Thompson’s (1988) RST. The basic distinction is made between the ‘subject matter’ and ‘presentational’ aspects of the text structure (Mann & Thompson, 1988: 256f), which are argued to pertain to the writer’s intentions. The relations merely intended to be recognized by the reader are believed to link two text spans in the subject matter. Other relations link text spans with the intended effect of ‘increasing some inclination in the reader’, such as the desire to act or her belief in one of the segments. Crucially, on the RST approach the intended effect is more important than the means to achieve it (Taboada & Mann, 2006:436) and so the relations belong either to the ‘subject matter’ (e.g. SOLUTIONHOOD) or to the ‘presentational’ (e.g. CONCESSION) category, independent of their locutionary or illocutionary character. All causal relations (including RESULT and PURPOSE) belong to the subject-matter category, according to Mann and Thompson (1988).

A far more illuminating taxonomy of coherence relations is provided by Sanders et al. (1992). The authors reject the RST concept of ‘descriptive adequacy’ as a necessary requirement for a discourse structure analysis. Consequently, they point to the lack of more systematic categorization of coherence relations in Mann and Thompson’s approach and its simplistic take on the question of psychological plausibility of coherence relations as cognitive primitives. As they argue, it is unlikely that all ‘relational propositions’ are cognitively basic (as assumed in the RST) and recognized by the reader as EVIDENCE or SOLUTIONHOOD etc. (Sanders et al., 1992:4). What they postulate instead is that every relation should be analyzed in terms of more elementary notions, such as causality.

Importantly, this particular taxonomy includes the notion of relations within the same relation (see (ex. (3)–(5) in Chapter 1 above). The distinctions are based on whether the relation exists between the propositional content of the segments (semantic) or concerns the “speech act status of the segments”. Consider:

(4) The remote control for the television was next to me so I pressed the ‘on’ button. (BNC: HD6 234)

According to Sanders et al. (1992:7), (4) is a semantic CAUSE-CONSEQUENCE relation. The semantic relation exists between two events in the real world and is coherent because “the world described is perceived as coherent”. In pragmatic relations, the coherence exists because of the writer's goal-oriented communicative acts. For instance:
(5) A hectic social life could cost a packet so you might have to pull in your horns a wee bit. (BNC: HJ3 5812)

S1 in (5) is not the CAUSE of the proposition S2, but serves as an explanation or motivation (REASON) of uttering S2. This type of relation was dubbed as ARGUMENT-CLAIM in the discussed model. By acknowledging the two different sources of coherence, Sanders et al. (1992) recognize the fact that some relations, which play different discourse functions, are in fact affiliated and stem from a common source. This is the case for (4) and (5) above, which are both RESULT relations. On Sanders et al.’s (1992) approach, the underlying relation type does not figure in semantic-pragmatic distinction and so both relations categorized in RST as subject-matter or presentational can have either a semantic or a pragmatic source of coherence.

However, the main purpose of Sanders et al.’s (1992) study was to identify the primitives according to which the relations can be ordered. The resulting taxonomy thus represents coherence in general conceptual terms, abstracting away from the specific content of the segments. Consequently, certain concepts included in the model could be further specified using segment-specific properties. As the authors argue about (6) below (1992:12f) this relation, categorized in their study as CONSEQUENCE-CAUSE, combines the properties of REASON (S2) and volitional action (S1):

(6) A piano concerto by Beethoven was removed from the program, because the soloist Anthony di Bonaventura fell seriously ill.

In the authors’ view, one of the candidates for further specification could be the property of ‘volitionality’. While the original paper does not zoom in on that particular aspect, several later studies of discourse connectives and coherence relations by Sanders and colleagues elucidate that volitional relations are such where the event is an action instigated by a conscious and intentional participant (e.g. Sanders et al., 2012; Sanders & Spooren, 2013; 2015; Stukker & Sanders, 2009; 2012). As mentioned, this participant can be the doer on both the semantic relational level (such as CAUSE-CONSEQUENCE) and the ‘speech-acts’ level (ARGUMENT-CLAIM). Consequently, real-world volition and relations between linguistic events are believed to share the crucial property of originating from the mind of a conscious instigator introduced in Chapter 1 under the term SoC (Pander Maat & Sanders, 2000; Pander Maat & Degand, 2001, Stukker & Sanders, 2009; 2012).

One methodological problem that the approach by Sanders et al. (1992) posits for the current study is that it treats all types of illocutions as ‘speech acts’ where “(…) coherence exists because of the writer’s goal-oriented communicative acts” (1992:8). While this is definitely true, the category of
communicative acts can also be further specified into more fine-grained sub-categories in order to account for instances such as (7) below:

(7) We’re both adults, so what harm is there in you staying here with me? (BNC: JXV 1717)

The relation in (7) is also one of RESULT, but the content of S2 is expressed via an interrogative, where the goal seems to be to convince the listener to stay. This makes the utterance different from the instances of ARGUMENT-CLAIM such as (5) above, both structurally and from the point of view of the motives underlying the relation and the effects it is meant to create.

Since the current aim is to account for all discourse realizations of the RESULT relation, the influential proposal by Sweetser (1990), which posits a tripartite structure of the communicative goals behind the coherence relations, is adopted in the following. The next section discusses this particular approach in detail.

2.1.2 Sweetser’s (1990) taxonomy of discourse domains

Whereas Mann and Thompson’s (1988) RST framework has a more descriptive orientation, the proposals by Sanders et al. (1992) and Sweetser (1990) share the focus on the cognitive mechanisms underlying coherence. Sweetser, however, proposes a taxonomical refinement of the common bi-partite distinction between the relations within the same family by adding yet another category of relations. The idea that underlies this particular model of analysis stems from the assumption that discourse connectives are polysemous lexical items which can be interpreted in three discourse domains: real-world (content), epistemic and speech act domains. Consider the following instances of RESULT relations (taken from Sweetser, 1990:71):

(8) He heard me calling, so he came. (real-world)

(9) (You say he’s deaf, but) he came, so he heard me calling. (epistemic)

(10) Here we are in Paris, so what do you want to do on our first evening here? (speech act)

As Sweetser (1990:21) argues, the human tendency to use the vocabulary from the external (sociophysical) domain in speaking of the internal (emotional and psychological) domain provides evidence for “metaphorically structured cognitive and linguistic understanding of the relevant areas”. Therefore, while (8) conveys a rather straightforward link between events in
the real world, in (9) it is the knowledge of the subject’s arrival that makes
the author draw the conclusion that ‘he’ heard the calling. Similarly, in (10)
the protagonists’ presence in Paris enables the act of asking the question that
follows (Sweetser, 1990:79). All three examples share the semantics of Re-
sult, but in (9) and (10) the causality operates on the metalevel of linguistic
events, not in the real world of observable actions, like (8). Consequently, on
Sweetser’s (1990:20f) tripartite approach, also discourse connectives (along-
side with modal verbs and conditionals) are argued to show polysemous
ambiguity between the sociophysical domain and the domains of the reason-
ing and exchange between interlocutors.

Following this proposal, Knott, Sanders and Oberlander (2001:198) sug-
gest that language users’ connective choice reflect their ways of thinking and
categorizing closely related events. Knott and Mellish (1996:13) provide
examples of preconditions (the conditions that must hold in order for a rela-
tion to be used) necessary for the use of different connective phrases in dif-
ferent domains of interpretation. Consider:

(11) The footprints are deep and well-defined. It follows that/so/* as a re-
sult the thief was a heavy man.

(12) I had a puncture on the M25 on my way back from work. As a re-
sult/* it follows that I missed most of the first half.

Since in (11) the relation holds between two events in the world, consequent-
ly, the connective as a result in this context is odd; suggesting that the foot-
print’s being deep caused the thief’s heaviness. By contrast, the phrase it follows that in (12) would convey some kind of deduction from the premises,
whereas the sentence is intended to express the writer’s own experience in
the real world (Knott & Mellish, 1996:13). Hence, as a result is more suita-
ble to convey this relation. These observations suggest that speakers have
preferences as to the connective choice, which indeed may be related to their
perception of different causality types. This question will be investigated
more closely in Chapters 5 and 6 below.

In sum, Sweetser’s (1990) idea of using systematic metaphorical structur-
ing of one domain in terms of another constitutes a useful modification of
the other existing classifications, as it allows for a more fine-grained analysis
of coherence relations and their linguistic realizations, both via connectives
and in the absence of explicit marking. This concerns the distinction between
epistemic relations and speech acts in particular, which were all treated as
instances of illocutions in Sanders at al. (1992). It is important to note that
speech acts as understood by Sweetser (1990) are usually linguistically sig-
naled by means such as interrogative or imperative forms, performative
phrases, quotations etc. (Lagerwerf, 1998:23).
Epistemic relations in Sweetser’s (1990) view can be established in the absence of any physical causal relation and pertain to the realm of the speaker’s reasoning. However, in some cases the distinction between the domain of real-world and epistemic relations can become more complex.\(^7\) Consider:

(13) Miranda quit her job, \textit{so} she spends more time with her son.

The connection in (13) may exist both in the real world (i.e. quitting her job enabled Miranda to spend more time with her son) and on the level of the speaker’s reasoning (i.e. Miranda’s not working made the speaker to draw the conclusion that she spends more time with her son). In fact, without additional context or/and disambiguating signals (e.g. modal verb), excluding one of these two readings is impossible.\(^8\)

A set of useful descriptions according to which coherence relations can be paraphrased in order to establish to which discourse domain they belong has been offered by Degand and Sanders (1999:5) (see also Stede & Pedszus, 2012:226). Consider several BNC examples of RESULT paraphrased according to these proposals:

i. Content/real-world domain: this action (B) is the consequence of the preceding situation (A)

\begin{itemize}
  \item (A) The woman opposite stuck her feet out too, (B) \textit{so} Philip pulled his in under his chair. (BNC: ABX 877)
\end{itemize}

ii. Epistemic domain: one can conclude (B) on the basis of the situation (A)

\begin{itemize}
  \item (A) For the rest of this book an attempt is being made to explore some metaphysical questions (B) \textit{so} perhaps we are entitled to stumble. (BNC: AMT 9)
\end{itemize}

iii. Speech-act domain: this event/state (A) enables the act of making the following utterance (B)

\begin{itemize}
  \item (A) You know all this, (B) \textit{so} why are you talking such nonsense? (BNC: JYE 3117)
\end{itemize}

In (i) we see a report on real-world causation, while (ii) and (iii) are metaphorical extensions of causality understood in the sense of Sweetser (1990).

---

\(^7\) Sweetser mentions this only very briefly (1990:77).

\(^8\) In naturally produced discourse ambiguities of this type (in case they occur) are likely to be successfully resolved.
In (ii) the speaker makes a claim and thus acts as a concluder, while in (iii) she asks a question, by which she performs a speech-act (Searle, 1976:355). As should be clear from the above, Sweetser’s (1990) idea of discourse domains is an efficient way of accounting for ‘relations between relations’ (Sanders et al., 1992:5). Such an approach is particularly apt considering both the complexity and omnipresent nature of causality.

However, one relation that does not seem analyzable in terms of Sweetser’s (1990) three discourse domains is PURPOSE:

(14) I’ll pull back the curtains so you can have some company. (BNC: HTG 1537)

Sanders et al. categorize the PURPOSE relations (GOAL-INSTRUMENT) such as (14) as pragmatically connected. The authors do not explicitly discuss this decision, but as they argue, the relation consists of two basic operations, one of which is a yet-unrealized wish for a state of affairs to be achieved (Sanders et al., 1992:14). It is indeed the case that the purposive event is intrinsically hypothetical and hence the relation is closer to the world of the speaker’s reasoning than to the physical world. However, the action of pulling back the curtains is undertaken in order to achieve a specific effect in the real world and the reasoning is highly constrained by this fact. Hence the distinctions within the same relation proposed by Sweetser (1990) are not fully relevant for the analysis of PURPOSE, which seems to exhibit characteristics intermediate between two discourse domains. A more detailed discussion follows in Chapter 4.

2.1.3 Empirical studies on connectives and coherence relations

As discussed, discourse coherence is nowadays generally considered a mental phenomenon – a characteristic of the user’s mental discourse representation (see also Mak & Sanders, 2013:1414). It is therefore not surprising that the notion has received substantial attention in experimental psycholinguistics.

One of the mainstream ideas followed in those studies is that discourse connectives are operating instructions on how to interpret coherence relations. In his seminal work, Fauconnier (1994) defines ‘mental spaces’ as cognitive structures rooted in schematic knowledge and deployed as discourse unfolds in order to interpret utterances. These spaces are distinct from linguistic constructs, yet established by linguistic expressions – more specifically, discourse connectives. Further, Anscombe and Ducrot (1977:925) argue that the connective but in (15) below establishes a kind of argumentative scale between a positive and negative poles:
John is rich, but dumb.

Blakemore (1992:149) suggests that discourse connectives govern ‘inferential computations’, which underlie the construction of a mental representation of relations between propositions. The connectives can be seen not only as markers of coherence, but also as procedural signals that ‘enable maximum rewards of interpretation at minimum processing costs (Blakemore, 1992). This applies particularly when linguistic environment fails to facilitate the appropriate (in Blakemore’s terms: ‘relevant’) discourse interpretation. In such cases connectives help limiting the assumptions that may arise from the context, for instance:

(16) The party is on Saturday, but Bill is not coming.

(17) The party is on Saturday, so Bill is not coming.

It is clear that without so and but the relations between the two propositions in (16) and (17) would be ambiguous, whereas the connectives indeed constrain the set of inferences which can potentially be drawn from the linguistic context of the relations.

The empirical studies of the role of discourse connectives commonly test reading times and content recall. The findings often indicate that connectives do affect the construction of meaning representation and facilitate the integration of linguistic information in the reader’s discourse representation. For instance, Haberland (1982) found a facilitating effect on reading times of RESULT connectives (so, therefore) and adversatives (but, however). Millis and Just (1994) showed that the overt connective because led to both faster recognition times to probes and more accurate responses to recognition questions immediately after reading a sentence. Cozijn (2000) found that in the sentences explicitly marked with because, the words immediately following the connective were read faster than those at the end of the clause.

Several other studies, however, produced rather mixed results. Both Meyer et al. (1980) and Britton et al. (1982) found in recall tasks that only underachieving readers benefit from the connective presence, whereas both poor and good ones do not enjoy the same effect. Their conclusion was that the connectives may activate passive knowledge that would otherwise not be accessed in underachieving readers, whereas the good readers do not need overt signals for knowledge retrieval. The poor readers may lack relevant knowledge in general, which explains why the lack of connective effect on recall in their case. These results to some extent converge with other evidence in the literature that shows that overall patterns of connective usage are register specific, which relates both to the writer’s expertise and also to the expected level of knowledge in the target audience (see the corpus studies by MacDonald, 1994; Biber et al, 1999; Hyland, 1999 etc.).
Further, the influence of connectives on macro and micro levels of discourse comprehension (the overall text representation and relations between the segments of the texts, respectively) has been investigated by Chung (2000) and Degand and Sanders (2002). Chung showed that discourse markers enhance the understanding at macrostructure level, but have no effect at the microstructure level. Degand and Sanders (2002), by contrast, in their study of the impact of causal connectives on the comprehension of expository texts in L1 and L2, found that they have a facilitating effect on both macro and micro levels of discourse representation in both L1 and L2. Finally, Millis, Golding and Baker (1995) compared because and and and found that because had a greater effect on causality construction (i.e. generated a greater number of causal inferences) than and. Their conclusion was that the effect of the readers’ invoking knowledge-based causal inferences in text processing is lesser than that of a specific causal connective present in the context.

This brief overview suggests that the role of connectives in discourse processing is not unambiguously established, but they nevertheless can be treated as linguistic instructions on how two discourse segments link to each other (Sanders & Spooren, 2010:8). However, given the fact that language users are able to establish links without overt marking, it can be expected that coherence relations per se affect discourse processing and representation. It is important to note that even the studies which do not test any specific explicit markers, provide an additional dimension to explore the role of connectives in discourse. The underlying assumption of such research is that the cognitively-rooted experience of causality influences the reader’s construction of discourse representation. As Trabasso, Secco and van den Broek (1984:108) put it:

(…) structure arises from a general consideration of viewing story understanding in terms of an attempt by the comprehender to infer relations among events in terms of human goals and purposes.

Trabasso et al. tested narrative comprehension in adults and discovered that text interpretation is governed by an expectation of cause-effect relations in the context. Consequently, the events on the causal chain are better remembered than those excluded from the chain (‘dead-end events’). In a follow-up study, Trabasso and Sperry (1985) also found that the cause-result events were judged by the readers as more important than those that lacked the same link.

Keenan, Bailet and Brown (1984) and Myers, Shinjo and Duffy (1987) reported similar results for reading times of causally related sentence pairs: the reading times of the second sentence in the relation increased as the level of causal relatedness decreased. However, the recall performance differed between highly, moderately and low related causal events and was best for
the moderate relations. Both studies argue that the moderately related events are more likely to be sustained in memory thanks to the lower processing effort or sufficient content provided by the sentences for the reader to generate a bridging inference and integrate the causal relation into the discourse representation. Similar results were obtained by Mills and Just (1994) and in the studies by Black and Bern (1981) and Trabasso and van den Broek (1985), which both found that causally related events are better recalled than non-causal sentence pairs.

The fact that causality can be established in the context without explicit marking was confirmed in several other studies. Murray (1995) tested isolated sentence pairs with adversative and causal connectives and found the latter group contribute to a small increase in reading times, whereas the adversative had a strong facilitating effect for interpretation. However, the participants deemed the causally related sentence pairs, whether or not explicitly signaled, as easier to interpret than the adversative relations. In another study, Murray (1997) discovered that adversative relations with misplaced connectives were judged by the participants as less coherent than causal and additives. This suggests that the overt marking for causal relations is perceived as less important, because the relation context provides enough information for interpretation.

Further, based both on their own and previous experimental evidence, Sanders and Noordman (2002) proposed that coherence relations should be viewed as cognitive entities that enable the reader to construct a coherent text representation. The authors distinguished three conceptual relations: ‘problem-solution’, ‘cause-consequence’ and ‘list’ and argued that they may be inferred without the presence of explicit connectives. The findings of that study indicated that different coherence relations affect processing in different ways. As initially predicted, the sentences that conveyed problem-solution (signaled by causals because and therefore) were processed faster than the list-type relations. The conclusion drawn by Sanders and Noordman was that coherence relation types play a primary role in interpretation, while the relations are an indissoluble part of the cognitive representation of the text. Most importantly, it was concluded that the conceptual character of the relation is more significant than the presence of overt connectives serving as ‘surface cues’ that guide the construction of text representation.

Finally, in line with Trabasso et al. (1985), Mak and Sanders (2013) argue that readers seem to have causal expectations when interpreting text and that these expectations can influence processing. For instance (2013:1415):

(18) The boy quarreled with his father when he did not get permission to go out.

Even though when is not a prototypically causal connective, the cognitively-based causal expectations were anticipated to make the reader interpret (18)
as a causal relation, which was confirmed in two eye-tracking experiments in referential processing (i.e. when anaphoric reference is available). However, a causal interpretation is possible only if the content of the sentence conforms to the content of the causal expectation. For instance:

(19) David praised Linda, because…

The more expected continuation of (19) is (a) “she had done a good job” as opposed to (b) “he wanted to encourage her”. Similar experimental findings were earlier reported by Stevenson et al. (1994; 2000), who found that the default focus in clauses describing events\(^9\) is on the thematic role associated with the endpoint of the event. According to Kehler and Rode (2013:10ff), the interpretative bias for a pronoun in RESULT relations is related to the comprehender’s focus on the end state of the event. This phenomenon affects the pronoun resolution, so the more likely continuation of (19) is (a), because the pronoun *she* refers to Linda, who is associated with the endpoint of this event.

In sum, the studies discussed in the present section account for the cognitive processes that enable the reader to build a coherent discourse representation. The impact of causal relations is particularly important in this context. As concluded by Trabasso et al (1984) and Trabasso and Sperry (1985), the readers’ comprehension of a text reflects the way they organize the world (see also Stukker & Sanders, 2102; Sanders & Spooren, 2105, among others), so the natural searching for causal relatedness between the propositions underlies text interpretation and comprehension. Most importantly for the present study, the research summarized here provides empirical evidence that felicitous comprehension and interpretation of a text do not solely depend on the presence of the established linguistic signals of coherence, such as discourse connectives. This further corroborates the idea pursued here, that coherence is a cognitive phenomenon, which can be studied empirically with attention to all features of its linguistic marking.

---

\(^9\) The study includes verbs of action and transfer.
2.1.4 A note on the distinction between CAUSE and RESULT connectives

As should be clear from the current discussion, the distinction between CAUSE and RESULT relation types is important for the account of causality. Not only can several different CAUSE and RESULT types be distinguished on the basis of the order of presentation of the causal events (Sanders et al., 1992), or the ability of causal relations to convey both intended and unintended actions (Mann & Thompson, 1988: 274), but differences exist also within the same relation (Sanders et al., 1992; Sweetser, 1990). Importantly, the distinction between CAUSE and RESULT relations pertains to that between CAUSE and RESULT connectives.

However, recall from Chapter 1 that in the literature the RESULT and CAUSE relations are quite often collapsed into one causal category. For instance, Martin and Rose (2003:113) distinguish between four logical relations that can be realized via conjunctions: ADDITION, COMPARISON, TIME and CONSEQUENCE. Interestingly, despite its very suggestive label, the function of the CONSEQUENCE relation in this study is described merely as “explaining causes”. Also, in the discussion of connectives, the authors list so, as a result and consequently on a par with because and since as signals of CAUSE. Huddleston and Pullum (2002:726) categorize so as a marker of RESULT, but claim that as a result is a signal of CAUSE, even though it indicates that what follows is the outcome of the preceding events. Halliday and Hasan (1976:256ff) argue that the specific causality types, i.e. RESULT, REASON and PURPOSE can be felicitously marked by so, since the connective can mean as a result, for this reason and for this purpose. This suggests that the authors perceive for this reason as a marker of REASON and thus assign the ambiguous connective so yet another role – that of signaling CAUSE. Even though discourse connectives are binary entities, which relate two information units/discourse chunks, such descriptions of their functions and meanings are quite misleading.

It is therefore somewhat surprising that those authors who actually distinguish between different causality types, also collapse discourse connectives into one ‘causal’ category (e.g. Halliday & Hasan, 1976; Huddleston & Pullum, 2002). This simplification probably stems from the common perception of RESULT as just the inverse of CAUSE. Huddleston and Pullum specifically refer to the converse relationship between CAUSE and RESULT: “if X caused Y, then Y resulted from X and vice versa” (2002:726). However, as mentioned in Chapter 1, the order of presentation of causal events determines the connective choice of either the ‘forward’ (RESULT) or the ‘backward’ (CAUSE) group. Consider:
(20) Samantha bought a dog, because/*as a result/*for this reason*/so she needed some company.

(21) Samantha needed some company, so/for this reason*/as a result*/because she bought a dog.

As should be clear from the simple substitution tests above, the forward connective as a result is nonsensical in the context of (20), which simply means that it cannot signal CAUSE. This phrase directs attention to the consequences of the event, unlike because, which focuses on the causes (Stevenson et al., 2000:227). Interestingly, if marked with so, the relation in (20) becomes an epistemic RESULT – “it can be concluded from the fact of Samantha’s buying a dog that she wanted some company”. So this particular connective can be used in (20), but only owing to its multifunctional character as a signal of RESULT in different discourse domains and not because of its purported ability to mark CAUSE. If a real-world interpretation is intended, so is definitely infelicitous in (20) and cannot replace because. This means that Halliday and Hasan’s (1976:256) argumentation about the functions of so as all-causality-types marker is at least imprecise.

The relation in (21) conveys the reverse side of the same situation – while both so and for this reason are able to mark the real-world link between the events, because renders the relation a conclusion (S1) drawn from the observation (S2). Note that as a result is not suitable in this particular context either; yet this is not due to its supposedly causal function, but more likely because of its preponderance to occur in real-world relations (see Chapter 5 for a detailed discussion). Thus the remaining question is why according to the authors of one of the most influential grammars of the English language, the phrases as a result and for this reason can be perceived as adjuncts of CAUSE (Huddleston & Pullum; 2002:726). Consider their original example:

(22) The airline had overbooked; for this reason/as a result/because of this/consequently/ two of us couldn’t get on a plane.

As Huddleston and Pullum argue, the adjunct as a result is anaphorically related to the first clause and so we understand the S2 segment as “as a result of the airline having overbooked, two of us couldn’t go on the airplane”. The connective phrase thus provides the cause and indicates that what follows is the effect (2002:726). What seems to be a possible explanation of this particular interpretation is that Huddleston and Pullum, on their obviously very syntactically oriented approach, treat (22) as an instance of syntactic ellipsis. While the argument on how the relationship between the events in (22) is understood may be true, that does not mean that as a result signals CAUSE. However, the situation changes when the adverbial phrase as a result of is used instead:
Samantha bought a dog *as a result of / because of / so / as a result / for this reason* her loneliness.

All forward causal connectives are apparently barred from the context of (23). The only two phrases that are felicitous are *as a result of / because of*. Interestingly, what Huddleston and Pullum argue of the role of *as a result* in (22) above is that it refers to CAUSE “even though” it includes the word *result*. While this claim is not true about (22), it applies to the phrase *as a result of* in (23), which indeed refers to the CAUSE or, more specifically, the REASON for Samantha’s buying the dog. What the fact that *as a result of* can signal CAUSE on a par with *because of* suggests is that it may be a good idea to leave out the analyzability of signaling expressions from the discussion of their function to signal specific relations. This can be a particularly useful step for the phrase *for this reason*, which includes a demonstrative pronoun *this* and apparently can be claimed to be anaphorically related to the CAUSE (Huddleston & Pullum, 2002: 726). As indicated in Chapter 6, the contribution of the connective to the relation context is most commonly more complex than the compositional meaning of its parts.

Section 2.1 above has discussed the general characteristics of the RESULT relation and the approach to its position in the taxonomy of coherence relations adopted in the present study. The remaining part of the current chapter are concerned with the concepts of volition, intention and subjectivity, which figure prominently in the construal of the RESULT relations on the microlevel of linguistic features. As will be demonstrated in the following, these concepts and their linguistic realizations crucially contribute to the distinctions between the types of RESULT in the different domains of interpretation.

### 2.2 Intention and volitionality in RESULT relations

While the notions of volitional action and intention are rather freely used in the literature (probably due to their quite transparent general language meanings), the present study sets out to provide a more integrated description of these concepts and the relationship between them. The nature of a volitional action has been characterized by Jackendoff (1995:198) as performing an action intentionally. Also, some corpus studies on causal connectives describe volitional action in a similar same way (e.g. Sanders & Spooren, 2007).

---

10 Admittedly, the syntactic features of *because of* and *as a result of* different: whereas the former marks the CAUSE and leaves the expression of RESULT unmarked, the phrase *as a result of* mutually links the concepts specified as CAUSE and RESULT by the two prepositional phrases. The question is thus whether this phrase should be treated as discourse connectives, or maybe rather as a type of cue phrases.
The question that should be asked, however, is what exactly is involved in an intentionally performed action. Intentionality is a complex and polysemous phenomenon that comprises both general language notions and also philosophical terminology notions. The concept can therefore be quite difficult to operationalize for linguistic purposes. By contrast, the notion of intention gets a fairly straightforward definition in a philosophical work (Oxford Companion to the Mind, online version 2006):

Intention—deliberate, purposive behavior—is one of the most difficult concepts to understand or discuss in academic psychology, although most ‘common-sense’ psychological explanations are in terms of intentions. Behavior is commonly explained by intentions (such as: ‘Why did the chicken cross the road …?’), but just what an intention is, in terms of brain processes or anything else, is exceedingly hard to say.

Intention seems to characterize mind, for we can hardly say that natural objects (atoms, molecules, tables and chairs, or planets or stars) have intentions. They are controlled, rather, according to natural laws. The forming of an intention involves free will and the ability to choose. Whether this ability is compatible with the operation of strictly causal laws at the physical level is a matter of philosophical debate.

A more profound discussion of causal laws would be beyond the goal of the present study, but the general sense of intention as an act of a free will and ability to make a choice will be adopted here. Jackendoff (1995) analyzes the notion of intention in the conceptual semantics framework and makes a primary distinction between non-intentional events (situational attitudes as in (24) below) and intentional events (actional attitudes, such as (25)). Consider (Jackendoff, 1995:199):

(24) John believed that he was shorter than Bob.

(25) John intended to scratch his nose.

As the author rightly argues, one can hold an intention only with respect to an event in which one is oneself an actor, i.e. in a voluntary and self-initiated action, as in (25). The situation in (26) below, by contrast, cannot be voluntary in the world we know:

(26) *John intended to be shorter than Bob.

Bach (1982:53) suggests that the oddity of such statements is a direct function of our beliefs. Indeed, according to our world knowledge, our height is not a property we are able to influence and therefore (26) cannot be catego-
rized as an intentional action. However, such categorizations are susceptible to changes in accordance with contextual and/or specific knowledge. For instance, in a situation of stilt walking or in another, pragmatically-marked context involving metaphorical extensions to our world knowledge (for example due to personifications), (26) would be a perfectly acceptable sentence. As Bach (1982:53) puts it, the obligatory component needed for the felicitous resolution of seemingly odd intentional sequences is a trace of agency:

(27) The exhibition is here in order to satisfy people.

By means of a metonymic shortcut, (27) conveys an intention (satisfying people) and implies an intentional and voluntary action (setting up the exhibition). The conclusion is therefore that intentionality and agentivity are inseparable (Jackendoff, 1972; Dowty: 1991:572), for an intentional action requires a voluntary initiator, i.e. an Agent.

The prototypical transitive [agentive] event is one that can be traced to a single cause from which an unbroken chain of control leads to the effect. The ultimate cause can only be an act of volition on the part of a (thus defined) prototypical agent (Delancey, 1984:207). This brings to mind Huddleston and Pullum’s (2002:193) reasoning on the nature of volition, which is, as they argue, an implicature overlaid upon futurity deriving from the assumption that the subject-referent is in control. Volition and control (on a par with animacy), are the most important components of agentivity. The obvious problem is that certain events include only some criteria of agentivity (Delancey, 1984:181), which results in an array of instances that technically can cause effects but lack internal volition and intentionality. This issue concerns, for instance, diseases that kill, computers that crash and mosquitoes that bite.11

However, human agency (and hence intentionality and volition) is not either straightforward to analyze. First, an action is not necessarily bound to intention. A driver may kill a pedestrian without having a prior intention to do so. Searle (1983) discusses a complex case of a person getting into the car with the intention to kill her uncle, who accidentally runs over a pedestrian and kills him, while this very pedestrian turns out to be the uncle himself. As Searle argues, this action cannot be categorized as intentional, whereas Jackendoff (1995:213) notes that this particular case demonstrates that “one can perform an action intentionally only by performing it with an intention that it fulfill an intention to perform that action”. This somewhat confusing description can be unpacked into a principle of intentional acting, which will be used throughout the present study: X did Y out of an intention to do so (Jackendoff, 1995:214). What this formula implicates is that the performed

---

11 See Chapter 5 (section 5.3.1) for a brief discussion of animate non-human participants.
action has first to be conceptualized in the instigator’s mind (intention) and, subsequently, can be executed (volitional action) as a result of the brain’s converting contemplated actions into motor instructions\(^{12}\) (Jackendoff, 1995:209). Therefore Searle’s example of killing the uncle is non-intentional, for the running over the unknown pedestrian was not the act at which the intention was primarily directed (Jackendoff, 1995:214).

In ordinary settings, which can be described as compatible with our world knowledge, killing a pedestrian is not intentional, if not followed by some additional qualification. Similarly, the example of rolling down the hill in (28) below (taken from Jackendoff, 1990:136) is ambiguous, unless a PURPOSE clause evoking intention is added:

\[(28)\text{ John rolled down the hill (to please his dog).}\]

Without the to-clause the reason for John’s rolling down the hill is unknown, but the PURPOSE clause efficiently resolves the intention and goal underlying this action. Without explicitly expressed or contextually supported intention, situations like (28) will most likely be categorized as accidents (hence non-intentional) on the basis of our world knowledge.

The case of intentional acting does not cease at this point, however. According to Jackendoff (1995:214), it is commonly assumed that all actions are performed intentionally, whenever possible. So intentional action is the default situation and thus sentence (29) below is just one of many examples where we can pursue the existence of an agentive and voluntary component. Even situational attitudes, such as beliefs, can be rendered intentional in certain contextual settings. Consider:

\[(29)\text{ Miranda trusts her husband’s fidelity for the child’s sake.}\]

According to Bach (1982:53), a cannot have a property P for a purpose Q if P is a sort of property beyond anybody’s control. Even though the feeling of trust may commonly be perceived as an emotion which people usually do not have control over, the purposive expression in (29) adds intentional force to the sentence. This force, crucially, implies control. Consequently, the sentence can be interpreted as conveying the Subject’s conscious and intentional choice of her beliefs.

However, the example in (29) also suggests that the concept of control is gradient. Virtually any agentive verb allows for a range of variation resulting in ‘attenuation’ in the degree of control and responsibility of the subject for bringing the event about (Langacker, 2000:307). Consider (Langacker, 2000:305):

---

\(^{12}\) Apart from the situations when the subject chooses not to act, which is a different event type.
Edward frightened the hikers by jumping out of the bushes and shouting at them.

Edward frightened the other hunters by accidentally firing his rifle.

Edward frightened the priest by believing in Satan.

Edward frightened the children by being so ugly.

Edward frightened his parents by not being among the children getting off the bus.

The sentences in (30) demonstrate gradual changes (‘diffusion’, in Langacker’s terms) of the subject’s responsibility from the fully agentive role in (a) to a passive unwilling locus of a static property in (d) and (e). Only in (a) is Edward the locus of potency, while in (b) his contribution is merely accidental and in (c) it resides in the mental domain as a steady-state attitude. In both (d) and (e) he has no role in bringing about the nonfinite events. This analysis implies complications for the distinction between volitional and non-volitional events. Consider an example categorized in RST as Volitional RESULT (Mann & Thompson; 1988: 253f):

(31) S1: Farmington police had to help control traffic recently, S2: when hundreds of people lined up to be among the first applying for jobs at the yet-to-open Marriott Hotel.

While the authors do not explain the grounds for interpreting S1 in (31) as an instance of a Volitional RESULT, one could probably interpret that event in line with the RST definition as a “situation that has arisen from a volitional action”. This approach is, however, rather confusing, as it implies that almost any situation can be considered volitional. Interpreting (31) as Volitional RESULT is questionable also if we follow the idea of intention and control as mandatory components of a volitional action (Taboada, 2013, p. c.). The verb have to implies enforcement and obligation (Sweetser, 1990: 54), so an intention underlying the event conveyed seems unlikely in this case. However, it is certainly not impossible to argue that the police in (31) consciously accepted the situation in S2 as a reason to take control of the traffic. On this reading the verb have to would serve as a metonymic shortcut to the decision-making process similar to that expressed in the sentence I

---

13 For instance, should dying as a situation that arose from somebody else’s volitional action be treated as Volitional RESULT? This issue will be taken up again in Chapters 5 and 6.

14 It is, certainly, beyond any doubt that the traffic management is always carried out under a certain degree of control by each policeman, because that particular person intentionally performs bodily movements and makes decisions about each undertaken action. Yet conditions of this kind will never be regarded as causes of any event (Meyer, 2004:19) and hence are irrelevant to considerations about volitional and intentional acting.
have to go, meaning that the Subject made an intentional decision based on some obligation. One important conclusion for a corpus investigation is that the distinction between volitional and non-volitional (and hence intentional and non-intentional) interpretations cannot be based on surface categorizations of verbs as states or actions. Classifications of event types have to be derived from the whole context of the utterance, which may provide additional information and even change the interpretation.

On a final note, a question that inevitably emerges as a result of this discussion is to what extent the notions of intention and volitionality are synonymous. Intention is simply more abstract than volition, as it belongs in the conceptual domain of plans and goals, which are not yet realized. But as soon as an intention is realized, it simply vanishes (Jackendoff, 1995:216). Volitionality, by contrast, even if more formally understood as an act of wishing for something to happen in the future (Heim, 1992), is present even in already realized events. Consider an example:

(32) Charlotte adopted a girl from China.

While a specific intention is the most likely underlying reason of the situation in (32), it is accessible only via a pragmatic inference. By contrast, the element of volition, understood as control and conscious choice, is explicitly conveyed via the action predicate.

The binary opposition ‘realized-unrealized’ pertains to another difference between intentionality and volition. The crux of this distinction seems to reside in the element of the temporal dependency of intending (example taken from Jackendoff, 1995:206):

(33) *John intends to have talked to Sue yesterday.

What (33) demonstrates is that intention pertains only to unrealized events and so it has to be distinguished from its (volitional) execution. This is where intentions and volitional actions diverge, as it is only the latter type that can be directed towards a realized action in the past, as in Jackendoff’s example (1995:206):

(34) John claims to have talked to Sue yesterday.

A point to note is that even though intentional and volitional actions seem more or less equivalent (since a volitional action means an action performed intentionally), the terms will not be used interchangeably in the present study. The justification of this decision stems precisely from the differences in temporal dependency of intending and volitionality discussed above, which point to quite different roles of the two concepts in the event construal. Thus the term ‘intentional action’ will be used in order to foreground the
intrinsically yet-unrealized character of the PURPOSE coherence relations in Chapter 4 and pragmatic RESULT relations in Chapter 6, whereas ‘volitional action’ will be used to emphasize control and voluntary nature of semantic volitional RESULT relations in the real world. More examples of how the notions are construed in the coherence relations of RESULT and PURPOSE follow in the relevant parts of the study, while the next section directs attention to the relationship between resultative events and the speaker’s commitment to the truth of the proposition, often discussed under the term ‘veridicality’.

2.3 Veridicality and nonveridicality in RESULT relations

The concept of veridicality was introduced by Montague (1969:169), who distinguished between two senses of the verb see: veridical and non-veridical, based on (non)existence (irrealis). According to that particular proposal, the logical consequence of the sentence John sees a unicorn is that unicorns exist. However, since this consequence is not compatible with our world knowledge (as unicorns do not exist), Montague argues that the non-veridical sense of see conveys the non-existential aspect of seeing a unicorn. This sense, as he points out, would be most accurately expressed via the circumlocution seem, i.e. John seems to see a unicorn.

Montague’s view was taken up and developed in the formal approaches to language by Asher (1987), Zwarts (1995) and Giannakidou (1998; 2002) and modified to incorporate both the traditional notion of irrealis and the speaker’s commitment to the truth of the proposition. As Giannakidou defines it (2002:5):

A propositional operator F is a proposition embedding function: a sentence modifier (...); a sentence-level adverb, modal operators, tense, temporal/aspectual adverbs, connectives), or an expression taking a proposition as its first argument, e.g. a propositional attitude verb (...), or the question operator (...). F is veridical iff whenever Fp is true; p is also true; if this does not hold, F is nonveridical.

Following Trnavac and Taboada (2012:304), we can simplify this formal account as follows: “If inference to the truth of p under F is not possible, F is nonveridical”. Further, veridical operators express the individual’s certainty and commitment to the truth of the proposition, whereas nonveridical operators have the opposite effect (see Chapter 6 for details of veridicality operators).

The idea of (non)veridicality applies also to discourse relations. A veridical coherence relation entails the truth of its two segments, which is a basic distinguishing characteristics of relations in the Segmented Discourse Repre-
sentation Theory framework (SDRT; Asher & Lascarides 2003). SDRT specifically identifies PURPOSE, ALTERNATION (semantic disjunction) and CONSEQUENCE (material implication\(^{15}\)) as being nonveridical. Trnavac and Taboada (2012) discuss nonveridicality with respect to the CONDITION relation and certain uses of CONCESSION. PURPOSE is identified as another nonveridical relation also by Jasinskaja (2007) and categorized as a nonveridical EXPLANATION relation in the SDRT annotation project (Reese, et al. 2007). Importantly, the feature of veridicality seems to be a crucial difference between PURPOSE and RESULT relations, because the truth of the subordinated PURPOSE segment is never entailed, whereas this is commonly the case with the RESULT clause (Huddleston and Pullum, 2002; Fabricius-Hansen, 2004; Jasinkaja, 2007; Schmidtke-Bode, 2009). Hence the mainstream view on the RESULT relation held in the literature is that it is veridical. Compare:

(35) **P**\(^{16}\): Annie left him, and then, pregnant, offered herself *in order* to saddle him with someone else’s child (…) (BNC: A05 389)

(36) **R**: In Scotland the AIDS problem is largely drug related with HIV spreading rapidly through the communal use of syringes and needles during the mid 1980s. *As a result* there is now a large group who are at a similar stage of HIV infection at any one time. (BNC: A02 151)

The PURPOSE clause in (35) conveys an intended situation yet-to-happen, whereas the RESULT sentence in (36) reports on the existing situation – an outcome of the prior circumstances. Although entailment and hence veridicality may indeed be prototypical properties of RESULT, in the discussion of the relationship between rhetorical relations, nonveridicality and evaluation in discourse, Trnavac and Taboada (2012:306) subsume also Volitional RESULT under the category of relations that are close to nonveridical readings.\(^{17}\)

According to Taboada (2014; p.c.), this idea stems from the potential of this particular relation type to be unrealized; however, given the conclusions from the current discussion (see ex. (32)-(34) in 2.2 above), the property of being unrealized pertains to intentionality more likely than to volition. However, since Volitional RESULT shares the property of an intentionally acting entity (SoC) with epistemic and speech act relations, the relationship between nonveridicality and volition can possibly be established via the intentionality and agentivity link between real-world volitional actions and the

\(^{15}\) In logic this relationship is comparable to the conditional construction *if…then* (Asher & Lascarides, 2003).

\(^{16}\) PURPOSE relations will be referred to as P, while RESULT relations as R throughout the study.

\(^{17}\) Alongside with the relations of ANTITHESIS, CONCESSION, Volitional CAUSE, PURPOSE, CONDITION, and OTHERWISE
site of linguistic events in terms of Sweetser (1990). More details of this proposal follow in Chapter 6. Finally, in Chapter 4 the discussion is concerned with the marking requirement, which has been postulated as obligatory for PURPOSE and optional for RESULT on the premise of the nonveridical nature of the former (Jasinskaja, 2007:63).

The next section explores the link between RESULT relations types and subjectivity. A good introductory point to this discussion should be the following excerpt from Giannakidou (2013: 6):

A sentence, every sentence is not true or false in isolation, but relative to an assessor, the individual anchor (...). This means that every sentence is ‘perspectival’, and in an unembedded case, the sentence is true or false with respect to the speaker’s perspective.

The speaker’s perspective and point of view are well-known concepts related to subjectivity construal in discourse and, as the following discussion will show, also to utterance realization in different discourse domains. Section 2.4 below sheds more light on this relationship.

2.4 Subjectivity in RESULT relations

Existing research in the area of subjectivity is vast and involves different approaches. The most influential proposals are those by Traugott (2007; 2010; 2012), Verhagen (2005) and Langacker (2002). Discussing all of them in detail would be beyond the scope of this study, but it should be noted that the present use of the notion is close to the ideas by Traugott, who sees subjective construal as related to the conceptualizer’s perspective, and Langacker, whose focus is on the implicit presence of the speaker (see Chapter 6 for more details of the present approach). The starting point of the current investigation is the proposal by Finegan (1995:1), who argues that subjectivity concerns:

(…) expression of self and the representation of a speaker’s (or, more generally, a locutionary agent’s) perspective or point of view in discourse.

Subjectivity is an overt manifestation of the speaker’s viewpoint “understood as a relationship to her beliefs and attitudes” (Traugott, 2010: 32). Consequently, it may be argued that subjective construal is affected by individual lexical items and, in fact, subjectivity has been considered as related to the use of certain linguistic forms habitually associated with the speaker’s perspective (e.g. 1st person pronouns, epistemic markers, verbs of cognition, discourse markers, epistemic modals, illocutionary speech acts, e.g.
However, it seems that the presence of such expressions cannot guarantee a subjective character of the utterance:

(37) I ate two eggs for breakfast this morning.

The mere occurrence of the 1st person pronoun does not endow the above report on a real-world situation with a subjective point of view; however, hedging the context with the adverb *only* (which implies the protagonist’s evaluation), could be perceived as a way to encode a more subjective standpoint. Needless to say, in the context of a sumptuous lunch buffet, (37) could definitely be used as a subjective excuse for overeating. This observation is in keeping with Lyon’s (1995:340) proposal that subjectivity is a feature added by the speaker, and Traugott and Dasher’s (2002:98) idea of subjectivity as related to certain linguistic forms, yet ultimately being a feature of the context.

It is also quite commonly accepted that both coherence relations and the meaning and use of discourse connectives can be described with reference to the concept of subjectivity. In fact, according to Sweetser (1990:21ff), the real-world meanings of connectives have developed into the more subjective epistemic and speech act senses. This has been confirmed in diachronic research – for instance, the meaning of *thus* has developed from temporal to resultative and that of *while* from temporal to denial of expectations (Traugott, 1995:31):

(38) Mary read *while* Bill sang.

(39) Mary liked oysters *while* Bill hated them.

Traugott dubs such instances ‘subjectification’, where meanings become gradually more entrenched in the speaker’s beliefs and attitude towards the proposition.

The same process can be observed synchronically as differences in the subjectivity levels between coherence relation types. These differences pertain to the domains of discourse interpretation, as described by Sweetser (1990). As briefly mentioned in Chapter 1, the relations tied to the presence of an intentional SoC are generally perceived as more subjective than those without this component (Pander Maat & Sanders, 2000; Pander Maat & Degand, 2001; Stukker & Sanders, 2012, Sanders et al., 2012; Sanders & Spooren, 2013; 2015). But there is also a difference between subjectivity levels of speech acts and epistemic relations. According to Pander Maat and Degand (2001:225), owing to their hearer-oriented character, speech acts make the most subjective coherence relation types. A question or imperative presupposes a social relationship between the speaker and the hearer – the act has to be viewed as appropriate in the given situation by both parties.
However, the lack of a similar relationship between the speaker and the hearer is the reason why epistemic relations are perceived as less subjective than speech acts. In the epistemic relation the hearer is only addressed indirectly as a member of the community that shares certain assumptions (Pander Maat & Degand, 2001:226). This shared background, in turn, makes epistemic relations more hearer-oriented than real-world volitional relations, which do not make any assumptions about the hearer views. Consider an example (Degand, 1996:131):

(40) Theo was exhausted *because* he was gasping for breath.

As she argues, this relation conveys the speaker’s epistemic interpretation of real-world causality and hence is “more restricted, more subjective”\(^\text{18}\) than a real-world connection. The example illustrates how information can be ‘perspectivized’, i.e. presented from the subjective point of view of another discourse subject (different from the sentence subject), who draws the conclusion (Sanders & Spooren, 2010:11; Sanders, Sanders & Sweetser, 2012:195). Possible perspective variations will be discussed in greater detail in Chapters 5 and 6.

It should also be pointed out here that since discourse connectives often specialize in marking relations in certain discourse domains, their meanings have been analyzed with reference to the concept of subjectivity. Several corpus studies in German, Dutch and French prove that the language users’ preferences for certain connectives in certain domains reflect human categorizations of different causality types. The English connectives have not been studied from this point of view; however, they are often perceived as more flexible between different discourse domains than their equivalents in other languages (Sanders and Spooren, 2015). Given the fact that the existing research on the topic lacks an investigation in naturally produced English discourse, the current study is hope to fill an important gap.

These considerations bring us to the account of methodology and materials used in the present study in Chapter 3 below.

\(^{18}\) Following Degand (1996), in the (2001:221ff) article Pander Maat and Degand distinguish between two types of epistemic relations: causality-based and non-causality based. The former type is argued to be modeled on real-world observations, while the latter one is derived from very subjective assumptions made in the internal world of the speaker’s reasoning. This distinction is not followed in the current work.
The current chapter presents the data and methods used to collect and analyse the chosen corpus material, along with the experimental methods and experimental tools used in the current study. The approach involves two steps of analysis: quantitative data collection and qualitative interpretation. Since the goal of this inquiry is to identify and operationalize variables in the most objective way possible, by means of measuring the relations between variables statistically and generalize from the results, it could be assumed that the study is quantitative. However, the investigation involves both in-depth explications of language data and detailed annotations followed by a semantic analysis, thus linking quantitative exploration with a qualitative enquiry. While these two methodologies are commonly combined in corpus studies, needless to say there are both enthusiasts and sceptics of using them in complementary or mixed ways. Some scholars, however, regard the qualitative vs. quantitative distinction as naïve and simplistic (Nunan, 1992:3), and the approaches are often seen as different ways of studying the same phenomenon bridging the macro and micro-levels and facilitating each other (Bryman, 1988). Indeed, as will be indicated in the following chapters, combining the two methods can result in a more thorough analysis, where evaluation and interpretation of the results from one method aids interpretation of the results from the other.

The methodological approach adopted in the present study is a combination of corpus and experimental work. Since speakers do not have access to the subliminal patterns of language, corpus work results in a more objective view of the language than intuition and introspection (Sinclair, 1998). Psycholinguistic experimentation can be a very enlightening and quite unique addition to the corpus-driven knowledge on how people disambiguate between closely related meanings. Furthermore, experimental studies, although based on entirely or partly constructed data, can be a useful complement of the corpus investigation particularly if the research question concerns a phenomenon that is infrequent or not occurring in the corpora. Finally, a wider range of subjects than just the authors of the texts included in a given corpus can be involved. In the present investigation, where one part of the analysis concerns a particularly ambiguous and multifunctional connective (so) and the main corpus studied is very large, only a small portion of the naturally produced examples can be analysed. This same problem concerns the connectives as a result and for this reason and the relatively large data size
available. Needless to say, a single analyst has limited means to annotate large corpora and so the conclusions from the corpus work have to rely on qualitative observations, at least to some extent. By contrast, the more controlled experimental environment favours quantitative measurements. The two methods are relatively independent until the interpretation phase, when they can be compared and evaluated from the point of their significance for the entire study (see also Bryman, 1988; cf. section 3.3 below).

3.1 Corpus study

For the present corpus study two main resources were used, the British National Corpus (BNC, Aston & Burnard, 1998) and the Penn Discourse Treebank (PDTB, Prasad, Dinesh, Lee, Miltsakaki, Robaldo, Joshi & Webber, 2008). The current section provides more detailed information about the two corpora.

3.1.1 British National Corpus

The present investigation focuses on the written section of the British National Corpus (BNC) (all genres, 90 million words; accessed via BNCWeb interface CQP Edition version 4.2, 2008.). The BNC is a balanced corpus of modern British English language and comprises a total of 100,106,008 words of both spoken and written genres. This makes it to the second largest general corpus of contemporary English after the corpus of Contemporary American English (COCOA), Davies, 2010).19 The spoken part of the BNC comprises transcripts of informal conversations and many different contexts such as radio shows or phone-ins (McEnery, Xiao & Tono, 2006:59f). The written section makes up 90 per cent of all texts and includes newspapers texts, academic genres, popular fiction, prepared speeches, letters and many other register types.

Since the intention of the present study is a cross-genre analysis of discourse connectives in written English, the BNC was a rather natural choice because of its coverage. This aspect is important also from the vantage point of representativeness of the samples. As mentioned, the BNC is a balanced corpus that includes a wide range of proportionally sampled text categories (McEnery et al., 2006: 16). A sample of any corpus is a scale-down version of a larger population, which should reproduce the characteristics of the population (Yates, 1965:9). The samples collected in this particular study

19 Several other corpora are larger than the BNC, but they are more specific, for instance: Time Magazine Corpus or Wikipedia Corpus (see: http://corpus.byu.edu/ )
should be, then, typical of written British English as a whole, since they comprise instances of *so*, *as a result* and *for this reason* across all registers. It is certainly quite predictable that discourse connectives will exhibit register-related distributional and frequency differences (e.g. the connective *so* may be more often sentence-initial in fiction than in academic writing or more frequent in the former text types). A cross-genre sample does not provide much information of this kind. Separate sampling for each register would have to be carried out in order to explore where the variation comes from. However, since the BNC is a balanced corpus, a random sample is expected to provide significant general information about the frequencies and distribution of **RESULT** marking in written English language.

The BNC corpus includes texts from between 1980s and 1993. No new material has been added after that time, but the corpus was slightly revised prior to the release of the second edition BNC World (2001) and the third edition BNC XML Edition (2007). Yet the phenomena studied here are not expected to have changed significantly over that period of time. While it is possible that certain phrases are used less frequently or possibly in a slightly different way in more contemporary texts (see Chapter 6, section 6.5), a full picture of potential changes of this kind could be provided only in a diachronic comparative study. The present inquiry may be considered as a more contemporarily oriented contribution to such an investigation. Needless to say, neither register-related variation nor diachronic change fit in the scope of the current analysis. What is most important here is the question of meaning modeling of the relations signaled by the three connectives in focus, and not a description of usages **per se**.

The BNC is annotated according to the Guidelines of the Text Encoding Initiative (TEI) to represent both the output from CLAWS (automatic part-of-speech tagger) and a variety of other structural properties of texts (e.g. headings, paragraphs, lists etc.) (McEnery et al., 2006: 60). This aspect is, however, less useful for the current work owing to its interest in discourse relations. As section 3.1.3 below will show, the syntactic tagging is not a reliable source of information of discourse relations. The optimal solution for a study like this would be a corpus which is annotated for discourse relations. Presently, the largest corpus of this kind is the Penn Discourse Treebank, which is introduced in the next section.

---

²⁰ Full info on: http://www.natcorp.ox.ac.uk/corpus/index.xml
3.1.2 Penn Discourse Treebank

PDTB, which is the largest available connective-based annotation of coherence relations in the Penn Treebank Wall Street Journal Corpus (1 million words of American English newswire). In the annotation procedure, annotators were first provided with explicit connectives such as subordinating conjunction *because*, prepositional phrases such as *in comparison* or adverbs such as *then* or *however*. The main idea behind the PDTB annotation is that it is assumed to be theory-neutral with respect to higher-level discourse structure (Prasad, Webber & Joshi, 2014:923). This basically means that the corpus is usable within different theoretical approaches and so it is expected to be compatible also with the current eclectic approach. Most importantly, as mentioned, the PDTB is annotated for discourse relations, both unmarked and explicitly marked by a connective.

The coherence relations that are the easiest to identify and classify are those that occur with an explicit connective. Such relations are termed Explicit, both in the research on discourse coherence but also in the two existing corpora annotated with respect to the meaning of discourse connectives – PDTB and Biomedical Discourse Relations Bank (BioDRB, Yu et al., 2008). The annotations in the PDTB are lexically-based, which means that the annotators were asked to search for phrases that link together two text spans. Subsequently the connectives’ attributions, senses as well as arguments were marked (Prasad et al., 2014:923). In the PDTB discourse relations are assumed to have only two arguments: Arg2 – syntactically associated with the relation and Arg1 (Prasad, Dinesh, Lee, Miltsakaki, Robaldo, Joshi, & Webber, 2008). The text extract below illustrates the annotation of an explicit *so* in the PDTB:

06/wsj_0601.pdtb-____Explicit____
06/wsj_0601.pdtb-1524..1526
06/wsj_0601.pdtb-12,4
06/wsj_0601.pdtb-#### Text ####
06/wsj_0601.pdtb-so
06/wsj_0601.pdtb-#### Features ####
06/wsj_0601.pdtb-Wr, Comm, Null, Null
06/wsj_0601.pdtb: so, Contingency.Cause.Result
06/wsj_0601.pdtb-____Arg1____
06/wsj_0601.pdtb-1430..1522
06/wsj_0601.pdtb-12,0;12,1;12,2;12,3;12,6
06/wsj_0601.pdtb-#### Text ####

---

21 Ascribing beliefs and assertions expressed in text to the Agent(s) holding or making them (Prasad et al., 2008:40).
Three seats currently are vacant and three others are likely to be filled within a few years.

Patent lawyers and research-based industries are making a new push for specialists to be added to the court.

The annotation of Implicit relations in the PDTB allows us to examine cases where the target coherence relation is present but there is no explicit marking and provides a clearly defined and easily identifiable level of discourse structure. This is the main reason why a comparison between a cross-genre
sample from the BNC and a newswire sample from the PDTB is justifiable. Also, even though the Wall Street Journal is a newspaper with a specific slant (business and economy), it is expected to include a certain spread of registers (editorials, reviews, off-duty sections, quoted speech etc.). Finally, the PDTB material will be used only in the investigation of the nature of the relationship between RESULT and PURPOSE, which is assumed to be not genre-dependent. Consequently, no significant register bias to the findings is anticipated.

3.1.3 BNC sample extraction

While a more detailed account on the connective choice for the present study will be given in the relevant sections in the following (see Chapters 4 and 5), the criteria of this choice should be briefly discussed at this point. The thesis is roughly divided into the study of an ambiguous, multifunctional and one-word connective so and two unambiguous multi-word connective phrases: as a result and for this reason.

This fact has certain implications for the analysis and sample extraction. The connective so is very frequent and exhibits an array of functional patterns in comparison to the other two phrases. However, no particularly useful terminological distinction between these two types of language elements has been found in the literature. So is a more ‘grammatical’ word in the sense that it is short, frequent and well-entrenched as a discourse relation marker, whereas as a result and for this reason could possibly be regarded ‘cue phrases’ in line with Mak and Sanders (2013:1433), who refer to the distinction between connectives (e.g. so) and cue phrases such as the result is. However, not only is this distinction only briefly mentioned in the original paper, but it is also unclear whether, and if so, how it relates to the prior work by Knott and Dale (1994), Knott and Mellish (1996) and Knott and Sanders (1998). In those earlier accounts a ‘cue phrase’ was defined as a linking phrase which renders its host clause incomprehensible without additional context. The same host clause becomes fully interpretable if the phrase is removed (Knott & Mellish, 1996:142). Consider a constructed example:

(1) (So/as a result) the children became really sad.

Without any prior context, (1) conveys uninterpretable information if prefixed by the connective. It should be noted, however, that this observation applies to both so and as a result (and, in all likelihood, also to for this reason), so this particular test does not result in a reliable distinction between the two connective types. In fact, the aforementioned body of work, which adopts the term ‘cue phrase’, subsumes both so and also multi-word connectives such as for this reason under this same category. Finally, the test seems
also operative for the ‘cue phrase’ the result is in Mak and Sanders’s (2013) terms, provided that it is followed by a that-clause complement,22 which is when it could be rephrased as as a result:

(2) (The result is that) no party has a majority. (BNC: ABK 1152)

The sentence is, again, unintelligible with the cue phrase, but fully interpretable without it, exactly like in the case of the other two RESULT markers in (1) above. The difference between ambiguous connectives such as so and unambiguous markers such as as a result (and also the result is) may therefore hinge upon other features. One could be the greater difficulty related to retrieving the intended relation with the unambiguous phrase. Compare:

(3) Sadly, ‘mental illness’ problems do not ‘exist’ here and it is not acceptable to express them. As a result many people are burnt out. (BNC:CC 386)

(4) John works with English hardwoods so he knew what those bulges might mean (BNC: BMD:982)

Without the cue phrase the CAUSE-RESULT relation can hardly be retrieved from (3), whereas so in (4) could be felicitously omitted. However, as will be discussed in Chapter 6 below, this observation is valid only for certain instances of RESULT relations. Note that both (3) and (4) are real-world relations, whereas the pragmatic relations (i.e. speech acts and epistemic) may be harder to interpret without marking. To sum up – more research would be needed to judge whether the distinction between cue phrases and connectives can be based on the degree of difficulty linked to the retrieval of the relation with no overt marking. Also, since Knott and Dale’s (1994) cue phrase-test does not provide means for making distinctions within the group of linking elements, the terms used in the present work will be ambiguous (so) vs. unambiguous (as a result and for this reason) connective.

Precisely due to its ambiguous and multifunctional character, the connective so can be a challenge for a discourse study intended to focus on just one of its meanings. The connective uses of the other two phrases, i.e. as a result and for this reason are not as diverse as those of so, but both of them can be used as non-connectives also. Certainly the most time-efficient and economical in terms of labour and effort would be an automatic extraction of a random sample of natural language examples of the connectives in question and subsequent close-analysis. Such a procedure was, for several technical rea-

22 As opposed to copula complements, which do not signal the RESULT relation, for instance: Again like some in Exodus 16 they try to manage things for themselves. The result is inevitable, but this time much more tragic. (BNC: 1299).
sons, impossible (see sections 3.1.3.1 and 3.1.3.2 for details), and so the large part of the investigation involved manual analyses and elimination of the noise from the obtained material in order to get a representative sample of target uses. This is also when the cue phrase-test proposed by Knott and Dale (1994) (see (2) above) has actually proved valuable.

The first question to discuss at this point is discourse segmentation, i.e. the process of decomposing discourse into elementary units (Tofiloski, Brooke & Taboada, 2009:77). The present study adheres to the RST approach (Mann & Thompson, 1988) and treats clauses and sentences as minimal units of analysis. According Tofiloski et al. (2009:78), discourse segments are required to contain a verb, since on this basis a RESULT coherence relation can be established between the units. The verb, however, can be elided from one of the segments, and the relation is still retrievable, for instance:

(5) In February 1992 the University received an additional 458 funded students (one of the largest increases of all UK universities) and, as a result, an increase of 8.7 per cent in UFC grant. (BNC: HCG 103)

It is also important to note that only the clauses/sentences directly related by the connective were taken into consideration as segments of the analysis. This is essential for the segments which include several coherence relations:

(6) What happens is that (a) when you follow a strict diet, (b) your body will adjust itself to the sudden reduction in the amount of calories you eat by simply slowing down your metabolism. As a result, (c) those calories are burned less efficiently, (d) so once you start eating normally again, the pounds can pile back on. (BNC: CGP 563)

(6) is clearly an example of a relation consisting of complex sentences. However, a closer analysis shows that as a result relates only the clauses (b) and (c), while both (a) and (d) are not parts of the RESULT relation marked by the connective, but simply parts of the discourse segments. In sum, the judgment of the character of the relation was based on the analysis of the relation arguments linked by the connective and those arguments were regarded boundaries of the relation (more examples follow in the next sections). So even though at times larger parts of discourse preceding the connective in questions had to be analysed in order to disambiguate between possible interpretations, all statistics is based on the analyses of discourse relations between adjacent sentences/ clauses (unless otherwise specified). This is also in line with the PDTB annotations manual.

The next sections discuss the BNC samples extraction process.
3.1.3.1 Connective *so*

*Sample extraction*

The samples used as a primary material in the current study were extracted from the BNC, which is a corpus of British English. Consequently, a British English dictionary – Longman Dictionary of Contemporary English (henceforth LDCE) (2005) was consulted on the meanings of the analysed connective. The dictionary provides two separate entries classifying *so* as an adverb or as a conjunction, and the BNC search engine follows this distinction. The pilot search was therefore done on a subcorpus tagged as ‘so_CJS’ (i.e. conjunction), even though according to the BNC-tagger Manual, only instances of *so* introducing a PURPOSE clause are tagged in this way. Yet the close analysis of the material indicates that PURPOSE is collapsed into one category together with RESULT.

The results of the pilot search were initially very satisfying, as the number of target hits was 477 in 500 random sample (including 40 PURPOSE sentences). The conclusion could be, then, that the uses of *so* that are not in focus of the present work (see section 3.1.4.2 below), are tagged as *so_AV0* (i.e. adverb) in the BNC. However, since the BNC is not a semantically annotated corpus, the high accuracy of the ‘so_CJS’ tag seemed surprising, and therefore a closer investigation of the obtained material was carried out. In the course of that investigation, 35 sentence-initial instances of *so* (including interrogatives) were identified in the sample and also seven instances of the phrase *and so*. Particularly the former finding was quite unexpected, even though it could be argued that the low number of sentence-initial *so* may reflect the nature of written discourse. Despite this fact, one more search was carried out on a 500 random sample, this time tagged ‘so_AV0’. There were 76 instances of *so* occupying the sentence-initial slot found it the new sample, out of which 48 were target-uses. The sample also included 37 instances of *and so*, out of which 18 were relevant (i.e. conveying RESULT, see (7) below). This means that the precision score of the tag ‘so_CJS’ is lower than it initially appeared and that quite many relevant uses are filtered out due to tagging.

This observation was additionally confirmed by a collocation query in the spoken BNC section, which indicated that the entire corpus material tagged ‘so_CJS’ (4132 hits) in spoken discourse does not produce a single example of *so* preceded by a period and only five hits preceded by a question mark. This finding points to a very low number of sentence-initial instances also in that part of the corpus. Given the function of *so* as a marker prefacing conversational units of various types (Bolden, 2009), such a result seemed very unlikely for spoken discourse, and again suggested that sentence-initial *so* may all be tagged as an adverb. A closer look at the sample showed that the
connective is quite commonly preceded by words such as: okay or right and also fillers (e.g. *erm*) and therefore not treated by the tagger as sentence-initial. That confirms the low reliability of the BNC tagging of semantically ambiguous words (or at least the word in question).

Therefore, on the basis of the observations on the unreliability of the BNC lemma query based on syntactic distinctions in both written and spoken discourse, the decision was made to select 500 relevant examples of *so* from the entirely untagged written corpus material. First, the whole written section was thinned to 10000 random instances and this sample was subsequently mixed to follow a random order so that all text types would be represented in the smaller manually collected final selection. Each example was closely read and all non-target uses were discarded (see Section 3.1.3.2 below for details). The 500 relevant RESULT examples were found among approximately 2000 uses of *so*, whereas there were only 28 instances of PURPOSE identified in this sample. At that point tagging continued only for examples of the latter relation, which will be further discussed in Chapter 4.

*Discarded uses*

The main criterion used to discard non-target instances of *so* was syntactic. Quirk et al. (2005:920) argue that resultative *so* should be classified as a conjunct (even though it resembles a coordinator). Huddleston and Pullum (2002:570; 1319) classify the connective as a lexically simple adverb and its resultative meaning - as a connective adverb, while Biber et al. (2000:80) label it as a borderline case between coordinators and linking adverbials. For this reason only these syntactic categories were deemed relevant for the analysis, whereas all others were disregarded. As mentioned, Knott and Dale’s (1994) cue-phrase test was also performed to eliminate non-target uses. Recall that an expression is regarded a cue phrase in case its presence in the clause-initial slot renders its host clause incomprehensible without any additional context.

The discarded cases of *so* include the intensifying adjectival predeterminers (e.g. *It is so good!*), which applies also to *so* with indirect complements in expressions such as *It was so big that we couldn’t believe it was real*, even though the *that*-clause may have a peripheral resultative sense. Yet *so* does not cease to indicate degree/extent in such examples, as it still premodifies an adjective or adverb. Biber et al. (2000:527) classify *so* in the construction *so…that* as a degree adverb, which means that it can be discarded as irrelevant for the purpose of the present study.

Other disregarded instances include the pro-form sense of *so* referring to the state or manner expressed or implied in the preceding discourse (Biber et al., 2000:72) as in *The band is successful and likely to become more so*, proposed *so* in *A: The clock has stopped. B: So I see.* and all other anaphoric and deictic uses of this word (e.g. *She was about so tall*). The majority of
fixed phrases such as: *and so on, like so, or so, so long!, so what?* etc. were discarded. However, the resultative senses of *and so* were included as, according to *LDCE*, the phrase can be rephrased as *and therefore*. Consider:

(7) His train had passed straight through the station *and so* he was safe. (BNC: ADE 696)

This use of *so* in (7) can sometimes be mixed with the pro-form function, but Knott and Dale’s (1994) cue-phrase test can help distinguish between the two uses:

(8) The match had been billed in the American press as the Battle at the Belfry and *so* it turned out. (BNC: HJG 74)

S2 in (7) would be hardly interpretable if the preceding clause was removed and the connective kept. It is, however, felicitous without the connective, unlike (8) (see also Quirk et al., 2005:880). Consequently, only examples of the former sense, as in (7), are included in the present analysis.

Several other irrelevant uses of *so* which had to be discarded include the comparative sense (*Just as you like me, so I like you*, and also in negative sentences *She is not so old as him*) and all instances of *so that*, even though the phrase can also mark RESULT.

(9) By the end of the struggle France had lost almost every single colonial possession she had, *so that* French imperial history had to begin all over again in the nineteenth century, but nobody in 1690 could have guessed at such a result. (BNC: CS5 656)

Such instances were also discarded, because *so that* is ambiguous between PURPOSE and RESULT interpretations and the current study does not provide a more detailed analysis of how the relations marked with this phrase can be disambiguated (but see section 4.6 in Chapter 4 below for a brief discussion).

The final note tackles the problematic sense distinction related to non-connective uses of discourse markers. The connective *so* commonly figures as a discourse particle with residual semantic content. This function of *so* is particularly frequent in spoken language, but the written genre inevitably includes dialogic components and instances of represented speech. Biber et al. 1999 point to *so* occurring in certain extralinguistic contexts not available for the analysts of written transcriptions (2000:877), similar to (10) below:

(10) Upstairs, Miranda pulled the bed clothes up to tidy the bed and patted the lumpy result, beckoning to Xanthe to sit down there; there
wasn’t anywhere else. ‘So how’s London? It must be the holidays — how’s your ma?’ (BNC: G0S 1293)

In this example so serves as turn opener or expression used to attract attention. However, a peripherally resultative sense, possibly related to knowledge outside the current discourse and shared between the participants (e.g. a recent trip to London), can also be inferred. It may therefore be quite hard to judge whether a given corpus example functions as a discourse particle (as in (10)) or indexes a causal connection. This difficulty relates to the inferential character of many instances of so marking illocutionary acts. Consider:

(11) “Gay, you’ve always been rather like that, haven’t you?” Breeze studied her friend thoughtfully. “So the character part won’t be so difficult for you. (...)”. (BNC: BMU 2164)

(12) ‘Jenna lived with her mother, but she was always Russell’s daughter and his delight. The portrait of her is, I think, the best thing he ever did.’ ‘So it must be valuable?’ (BNC: HGD 3844)

In (11), which conveys an epistemic RESULT relation, the speaker’s conclusion is slightly detached from the prior context; yet that context is an obvious example of an utterance giving reason for making another utterance (Sweetser, 1990). In (12) so clearly prefaces a new turn in the conversation, but it also signals a logical link with the preceding discourse. As Bolden (2009:975) argues, so quite often carries inferential meanings in sequence-initiating actions (e.g. questions), similar to (12) extracted from the present corpus. Therefore discarding such instances would entail a bias in the analysis, for substantial parts of the written genres closer to spoken discourse (e.g. fiction, prepared speeches; Biber, Conrad & Repen, 1998) would have to be omitted. Also, so has a well-established conjunctive role in mid-discourse and is quite often used in narrative accounts (in the conversation) facilitating inferences about discourse transitions between events following from one another, which also involve a relationship of RESULT (see Biber at al., 2000:883ff and Quirk et al., 2005:633). This is, again, confirmed in the cue-phrase test (Knott & Dale, 1994), which demonstrates that (10) is interpretable with the connective and without any prior context. This suggests that so in this example is not a cue phrase, whereas it functions as such in both (11) and (12) (the relations would be hard to interpret with no prior context and the connective in place). Thus the uses of so similar to (12), which can be said to have a linguistic ‘antecedent’ to link back to (unlike (10) above), were also included in the current study. More fine-grained criteria used for the annotations of other types/subtypes of the RESULT relations will be discussed in the relevant chapters.
3.1.3.2 As a result and for this reason

Sample extraction

Neither LDCE nor Collins Cobuild English Dictionary for Advanced Learners comprise separate entries for *as a result* and *for this reason*. The phrases are not included under the entries for the nouns *result* and *reason* either. Consequently, the BNC searches were performed on the basis of the discussion of the meaning and function information available from Huddleston and Pullum (2002:725:f, see Chapter 2, section 2.1.4). The LDCE includes the phrase *as a result of* with a brief explanation of its meaning as “something that happens because of something that happened before”. Recall from Chapter 2 (example (23) in 2.1.4) that this sense was deemed as a non-target use for the present study.

The first step in the corpus investigation was to collect two samples of 250 instances of both *as a result* and *for this reason* from the written part of the BNC across genres. The problem with the phrases like those investigated here is that they are tagged in the BNC as separate word tokens with individual tags. So neither tagging of *as a result* as ‘as_PRP a_AT0 result_NN1’ nor *for this reason* as ‘for_PRP this_DT0 reason_NN1’ does filter out the non-target uses (see (10)–(15) below). Consequently, the material had to be manually annotated.

The samples were first mixed to follow a random order so that all text types would be represented in the manually collected smaller samples of relevant instances. The initial step involved discarding non-target uses of the investigated connectives. This process was somewhat easier for *as a result*, which generates 7584 instances out of which 5321 are followed by *of*. This means that they are irrelevant, non- connective uses of the phrase. When more non-target uses had been discarded on the basis of the collocation search (see examples below), approximately 1960 target examples were left. The phrase *for this reason*, by contrast, generated a total of 964 hits out of which approximately 789 were deemed relevant (see examples below). The next section will briefly discuss the discarded cases.

Discarded uses

Huddleston and Pullum (2004:777) provide an example which demonstrates that *for this reason* is not always interchangeable with a one-word connective and therefore not every instance of the phrase is a connective use:

(13) However, Ed hadn’t decided to resign *for this reason/*(therefore) but because of his disagreement with (...)

49
Importantly, since the phrase occupies the clause-final slot here, the cue-phrase test by Knott and Dale (1994) is not operative in this case. The same observation applies to many instances of *as a result*, which also can resemble a connective but are in fact REASON/RESULT adverbs/adjuncts (Huddleston and Pullum, 2004:777). These uses refer in a more compositional sense to the actual reason/result of something. For instance:

(14) As Bertram is owed a duty of care, the Trust would appear to be in breach of duty by failing to maintain the boat, and Bertram has suffered damage *as a result*. (BNC: HXV 1433).

Such examples of non-connective uses were excluded from the present analysis. Also, the non-target meanings of the phrase *as a result of* + noun and *for this reason* + *that* were discarded:

(15) There has been a marked increase in reports of deaths *as a result of* torture in Turkish police stations. (BNC: A03 191).

(16) If you had written that package, would you be angered by people using it without paying? It's *for this reason* that shareware hasn’t to be confused with public domain (PD) software. (BNC: HAC 8991)

Finally, all instances of both phrases preceded by *perhaps*, *largely* and *partly* were also excluded from the analysis:

(17) His account is therefore by far the most ambitious and the most insightful of its kind, and is of singular value as an instantiation of, and a means to assess, absolute holism. *Partly for this reason* his work has been, and remains, enormously influential among social theorists, who are variously attracted and repelled by it. (BNC: ADD 1140)

(18) Under their new paymasters, filmmakers were no longer interested in the sort of inner tensions that work at the heart of the more intense and exciting British films. *Largely as a result*, they had lost the ability to construct complex and resonant narratives. (BNC: A7L 1275)

The status of *as a result* and *for this reason* in (17) and (18) is not fully clear. Admittedly, they both pass Knott and Dale’s (1994) test for cue phrases, as their host sentences would be hardly interpretable with no prior context and the connectives in place. However, the presence of the modifying phrases before the connectives makes this interpretation less certain, because the connectives in such contexts seem to acquire a somewhat ambiguous role between the marker of the relation and, possibly, the speaker’s
estimation of the extent of the actual relationship between the two events. While Knott and Dale’s proposal is otherwise a reliable test for the phrase status, the connectives were analyzed in a slightly different text environment. Consequently, such instances were not taken into consideration.

The two samples of the RESULT relations thus obtained were subsequently coded according to the criteria for the distinction between Volitional and Non-volitional RESULT discussed in detail in Chapter 5 (section 5.3.1).

3.1.3.3 A note on objectivity issues

As mentioned, the samples of relevant examples of the RESULT connectives were collected from an untagged BNC corpus material. This process involved adding interpretative, linguistic information to the existing corpus, i.e. annotation (Leech, 1997:2). Annotation is needed both in the case of corpora like the BNC, i.e. semantically untagged, but also PDTB, which is semantically annotated but does not contain all the information necessary in every investigation.

In a project like this most of the annotations are done by a single analyst. The process very often involves reading lengthy text chunks and careful examining of the linguistic features and their co-text, and also manual selection of only relevant uses. A sample of 50 random instances of so from the written section of the BNC included 14 examples of the RESULT relation and one ambiguous between RESULT and PURPOSE. This means that involving another person in annotating even a small subcorpus in order to ensure greater objectivity and reproducibility, would require substantial amount of work also for that person. This was, for obvious reasons, not possible. Furthermore, corpus annotation is a process of an interpretative nature, which gives a leeway for subjectivity. Thus another annotator would have to be trained on the annotation criteria and the nature of the relationships analysed, which is impossible in some cases. As Taboada and Das (2013:16) argue, sometimes the level of difficulty of annotations is so high that it can be carried out only by members of the projects who are familiar with the theoretical background of the study and share similar points of view. This is particularly relevant for Chapters 5 and 6 and the analysis of the RESULT relations with as a result and for this reason. The distinction between RESULT and PURPOSE is more straightforward; however, it would also require rather much effort from a party otherwise uninvolved in the present study. Moreover, even though there was only one annotator in this project (except from a subcorpus of 100 PURPOSE and RESULT instances coded by two other annotators, see Chapter 4), investigations carried out by trained analysts most commonly show that they are not completely subjective (Taboada, 2006:576).

Needless to say, corpus analysis always inevitably involves intuitive and subjectively formulated judgements. However, in order to minimise the de-
gree of subjective judgements and get the idea of how the character of the relations in focus can be described, several sources of information on the English grammar and vocabulary were consulted in the course of this study. One last remark therefore concerns the question whether the present analysis should be described as corpus-based or corpus-driven. As McEnery et al. (2006:10) rightly argue, the distinction between the two approaches is quite fuzzy, because it is impossible to reject or disregard all existing preconceptions. In the case of the present investigation, where all pre-corpus theoretical considerations on the nature of the RESULT relation were the starting point, we can primarily talk about a corpus-based approach. However, naturally produced language provides a plethora of instances that are not discussed in the literature and always yields new evidence on language variety and development, which is where the corpus-based approach converges with the corpus-driven evidence in the present study.

3.2 Experimental work

This section aims to give an account of the on-line service used for the experimental part of this study, the problems and issues related to this type of work, and also the measures taken in the current investigation in order to minimise potential undesirable effects.

3.2.1 Amazon Mechanical Turk

Amazon Mechanical Turk23 (MTurk) is a subsidiary of Amazon.com. It is an on-line marketplace for human intelligence tasks. As Fort, Adda and Bretonnel Cohen (2011:414) indicate, the use of MTurk has been steadily growing since its introduction in 2005, because it is an easy, fast and cheap way to collect large amounts of data. Natural language production is one of the domains where MTurk also proves to be a useful tool for gathering information and has been used for word sense disambiguation, textual entailments, sentiment studies, machine translations etc. (Snow, O’Connor, Jurafsky & Ng, 2008; Callison-Burch & Dredze, 2010).

The service consists of the group of Requesters, who provide the tasks to be completed and the Turkers, who are simply the workers completing the tasks. Requesters decide on the financial reimbursement offered and the workers are free to choose the tasks that they see as most interesting both

---

23 The name of the service dates back to the 18th century where a chess automaton was seemingly better at playing than its human opponents, but was in fact controlled by a person concealed inside of it (Callison-Burch & Dredze, 2010:2).
from the vantage point of the content and the wages. The Turkers are, generally speaking, registered internet users. What is one of the most problematic aspects of using MTurk is lack of the workers’ biographical data that would be provided by Amazon itself (each Turker can be identified only on the basis of a serial number). However, according to the survey carried out by Iperitois (2010), who in an informal study created a profile of 1000 Turkers, as many as 47% of them come from the United States, 34% from India and the remaining 19% from other countries. Over half of the workers declared they had a college education.

For the present investigations only US-based Turkers were used. Iperitois’ survey found that most US Turkers (60%) claim they treat AMT surveys as a secondary source of income, or as a part-time work (30%) but also as a way to spend time fruitfully (70%). As many as 33% of American workers declare they do AMT tasks in order to kill time. In another study of Turkers’ motivations (based on the questions asked by Iperitois (2010)) Antin and Shaw (2011) found that US-based Turkers report on a wider variety of motivation factors than those from, for example, India. The authors argue that these differences are driven by complex cultural, economic, psychological and social factors (so-called ‘social desirability bias’ pertaining to what is perceived appropriate in a given culture). For instance, it seems that the India-based Turkers over-state the importance of ‘sense of purpose’ in comparison to ‘killing time’, as the former motivation may be seen as socially more proper attitude towards the employer. In sum, the most important conclusion from both analyses is that earning money is a vital but not the only motivation for the workers to do AMT tasks.

The reason why this conclusion is important is that MTurk has been questioned as a fair-play labour market. The payments are quite often as low as $0.01 per item completed and the observed mean hourly wages is below $2 (Callison-Burch & Dredze, 2010:2; Ross, Irani, Silberman, Zaldivar & Tomlinson, 2009:3). Therefore the criticism has been raised that MTurk may be a kind of digital sweatshop, where laws on minimal wages are flaunted and people are exploited without being able to claim an employee status or demand health benefits (Fort et al., 211:417). As the results of the surveys cited above showed, there is a group of people for whom MTurk is a primary source of income, and in fact around 20% of all Turkers (and 30% of those based in India) declare that they do AMT surveys to make basic ends meet (Ross et al. 2009:3; Iperitois, 2010). This must be kept in mind so that when using MTurk for research purposes, the researcher will not be exploitive.

However, there are also advantages for workers offered by the MTurk environment. One obvious benefit of this kind of occupation is the worker’s flexibility both time-wise and task-wise. The Turkers are free to choose the survey they find interesting/fun/payable and complete it (or not) within the time framework that suits them the most. Moreover, the tasks posted on MTurk are most commonly very simple, and do not require expertise or spe-
cific knowledge in any area and so can be done by basically anyone independ-ently of their skills or education.

Requesters too face a number of different dilemmas with using MTurks. The problem of potential spammers and/or low-quality contributions is a real one. Offering very low compensation may encourage random clicking or unconscientious answering. However, as Callison-Burch and Dredze (2010:3) argue, increasing the amount of financial compensation does not improve the quality of results (for the same observations see also Mason and Watts, 2009). According to their experiences, it is in fact the high-paid tasks which attract workers without the required skills (e.g. the people pretending they can translate from Urdu to English by using an online machine translation system; Callison-Burch & Dredze, 2010). Requesters can opt to limit the number of groups of MTurkers that can participate in their tasks. As Akkaya, Conrad, Wiebe and Mihalcea (2010) demonstrate, the lesser constrained groups (e.g. constrained only to location) attract more spammers than those that accept subjects limited only to those with high approval rate for their work. However, according to the findings of that particular study, spammers contributed only minimally and the quality of work for the three groups with different conditions they compared was similar.

There are, certainly, ways to control the quality of the work provided by Amazon, for instance the Requester has a right to block or not pay the worker who provides low-quality input. Another option is that the workers should meet sufficient accuracy on a small pre-test (Callison-Burch & Dredze, 2010:3). Yet the question is whether these possibilities also are fully ethical or guarantee that the real survey will be taken thoughtfully. Also, the learning effect (i.e. better performance under test condition B due to prior practice under test condition A) among expert (trained) annotators is common and thus it can be hypothesised that using the expert Turkers may involve a bias of this kind. Therefore the current study used unique workers for each experiment. This choice was based on the rather simple intuitive character of the questions asked here and is related to another advantage of using MTurk: the workers do not receive any formal training apart from short and concise annotation guidelines. While such a procedure can be somewhat problematic with complex tasks, in the case of simple surveys it actually may ensure that the learning effect will be small. Akkaya et al. (2010: 201) demonstrate that there is indeed no improvement in annotator reliability over time. The Turkers have no interaction among themselves, which contributes not only to the small learning effect but also to a less pronounced ‘social desirability bias’ (Antin & Shaw, 2011). Moreover, even though the MTurks are argued to be representative of the American population of internet users (which means they are relatively young and well-educated) (Ross et al., 2010:2), in the unconstrained group the variety of subjects is certainly bigger than that in a restricted group. This seems particularly relevant for the current study where the opinion of an average language user is of the interest.
To sum up – there are certainly some problematic aspects of using MTurk (just as with any other experimental method), but the service is a fast, efficient and relatively cheap way to carry out human intelligence surveys of an easy intuitive character. Also, the current experimental study does not require any private information from the subjects and so the demographics provided is sufficient for the present goal. Most importantly, MTurk enables access to large groups of native speakers of English, which otherwise would have been very difficult (if possible at all) living in Sweden. Therefore, the decision was made to use this method of data collection, yet acknowledging its limitations. The next section demonstrates how several problematic aspects of using MT were solved specifically in the current study.

3.2.2 AMT-related solutions in the current work

Since the focus of the present work is on the English language, the natural consequence is that the main interest here are judgments provided by native speakers of English. As Tratz and Hovy (2010:684) argue, there is no method of enforcing that MT subjects have a particular mother tongue. While this is generally true, Tratz and Hovy’s solution to this problem consisting in requesting that only native speakers of English take the task has been tried, but it is open to fraud. Therefore, in the current study, the workers were simply asked what their mother tongue was and what language they spoke in the kindergarten. In case of inconsistent answers between these two options and when the languages declared were both different from English, the worker was paid for the contribution, but his/her answers were not taken into consideration. Importantly, since the person taking the survey cannot possibly know whether the requester needs a native speaker of English or a speaker of another language, the chance that the subjects lied about their mother tongue seems to be rather low (though such a possibility cannot be fully excluded).

Another step taken to help ensure that the subjects were native speakers of English was limiting the answers accepted only to American IP addresses. This is, certainly, not a fully reliable solution in the contemporary multicultural world, but it definitely increases a chance of finding subjects who meet the adopted language criterion. Moreover, since the U.S. based Turkers more commonly declare that doing MT tasks is their secondary source of income or an activity undertaken for fun, then the problematic ethical aspects of the workers earning their living on MTurk without common employee’s benefits and for low wages are at least to some extent diminished in the present work. It is also worth mentioning that all the Turkers whose answers were for some reasons disregarded in this study were still paid for their work.

There were several other measures taken in order to ensure that the quality of the results would be as high as possible. First, each task was redundant-
ly completed by more Turkers than it actually required. This strategy allows for selecting higher quality work by discarding “suspicious” answers (see also Callison-Burch & Dredze, 2010:3) including non-native speakers, surveys taken much below the average time (e.g. according to the system one of the 32 sentence-task was solved in 5 seconds) or those where some autobiographical information was missing or unclear (e.g. several times the age declared by the worker was below 18). The details of what kind of biographical information was required will be discussed in Chapter 4 along with the design of the experiments, including the initial instructions on the tasks given to the participants.

3.2.3 Additional methodological considerations

One last methodological consideration that should be addressed in this chapter is related to the combined use of corpus analysis and experimental studies. While this method has the potential to yield complementary evidence, several difficulties are quite likely to surface in the course of such an investigation. What happens if the results of the corpus analysis and the experimental study diverge? Can simple constructed sentences (which for practical reasons always are included in experimental work) provide useful information on complex and often context-sensitive relations? Are the participants objective and focused on the task to an extent that makes the results reliable? Finally, can we extrapolate from the results of a few experiments to more general discourse phenomena? All these questions convey valid criticism, which the multi-method approach will always have to face. However, cross-checking of information and results obtained by means of using multiple procedures is believed to provide support for data interpretation, even if the findings differ in certain ways. Consequently, the decision was made for the current investigation that there is more to gain by trying to combine these two methods, than there is to lose in the confusion that might be introduced by potentially different results.
As discussed in the Introduction, all taxonomies of coherence relations include some type of RESULT relation. However, many taxonomies do not make a distinction between RESULT and PURPOSE at all, for instance: SDRT, (Asher & Lascarides 2003), Discourse Graph Bank annotations (Wolf & Gibson 2003), and the PDTB. In fact, the PDTB annotation manual explicitly states that PURPOSE relations are annotated as RESULT (Prasad et al. 2007). Several other taxonomies include a PURPOSE relation that is separate from RESULT (e.g. Grimes (1975), Martin (1992), Sanders et al. (1992), Mann & Thompson (1988), Halliday & Hasan (1976) and the PDTB style annotation of biomedical texts (BioDRB, Yu et al., 2008), specifically. However, even these taxonomies do not explicitly state what features PURPOSE might have that would distinguish it from RESULT.

Based on proposals found in the literature, the RESULT and PURPOSE marked with an ambiguous connective so were investigated in two corpora: the British National Corpus (BNC) (Hoffman et al. 2008) and the Penn Discourse Treebank (PDTB, Prasad et al. 2008). Subsequently, the corpus findings and earlier proposals in the literature were used to systematically test different features in five experiments on the interpretation of RESULT and PURPOSE events, as well as events that are ambiguous between a RESULT and PURPOSE relations, both with the connective so and without any marking at all.24

The current discussion contributes to a rather scarce body of work on the PURPOSE coherence relation in English. The only studies devoted to the PURPOSE relation in English are Jones (1991), which is a generative-oriented analysis of PURPOSE clauses and Thor (1990), which describes PURPOSE constructions in terms of Government and Binding. Most grammars of the English language at least mention the relation. The most extensive treatment can be found in Huddleston and Pullum (2002:725ff), who discuss the differences between PURPOSE, REASON and RESULT in the chapter on adjunct clauses. Further, the most in-depth study of PURPOSE clauses to date is the typological work by Schmidtke-Bode (2009). The monograph includes a sample of 80 languages meant to be representative of the world’s languages.

24 Both the experimental and corpus findings presented in this chapter have been previously published in: Andersson, M. and Spenader, J. (2014).
The discussion and findings in that study carry implications for the current work; yet English is present only as a control language. For this reason the present investigation sets out to analyse the topic more closely, with the particular focus on the relationship of PURPOSE and RESULT in English.

PURPOSE can be defined as a relation where the first segment conveys the activity initiated in order to realize what is intended in the second segment (RST, Mann & Thompson, 1988:276). In a similar vein, Jackson (1995:57; see also Schmidtke-Bode, 2009:20) characterizes the purpose of an action as a reason formulated in terms of the intended outcome of that action, which can be illustrated in (1):

(1) **P:** Samantha moved to Los Angeles *in order to* help her boyfriend become a TV-star.

Jackson’s approach to PURPOSE is particularly apt, because it points to the close relationship between this and other types of causal relations. Indeed, as we see in (1) above, S1 conveys a volitional action that was initiated in order to realize the intended effect communicated in S2 (in RST terms), but at the same time S2 can be said to provide the reason or motivation for the following action. As Wierzbicka (1988:183f) argues, PURPOSE can in fact be characterized in terms of the semantic primitive BECAUSE. According to her reasoning, it is clear that these two concepts share semantic properties:

(i) A happened BECAUSE B happened  
(ii) person X did something (Z) BECAUSE X (had) thought: I want to do W; when I do Z, I can do W

As formalized in (ii) above, the PURPOSE relation can indeed be seen as a special case of a causal relation, where one of the arguments is not-yet realized. Recall also from Chapter 2 (section 2.1.4) that CAUSE and RESULT relations are semantic counterparts. This suggests that PURPOSE and RESULT are also likely to share certain properties. Schmidtke-Bode (2009:177) refers to this special relationship as ‘the purpose-reason-result cline’. Whereas there is little doubt about the similarity between PURPOSE and *because*-clauses (see section 4.1 below for a detailed discussion), the relationship between PURPOSE and RESULT is not as straightforward. As Schmidtke-Bode (2009:178) elucidates it, conceptually the notion of PURPOSE involves that of RESULT and implicates that the intended outcome was achieved. However, the outcome is not logically entailed in the case of PURPOSE, which makes the relationship between the two concepts a very interesting

---

25 As Huddleston and Pullum (2002:726) put it: “if X caused Y, then Y resulted from X and vice versa”.

58
topic to investigate, particularly that they can both be signalled by the same ambiguous connective:

(2) **R:** Carrie spends a lot of money on designer clothes, *so* she often ends up broke.

(3) **P:** Carrie spends a lot of money on designer clothes *so* she can look unique.

The features discussed in previous research include intentionality, modal auxiliaries and the use of commas as relevant for disambiguating between the two connective usages and the two relations. These will be highlighted in the comparison between (2) and (3) in the following. The absence of the comma is rather conspicuous a difference and thus could be perceived as a basic disambiguating factor between PURPOSE and RESULT with *so* in written discourse. However, it cannot be assumed that language users always follow prescriptive rules, nor, for that matter, that they are always aware of their existence. Consequently, it is not certain that a comma is a signal prominent enough to unambiguously guide parsing decisions (see 4.4.1 below). It seems that other factors may figure more importantly in the disambiguation between the two relations. The current chapter is concerned with further identification and detailed description of these factors.

While both examples above convey the same event in their S1 segments, (2) clearly is a RESULT relation and (3) PURPOSE. Without any additional qualification, the RESULT event in (2) cannot be an example of an intended outcome. (3), by contrast, is clearly a PURPOSE owing to the intentional quality of the situation. The complication is that the event types conveyed in this example can, in fact, function also as RESULT:

(4) **R:** Carrie spends a lot of money on designer clothes, *so* she looks unique.

As should be clear from the discussion in Chapter 2 (section 2.2), the RESULT relation can also be intentional. This concerns the RESULT events where a volitional action is involved – recall that the definition of a volitional action describes it as undertaken intentionally. What follows is that an intention behind the causal event is not a fully reliable disambiguating factor between PURPOSE and RESULT. The difference between the nature of the relations stems from the difference between intended effect and an intentionally achieved effect, which are components of the PURPOSE and RESULT arguments, respectively. The act of spending money on designer clothes in

---

26 *P* at the beginning of an example is used to signal a PURPOSE relation and *R* for a RESULT relation for clarity.
both (3) and (4) is intentional, but while the effect remains intended in (3), in (4) the (prior) intention is only implied in the context of the already achieved outcome.

Since the RESULT and PURPOSE arguments in (3) and (4) are almost identical, the above observations leave us with the conclusion that it is the presence of the modal verb can, which has a vital role in marking the transition between intended effect (PURPOSE) and achieved effect (RESULT). Modality has been mentioned in the literature as a necessary element of the PURPOSE relation owing to its hypothetical and future-oriented character (Huddleston & Pullum, 2002; Schmidtke-Bode, 2009). While it is indeed the auxiliary can that conveys the intended effect in (3), the problem is that modal verbs are known for their polysemous qualities (Coates, 1983; Sweetser, 1990). It is therefore quite certain that can will also be able to evoke RESULT relations and so the question to ask is under what conditions an ambiguous lexical item can have a disambiguating function. This is a thought-provoking topic to consider given the intrinsically ambiguous character of the difference between the two relations.

A related aspect in this discussion is the fact that coherence relations can be explicitly marked with a connective or be left unmarked (‘Implicit’ in PDTB terms; see Chapter 3, section 3.1.2). The RESULT-PURPOSE distinction is particularly interesting in this regard because the literature has claimed that PURPOSE relations differ from RESULT relations in that they cannot be successfully inferred without explicit marking. Consider (2) and (3) reformulated as simple juxtapositions:27

(5) **R:** Carrie spends a lot of money on designer clothes. She often ends up totally broke.

(6) **?:** Carrie spends a lot of money on designer clothes. She can look unique.

At first blush both (5) and (6) seem to be RESULT relations. The intentional character of the events and the presence of the modal verb do not seem to be fully sufficient to decide on an unambiguous reading. Yet for (6) it is hard to escape the interpretation that Carrie buys designer clothes in order to look unique. So the intended character of the situation and the modal verb figure prominently in this case. Consequently, the unrealized nature of the relation (i.e. nonveridicality, see Chapter 2, section 2.3), becomes a strong candidate for a disambiguating cue role.

---

27 This term means two sentences – segments of a coherence relation without any marking.
To investigate the semantic overlap and semantic distinctions between PURPOSE and RESULT, the following main research questions will be addressed in the current chapter:

(i) How do writers and readers disambiguate between RESULT and PURPOSE marked with so? Are there any cues/features that help in this process?

(ii) Can PURPOSE relations be left unmarked in English? If so, what consequences does it have for the relation construal and interpretation?

(iii) What is the role of the feature of nonveridicality for both the disambiguation between PURPOSE and RESULT and the marking requirement? Does PURPOSE require overt marking due to its nonveridical character?

In order to answer these questions, further description of the character of both relations is provided in the following.

The remainder of the chapter is organized as follows: section 4.1 below elaborates on the relationship between PURPOSE, CAUSE and RESULT relations and suggests that PURPOSE can be perceived as a type of RESULT. Section 4.2 is concerned with the features of the distinction between PURPOSE and RESULT found in the literature: intentionality and agentivity, modality and nonveridicality. Section 4.3 presents and discusses the present corpus findings, while section 4.4 is devoted to the experimental part of the study. Section 4.5 provides a short overview of subjectivity of the PURPOSE relations. Finally, section 4.6 briefly discusses the case of so that. Finally, section 4.7 summarizes all findings of the current chapter.

4.1 PURPOSE as a special case of RESULT

As mentioned above, Wierzbicka’s idea (1988:183) of characterising purposive clauses in terms of the semantic primitive BECAUSE may serve as an illustration of the close relationship between PURPOSE, REASON and RESULT clauses. According to Schmidtke-Bode (2009:152), this similarity is the reason why languages tend to cover all three notions by a single marker:

(7) **RN/P:** Charlotte has hired a full-time nanny, *because* she wants to have more time for herself.

---

28 REASON.
(8) **P/R:** Charlotte has hired a full-time nanny, *so* she can have more
time for herself.

The S2 segments are ambiguous between **REASON** and **PURPOSE** in (7) and
**PURPOSE** and **RESULT** in (8).\(^{29}\) Most importantly, both the connectives used
are multifunctional and do not unambiguously signal the intended interpreta-
tion. While resolution between the possible senses is obviously possible by
means of phrases such as *as a result* and *in order to*, the examples above
show that there indeed is a close polysemous connection between the three
relations.

The most prominent similarity concerns **PURPOSE** and **REASON** clauses
and their preference for the non-topical final sentence position, even though
they can both be fronted, unlike **RESULT** (Huddleston & Pullum 2002:733).
The final sentence slot is canonical for both clause types and relates to their
role in the information structure – they both provide a motive (explanation)
for the main clause and hence offer new information (Schmidtke-Bode,
2009:123ff). The S2 clauses in both (7) and (8) provide the reason for the
Agent of the main clauses to have undertaken the action. This suggests that
purposes and reasons indeed converge. However, while **PURPOSE** requires
intentionality, **REASON** does not have to be intentional. For instance, some-
body’s illness can be a reason for going to the doctor, but not the purpose
*per se*. This means that while **PURPOSE** presupposes **REASON**, **REASON** does
not have to presuppose **PURPOSE** (see discussion in 4.2.1 below).

The relation between **RESULT** and **PURPOSE** is seemingly less straightfor-
ward, because **PURPOSE** does not logically entail the realization of the event.
However, as Schmidtke-Bode (2009:178) rightly argues, in natural language
the default case creates a strong implicature that the intended event was in-
deed realized and only an overt denial can cancel this implicature:

(9) **P:** Miranda quit her job *in order to* spend more time with her son.
(But she actually doesn’t have more time/isn’t spending more time
with him.)

Without the concessive relation attached to this context, the most likely im-
plicature of (9) is that Miranda is now able to spend more time with her son.
So even though Purpose relation does not entail the outcome, it induces an
expectation that the intended effect was realized. In consequence, it can be
argued that, conceptually, **PURPOSE** implies not only **CAUSE/REASON** (as
Wierzbicka (1988) proposes), but also **RESULT** (Schmidtke-Bode, 2009:178).

\(^{29}\) Before the discussion and experimental evidence on comma presence in 4.3.2.3 and 4.4.2
below, commas will not be treated as a disambiguating factor. Also, the aim behind (8) above
is to show that the S2 event *per se* is ambiguous between the two interpretations.
Another interesting relationship between PURPOSE and RESULT has been noted by both Schmidtke-Bode (2009:153) and Huddleston and Pullum (2002:1224) and concerns infinitival constructions. These constructions normally convey PURPOSE, but in some cases can lead to a RESULT-like interpretation:

(10) **R:** I ran all the way to the station only to find out that the train had just left.

As Schmidtke-Bode argues, it is obvious that the situation conveyed in the PURPOSE clause was not intended by the Subject of the main clause – the event in S1 simply facilitated what happened later. However, what neither Huddleston and Pullum nor Schmidtke-Bode discuss is the fact that the PURPOSE clause in such contexts does not cease to imply the intended effect (here: catching the train). The difference between (10) and a prototypical PURPOSE clause is that in (10) the intended effect is not explicit, and thus the clause conveys the violation of the expected outcome. In fact, the adversative relation in (9) could also be expressed in this way: *Miranda quit her job only to discover that she didn’t have more time to take care of her son.* It should be noted that the resultative interpretation is in both cases commandeer by the presence of the particle *only*, which has a restrictive modifying function (Huddleston & Pullum, 2002: 586). Without this phrase the context of (10) is likely to be pragmatically odd in English.30

According to Schmidtke-Bode (2009:153), such ‘non-intentional’ constructions are rare and can be found only in Martuthunira (Australia) and Modern Greek. This claim does not seem to be based on strong empirical evidence, as (10) is a construction that functions well also in several other languages, like Italian, Finnish, Swedish and Polish. The case of Polish is particularly interesting, because the language uses such ‘non-intentional’ PURPOSE clauses also with PURPOSE connectives, which are all unambiguous. As a result, constructions such as (11) below are not uncommon:

(11) **Poszłam do lekarza, żeb** yr się dowiedzieć że lekarz też jest chory.

‘I went to the doctor in order to find out that the doctor also is ill.’

However, it has to be mentioned that the structure of a PURPOSE clause in Polish requires that the connective (both *in order to* and *so that*) is followed by a non-finite clause, which is similar to the function of the English construction discussed here. Also, while the particle *only* can be felicitously omitted in the Polish sentence, other indicators of the unexpected character of the situation are commonly present (here: the phrase *also*, which triggers

30 It is, however, not impossible: *She opened the curtains to see that the ground was covered with snow* (Huddleston & Pullum, 2002:1224).
the presupposition that the patient was sick in the first place and went to the
doctor for this particular reason). So while the construction can be used to
convey special resultative contexts, it apparently needs other linguistic ele-
ments that support the intended interpretation.

The reason why PURPOSE clauses are used in such contexts stems from
the very nature of the concept. Not only does it implicate the intended effect,
but it can also convey an unexpected effect, owing to the fact that it can be
denied (see (9)), unlike RESULT below:

(12) R: Miranda quit her job and as a result she has more time to take
care of her son. *But she actually doesn’t have more time.

What follows is that the canonical RESULT construction cannot express the
content of (10):

(13) *I ran all the way to the station and as a result I found out that the
train had just left.

This means that even though (10) conveys a rather special type of RESULT
(probably close to the causal relation type which Kehler and Rhode dub ‘Vi-
olated EXPECTATION’ (2013:7)), the operativeness of the PURPOSE construc-
tion in such contexts further proves that there is a semantic overlap between
the two relations.

In sum – the relationship between RESULT and PURPOSE is not as straight-
forward as that between PURPOSE and REASON, but PURPOSE apparently
implies also RESULT. However, while PURPOSE is identical with REASON, it
is not identical with RESULT. Disambiguation is therefore not needed for (7)
above, because S2 can be interpreted both as purpose or reason/motivation
for the action in S1 without changes in the relation type. By contrast, in (8)
the relation is ambiguous between intended effect (PURPOSE) and realized
effect (RESULT) and needs disambiguation. Section 4.2 below discusses fur-
ther the topic of intentionality of the PURPOSE relations and introduces sev-
eral other features relevant to the distinction between PURPOSE and RESULT.

4.2 Features marking differences between RESULT and
PURPOSE relations

Several features that have been mentioned in the literature as relevant for the
distinction between PURPOSE and RESULT: intentionality and agentivity, the
presence of a mood marker, nonveridicality and marking requirement. These
features are all mandatory for PURPOSE, but their presence is attested in RE-
SULT also, which makes the disambiguation between the two relations quite
challenging. The following sections discuss these questions in a greater detail.

4.2.1 Intentionality and agentivity as obligatory components of PURPOSE relations

As mentioned, many researchers have identified intentionality as a core feature of PURPOSE relations (Schmidtke-Bode (2009), Huddleston & Pullum (2002), Jones (1985), Thor (1990) and Wierzbicka (1988)). However, authors who describe PURPOSE as intentional do not always elaborate on how to determine this more precisely. Therefore exactly what features can signal it linguistically have yet to be identified. Intuitively, the BNC examples (14) and (15) below illustrate a difference in intentionality:

(14) **R:** And this makes sense because the ground is still warm from the summer so roots can start to grow out into their new soil straight away and the plants will settle down quickly. (BNC: HSK 564)

(15) **P:** He sweeps under the bench I’m sitting on, and I lift up my feet so he can sweep under them. (BNC: A74 2263)

These naturally produced sentences have the same connective and the same auxiliary verb in the second clause. Also, they both lack a comma before so. Yet (14) conveys RESULT, while (15) expresses PURPOSE and this difference seems at least partly attributable to greater intentionality found in the latter sentence. This intuition is in line with Jackendoff’s (1995) definition of the folk concept of deliberate acting – *X did Y out of the intention to do so*. Consequently, (14) cannot be regarded as intentional, since intentional acting requires an animate and volitional actor (i.e. Agent) who could deliberately instigate an action and cause the result. In (15), by contrast, the first clause has an Agent who deliberately performs the action and so we can understand the clause as: *I lift up my feet with the intention to do so*.

In the same vein, Thor (1990:12) argues that the verbs in the PURPOSE sentence must imply an effect through a volitional action. Interestingly, the required presence of an intentionally acting participant can be either lexically explicit, as demonstrated in the examples of the PURPOSE relations above, or entirely implicit, as in (16) below:

(16) **P/R:** The shop ain’t got no proper doors — it's just like part of the station so you can walk in and out without using a door. (BNC: A74 1924)
While the relation is somewhat ambiguous between PURPOSE and RESULT interpretations, it definitely conveys an effect of somebody’s decision not to equip the shop with doors. The prior context does not provide any other information and no other qualification (e.g. an act of vandalism). Hence (16) can be perceived as an instance of PURPOSE with implicit agentivity (cf. Thor, 1990:35; Schmidtke-Bode, 2009:53).

Furthermore, as briefly mentioned in Chapter 2 (see example (27) in 2.2), the volitional action prior to the upcoming effect does not have to be explicit either:

(17) P: The skin needs time to settle down after these treatments in order to absorb the essential oils more efficiently. (BNC: B06 1096)

PURPOSE clauses can be felicitously preceded by directives, imperatives and instructions similar to (17). Although these types of utterances belong to the category of speech acts and therefore can be seen as metalinguistic forms of intentional act (recall the discussion in Chapter 2, section 2.1.2), it is unlikely that this is the reason why the relation above is felicitous. A more plausible explanation is that such utterances convey an implicit directive (here: “you need to give the skin time”), which is intrinsically unrealized and thus its effect can also be merely intended. 31 Not only does this fact support the idea that there is an overlap between PURPOSE and CONDITIONAL relations (Schmidtke-Bode, 2009:152) (here: “if you give the skin the time it needs, the intended effect will be achieved”), but it also supports the argument about the greater significance of intentionality over volition in PURPOSE relations (Chapter 2, section 2.2). While intentionality behind both segments of (17) is very prominent, the volitional action is present only implicitly.

Another property that is closely related to the intentional character of the events is non-entailment. This feature often distinguishes PURPOSE from both RESULT and REASON. Following Thompson and Longacre (1985), Wierzbicka (1988) argues that both PURPOSE and REASON clauses express a motivating event with the only difference that in the purposive clause this event must be unrealized at the time of the main event, while in the REASON clause, it can be realized. This is why REASON does not always presuppose PURPOSE, as the latter is intrinsically non-factual. Consequently, PURPOSE is always tantamount to REASON, but REASON does not have to be identical with PURPOSE.

The same principle applies to RESULT clauses, which are prototypically realized, unlike PURPOSE clauses (Huddleston & Pullum, 2002:733; Jasinskaja, 2007:43; Schmidtke-Bode, 2009:179):

---

31 With the exception of the cases where the request to undertake an action is contradicted by another participant, for instance: A: You need to put more effort into your thesis work. B: I've already given everything I could!
(18) **R:** Charlotte decided to take up her jogging routine, *so* she bought new running shoes.

Again, in this case we also see the difference between an intended effect (PURPOSE) and an intentionally achieved effect (RESULT). Recall from Chapter 2 (section 2.2, example (32)) that intention can be present in realized events only as a pragmatic inference, which is quite clear in (18). However, less straightforward instances can also be found. Consider:

(19) **RN:** Samantha came to New York, *because* she wanted to go to the jewellery auction.

The situation in S2 in (19) could be perceived as realized on the basis of its conveying past events. However, if we analyse this sentence, prototypically marked for intentionality with the verb *want* (Heim, 1992; Jackendoff, 1995), in terms of Wierzbicka’s (1988) semantic primitives, it reads as follows:

(20) Samantha came to New York, *because* Samantha had THOUGHT: ‘I WANT to go to the jewellery auction; if I go to New York, I can go to the jewellery auction’.

This analysis indicates that S2 in (19) conveys an unrealized intended effect. Following Giannakidou’s (2009: 1903) arguments about *want* in the past tense, the time interval of wanting to go to the auction starts at the internal *now* of the attitude and moves forward to include the actual utterance time, as well as times before or after that. Intention is therefore not bound to the utterance time and does not simply vanish after that. If the intention vanishes, it means that it has been realized as a volitional action, as in (18). This observation has implications for the PURPOSE relations expressed in the past tense (see section 4.4. below).

Nevertheless, an efficient way to cancel an intention is to deny the PURPOSE clause, as briefly mentioned in 4.1 above:

(21) **RN:** Samantha came to New York, *because* she wanted to go to the jewellery auction. But in the end she changed her mind and had a drink with friends.

A concessive continuation of this kind is claimed to be nonsensical with RESULT (Verstraete, 2008:763). However, naturally produced language suggests that this argument is valid only for the prototypical RESULT, which involves entailed events and therefore many counterexamples can be found:
(22) **R:** Miranda and Steve want to entertain their son, so they go to watch the dolphins every Saturday. (But last weekend they didn’t go.)

The sentence in (22) conveys an intention (S1) which leads to a habitual action (S2). This type of action is regarded as unrealized (it is also described as related to nonveridical readings in Giannakidou, 2009:1887ff). Consequently, the content of the RESULT clause can also be denied, as demonstrated above.

As the current section has tried to demonstrate, intentionality is a crucial feature for conveying a PURPOSE relation. According to Verstraete (2008:761f), the factor which crucially distinguishes RESULT from PURPOSE in cases where the first clause of a so-marked sentence includes intentional Agents, is the way in which the participants in the first argument are involved in the second argument. Therefore, if the event in the second argument is not the effect of the Agent’s intentional action, then PURPOSE is not a possible interpretation (e.g. *Anna was very tired, so she fell asleep on the couch*). However, an intentional Agent is perfectly possible also with RESULT relations. Intentionality, agentivity and entailment are therefore good criteria for the distinction between RESULT and PURPOSE in prototypical cases. In naturally produced language much less prototypicality is expected and so yet another feature to consider in disambiguation between the two relations will be analysed in the next section.

4.2.2 Modality

Given the unrealized non-entailed character of the PURPOSE relation, it is not surprising that modal auxiliaries are mentioned in the literature as obligatory for conveying PURPOSE. Consider a PDTB example:

(23) **P:** We are doing it so we can concentrate on our core business, renting automobiles in the U.S. and abroad (22/wsj_2243.pdtb-206…289).

As Hewitt (1987:40) puts it “as the accomplishment of any intention may be foiled as events unfold, it is clearly appropriate if a language should choose to have recourse to a non-factual mood for the representation of purpose”. Modality is necessary to evoke the participant’s wish for a state of affairs to be achieved and to convey a ‘future-oriented ability’ (Sweetser, 1990; Schmidtke-Bode, 2009:45). However, this is only possible with the ‘root’ meaning of the modal, as in (23), where it contributes to the overall saliency of the intended effect. Importantly, without a participant intentionally performing an action in S1 (or at least implicit agentivity, as illustrated in
(16) and (17) above), *can* evokes plausibility and thus gets an epistemic interpretation (Coates: 1983:25):

(24) **R**: But everything is relative to Mr. Terrizzi, *so* stocks in his view *can* become more attractive in comparison with bonds or T-bills (PDTB: 09/wsj_0978.pdtb-3443..3524).

This root-epistemic distinction between different senses of modal auxiliaries pertains to another difference between PURPOSE and RESULT – PURPOSE is believed to be one of those constructions which cannot maintain the desired interpretation if the mood marker in the sentence represents the speaker’s epistemic or attitudinal judgment (Verstraete, 2008:771ff). Consider the following BNC example of PURPOSE (25a) and a manipulated version (via the added stance adverbial *possibly*) (25b):

(25)

a) **P**: Commercial rose growers are praying for rain *so* they can start getting bare-root plants out of the ground and away to customers. (BNC: A5N 97).

b) **R**: Commercial rose growers are praying for rain *so* they can possibly start getting bare-root plants out of the ground and away to customers.

The added stance marker (*possibly*) seems to render the reading of the original PURPOSE sentence resultative – the speaker draws a conclusion and marks her stance towards the most likely scenario. This points to the crucial difference between the two relations discussed – for PURPOSE the judgment marked by the modal verb has to be of the Agent of the action described in the main clause and not the implicit speaker. RESULT sentences are felicitous with the speaker’s evaluations, whereas PURPOSE relations are not (see further discussion in section 4.5 below).

However, given the acknowledged problem of ambiguity of modal senses and complexity of natural language, the question to ask is whether the epistemic vs. root distinction is always a useful criterion for the PURPOSE-RESULT disambiguation. Consider:

(26) **?**: We’re showing up his operation\(^{32}\) *so* he’ll never be able to use it again (BNC: HWL 2362)

---

\(^{32}\) Here: his acting strategy.
It may be hard to tell whether the author of this sentence aims to express the intended goal of the action undertaken in S1 or simply estimates the chances of a certain event to be happening in the future. Admittedly, the prior context strongly suggests the PURPOSE interpretation, but a slight epistemic/evidential bias is present. This observation suggests that the intrinsic ambiguity of modal auxiliaries is likely to obscure the desired meaning in some cases.

The final question in this section is whether all modal verbs are able to convey both PURPOSE and RESULT. As mentioned, in the literature modality is considered one of the mandatory elements of PURPOSE and all modal verbs can receive ‘root’ interpretation necessary to convey the sense of the relation (Coates, 1983). However, given the core meanings of the verbs must, may, might, should, ought to, might, have to, which pertain to possibility and necessity (Coates, 1983; Huddleston & Pullum, 2002), their potential to express PURPOSE is very small. Yet Quirk at al. (2005:564) and Thor (1990:30) provide examples of the PURPOSE relation with an unambiguous connective followed by the modal verb might and a that-complement (example borrowed from Thor):

(27) P: We study grammar in order that we might understand nature better.

While this type of construction is certainly of a purposive type, it has been treated in the literature as a separate category labelled Rational Clause (Thor, 1990:29). Similarly to PURPOSE, the construction cannot assume factivity and thus requires a modal verb; however, it seems that it is the phrase in order that that prompts a purposive interpretation of (27), while the modal might marks the degree of possibility that the goal will be achieved (i.e. it is evidential). Despite that, the corpus analysis of the purposive function of so that in the current study (see 4.6 below) suggests that the modal verbs may and might in fact can occur in the context of this phrase (though they are very scarce). According to Coates (1983:25ff) both these verbs carry overtones of the ‘root possibility’ meaning, which is primary to can and could. Therefore their ability to convey PURPOSE cannot be fully excluded.

The only auxiliary verb that has the intrinsic desiderative potential oriented towards an intended future effect is can. Will is not as clear in this respect, however; given its polysemous character ranging from root meanings linked to volition to epistemic meanings related to prediction (Coates, 1983:169), it can be assumed that this verb also has a potential to convey PURPOSE.33 This observation suggests that these two auxiliaries may

---

33 These conclusions concern also the past tense forms could and would, owing to the intrinsically unrealized character of intention, which remains unrealized even in the past tense (recall (21) above).

70
be strongly preferred in purposive contexts and may function as reliable disambiguating cues. However, since both can and will are used also with RESULT, the potential for ambiguities exists. The analysis of the corpus samples and the experimental study will thoroughly investigate the aspect of modality in RESULT and PURPOSE relations.

This brings us to the last feature believed to be intrinsic to PURPOSE, i.e. nonveridicality. This feature is also related to the non-factual nature of the relation and, most importantly, to the marking requirement, which has been argued to be obligatory for PURPOSE but optional for RESULT (Jasinskaja, 2007; Schmidtke-Bode, 2009). Overt marking is the main focus of section 4.2.3.

4.2.3 Nonveridicality and explicit marking requirement for PURPOSE relations

Chapter 2 (section 2.3) has discussed one of the major features believed to distinguish RESULT from PURPOSE, related to whether or not the relation entails the truth of its arguments, i.e. veridicality (see, e.g. Giannakidou, 2009; Jasinskaja, 2007). Consider a BNC example (28) and a manipulated version (29):

(28) P: I always carry the bag on my left shoulder so I can pull out clubs with my right hand. (BNC: ASA 315)

(29) R: I always carry the bag on my left shoulder. I can pull out clubs with my right hand.

In (28) the fact that the bag is usually carried in a certain way (so that it is possible to pull the clubs out) does not necessarily mean that the Agent will pull or has pulled out the clubs. Consequently, the second argument is not entailed, which can be tested by continuing the sequence with a sentence denying this particular event, as discussed in 4.2.1 above.

According to Jasinskaja (2007:69), coherence relations with non-entailed arguments (i.e. nonveridical relations) must be explicitly marked. Indeed, it may be difficult to create a conditional statement without using if or then or their synonyms. Similarly, it seems hard to communicate PURPOSE without an overt signal. While it is clearly PURPOSE that is conveyed in (28) above, in (29) the lack of overt marking removes the hypothetical interpretation of the second event and the modal auxiliary induces an evidential reading. As a

34 It is not impossible, though. Consider the example Call me and I will help you, which is a conditional-like construction meaning: “if you call me, then I will help you” (Trnavac & Taboada, 2012).
result, the juxtaposition conveys a statement that no longer can be denied naturally like the nonveridical PURPOSE argument in (28). One explanation of the production requirement to mark PURPOSE could therefore be that the overt signal is needed to clearly identify nonveridical relations.

Relevance theory-based proposals such as Blakemore and Carston (2005:575) suggest that the difference between simple juxtaposition and explicit marking is that no-marking implies that each sentence/utterance contributes independently to the message. When marked, the implication is that the component clauses contribute as a pair. Extending this line of reasoning a little further, the tendency for nonveridical relations to be explicitly marked could be explained as a consequence of the fact that at least one (and in some cases both) of the arguments is nonveridical, and as such is only maximally interpretable in the context of the other argument, i.e. the speaker marks the relation to block a misinterpretation by the hearer that the arguments are independently related to the discourse.

This idea is in line with Schmidtke-Bode (2009:35ff; 150f), who argues that the more syntactically integrated the clause containing one of the arguments of a coherence relation, the more likely it is to be explicitly marked. According to the results of his investigation, there is a cross-linguistic, statistically significant preference for PURPOSE clauses to be coded by means of non-finite verbs (e.g. Carrie buys high-end designer clothes to look unique). Non-finite clauses are in general more prone to syntactic integration with the preceding context, which means that PURPOSE clauses also tend to be more dependent on the superordinate construction they are a part of. Even though the current work focuses on events that are, or could have been, signaled by so, certain properties are likely to be common for all purposive constructions. This suggests that it is probably the cross-linguistically attested syntactic integration of PURPOSE clauses that constitutes one of the reasons for their explicit. Indeed, 92.9% of Schmidtke-Bode’s (2009:37) typological sample was explicitly marked. Another important implication of the syntactic integration of PURPOSE clauses is that in PURPOSE sentences commas may be dispreferred, unlike in RESULT sentences, where they signal the supplement status and prosodic detachment of the RESULT clause from the main clause (Huddleston & Pullum, 2002: 733).

The requirement for marking PURPOSE can also stem from its multifaceted nature – as mentioned in Chapter 2, PURPOSE is a relatively complex coherence relation, because it includes two basic causal operations: a volitional action and the wish for a state of affairs to be achieved (Sanders et al., 1992:14). Recall also from 4.1 above that the PURPOSE clause is prototypically postposed in the sentence, which differs from the temporal order typical of causal events. This feature can be explained in terms of the necessity to first undertake an action in order to enable the intended effect (i.e. the canonical order of CAUSE-RESULT) (Schmidtke-Bode, 2009:116), but PURPOSE may also be perceived as a backward relation (RESULT-CAUSE), where
the wish to achieve a goal follows the action. This suggests that not only
does the PURPOSE relation include two causal operations, but the temporal
order of these operations is apparently ambiguous. As Asr and Demberg’s
(2012:2680) analysis of the PDTB relations indicates, explicit marking is
more frequently dropped in forward causal relations (CAUSE-RESULT) be-
tween consecutive sentences. The ambiguous status of PURPOSE between
forward and backward temporality can therefore be another factor that
prompts explicit marking.

However, the aspect of the reversed temporal order of events in PURPOSE
relations at the same time provides certain evidence that English has a poten-
tial to convey PURPOSE without overt marking. Croft (2010:31f) demonstrat-
ed that only half of all the PURPOSE relations in Chafe’s Pear Stories (1986)
are coded by means of the canonical English construction for PURPOSE, i.e.
to-clause. The rest are, as he argues, conveyed by coordinated structures,
which almost always (with two exceptions) include the overt conjunction
and, for instance (Croft, 2010:32):

(30) He goes up the ladder and picks up some pears.

This observation is in line with Schmidtke-Bode’s evidence (2009: 151) that
in some languages overt marking can be omitted in purposive sentences, if
the specific inference of an intended goal is available in the context of the
relation. One of the features associated with inferences of this kind are verbs
of transition and motion, as in (30). It is highly unlikely to interpret the con-
nective and in this relation as resultative – one does not pick up pears ‘as a
result’ of climbing the ladder.

However, another possible interpretation of (30) could be temporal suc-
cession – “He goes up the ladder and then picks up some pears”. While the
closeness of causal and temporal relations is very clear (e.g. Spooren, 1997:
153, Schmidtke-Bode, 2009:177), such an interpretation is possible when
only the basic information is read off the relation segments. So the afore-
mentioned reversed temporal order of the PURPOSE relation has, in fact, an
iconic motivation, since the main action has to be undertaken first so that the
intended effect can follow (Schmidtke-Bode, 2009:116). This observation
confirms that (30) can indeed be interpreted as PURPOSE where the ladder
had to be climbed first in order to pick up the pears.

One last argument for the purposive interpretation of (30) relates to the
ability of the S2 segment of the PURPOSE relation to be fronted (Huddleston
& Pullum, 2002:733). Such a manipulation is not possible with a temporal
relation (Sanders et al. 1992:27). Compare:
The difference between (31) and (32) is that (32) is intended to locate events in time. Thus reversing the segments would create a mismatch in the chronological order typical of such narrative strings (Blakemore & Carston, 2005:570). Additional evidence that (32) conveys only temporal meaning is that the connective *and* cannot be replaced by any other signal of the RESULT or PURPOSE relations (unlike *and* in (30)). Consequently, the event in S2 cannot be regarded either as an outcome or purpose of the event in S1.

To sum up – the above discussion indicates that the range of meanings that the connective *and* (and also can convey is much more fine-grained than what the temporal interpretation of sequences similar to (30) suggests (Blakemore & Carston, 2005:570). What is argued here is that certain utterances evoke suggestions beyond the obvious temporal reading, which is the case in (30). Further, given the exceptionally multifunctional character of *and*, it has to be assumed that this connective is not a particularly strong signal of PURPOSE. However, the presence of such a highly ambiguous connective in PURPOSE relations suggests that it may be possible to retrieve the purposive interpretation even from simple juxtapositions. There is also similar cross-linguistic evidence, which may have more universal implications for the PURPOSE relation.

### 4.2.4 Summary

The discussion in the current section has provided an overview of the most important features of the PURPOSE relations found in the literature and identified in the corpus. As demonstrated, due to the similar character of the RESULT and PURPOSE, none of these features can be treated as unequivocal means of distinguishing between the two relations. However, since PURPOSE is much more constrained than RESULT, the presence of reliable contextual signals can be anticipated. The remaining part of the chapter will present the findings of the corpus analysis and the experimental study testing the role of the discussed features in the distinction between PURPOSE and RESULT. First, a short summary of the features is in order:

---

35 This particular sentence may, admittedly, appear somewhat unnatural (albeit not incorrect), probably due to a certain register-clash. As Schmidtke-Bode (2009:124) argues, fronted PURPOSE clauses acquire a discourse-organizing function, which was probably not the intention behind (28) and which is the reason why the sentence would be more natural as a directive, as in *To pick up pears you should first go up the ladder*.

36 Temporal relation.
a) PURPOSE requires an intentionally acting participant, whereas for RESULT this element is optional
b) PURPOSE is intrinsically unrealized and nonveridical, while RESULT can exhibit the same properties, but is prototypically realized and veridical
c) PURPOSE has to convey an intended effect to happen in the future and hence attracts modal auxiliaries, whereas these elements are not necessary to convey RESULT
d) PURPOSE is more syntactically integrated with the preceding context than RESULT and therefore punctuation before so may be dispreferred
e) PURPOSE clause can be fronted, while RESULT cannot
f) RESULT connectives cannot be replaced by in order to

A short note on (e) and (f) has to be provided at this point. The inability of the RESULT clause to occur in the sentence-initial position should not be confused with the mirror-image character of the CAUSE and RESULT relations. Reversing the order of a CAUSE-RESULT relation will change its nature into RESULT-CAUSE, which will also require another connective (for example, so will have to be replaced with because). This does not apply to the PURPOSE relation, which can be reversed without any changes to the relation type or the connective needed (see (30) and (31) above). A note on (f) – this argument, brought up by Huddleston and Pullum (2002:733), has not been discussed above, but will be used as one of the criteria for the annotations of the corpus material (see 4.3.1 for details).

Section 4.3 below presents the results of the corpus study carried out on two samples of naturally produced RESULT and PURPOSE relations from the BNC and the PDTB.

4.3 Corpus study

Based on the previous discussion, it seems that there are several features that are worth closer investigation in the corpus of PURPOSE and RESULT relations. First, given how crucial intentionality is for PURPOSE, the question to ask is whether consistent markers of intentionality can be found in natural language. For instance: do certain modal verbs occur in PURPOSE relations that we do not find in RESULT relations? Second, since prescriptively the RESULT clause should be preceded by a comma, while PURPOSE is not detached from the main clause in the same way (Huddleston & Pullum, 2002:733), the question to investigate is whether commas are indeed found before so in RESULT relations only. Third, given the considerations found in the literature concerning the requirement for marking PURPOSE (see section
4.2.3), it is interesting to examine whether or not PURPOSE can occur in unmarked relations. The general conclusions in this section are backed up by quantitative data.

4.3.1 Materials and annotation method

Two English language corpora were consulted to determine what features might disambiguate between PURPOSE and RESULT relations: the written section of the British National Corpus (BNC) (all genres) and the Penn Discourse Treebank (PDTB, Prasad et al. 2008), which is a connective-based annotation of coherence relations in the Penn Treebank Wall Street Journal Corpus (1 million words of American English newswire). Recall from Chapter 3 (section 3.1.2) that in PDTB connectives are annotated for their coherence relations sense, the ‘Explicit’ relations. Additionally, adjacent sentences without an explicit connective are annotated with the most appropriate connective, and classified for coherence relation sense type, i.e. ‘Implicit’. The annotation of Implicit relations in the PDTB allows us to examine unmarked relations, which could have been signalled with so.

As indicated in 4.2 above, there are several criteria that can potentially be helpful for disambiguation between the two relations. Intentionality, modality and the unrealized character of the PURPOSE clause were taken into consideration as mandatory but not sufficient features for PURPOSE recognition, since RESULT relations can also occur with these elements. In case of ambiguities, the decisive criterion used to distinguish between the investigated relations was whether the sentence was paraphrasable with as a result or in order to. Paraphrasing is a frequently used method to determine the meaning of connectives, as it forces the annotator to make an explicit choice on what the possible relation is. Most importantly, paraphrases can help determining the meaning of the possible relation segments, when the influence of the connective itself is left out (Degand & Sanders, 1999:3). In the current study the validity of paraphrases was confirmed in an additional annotation task performed by two native speakers of English who were presented with a random sample of a total of 100 instances of PURPOSE and RESULT sentences with so from the BNC. After a short introduction to the topic and a few relevant training examples of both relations, the annotators were asked to paraphrase the content of each sentence/sentence pair with either as a result or in order to, according to what they felt the most suitable interpretation was. The free-marginal Kappa scores showed an inter-annotator agreement of 0.90, which is considered outstanding (Landis & Koch, 1977). This suggests that the task of distinguishing between PURPOSE and RESULT in naturally produced texts is not very difficult, and can be done reliably by non-expert annotators.
The presence/lack of commas was not treated as a reliable measure in the process of corpus annotation, but this aspect was afterwards analysed together with the other potentially disambiguating features (see 4.3.2.3 below).

4.3.1.1 BNC Corpus sample

As discussed in Chapter 3 (section 3.1.3.1), the part-of-speech BNC tagger does not filter out non-target uses of the connective *so* and, most importantly, does not reliably distinguish between *so* as a conjunction (CJS) and as adverb (ADV0). As a result, a random sample of 10000 untagged instances of *so* had to be analyzed in order to find target uses of both PURPOSE and RESULT relations. Each example was closely read and RESULT and PURPOSE examples were collected until 500 relevant instances of RESULT relations and 100 relevant instances of PURPOSE relations were obtained. The 500 RESULT examples were collected from approximately 2000 uses of *so*, whereas there were only 28 instances of PURPOSE identified among this sample. It required close-reading of 7000 sentences with *so* to find a full 100 examples of PURPOSE. Already this finding suggests that this connective is much more frequently used to mark RESULT than PURPOSE.

4.3.1.2 PDTB Corpus sample

All examples of *so* as a discourse connective were examined in the PDTB. In all, there were 1056 relations marked with *so* among which 255 were Explicit and 801 implicit. The PDTB primary annotators were not asked to distinguish between PURPOSE and RESULT, and all relations marked with *so* were classified broadly as CAUSE-RESULT relations (Webber, 2014; p.c.). For this reason, just as for the BNC, all examples had to be manually annotated for coherence relation type and coded either as PURPOSE or RESULT. All unclear cases were discussed with an English native speaker until agreement was reached.

4.3.2 Corpus study results

The following sections provide specific findings on the corpus samples extracted for this study. Section 4.3.2.1 reports on the Implicit and Explicit relations identified in the PDTB (recall that the BNC includes only overtly marked relations). Section 4.3.2.2 presents the results of the investigation of modality markers in the analyzed relations, whereas section 4.3.3.3 is concerned with the role of punctuation in marking of the distinction between PURPOSE and RESULT.
4.3.2.1 Explicit vs. Implicit relations in the PDTB

Only 255 of the PDTB instances of so are explicitly marked: in this group 213 examples were identified as RESULT and 42 as PURPOSE. Among the remaining 801 instances of Implicit so, not a single instance of PURPOSE was identified in the PDTB. This result suggests that the PURPOSE relationship may never be left Implicit in natural language production. Table 4.1 below presents the results of the PDTB corpus annotations:

Table 4.1 Explicit and Implicit PURPOSE and RESULT relations in the PDTB

<table>
<thead>
<tr>
<th></th>
<th>RESULT</th>
<th>PURPOSE</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explicit</td>
<td>213</td>
<td>42</td>
<td>255</td>
</tr>
<tr>
<td>Implicit</td>
<td>801</td>
<td>0</td>
<td>801</td>
</tr>
<tr>
<td>Total</td>
<td>1014</td>
<td>42</td>
<td>1056</td>
</tr>
</tbody>
</table>

Another important observation is the number of Implicit and Explicit RESULT relations, suggesting that the unmarked CAUSE-RESULT is much more frequent than marked RESULT. This is in line with Asr and Demberg (2012) whose analysis of the relations in the PDTB found that forward causal relations are more commonly left unmarked. However, both theirs and the present results come from newswire, so they may be register-related. There is in fact vast empirical evidence in the literature which shows that overall patterns of connective usage are both genre and register specific, which relates both to the writer’s expertise and to the expected level of knowledge in the target audience (see e.g. MacDonald, 1994; Biber et al, 1999; Hyland, 1999). Yet, the PDTB is currently the only large-scale annotated corpus with Implicit and Explicit relations and thus it is impossible to check whether or not leaving RESULT unmarked is a common practice in other registers.

4.3.2.2 Modal verbs

In the random 100-sentence BNC sample, PURPOSE was accompanied by can/could in S2 segments in almost 80% of all the cases (the remaining instances were followed by will and would and various verbs in the present tense). In PDTB can/could was also the most frequent modal (55% of the cases). A somewhat surprising finding concerns RESULT. As the corpus analysis indicated, RESULT relations are accompanied by all types of modal auxiliaries in S2 segments, but in comparison to the PURPOSE relation the

---

37 The frequencies of all the modals with RESULT in the current BNC sample are rather low: should 6, must 9, shall 1, may 5, might 2, need 7.
verb *can* is very infrequent with RESULT. It occurs in a mere 2.6% of the BNC sentences and *could* in 0.4%. In the PDTB the numbers were 1.8% for *can* and 1.4% for *could* in the 213 explicitly marked RESULT instances and 2.3% for *can* and 2.6% for *could* in the 800 unmarked instances.

Recall that both Schmidtke-Bode (2009) and Huddleston and Pullum (2002) argued that PURPOSE requires an auxiliary verb in the S2 argument. The corpus material shows that this auxiliary is almost exclusively *can/could*. The PURPOSE relation was also found with *will/would* (9% of the BNC sample and 28% of the PDTB examples) and present tense verbs. No other modal auxiliary verbs were found with PURPOSE in the current corpus material. This finding is consistent with the prediction made in section 4.2.2 above that only those two modal verbs that can convey a future-oriented ability compatible with PURPOSE.

There is a statistically highly significant association between the coherence relation type and the presence of *can* or *could* both in the BNC ($\chi^2 = 351.50; df = 1; p < 0.001; \phi = 0.768$) and in the PDTB ($\chi^2 = 89.1229; df = 1; p < 0.001; \phi = 0.592$). The effect size is very large for both corpora, meaning that this feature has a strong relationship with PURPOSE, but this is particularly so for the BNC ($\phi = 0.768$). Examination of Pearson residuals shows that this effect stems from an unexpectedly high rate of *can/could* with PURPOSE relations. Table 4.2 presents specific results:

Table 4.2 Frequencies of *can* and *could* with PURPOSE and RESULT

<table>
<thead>
<tr>
<th></th>
<th>BNC</th>
<th>PDTB</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Explicit</td>
<td>Implicit</td>
<td></td>
</tr>
<tr>
<td><strong>RESULT</strong></td>
<td>500</td>
<td>213</td>
<td>801</td>
</tr>
<tr>
<td><em>can</em></td>
<td>7</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td><em>could</em></td>
<td>0</td>
<td>3</td>
<td>21</td>
</tr>
<tr>
<td><strong>PURPOSE</strong></td>
<td>100</td>
<td>42</td>
<td>0</td>
</tr>
<tr>
<td><em>can</em></td>
<td>47</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td><em>could</em></td>
<td>30</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>600</td>
<td>255</td>
<td>801</td>
</tr>
</tbody>
</table>

Subsequently, the presence of *will* or *would* was investigated in the corpus samples. There is a statistically highly significant correlation between coherence relation and the presence of *will/would* both in the BNC ($\chi^2 = 8.68; df = 1; p < 0.008; \phi = 0.12$) and in the PDTB ($\chi^2 = 17.1761; df = 1; p < 0.000; \phi = 0.26$). However, the effect size here is much smaller ($\phi = 0.26$) than that found with *can/could*. This suggests that the auxiliary *will/would* is not as
well-suited to convey PURPOSE as can/could. Table 4.3 below provides specific results:

Table 4.3 Frequencies of will and would with PURPOSE and RESULT

<table>
<thead>
<tr>
<th></th>
<th>BNC</th>
<th>PDTB</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Explicit</td>
<td>Implicit</td>
<td></td>
</tr>
<tr>
<td>RESULT</td>
<td>500</td>
<td>213</td>
<td>801</td>
</tr>
<tr>
<td>will</td>
<td>9</td>
<td>7</td>
<td>40</td>
</tr>
<tr>
<td>would</td>
<td>5</td>
<td>8</td>
<td>39</td>
</tr>
<tr>
<td>PURPOSE</td>
<td>100</td>
<td>42</td>
<td>0</td>
</tr>
<tr>
<td>will</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>would</td>
<td>5</td>
<td>10</td>
<td>0</td>
</tr>
</tbody>
</table>

4.3.2.3 Presence of comma

While punctuation was not treated as a reliable indicator that the relation is one of PURPOSE/RESULT in the process of corpus coding, the annotated material has been examined for the presence of commas. Recall from section 4.3.2 above that it has been suggested in the literature that PURPOSE clauses are more syntactically integrated with the previous context and therefore are less expected to be preceded by a comma (Huddleston & Pullum, 2002; Schmidtke-Bode, 2009).

Out of the 500 instances of resultative so from the BNC, 66 were preceded by and and thus disregarded; 188 were sentence initial, i.e. delimited from the other argument by means of punctuation and 67% (165 examples) of the remaining 246 instances were preceded by a comma. Among the PURPOSE relations, commas are not frequent, co-occurring in only 15% of the 100 BNC sample. Also, only six instances of PURPOSE were found in the BNC sample (0 in the PDTB) where so was a sentential instead of a clausal subordinator (e.g. That’s why I’m determined to set up business for myself. So I don’t have to restrain myself any more! (BNC: H97 1002)). All these instances come from represented speech, which emulates spoken discourse. This genre tends to be fussier and more commonly uses intra-sentential connectives for prefacing. This finding provides an additional piece of evidence that PURPOSE clauses are more syntactically integrated and, consequently, may be more seldom preceded by punctuation marks.

In the PDTB PURPOSE was identified only in Explicit relations and hence only those were investigated. For these, a slightly different pattern can be seen, with many more RESULT relations occurring without a comma. Table 4.4 below provides specific results:
Table 4.4 Commas in the BNC and Explicit PDTB examples

<table>
<thead>
<tr>
<th></th>
<th>BNC</th>
<th>PDTB</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RESULT</td>
<td>PURPOSE</td>
<td>RESULT</td>
<td>PURPOSE</td>
</tr>
<tr>
<td>Comma</td>
<td>165</td>
<td>15</td>
<td>67</td>
<td>5</td>
</tr>
<tr>
<td>No comma</td>
<td>81</td>
<td>85</td>
<td>146</td>
<td>37</td>
</tr>
</tbody>
</table>

There is a statistically significant correlation between coherence relation type and the presence of a comma before an explicit so on in the BNC (BNC: $\chi^2 = 77.24; \text{df} = 1; p < 0.001; \varphi = 0.47$; PDTB: $\chi^2 = 6.63; \text{df} = 1; p < 0.05; \varphi = 0.16$), with RESULT relations being more likely to have a comma before so than PURPOSE relations. However, the effect size of the BNC results is moderate ($\varphi = 0.47$) and for the PDTB it is minimal ($\varphi = 0.16$). There are still quite a number of examples that do not follow the prescriptive guidelines:

(33) **P:** Water well, then carefully remove the container and gently tease out the outer roots, so they don’t develop in the wrong direction. (BNC: G35 2014)

4.3.2.4 Summary of the corpus findings

Since the corpus results show that 83% of so-marked relations are RESULT relations, it can be concluded this connective is primarily a RESULT marker. However, owing to its multifunctional character, so is also used to signal a PURPOSE relation, which made it interesting to look for features that could help distinguish between its different usages.

Several features have been identified in both theoretical work and also the current corpus results, which can potentially endorse disambiguation. The first useful feature was a volitional action instigated by an intentional participant in the main clause, and this element was found in all the examples in both corpora analyzed here. However, since intentional agency also occurs with RESULT relations, this feature *per se* cannot be treated as sufficient for the distinction between RESULT and PURPOSE. Another element very strongly bound to the PURPOSE relations is the intended yet-unrealized effect to happen in the future. What the corpus findings show is that it is mainly the modal auxiliary *can/could* which conveys this content. Most importantly, *can/could* is rare with RESULT relations. It is therefore worth further investigation whether this verb (as well as *will/would*, which were also found in the
PURPOSE clauses) can serve as a disambiguating cue between RESULT and PURPOSE.

Another feature that was anticipated to play a role in RESULT-PURPOSE disambiguation are commas. A comma preceding so seems to suggest Result, which is in line with prescriptive grammatical rules (Huddleston & Pullum, 2002:733). Yet, since the findings from the current corpora are not consistent exhibiting different effect sizes the presence of the comma, this factor also seems worth investigating further empirically. Needless to say, an average language user may not be fully aware of the potentially disambiguating function of punctuation in the context of PURPOSE and RESULT relations. Thus the experimental results are expected to reflect the level of this awareness. Experimental work is likely to help answer the question whether there is a potential to infer PURPOSE from text segments with no overt connective or marked with another linguistic feature.

Several corpus studies (similarly to the current findings) suggest that PURPOSE is never left unmarked. Andersson and Spenader (2014:10) report on 33 instances of the connective so that annotated as RESULT in the PDTB. Among this sample, the authors categorized 23 instances as PURPOSE, eight as RESULT and two as unclear. All the PURPOSE examples were overtly marked. Taboada (2006) examined coherence relations and discourse connective marking in a corpus of task-oriented scheduling dialogues done from an RST perspective. Looking specifically at PURPOSE, out of the ten PURPOSE relations she found (among 560 coherence relations studied), nine were marked by one of four connectives: and, so that, that, and to (and one was unmarked). From this set, only so that and to are frequently used to signal PURPOSE, the other markers being as ambiguous as juxtaposition. Taboada did not find so-marked PURPOSE (but her sample is relatively small). Finally, the recent annotation of the Bio Discourse Treebank (BioDRB; Yu et al., 2008; Prasad et al. 2011) included PURPOSE as relation. Similarly to the present study, the annotators did not find implicitly marked PURPOSE. Among the 618 PURPOSE relations they identified, 617 were Explicit and 1 was an Alternative Lexicalization, meaning that the relation was signaled by something other than an established connective (Prasad et al., 2010; Webber, p.c.).

As mentioned in 4.3.2.1, certain marking patterns may be register-specific. While the current analysis indicated a high rate of Implicit RESULT relations in the PDTB, the BioDRB showed a higher rate of explicit RESULT signals: among the 196 instances of RESULT identified, 117 were explicitly marked, 57 were left Implicit and 22 were signaled by Alternative Lexicalization. However, the findings regarding PURPOSE marking are similar in several studies, which suggests that overt signaling of this relation is indeed obligatory, also across registers. This feature has not been checked experimentally and is worth investigating in the context of the corpus findings that PURPOSE is never left unmarked.
Psycholinguistic experiments provide an important complement to the corpus results, because they allow us to systematically test minimal pairs with controlled stimuli. Also, experimental work can help explore the signals of coherence relations that have not been considered, which should also add validity to corpus findings (Taboada, 2009, 136). The next section provides the results and discussion of the experiments carried out to control for several PURPOSE-RESULT disambiguation features.

4.4 Experimental study

In this section five experiments testing the features potentially disambiguating between PURPOSE and RESULT will be presented. The discussion starts with the report on a sentence completion task in 4.4.1, which is followed by the remaining experiments. Section 4.4.5 will discuss the experimental results and their theoretical implications.

4.4.1 Sentence completion task

In order to test the effects of the features that can possibly disambiguate between PURPOSE and RESULT, a decision was made to empirically obtain event pairs that were likely to be interpreted as PURPOSE, and those that were likely to be interpreted as RESULT. In addition, a set of event pairs ambiguous between these two interpretations was acquired.

Initially 26 sentence beginnings were created, all formulated with third person singular subjects so that an intentional Agent would be present, and in the present tense. The verbs used were taken from the list of common transitive verbs in Collins Cobuild Grammar of English (1990). Subsequently, 56 native speakers of American English recruited via Amazon Mechanical Turks (AMT; see Chapter 3 for details) were asked to create typical PURPOSE and RESULT relations. Half the subjects were presented with the sentence beginnings followed by the phrase *as a result* and the other half were presented with the same sentence beginnings followed by *in order to*. Subjects were also explicitly informed that obtaining typical PURPOSE or RESULT relations was the goal of the task.

Initial analysis of the first results showed that many continuations were in fact ambiguous between PURPOSE and RESULT, but since the main goal of the task was to collect unambiguous PURPOSE or RESULT relations, 12 addi-

---

38 Transfer verbs (e.g. *throw, kick, email*) were excluded, because a pilot experiment suggested the subjects did not distinguish between RESULT and PURPOSE for transfer verbs.
tional sentence beginnings were constructed and 56 new native speakers of American English (via AMT) were asked to perform the same task. The two completion experiments provided 21 unambiguous RESULT endings, 21 unambiguous PURPOSE endings and 17 ambiguous sentence endings. If a continuation referred to an event type that was only found with one of the connectives (e.g. in order to or as a result), it was classified as unambiguous. Ambiguous continuations were events for which subjects filled in both as a result and in order to, indicating that the event pairs could be interpreted both as a RESULT or as a PURPOSE relation.

The obtained responses were first classified by searching for a generic event independent of a particular subject’s stylistic, formal and personal preferences. For example, for the beginning: Luke always buys the latest designer clothes..., completions such as: in order to impress his friends, in order to impress ladies at work or in order to impress others were collapsed into one event labelled ‘impress others’. This allowed judging which sentence beginnings generated different continuations for PURPOSE and RESULT (the ‘unambiguous’ examples) or whether the same event pair appeared in responses with both PURPOSE and RESULT (i.e. the ‘ambiguous’ sentences).

Subsequently, for each sentence beginning, the most frequent response and its rate of occurrence were identified. There were 21 frequent PURPOSE responses from which the 16 least ambiguous PURPOSE event pairs were selected. For these PURPOSE event pairs, the rate with which the events chosen occurred as responses ranged from 25-93% of all responses with a mean of 46.31%. Similarly, there were 21 frequent responses for the RESULT relations, from which the 16 best were selected. These 16 events made up between 29-54% of all responses, with a mean rate of response of 41.88%. Finally, there were also 17 event continuations that were common for both PURPOSE and RESULT. From this group the 16 best for the class of ambiguous event pairs were selected. The number of responses ranged from 25-97%, with a mean of 58.59%. This means that ambiguous event continuations were more likely to be given by the participants than unambiguous PURPOSE or RESULT event continuations.

What can be concluded already from this task is that some event pairs are strongly indicative of PURPOSE or RESULT relations. The consistency of the answers suggests that speakers share world knowledge about the typical RESULT or PURPOSE scenarios of a given event. Also, the number of the events which can lead to either a PURPOSE or RESULT interpretation contradicts the claim by Huddleston and Pullum (2002:733) that resultative so cannot be replaced with in order to. This rule, apparently, applies only to some contexts. Also, the experimental sentences were presented without any context that could support disambiguation, so it may be that naturally occurring RESULT relations cannot have so replaced with in order to.
4.4.2 Experiments 4.1a and 4.1b – the effect of *can* and comma presence on relation identification

In Experiment 4.1a the presence of the explicit connective *so* and the use of the modal verb *can* were tested. Based on the corpus results and the discussion in the literature suggesting that PURPOSE relations are never left unmarked, it was expected that items without the connective would seldom or never be identified as PURPOSE. Further, the presence of the modal *can* was expected to increase the number of PURPOSE classifications relative to the same items without this modal for items marked with *so* only. In Experiment 4.1b the presence of commas on the event interpretation was tested.

4.4.2.1 Method

62 native English adults recruited via AMT. There were 25 non-target responses (where participants chose a Contrast paraphrase which was intended for the fillers). There was no significant difference between conditions and non-target responses (Fisher exact test, p = 0.54). Therefore all participants who had chosen the non-target response were removed. This left 47 participants (25) female, mean age 33.7; range 18-64). 25 did Experiment 4.1a and 22 did Experiment 4.1b. Participants were paid $0.35 for their participation.39

16 unambiguous PURPOSE event pairs obtained via the Sentence Completion task were tested. Each event pair had a third person singular intentional Agent as the subject of the first event, and this same Agent was also the subject of the second event. Four versions of each event pairs were created to obtain materials for the 2 x 2 design with the factors connective presence (*so* vs. no *so*) and modal verb presence (*can* vs. no *can*). This experimental design involves two independent variables in a way in which every level of one variable is paired with each level of another variable (Howell, 2012:453). Consider one of the constructed sentences in its four experimental versions:

39 The participants were limited to IP-addresses in the United States and the payment was set to achieve the Federal Minimum Wage. The experiments took only several minutes to complete and did not require expert knowledge.
(1a) Thomas consistently saves money every month. He is prepared for the future.  
(1b) Thomas consistently saves money every month, so he is prepared for the future. 
(1c) Thomas consistently saves money every month. He can be prepared for the future. 
(1d) Thomas consistently saves money every month, so he can be prepared for the future. 

Commas were included in both versions of the sentence with so, because a number of writing guides suggests that this is most appropriate for any use of so. However, recall that both the literature and the current corpus results point to a greater tendency for commas to occur before so in RESULT relations than PURPOSE. It can be therefore expected that a potential bias introduced by punctuation will increase the rate of RESULT classifications.

The experimental items were distributed over four lists using a Latin-square design where each item was presented once in a particular condition for each list. This type of design is used to control the random variation of two factors. Each list contained equal numbers of items of each condition type. 16 filler items were added to each list containing contrastive sentences with the explicit connective but. Similarly to the target items, fillers were also in the present tense. Two randomized versions of each of the four lists were created to counteract ordering effects.

Subjects were presented with a test item and three multi-word connectives which unambiguously marked the three relations: as a result for RESULT, in order to for PURPOSE, and in contrast/unexpectedly for CONTRAST. Subjects were asked to choose which connective best described the relationship between the events in the two clauses or sentences. The multiple choice answers were always presented in the same order: as a result, in order to, and in contrast/unexpectedly with the last category being expected to be chosen for the filler items with the contrastive connective but. The experiment began with an example of a but-marked sentence where the answer in contrast/unexpectedly was already filled in. Following the 32 sentences, subjects were asked to provide biographic information about age, gender, native language, and the language that they spoke in kindergarten (specified as “at age 5”). Any subjects that reported a language other than English were excluded but were still reimbursed for their participation and the experiment was rerun for that particular list and random order.

40 Numbering of experimental items follows a separate order throughout the whole study. More examples of the experimental items can be found in Appendix 1.
4.4.2.2 Results and discussion

Fig. 4.1 Experiment 4.1a. The mean % ‘purpose’ responses (±1SE) for sentences with or without can and with or without so using PURPOSE relations.

Two-factor (Connective presence x modal presence) repeated-measures analyses of variance (ANOVAs) were performed, with participants (F1) and items (F2) as random factors. In Experiment 4.1a, the presence of the modal verb can lead to a significantly higher rate of PURPOSE identifications: (F1(1,24) = 42.83, p < 0.0001 and F2(1,15) =23.36, p < 0.001). The presence of so also lead to a significantly higher rate of PURPOSE identifications: (F1(1,24) = 20.9, p < 0.001 and F2(1,15) =17.17, p < 0.001). There was no significant interaction effect. Interaction effect is obtained if the effect on the outcome of one factor depends on the level of the other factor (Howell, 2012). In the present case the results show that can increases the rate of PURPOSE identification even if it is not combined with the connective

41 The current chapter analyzes the experimental results using a two-way repeated measure ANOVA, but Andersson and Spenader (2014) use mixed effect linear models. These models have been argued to be more appropriate for unbalanced designs. Interested readers are referred to that paper; however, it should be noted that both analyses found the same significant effects for all experiments presented.
and suggests that this specific modal is a particularly strong PURPOSE marker.

The corpus study (section 4.3.2.3 above) indicated that commas are significantly more likely to occur with RESULT relations. In Experiment 4.1a the results may have been biased towards RESULT interpretations by using commas. So far, the results indicate that even with a comma subjects interpret many events as PURPOSE, but a separate test was carried out in order to verify this finding.

Sentences from Experiment 4.1a with the commas removed were used in Experiment 4.1b. The experimental method was also identical with that used in Experiment 4.1a. 15 non-target responses were discarded. The results were the same as in Experiment 4.1a: *so* lead to a higher rate of PURPOSE identifications: \( (F1(1,21) = 20.96, p < 0.000 \) and \( F2(1,15) = 30.93, p < 0.000 \) ), and *can* lead to more PURPOSE identifications: \( (F1(1,11) = 25.8, p < 0.000 \) and \( F2(1,15) = 11.35, p < 0.000 \)). The rate of PURPOSE identifications with both cues present was the same as in Experiment 4.1a \( (M = 0.89; SE = 0.03) \). There was no interaction effect.

Subsequently, the results of Experiments 4.1b and 4.1a were compared by means of a logistic mixed effects linear model (cf. Baayen 2008) using *Experiment* as a factor in addition to *connective* and *modal*. This in effect tests for a difference between the presence and absence of commas. The factor *Experiment* was not significant, indicating that there was no significant difference between responses with and without commas.

These results both support and diverge from the corpus results. Consistent with the corpus findings, the modal verb *can* 42 turns out to be a strong signal of PURPOSE. However, despite the suggestions in the literature, the presence/absence of commas did not influence the rates for PURPOSE identifications. This is in line with the corpus results which indicated at most a moderate association between punctuation and coherence relation type. Most importantly, both experiments indicate that subjects can recognize a PURPOSE relation even without the explicit connective *so* \( (M = 0.39; SE = 0.05) \). Recall however that Croft (2010) found evidence of unmarked PURPOSE relations in his examination of the Pear Stories (Chafe 1986). In both 4.1a and 4.1b very clear empirically gathered examples of PURPOSE relations were used. It is quite possible that for event pairs that are ambiguous between a

---

42 Following comments by various linguistic audiences suggesting that past tense may be strongly associated with RESULT, Andersson and Spenader (2014:12) experimentally checked this factor as well. According to their findings, the modal past-tense modal verb *could* leads to even higher rate of PURPOSE identifications than *can*. The implication for the current investigation is that, as discussed in 4.2.1 above (see examples (19) and (20), intention retains its unrealized character even if expressed in the past tense. There is also clear corpus evidence that PURPOSE can be expressed in the past tense (e.g. *I pulled my window down and twisted round so I could stick my head out*. BNC: HW8 3252).
RESULT and a PURPOSE interpretation, the presence of so may be more important to retrieve PURPOSE relations, and we should find that non-so marked event pairs will seldom be categorized as PURPOSE. This hypothesis was tested in Experiment 4.2 below.

4.4.3 Experiment 4.2 – Testing ambiguous sentences.

The goal of Experiment 4.2 was to test how subjects react to events that are ambiguous between a PURPOSE and a RESULT relation. The main question was whether the presence of so or can is enough for subjects to interpret the relationship as one of PURPOSE. Since RESULT is the most frequent category, it may be that most examples are likely to be interpreted as RESULT.

4.4.3.1 Method

32 native English speaking adults were recruited via AMT (19 women, 13 men; mean age = 35.35; age range; 18-62) and paid $0.35 for their participation. There were 12 non-target responses. These did not show any significant pattern with respect to the conditions tested (Fisher Exact Test, p= 1). Therefore 26 participants were left for the final analysis (15 women; mean age 36.92, range 18-62).

The 16 empirically harvested sentences collected in the sentence completion task that were ambiguous between a PURPOSE and a RESULT interpretation were used. The same 16 fillers from previous experiments were used. The procedure was the same as in previous experiments.
4.4.3.2 Results and discussion

Fig. 4.2 Experiment 4.2. The mean % ‘purpose’ responses (±1SE) for sentences with or without can and with or without so using items ambiguous between PURPOSE and RESULT relations.

The presence of so also in this experiment led to a significantly higher rate of Purpose identifications: (F1(1,25) = 33.28, p < 0.0001 and F2(1,15) = 83.72, p < 0.0001). The presence of can led to a significantly higher rate of Purpose identifications: (F1(1,25) = 81.32, p < 0.0001 and F2(1,15) = 40.051, p < 0.0001). There was no significant interaction effect.

Several conclusions can be drawn from these results. First, for examples which are ambiguous between RESULT and PURPOSE, where world knowledge does not help determine the relation type: without explicit marking and without additional contextual information, most subjects chose RESULT\footnote{Please note that the vertical axis of Figure 4.2 shows the means of PURPOSE identifications.} as their default interpretation (88% of the time in Experiment 4.2). The rate of PURPOSE identifications for unmarked examples was minimal at only 12% (SE = 0.03), unlike in Experiment 4.1a (39% PURPOSE for unmarked items). Adding so increased the number of PURPOSE interpretations, but adding can had an even greater effect.
In Experiment 4.2 the event pairs were ambiguous between two interpretations, but since the current corpus study shows that so is more commonly used to mark RESULT than PURPOSE, a basic preference for a RESULT interpretation could be expected. Further, given the present corpus results that show that PURPOSE relations were always marked, the finding that unambiguous PURPOSE relations (Experiment 4.1) were most frequently identified as such in the presence of so was predictable. However, when the event pair relationship is ambiguous, the presence of overt so was likely to have a smaller effect, which is what was found in Experiment 4.2.

Another result to notice is that, when both cues are present, the rate of PURPOSE classifications only reached 81% for Experiment 4.2. This is in contrast to the 90% for the previous two experiments with event pairs constructed to be interpreted as PURPOSE. When both events clearly can be interpreted as both PURPOSE and RESULT (because they are completely ambiguous), even when both strong cues for PURPOSE identification (i.e. so and can) are present, the rate of RESULT classification was much higher than for Experiments 4.1a and 1b. We know from the rate of interpretations with neither cue (12%) that there is a preference for RESULT for these ambiguous examples, and even adding one of the cues does not reverse that preference. This suggests that RESULT is the more basic, default interpretation, and that only highly stereotypical PURPOSE relations or the use of both cues can override this preference.

4.4.4 Experiment 4.3a – testing the effect of the connective presence on PURPOSE and RESULT relations

In Experiments 4.3a and 4.3b it was tested whether the cues that identified PURPOSE relations would also affect RESULT relations in the same way, or if they are only effective when the underlying relation is one of PURPOSE.

4.4.4.1 Method

32 native English speaking adults recruited via AMT (21 women, 11 men; mean age = 35.62; age range: 17-66) were paid $0.45 for their participation. There were 11 non-target responses. There was no significant difference by condition (Fisher exact test, p=0.331). These participants were removed and the remaining 21 were analyzed (16 women; mean age 35.71; range 17-66).

Experiment 4.3a used eight empirically gathered event pairs that were unambiguous RESULT relations and eight of the unambiguous items originally used in Experiment 1 that were PURPOSE relations to create the stimuli for a 2 x 2 design testing the factors Coherence relation type against the presence or absence of the connective so. The relations were the same ones reported on in the sentence completion task, but in this case a RESULT relation and a
PURPOSE relation that had the same initial event were treated as members of
the same item pair. The same 16 fillers that were used in the previous exper-
iments were included.

4.4.4.2 Results and discussion

![Experiment 4.3 a Results](image)

**Fig. 4.3** Experiment 4.3a. The mean % ‘purpose’ responses (±1SE) for
sentences with or without so using items that are unambiguously PURPOSE or
RESULT relations.

Intended PURPOSE relations were identified as such around 50% (SE = 0.05)
of the time, and intended RESULT relations were identified as such 88% (SE
= 0.03) of the time so relation type was a significant effect (F1(1,20) =77.4,
p < 0.0001 and F2(1,15) = 40.22, p < 0.0001). The presence of so did not
have a significant effect on the rate of PURPOSE relation classifications.
There was also no significant interaction effect. Further, the presence of so
with a clear RESULT relation did not lead subjects to a PURPOSE
interpretation. This result is in line with the corpus findings from the PDTB
that showed that the most common way for RESULT to appear in text is
without marking.

Given the results of previous experiments, the presence of so was
expected to lead to significantly more PURPOSE classifications among the
PURPOSE event pairs. PURPOSE classifications turned out to be more frequent
with the connective although not significantly so. This experiment differs
from the previous ones in that items strongly biased towards RESULT
interpretation were included, which may have decreased the number of PURPOSE responses.

4.4.5 Experiment 4.3b - Testing the effect of the modal verb *can* on RESULT relations

The question that can be asked on the basis of the findings of Experiment 4.3a is whether the RESULT event pairs will be unaffected by the presence of the modal verb *can* in the same way as they were unaffected by *so*. In the previous experiments *can* turned out to be a strong signal of the PURPOSE relation, but it can be tested whether this modal, similarly to *so*, only increases the number of PURPOSE identifications for event pairs that are strongly purposive. In this case *can* should not have any effect on the rate of PURPOSE identifications for the RESULT event pairs.

4.4.5.1 Method

32 native English speaking adults recruited via AMT (15 women, 17 men; mean age = 34.5; age range; 20-60) were paid $0.45 for their participation. There were 3 non-target responses, and these showed no significant pattern (Fisher Exact Test, p=1). Participants who produced a non-target response for a target item were removed. This left 29 participants (14 women; mean age 33.79; range 20-60).

Experiment 4.3b used six empirically gathered event pairs that were unambiguous RESULT relations and six of the unambiguous items originally used in Experiments 4.1 that were PURPOSE relations. Only six items rather than eight could be used, as it was not possible to naturally add *can* to some of the empirically harvested RESULT relations.
4.4.5.2 Results and discussion

**Fig. 4.4** Experiment 4.3b. The mean % ‘purpose’ responses (±1SE) for sentences with or without **can** and with **so** using items that are unambiguously PURPOSE or RESULT relations.

PURPOSE event pairs were significantly more likely to be identified as PURPOSE than RESULT event pairs ($F_{1}(1,28) = 57.14$, $p < 0.0001$ and $F_{2}(1,15) = 23.61$, $p < 0.0001$) in Experiment 4.3b also. Most importantly, using **can** significantly increases the rate of PURPOSE identifications for both PURPOSE and RESULT event pairs as well ($F_{1}(1,28) = 378$, $p < 0.0001$ and $F_{2}(1,15) = 223.6$, $p < 0.0001$). There was also a significant interaction between coherence type and **can**. Tukey’s multiple comparisons of means\(^{44}\) was used for pair-wise post-hoc comparisons. All interactions were significant at the $p=0.05$ level or lower. This indicates that **can** is a reliable signal of PURPOSE, raising the rate of PURPOSE identifications from 0.03% to 82% for RESULT event pairs. Based on Experiments 4.3a and 4.3b, it can be concluded that **can** is a stronger indicator of PURPOSE than **so**, even when the event pair is meant to be RESULT.

---

\(^{44}\) Test performed when the means of the response variable differ significantly across the factor, but it is uncertain which pairs of the factor levels significantly differ from each other (Lowry, 2008).
4.4.6 Summary and discussion of the experimental results

The most important finding of the experimental part of the study is the strong ability of *can* (and *could*) to signal PURPOSE relations. All results showed that *can* is a good, consistent marker for PURPOSE. This is also in line with the current corpus findings (see 4.3.2 above) and with the literature that has suggested that modality plays a vital role in evoking PURPOSE (Schmidtke-Bode 2009; Huddleston & Pullum 2002; Verstraete 2008; Quirk et al., 2005). Yet the present result is much more specific.

The modal verb *can* had a large effect on event pairs that were typical of PURPOSE relations or relations ambiguous between PURPOSE and RESULT. Even more remarkable is that the effect is so strong when the underlying events were related by RESULT. Adding *can* dramatically increased the rate of PURPOSE identifications: from less than 1% to 82% in Experiment 4.3b. This single cue seems to coerce reading of RESULT relations into PURPOSE relations. Moreover, as Andersson and Spenader (2014:15) demonstrate, *can/could* is a more reliable signal of the PURPOSE relation than *will/would*, which had an effect only in sentences already marked with *so*. This finding may be related to the primary function of *will* as an epistemic modality marker (see Giannakidou, 2009; 2013; Jaszczolt 2003), which suggests that this verb more felicitously conveys eventuality and not future-oriented ability (necessary to express PURPOSE). Finally, as Schmidtke-Bode (2009:108) argues, the anticipatory mood expressed by English *will* is not a distinct gestalt feature of PURPOSE clauses.

The second finding concerns the effect of explicit *so* on coherence relation interpretation. Recall from examples (5) and (6) at the beginning of the chapter that removing the connective from a PURPOSE relation seems to change its interpretation to one of RESULT. In the corpus investigation support was found for the claim that PURPOSE can only be communicated with an explicit marker (see 4.3.2.1 above), consistent with the arguments in Jasinskaja’s (2007) work and Schmidtke-Bode’s (2009) cross-linguistic findings. This is also in line with recent results based on annotation experiments by Sporleder and Lascarides (2008) and Webber (2009), and could mean that *so* is a rather special connective, where one of the senses with which it can be used in Explicit relations is entirely absent in Implicit relations. However, the picture is more complex because the present corpus findings and the experimental results diverge. For the experiments where the event pairs tested were intended PURPOSE relations, a substantial percentage of examples where neither *so* nor *can* were present were still identified as PURPOSE (39 % in Experiment 4.1a). The question to ask is, therefore, why the experimental findings differ from what was found in the corpus.

There are several factors that are likely to have played a role. First, empirically collected event pairs are probably more stereotypical than what
is normally encountered in naturally produced language, making them easily recognizable as PURPOSE. All instances had multiple features prototypical of the PURPOSE relation, such as a dynamic event conveying a volitional and intentional action instigated by an animate participant (Schmidtke-Bode, 2009). Also, in all the cases the subjects of the two clauses/sentences were co-referential, which is a feature suggested cross-linguistically to induce purposive inferences from coordinated structures (evidence from Semelai in Schmidtke-Bode, 2009:108f). Interestingly, this feature was not incorporated deliberately, but naturally emerged from the empirically collected event pairs in the Sentence completion task. These two factors can at least partly explain the rate of unmarked PURPOSE identification.

Another explanation may stem from differences between production and comprehension. While the experiments tested comprehension, the corpus results show us examples of how individual writers have chosen to code a PURPOSE relation in context, and could be argued to primarily investigate production (though admittedly, in the process of annotation an element of language comprehension is present). As mentioned in 4.2.3 above, Sanders et al. (1992:18) point out that PURPOSE is a relatively complex coherence relation, because it includes two basic causal operations: a volitional action and the wish for a state of affairs to be achieved. It could be that this kind of complexity but also the specific meaning of the relation prompt explicit marking. This idea seems relevant particularly for written discourse, where the writer cannot receive feedback from the reader and thus additional incentives to mark PURPOSE can be expected.

Finally, the last reason why the constraint on marking PURPOSE is so strong, despite the apparent potential to retrieve the relation from unmarked sentences, may be a more general speaker requirement that the whole class of nonveridical relations should be explicitly marked. Other nonveridical relations like DISJUNCTION and Material IMPLICATION are rather hard to express without explicit marking. Since the marking requirement applies to the class as a whole, it is not directly related to whether or not the relation of PURPOSE is recoverable for a hearer when no marking is present.

However, we must not forget that around 50% of intended PURPOSE relations are still interpreted as RESULT, if presented as unmarked juxtaposed sentences and it is only on the basis of additional signals that the rates of PURPOSE identifications increase. An interesting question is also why RESULT relations allow both explicit and implicit marking. The answer is likely to relate to the general tendency to treat implicit relations as causal by default in order to build the most informative discourse representation (see Sanders 2005). For the present findings this suggests that RESULT is a ‘default’ unmarked version and PURPOSE a more specific marked version of a very close semantic relationship.

A final note on possible experimental effects should be made at this point. There are, certainly, several problematic factors that could have to some
extent influenced the findings. The first one is the nature of the forced-choice task, which will always involve certain limitations. One of them is guessing and random answering. However, in the light of the sample annotation task and the excellent results of the inter-annotator agreement (see 4.3.2 above), it can be assumed that the task was simple enough to minimize these potential effects. Another possible problem is that the empirically obtained sentence continuations could not be fully controlled for the differences in their complexity and so for certain versions of the items the judgment could have been more difficult and/or uncertain than for others. While improvements of this issue could possibly be incorporated in follow-up studies (e.g. on-line measures of the strength/confidence of each relation), again, the generally simple character of the task is likely to have reduced this effect also. Finally, the consistency of the findings (for more experimental findings see also Andersson & Spenader, 2014) suggests that the potential experiment effects were probably not significantly affecting the current results.

More insights into the marking requirement of PURPOSE will be provided in 4.7 below, while the next section will explore the potential of the PURPOSE relations to be subjective.

4.5 A note on the subjectivity of PURPOSE relations

As briefly mentioned in Chapter 2 (section 2.1.2), PURPOSE is not analyzable in terms of Sweetser’s (1990) discourse domains and exhibits features characteristic of both the real-world domain (e.g. volitional action) and epistemic domain (e.g. reasoning). This means that the analysis of the participant’s involvement in the causality of the relation cannot be carried out in the same way as in the case of RESULT (see Chapter 6). A cruder comparison, however, is possible between RESULT and PURPOSE relations. One criterion on which such a comparison could be based is syntax. As Sanders and Spooren (2015:64) argue following the literature on the topic, there is a strong correlation between syntactic integration and the tendency to express objective relations, i.e. relations presented as facts in which the current speaker is not involved (Pander Maat & Degand, 2001:216). The constructions that are believed to be better suited to convey subjective illocutions are coordination constructions, owing to their syntactically independent status. By contrast, subordinating constructions, which are integrated, and are less likely to have the same function.

While both PURPOSE and RESULT clauses are subordinated, the RESULT clauses syntactically resemble coordination – they cannot be transposed and can be preceded by the coordinator and, which has been argued to be impossible for PURPOSE clauses (Huddleston & Pullum, 2002:1319f; Quirk et al.
Further, as Quirk et al. (2005:1109) argue, PURPOSE clauses have the status of adjuncts, while RESULT clauses are disjuncts. This fact underlies certain semantic differences, because adjuncts denote the circumstances of the situation in the main clause, whereas disjuncts comment not only on the content but also on the style and form of the main clause (Quirk et al., 2005:1070ff). For instance:

(34) RN: Elizabeth enjoyed last night’s concert, *since* her brother told me so.

The content of the subordinate clause in (34) refers to the speaker’s motivation for making the assertion, which incidentally resembles Sweetser’s (1990:77) idea of metaphorical uses of connectives in three discourse domains. In this case the connective *since* provides the reason for uttering the statement in the main clause. PURPOSE adjuncts do not function in the same way (recall (22) in 4.2.1 above) and therefore, unlike RESULT, they are not capable of conveying subjective contexts (see Chapter 2, section 2.1.1).

Going back to syntactic properties, needless to say, RESULT relations can be expressed via parataxis without any coordinator (Quirk et al., 2005:1042), such as two juxtaposed sentences or clauses with a semi-colon. This is, as we know from the current findings, only potentially possible for the PURPOSE relations, which are more closely integrated with the preceding context and require overt marking (Huddleston & Pullum, 2002; Schmidtke-Bode, 2009). Consequently, if we follow the arguments brought up in Sanders and Spooren (2015:64) that syntactic integration is correlated with objectivity, then PURPOSE could indeed be perceived as a potentially more objective relation than RESULT also on this basis.

However, as Sanders and Spooren (2015) further elucidate in the context of their discussion of Dutch connectives, a difference in subjectivity between connectives cannot be reduced to a difference in their grammatical status. Indeed, there are several other factors to consider at this point. According to Verstraete (2008:771), the common (cross-linguistically confirmed) use of mood markers in PURPOSE clauses signals the presence of some evaluating entity whose mental state is represented in that clause. Further, PURPOSE evokes the desirability of a particular course of action, which can be viewed in terms of Wierzbicka’s (1988:184ff) idea of the link between this relation with semantic primitives, one of which is WANT (apart from BECAUSE and THINK; see section 4.2.1 above). This means that a PURPOSE clause conveys the perspective of someone who finds a certain course of events desirable. Also, the semantic primitive THINK as a component of this relation points to the peripheral epistemic-like component of the projected future outcome – X thinks/believes that Y will be the case. This property may in fact enable the modal verbs such as *might* to occur in the PURPOSE relations (see (27) in 4.2.2 above).
Since linguistic expressions of perspective are believed to be related to subjectivity construal in discourse (e.g. Stukker & Sanders, 2009:30), the presence of this trait could be regarded as evidence of a relatively subjective character of PURPOSE relations. The problem is that subjectivity is often perceived as closeness to the speaker – the more the meaning is grounded in the speaker’s belief and attitude, the more subjective it becomes (Traugott, 1995:31). In PURPOSE relations the judgment signaled by the modal auxiliary is that of the Agent behind the action expressed in the main clause and not the implicit speaker (Verstraete, 2008:774) (recall (24) and (25) in 4.2.2). However, the participant of the main clause in the PURPOSE relation can in fact not only be identical with the current speaker (in the case of 1st person pronoun), but can also be present as an implicit speaker:

(35)(a) It is important that the piston moves smoothly back and forth, (b) so great care should be taken to smooth and even varnish the inside of the box (c) so no air can leak past the piston head. (BNC: EFH 1730)

The sentence in (35) consists of three clauses. In the main clause (a) the speaker expresses his opinion on a certain function of the device under construction (a box bellows) and moves on to the RESULT clause, (b), drawing a conclusion/giving instructions on what should be done to achieve this function (note that there is an embedded purposive meaning also in this clause signaled by the infinitival particle to). The sentence ends with the PURPOSE clause (c) (signaled by so and can) providing the reason why the previously mentioned actions should take place (and also the reason why the preceding utterances were made). Most importantly, the judgement of desirability of the intended effect in this particular PURPOSE clause has to be linked to the implicit speaker/author. In this respect the relation is bound to the speaker’s mental domain. Also, the act of giving instructions/advice brings to mind Pander Maat and Degand’s (2001:225) reasoning (see Chapter 2, section 2.4) on the special subjective and hearer-oriented character of speech acts, which (35) at least partly exhibits.

PURPOSE relations in general seem to be a particularly suitable way to give advice and directives (in this respect they often resemble or even include speech acts), but a more thorough investigation would be needed to answer the question as to what extent those acts convey the author’s personal beliefs and opinions (as opposed to the axiom of necessity). Out of the 100 instances of PURPOSE from the BNC sample, 19 resemble the relation in (35) (example (35) included). All of them seem express a more general necessity related to the situation conveyed. However, it is possible to find more subjectively construed PURPOSE relations, as in (36) below:
(36) **P:** It’s not much use arriving somewhere at ten in the morning clutching the collected works under your arm and wishing you had a wig and been born thirty years earlier in order to play Lear — or for that matter the Duke of Gloucester. (BNC: A06 252)

The implicit author not only speaks from his own experience but obviously also uses the PURPOSE construction to convey an ironically or humorously tinted ‘directive’. While apparently not impossible, such instances were not found in the present sample of the purposive connective *so.*

Finally, another potential possibility to involve the implicit author/speaker in the subjective construal of PURPOSE is the construction used to convey RESULT of an unexpected character (recall (10) and (11) in section 4.1 above):

(37) **P:** Carrie spends a lot of money on designer’s clothes only to impress her friends.

The function of *only* in (37) is somewhat ambiguous between the mental domain of the 3rd person Agent and the current speaker’s subjective evaluation. Yet the fact that the latter is a real possibility points to another potential path to subjectivity construal in PURPOSE relations. To sum up – from the syntactic point of view PURPOSE could be perceived as objective, owing to its close integration with the preceding context. However, the fact that the purposive structure commonly uses mood markers in the dependent clause in order to establish the link to the Agent’s perspective (‘judgement of desirability’, Verstraete, 2008:777), may be seen as a relatively subjective trait. Further, being a linguistic realization of the semantic primitives WANT and THINK, PURPOSE clauses (and hence relations) have a potential to be subjectively construed. As indicated in this section, PURPOSE can express the perspective of the implicit speaker/author ((35) and (36)), who does not even have to be identical with the Agent in the main clause (37). This fact is likely to open the way to introduce elements related to the main participant’s mental domain, with the caveat that they cannot be used epistemically, because then the purposive interpretation is lost. The question to ask is to what extent this potential is exploited by language users. This question could be explored in a separate study.
4.6 A note on so that and modal auxiliaries with PURPOSE

Exactly like the connective so, the phrase so that can mark both PURPOSE and RESULT. Yet, both Andersson and Spenader’s (2014:10; see also 4.3.3.4 above) PDTB analysis and a brief annotation of a random sample of 100 BNC instances performed for the current study suggest that this connective is more commonly used to mark PURPOSE (63 instances) than RESULT. Also, despite its obviously ambiguous character, so that is commonly singled out as a marker of PURPOSE in the literature (Huddleston & Pullum, 2002; Quirk at al., 2005). It is therefore interesting to investigate to what extent so that resembles/differs from so in its function.

Since both so that and so preface finite PURPOSE clauses, the criteria for disambiguation between PURPOSE and RESULT are expected to be similar in both cases. Recall that PURPOSE clauses (unlike RESULT clauses) can be fronted (Huddleston & Pullum, 2002:733). However, while no instances of fronted so marking PURPOSE were found in the present corpus material, they were present with so that:

(38) P: So that the forest could retain its wildness — its original denseness — it was forbidden back then to cut trees or hunt animals, though people were permitted to collect berries, nuts, fruits and medicinal plants. (BNC: G33 470)

This observation suggests that so that may indeed be a more prototypical signal of PURPOSE than so.

The analysis of the 63 extracted BNC instances indicates that so that with PURPOSE is most commonly followed by the modal verb can/could (36 times; 57%), but the relation can also be conveyed via a present tense (21 instances; 33%):

(39) P: Show the candidate to the door and say goodbye while shaking hands so that the interview is properly rounded off and the candidate leaves with the impression of having been dealt with fairly and politely (BNC: BNA 1725)

By contrast, there were only 12 present-tense PURPOSE relations with so in the current BNC sample and seven in the PDTB sample. This finding also suggests that the sense of so that is more unambiguously purposive. Thus the modal marker may be more commonly omitted. Interestingly, apart from four examples of purposive so that with will/would also identified in the
sample, one instance of the modal verb *should* and one of *might* were coded as expressing PURPOSE:

(40) **P:** (...) I feigned the countenance, clothing and words of speaking characters, *so that* you *should* suppose several to speak through one mouth. (BNC: HXS 689)

(41) **P:** I asked for names and addresses *so that* I *might* pass on details to the police. (BNC: B2G 108)

The interpretations of the modal auxiliaries are, admittedly, somewhat ambiguous between PURPOSE and RESULT in both cases. Fronting of the *so that*-clauses is possible, though slightly unnatural; however, in both relations S2 segments quite likely provide the purpose of the action undertaken in the main clause. As discussed (see 4.2.2 above), it may not be impossible for *may* and *might* to express PURPOSE, which the above examples prove.

To sum up – the findings on *so that* to a great extent replicate those on *so* and show a strong preference for PURPOSE signaled with this phrase to be conveyed by means of the modal verb *can*, both the number of the present tense PURPOSE relations and the occurrence of other modal auxiliaries in the context of *so that* lead to several conclusions. First, the phrase *so that* may be a stronger signal of PURPOSE than a sole *so* (though experimental work and a larger corpus would be needed to confirm this hypothesis). Second, since a sole *so* is a rather weak marker of PURPOSE, it needs an additional disambiguating cue more often than *so that* *may*. This provides another justification of *so* plus *can* as a strong collocation of the PURPOSE relation. Finally, the other modal auxiliaries, which do not have the same potential to convey intended effect as the verb *can*, may not be sufficient in the context of a weak signal, whereas they apparently can occur with a stronger one.

### 4.7 Discussion and conclusions

The goal of the present chapter was to investigate the coherence relation of PURPOSE as a special, more specific, subtype of RESULT. The close relationship between these two relations has also been noted by Schmidtke-Bode (2009) and Huddleston & Pullum (2002:725ff) and is reflected in the linguistic marking with the same connective (*so*). The focus of this chapter has therefore been on the following questions:

(i) How do writers and readers disambiguate between RESULT and PURPOSE marked with *so*? Are there any cues/features that help in this process?
(ii) Can PURPOSE relations be left unmarked in English? If so, what consequences does it have for the relation construal and interpretation?

(iii) What is the role of the feature of nonveridicality for both the disambiguation between PURPOSE and RESULT and the marking requirement? Does PURPOSE require overt marking due to its nonveridical character?

One of the most revealing conclusions to be drawn from the current findings is how closely the answers to the three main research questions are interrelated. In the course of the discussion and corpus investigation, several features typical of PURPOSE have been identified. These features include: the intended effect underlying the action in the main clause (Wierzbicka’s primitive WANT, 1988:184ff), the presence of a volitional participant in the main clause, the non-factual unrealized nature of the PURPOSE clause (nonveridicality), the presence of the modal mood marker in a non-epistemic sense, the syntactic integration of the PURPOSE and hence lack of punctuation and, finally, the overt marking. Most importantly, although the occurrence of these features in RESULT relations is also attested, they are optional for RESULT, whereas the conceptual structure of a purposive event cannot exist without their collective presence. This constraint makes PURPOSE quite different from the related REASON and RESULT adverbial constructions.

On the aggregate approach it can be therefore concluded that all the identified features interact towards expressing a coherent PURPOSE relation; however, due to certain commonalities of PURPOSE and RESULT, some of them have apparently developed into stronger signals. This concerns first of all the modal auxiliary *can*, which not only is the most frequent linguistic element of PURPOSE clauses according to the current corpus findings (see 4.3.2.2), but turned out to be a central force guiding the relation interpretation towards one of PURPOSE (see section 4.4). In Experiments 4.3a and b, where the sole *so* did not significantly influence the relation interpretation, *can* increased purposive readings also for the relations intended to convey RESULT. Given the highly ambiguous character of *can*, which can convey not only future-oriented ability, but also general ability (*I can dance*), permission (*You can go now*) or epistemic possibility (*He can be home by now*), this finding is quite revealing; however, it also provokes the question of why the ambiguous auxiliary verb has such a strong disambiguating force.

The reason for the strong attraction of *can* to the PURPOSE relations stems from its almost exclusive ability to convey an effect intended to happen in the future – the property only partly shared with *will* and, possibly, with some senses of *may/might*. Therefore the dominance of *can* in the semantic territory of PURPOSE is not as surprising as it may seem. The more surprising result is the ability of this verb to coerce the reading into one of PURPOSE even if RESULT was intended. The simple explanation of this finding could
rely on the potential of the contextual environment to support the ‘root’ interpretation of modality. If the core property of PURPOSE, i.e. the intended effect is present in the context, the purposive reading of the modal verb is preferred. Importantly, certain types of RESULT relations share this particular property with PURPOSE. Consider two examples of the current experimental items:

(2a) **R:** Maggie paints her fingernails black, *so* she gets comments and attention.
(2b) **P:** Maggie paints her fingernails black, *so* she completes her unique Gothic look.

(2a) emerged in the Sentence completion task (see 4.4.1) as the most frequent continuation of the sentence beginning when the subjects were prompted with *as a result*, whereas the situation (2b) was most commonly singled out as likely to be prefaced by *in order to*. Note that the PURPOSE relation conveys an event where the participant herself is the actor, whereas in the RESULT relation the participant in S2 has a role of experiencer.\(^45\) Even so, the RESULT event evokes the desirability of a specific outcome, exactly like purposive events.\(^46\) What follows is *can* added in the RESULT of argument of (2a) is perceived as conveying an intended goal, as opposed to an inference. The epistemic interpretation would necessarily involve an implicit author/speaker and her commitment to the truth of the proposition or evaluation of the degree of possibility that the event will happen. In a situation like (2a), where the outcome can be seen as intended by the participant, such an interpretation could in fact involve a counterintuitive complication.

However, the presence of the auxiliary *can* helps guide the interpretation towards PURPOSE even in the contexts where the situation is not likely to be the participant’s intention. Consider one of the current experimental examples of RESULT, which was judged to be unnatural with the modal auxiliary *can* and excluded from Experiment 4.3b:

(42) **R:** Kate drinks a **lot** of water and *as a result* takes frequent toilet breaks.

---

\(^45\) This finding is probably related to the fact that the participants were presented with the connective *as a result*, which is preferred in non-volitional contexts (see Chapter 5 below, sections 5.2 and 5.3 for a detailed discussion).

\(^46\) Three experimental RESULT events involved an inanimate Subject in the subordinated clause (e.g. *Lean always cleans the kitchen with bleach, so the kitchen smells fresh*.). Interestingly, the PURPOSE continuations always involved an animate Subject, identical with that in the matrix clause. More research would be needed in order to check whether the inanimacy and hence change of the Subject in the subordinated clause has an effect and the sentence gets a resultative reading even with *can.*
According to our world knowledge, voluntary taking frequent toilet breaks is not common in a normal situation and hence the context requires an additional qualification. However, as soon as the auxiliary can is added, the inference of intentional acting and desirability of the outcome arises:

(43) **P?:** Kate drinks a lot of water so she can take frequent toilet breaks.

In fact, interpreting (43) as PURPOSE is quite likely, though several interpretations of this situation are possible: purposive – will be able to and resultative/inferential ones: is able to/is likely to. The purposive reading is necessarily based on a specific inference about an underlying goal of the events (e.g. taking break from boring work routines), whereas the resultative interpretations are ambiguous between a specific situation and more general rules of causality. This means that the purposive interpretation is a more specific and hence more informative alternative. Consequently, the modal verb can is more likely to be interpreted as expressing the ‘root’ sense typical of PURPOSE, even in context that is not unambiguously desiderative.

Interestingly, the specific inference of the underlying goal intrinsic to the purposive interpretation of can in fact stems from our world knowledge. This is why we can felicitously interpret (43) as PURPOSE – the situation is not fully compatible with our world knowledge about desired effects, but can be interpreted as a specific goal (situation-dependent). The same principle applies, mutatis mutandis, to the resolution of RESULT examples:

(44) **R:** They say the formalities are over, so he can be brought over and buried. (BNC: HTR 3012)

The relation in (44) is quite clearly one of RESULT, but it appears to have all necessary components of PURPOSE – the main clause is agentive and intentional and the subordinate clause conveys an unrealized intended situation via the modal marker can. The only signal of RESULT is the presence of the comma. The previous context of (44) supports the resultative reading (the sentence was uttered in the context of a finished police examination of a dead body and so the auxiliary can conveys permission to proceed with the burial), but it is possible to make a resultative inference simply referring to Wierzbicka’s (1988) semantic primitives, argued to be intrinsic to PURPOSE. The features of WANTING, THINKING and BECAUSE are virtually absent from the context of an unavoidable necessity conveyed in (44). Thus the sentence cannot be analyzed as: “They say the formalities are over, BECAUSE they THINK: ‘We WANT him to be brought over and buried; if the formalities are over, he can be brought over and buried’”. This meaning is not compatible with our world knowledge about necessities and so the interpretation of (44) cannot be purposive. These observations also confirm the aggregated view on the PURPOSE relation as a combination of conditions and features so con-
strained to that the absence of merely one of them precludes the purposive interpretation.

In this context the findings of the current experiments that consistently show that PURPOSE has a potential to be left unmarked are quite surprising, since the connective is one of the mandatory components of the relation. However, according to Croft’s (2010) analysis of the Pear Stories, an unambiguous marker may not be necessary to convey PURPOSE in English and at least in some cases the relation could be left implicit. This observation applies first of all to more stereotypical event-pairs, such as selling something in order to earn money. The rates of PURPOSE identifications for unambiguous and ambiguous event pairs as well as the findings of the Sentence completion task suggest that certain scenarios may be more stereotypically purposive than resultative (and the other way around). This means that if all other PURPOSE ingredients are present, overt marking can possibly be omitted.

Despite this observation, the corpus findings show a very strong tendency to signal PURPOSE in language production, which is in line with both arguments found in the literature that the relation usually is or has to be marked (Huddleston & Pullum, 2002, Jasinskaja, 2007; Schmidtke-Bode, 2009) and with the findings from other corpora, where no Implicit PURPOSE was identified either (Taboada, 2006 and BioDRB corpus annotations, Yu et al., 2008). Further, the unambiguous phrase in order to generates 11549 hits in the written part of the BNC, whereas so tagged as ‘conjunction’ returns the total of 20480 multifunctional uses. It can be therefore concluded that there is a very strong preference to mark PURPOSE unambiguously with in order to in English written discourse in comparison with the multifunctional so. This connective is a strong marker of PURPOSE only if accompanied by other contextual signals, such as the modal auxiliary can. Interestingly, in spite of their obvious potential to convey RESULT, so and can together are very infrequent in this function (see section 4.3.2.2); however, the auxiliary can is the third most frequent verbal collocation of therefore and thus,47 where it unambiguously expresses RESULT.

The last question to answer is therefore the reason underlying the strong tendency to overtly mark PURPOSE found in the corpora, despite the evidence that the purposive meaning can be retrieved from unmarked contexts. There are several reasons for that: the semantic complexity of PURPOSE as consisting of two causal operations (Sanders et al., 1992), the ambiguity of the relation between backward and forward temporality (cf. Asr & Demberg, 2012) and the syntactic integration of a PURPOSE clause with the matrix clause. These factors are at least partly responsible. On a simple neo-Gricean view it might be that speakers want to cooperate and use overt marking in order to lessen the potentially bigger cognitive effort of deriving purposive

47 These two are the most frequent one-word resultative connectives in the BNC (after so).
inferences from unmarked event pairs. Needless to say, naturally produced relations are not as simple and stereotypical as the experimental items and therefore some may not be interpretable without marking. At the same time, the hearers seek to find meaning beyond what is said, and so may infer PURPOSE even from unmarked segments.

The problem with this explanation is that in neo-Gricean pragmatics the expectation of cooperative communication between speakers and hearers is believed to lead to iconicity (also called ‘the division of pragmatic labor’; Horn, 1984). Iconicity means that marked meanings (here: PURPOSE) are associated with marked forms (so), and unmarked meanings (here: RESULT) are associated with unmarked forms. Further, in theories like Bidirectional optimality theory (Blutner, 2000; Zeevat, 2000), partial iconicity has been identified as an even more common pattern (see e.g. Gaertner, 2004). Partial iconicity concerns situations when marked forms go with marked meanings, while unmarked forms are ambiguous. Yet, the present corpus study found that the marked form (so) can be used for both the marked meaning (PURPOSE) and unmarked meaning (RESULT), while the unmarked form (i.e. no connective) can only felicitously be used with the unmarked meaning. This means that neither of the above pragmatic principles can fully account for the patterns of marking of PURPOSE and RESULT.

The most credible explanation of the marking requirement is therefore likely to pertain to the intrinsic nonveridicality of the PURPOSE relations, which prompts overt signaling in language production. This simple production requirement justifies the early theoretical descriptive characterization of PURPOSE as a relation that is inherently hypothetical and hence difficult to retrieve without a connective. However, the particularly complex nature of PURPOSE as a constellation of several mandatory components is another vital factor in the context of overt signaling, for nonveridicality is related to much wider a variety of linguistic modalities and relations and yet does not always lead to the same ecological pressure on marking as in the case of PURPOSE. This concerns first of all RESULT relations, which can be, but prototypically are not nonveridical. The discussion of nonveridicality and marking requirement will be taken up again in Chapters 6 and 7, while the next chapter is concerned with the fine-grained differences between several types of RESULT relations as defined by Sweetser (1990).
5 Volitional and Non-volitional RESULT relations with *as a result* and *for this reason*

The main idea followed in the current part of the study is that in addition to the distinction between RESULT and PURPOSE made in Chapter 4, there are two other closely related yet different RESULT coherence relations, i.e. Volitional and Non-volitional RESULT. These two relations were first described by Mann and Thompson (1988) as part of RST theory, but that particular account does not provide precise information on how to distinguish between the range of examples to be found in natural discourse. The variety stems from the fact that volitional events, prototypically bound to the real-world discourse domain, share the property of originating from the mind of a conscious participant with events in the domain of conclusions and speech acts. The nature of this kind of relations within the same discourse relation was later undertaken in both theoretical literature and empirical studies (see Chapter 2), mainly on Dutch, German and French causal connectives (see 5.2 below). However, no detailed investigation of English discourse exists. Therefore the current study sets out to investigate two corpus samples of naturally produced English RESULT relations from the point of view of conceptual and linguistic features that contribute to their intended interpretations. These features also include two discourse connectives: *as a result* and *for this reason*, the extent of the overlap between the semantic information they encode and the relation type they mark.

5.1 Inspirations and research questions for the present investigation

Similarly to Chapter 4, identifying an unambiguous way to linguistically mark the distinction between the two RESULT relation types is desirable here. As mentioned in Chapter 2, connectives are often specialized in marking specific causal categories in different discourse domains. This principle applies also to the basic distinction between Volitional and Non-volitional RESULT relations (see Pander Maat & Degand, 2001; Sanders et al. 2012; Stukker & Sanders, 2009; among others). Consider:
109

(1) **NVR**: It rained all night. *As a result* the streets are all wet.\(^{48}\)

(2) **VR**: It rained all night. *For this reason* the conference organizers cancelled the morning boat trip.

In (1) the **RESULT** segment evokes a real-world outcome independent of anybody’s will or intention and, in this particular case, quite likely to be recurrent (‘the rule of universal causality’, Searle, 1983: 118). Example (2), by contrast, conveys a decision-making process by a conscious participant, which is a less predictable/universal outcome. These observations indicate that (1) and (2) indeed express two related but differing types of the **RESULT** relations that are categorized by speakers in two different ways and, consequently, differently marked. The idea that discourse connectives specialize in signaling different causality types and language users consistently choose markers that are ‘compatible’ with the relation type they intend to communicate has been empirically confirmed in several corpus studies on French, German and Dutch (Pander Maat & Sanders, 2000; Pander Maat & Degand, 2001; Degand & Pander Maat, 2003; Pit, 2003; Zufferey, 2012; Stukker & Sanders, 2009; 2012; Sanders & Spooren, 2015). However, as the same research often indicates, despite the existence of even very strong preferences, the connectives are hardly restricted to one discourse domain and can be used in other contexts (Stukker & Sanders, 2009:3). These findings may have particularly interesting implications for the English language, as English connectives, unlike their French or Dutch equivalents, are believed to be less constrained to marking relations in just one discourse domain (Sweetser, 1990; Sanders & Spooren, 2015:55). Thus, even though the two connective phrases analyzed here are anticipated to exhibit certain tendencies, they may indeed be quite flexibly used across discourse domains.

Interestingly, English causal connectives have mainly been used as a reference point or ‘control group’ for analyses of other languages, or in studies where constructed coherence relations were discussed. The phrases *as a result* and *for this reason* are both hyponyms of *so* (Knott & Mellish, 1996; Knott & Sanders, 1998), but are assumed to specialize in marking different causal events (cf. (1) and (2)). However, these assumptions have little (if any) empirical support. The phrase *as a result* quite often figures as an example of a ‘classic’ signal of Non-volitional **RESULT** in constructed examples, whereas *for this reason* has only been briefly mentioned by Knott and Sanders (1998:155) in their substitutability test motivating Sanders et al.’s (1992) taxonomy of coherence relations. In natural English, *for this reason* is (similarly to *as a result*) quite formal and used mostly in written language. It is also not very frequent (approximately 789 target instances in the BNC),

\(^{48}\) Non-volitional **RESULT** relation will be referred to as **NVR** and Volitional **RESULT** as **VR** throughout the present chapter.
which suggests that it may have a limited range of uses. In fact, the phrase has been argued to be constrained to semantic relations (in terms of Sanders et al. 1992) or real-world volitional relations (in terms of Sweetser 1990) (Knott & Sanders, 1998:155).

The present study thus evaluates two connectives, both believed to specialize in marking relations in the real-world domain. Furthermore, they also have similar syntactic functions. As argued in the literature, the underlying reason for the connectives to specialize in marking different discourse domains is syntax (see also Chapter 4, section 4.6 for the discussion of PURPOSE and RESULT). For instance: coordinating constructions (and hence connectives) are assumed to be better suited to express illocutions than subordinating constructions (Sanders & Spooren, 2015:64). Yet, as the studies of Dutch causality indicate, connective phrases which have the same grammatical status can be specialized in marking causality in different discourse domains also. This seems to be the case for (1) and (2) above, but should be more systematically analyzed. The present investigation will therefore focus primarily on the conceptual distinctions signaled by different linguistic features in keeping with the idea that different causality types can be signaled by a variety of lexico-grammatical elements, including discourse connectives. Importantly, the chapter demonstrates how the RESULT relations are construed from the vantage point of the vital notions of volitionality, intentionality and agentivity. In the existing research there is rather little synthesis as to what these properties really involve and how they can be identified in discourse. This investigation is therefore hoped to provide a strong background to the discussion of subjectivity construal in Chapter 6.

Apart from the corpus analysis, two experiments were conducted in this part of the study in order to verify whether the presence of a volitionally acting participant is sufficient to prompt the reader to rephrase the ambiguous connective so as for this reason. The experimental findings confirm this hypothesis and thus carry implications for the RESULT type identification. Also, since in a previous corpus investigation Volitional RESULT has been found to be overtly marked more frequently than Non-volitional RESULT (Taboada, 2006), the experimental study tests the effect of the presence of the explicit connective on the relation interpretation. These considerations bring us directly to the research questions for this chapter:

(i) What are the parameters of the distinction between the Volitional and Non-volitional RESULT relations? How can we define and operationalize these parameters?

(ii) To what extent is there a mapping between the relation type and the specific connective?
(iii) What are the features of the interaction between a specific discourse connective and the relation type?

(iv) Are the discussed features of the distinction between Volitional and Non-volitional RESULT relations sufficient to retrieve the intended relation type if marked with an ambiguous connective? Does marking matter for this distinction?

The chapter is organized as follows: section 5.2 provides theoretical considerations of the notions of volitional action and intentionally acting participant. Section 5.3 presents the corpus study including the method of coding the naturally produced coherence relations and the statistical results of the analysis. Finally, section 5.4 discusses the results of two experiments and how they confirm both theory-based predictions and also corpus findings concerning the features of the volitional-non-volitional distinction and interaction between a given connective and the relation type.

5.2 Background.

This section synthesizes previous approaches to the distinction between Volitional and Non-volitional RESULT and discusses the concept central to this distinction, i.e. a conscious participant responsible for the construction of causality – a Subject of Consciousness (SoC).

5.2.1 Previous theoretical considerations

As mentioned in Chapter 2 (section 2.1.1), according to RST definition, Volitional RESULT presents in S1 a situation that could have caused the situation in S2, while S2 presents a volitional action or a situation that could have arisen from a volitional action. Consider the following example (Mann & Thompson, 1988: 275):

(3) VR: Writing has almost become impossible so we had our typewriter serviced and I may learn to type decently after all these years.

The S2 segment in this example presents a human subject making a conscious decision about having the typewriter serviced based on certain external circumstances (it had become impossible to use the machine). Therefore the RESULT can be deemed volitional. By contrast, in Non-Volitional RESULT, as in (4) below, S1 also conveys an external circumstance, while S2
presents an outcome of the events in S1 — a non-volitional event independent of anybody’s intention or decision (no one intended people to be injured).

(4) **NVR:** The blast, the worst industrial accident in Mexico’s history, destroyed the plant and most of the surrounding suburbs. Several thousand people were injured, and about 300 are still in hospital.

Mann and Thompson’s taxonomy offers quite a straightforward distinction between the two types of **RESULT** but does not provide the whole picture of what the difference actually involves. Particularly the definition of the **RESULT** part of the Volitional **RESULT** relation seems vague, as the formulation “situation that could have arisen from a volitional action” implies that any situation can be regarded as a volitional outcome. This imprecise description of a volitional outcome also pertains to the lack of finer distinctions between relations within the same relation in RST, which are crucial for the types of events located in the intentional mind of an SoC.

Recall from Chapter 2 (section 2.2) that an SoC is an intentional and volitional participant of causal relations in the three discourse domains as defined by Sweetser (1990) — in the real-world as the Agent performing a volitional action, and at the level of metalinguistic events as the speaker/concluder (Pander Maat & Sanders, 2000; Pander Maat & Degand, 2001; Stukker & Sanders, 2009; Sanders et al. 2012). Consider the following types of **RESULT** relations:

(5) The temperatures were below 0 for weeks. So the ground was frozen. (non-volitional)

(6) It was a hot day. So Jan went swimming. (real-world)

(7) Their car is not there. So they are not at home. (epistemic)

(8) We are having a party. So what do you want to drink? (speech act)

In non-volitional relations there intrinsically is no SoC responsible for causality. In real-world volitional relations, by contrast, it is the explicitly verbalized character who functions as an intentionally and volitionally acting SoC and thus becomes the source of causality of the relation (Stukker & Sanders, 2009; Sanders & Spooren, 2015:59). In epistemic relations it is the current speaker who is the SoC, since she acts as the concluíer. Similarly, in speech acts, the speaker makes an utterance, which is doing an action in itself (Austin, 1955:5). Consequently, the taxonomy of **RESULT** relations can be illustrated as follows:
Fig. 5.1 Taxonomy of RESULT coherence relations.

Figure 5.1 suggests that real-world volitional, epistemic and speech act relations can be discussed under the umbrella term ‘SoC RESULT’ (yet clear distinctions according to the domain of interpretation will be made in the following). No-SoC relations are tantamount to non-volitional relations.

The question to ask is how to interpret naturally produced language as to the presence of an SoC and what features specifically indicate that she indeed is an intentionally acting participant. The most obvious candidates for this role are human beings, as in (2) and (3) above. However, the presence of an acting participant in the relation is not a guarantee of volitionality. Consider (example borrowed from Stukker, Sanders & Verhagen, 1999:72):

(9) NVR: Monday his train to Amsterdam arrived at another platform. He got on the train to The Hague.

As Pander Maat and Degand’s (2001:216-ff) argue about (9), there is no conscious participant in this relation. The subject of S2 (he) is only a potential candidate for an SoC responsible for causality in this passage, because the course of events falls outside the domain of his intentions. This is in line with the RST distinction (see also Sanders & Spooren, 2015:67) between volitional and non-volitional relations in the real-world domain, which is based on a judgment whether the relation involves an intentional act or not. Getting on the wrong train is not intentional and so the human participant in (9) is involved (as a kind of experiencer) in the RESULT segment, but not in the causal relationship.
Recall that one can only intend an action which one has control over as an acting participant (Jackendoff, 1995, Chapter 2). The implicature of the Subject’s control over the event has also been mentioned in the accounts of a volitional action in the literature (Huddleston & Pullum, 2002: 193). Neither in (4) nor in (9) do the subjects have control over the events and therefore the RESULT arguments are not volitional. By contrast, in both (3) above and (6) the subjects were potent to act according to the circumstances. This property is a paramount condition to categorizing the RESULT relation as volitional, despite the existence of several other criteria. Consider an example borrowed from Pander Maat and Degand (2001:218):

(10) **VR**: Her/my plane takes off tomorrow at 6 a.m. She/I left the party early.

As they argue, the causal argument S1 in (10) is not just a state of affairs in the real world (though, apparently, one could argue in this way), but its representation by the protagonist. In volitional causal relations the protagonist is aware of the motivational relation underlying the sequence. This means that she goes home, because she generally accepts morning trips to be a good reason for leaving a party earlier. Most importantly, the Subject of (10) is potent to act according to the circumstances, unlike the protagonist of (9) above, who simply had no control over the course of events. Even more obviously, the human participants injured in the blast in (4), had no control whatsoever over the circumstances. It seems therefore that we can refine Pander Maat and Degand’s (2001:216) account of non-volitional relations which treats them as ‘states of affairs taken as facts’ by adding a necessary requirement that they always involve the protagonist’s lack of control and power over the relation understood as a ‘power to act’. As to volitional causality, it should be evident now that the protagonist’s awareness, her intentions and acceptance of the underlying relation as a motivation or reason to act are necessary but not sufficient conditions for the relation to be volitional. However, the ability to realize the event is the most prominent component of a volitional action.

As mentioned at the beginning of this chapter, it has been argued in the literature that discourse connectives are usually better suited to mark some relation types than others (Verhagen, 2000; Stukker & Sanders, 2009; 2012).

---

49 Note that the analysis of this example does not change with regard to the grammatical person and it is the explicitly mentioned Subject who is responsible for the volitional action of leaving the party in both cases (Sanders et al., 2012:201). More discussion follows in Chapter 6 (6.3.1).

50 The access to the protagonist’s mental domain could have been made explicit in S1, as in *She thought the guests were boring. She left*. Yet, as Pander Maat and Degand (2001:220) argue, it is most commonly left implicit and treated as part of the assumptions inherent to the volitional interpretation.
Interestingly, the felicitousness of a connective in the context seems to depend on the degree of control the participant has over the relation. The fact that the participant of S2 in (11) below has no control or awareness of the events is likely to be the reason why *as a result* is a more natural a choice to mark the relation than *for this reason*. Consider (the original example of taken from Jasinskaja, 2007:17; the connectives in the brackets added for the purpose of the present study):

(11) **NVR:** She fed him poisoned stew and *so*/*as a result/*for this reason* he died.

In order to check which of the two paraphrases of *so* proposed in (11) is more suitable, ten native speakers of English were consulted in the current study. They unanimously agreed that *as a result* was the felicitous alternative and explicated that *for this reason* seems unacceptable in this context, as it implies deliberate acting by the protagonist of S2 (*he*). Such an interpretation is not likely in the case of dying (!!). Note that the protagonist of S1 (*she*) in (11) acted intentionally, but the connective is compatible with the content of S2 whose subject is not a conscious participant of the causal relation. This further confirms that *as a result* is a marker of RESULT (cf. Huddleston and Pullum, 2002; see Chapter 2, section 2.1.4).

The phrase *for this reason* could be used in (11), but only if the RESULT argument also was constructed from the perspective of a voluntarily acting participant:

(12) **VR:** She tried to feed him a poisoned stew and *so*/*for this reason/*as a result he left her.

Note that in the context of (12) *as a result* would sound, as Pander Maat and Degand (2001:234) put it, “rather silly since it suggests that the speaker did not act intentionally at all”. Ten native speakers of English were consulted on this example in the current study and found the phrase infelicitous in (12). As they argued, *as a result* should be avoided in any intentional and/or mental activity contexts. This intuition can be systematically tested by varying the discourse markers and investigating possible tendencies, constraints and ‘non-prototypical’ uses. It therefore seems that discourse connectives in-

---

51 There is a certain register clash between the connectives and the examples in (7) and (8). However, the persons consulted were asked to disregard this problem and judge on the appropriateness of the connectives as conveying the character of these particular RESULT relations.

52 On the most prototypical interpretation, since no other information is provided.

53 According to Stukker and Sanders (2009: 23), despite common tendencies for the connective to signal certain discourse relations, there are always usages that can be regarded ‘non-prototypical’, where prototypicality is defined in terms of usage frequency, see also Stukker et al, 2012:123 (Chapter 6, section 6.1).
deed exhibit tendencies to mark certain relation types, but some connective expressions are generally felicitous across the three discourse domains, while others are more restricted (Dancygier & Sweetser, 2005). The tendencies pertain to the presence and role of the SoC in a given relation and have been empirically confirmed in several studies on French, Dutch and German (e.g. Keller, 1995; Pander Maat & Sanders, 2000; Pander Maat and Degand, 2001; Stukker & Sanders, 2009, 2012; Sanders & Spooren, 2015). For instance, the Dutch connective daardoor (as a result) is restricted to non-volitional relations, and so it could not be used with (6) – (8) above, whereas both dus (so) and daarom (that’s why) would be felicitous in those contexts, for they can mark real-world volitional and epistemic contexts (e.g. Sanders et al., 2009:21).

Dutch, however, has been argued to divide the semantic space of causal relations more precisely than English, where since can signal both epistemic relations and speech acts and because (on a par with so) covers all causality types (Sweetser, 1990; Stukker & Sanders, 2102:185). The question is thus to what extent the aforementioned findings from other languages will carry valid implications for English. Consider the connectives as a result and for this reason in the context of a Non-volitional RESULT (13), real-world Volitional RESULT (14), epistemic (15) and speech act (16) RESULT relations:

(13) The temperatures were below 0 for weeks. So/as a result/*for this reason the pond was frozen.

(14) It was a hot day. So/? for this reason/*as a result Jan went to swim.

(15) Their car is not here. So/*as a result/*for this reason they are not at home.

(16) We are having a party. So/*as a result/*for this reason what do you want to drink?

As indicated here as a result is felicitous only in the non-volitional event (13) and does not seem compatible with any of the remaining relations. More interesting is the phrase for this reason, which has been demonstrated to signal the RESULT relations with an intentional SoC (see (2) and (12) above), but appears somewhat unnatural with the real-world Volitional RESULT in (14). It is also definitely infelicitous with both the epistemic RESULT (15) and speech act in (16). The question can therefore be asked whether these examples mean that the analyzed connectives are confined to marking causality in just one discourse domain. Such a hypothesis seems quite unlikely and, in fact, can be easily disproved in the analysis of natural language instances:
However well you treat them, after two to three years these foliage begonias lose their compact appearance and look straggly. For this reason consider them temporary houseplants and propagate new stock each year. (BNC: ACX 2152)

Many other cases raise only hints, come from uncertain contexts, or are doubtful for other reasons. As a result it is not worth discussing them fully here. (BNC: B2P 1334)

As should be clear from (17), the phrase for this reason can occur in speech acts (with a directive here), and as a result is operative in the context of a conclusion (18). This observation is in line with the conclusions of the aforementioned cross-linguistic studies, which commonly found that there is no one-to-one mapping between the connective and relation type (see Stukker & Sanders, 2012:171 for details). So despite the fact that neither for this reason nor as a result seem prototypical signals of speech acts or epistemic relations, they apparently can be used in these contexts under specific circumstances also in English. The interesting question is, then, what kind of contextual circumstances allow the investigated connectives to occur in such less prototypical types of the RESULT relations.

On a final note, the last criterion which has been argued to contribute to the distinction between the Volitional and Non-volitional RESULT relations is their temporal sequencing. As Pander Maat and Degand (2001:217) explain it, in non-volitional relations the state of affairs $p$ is valid at time point or interval $t_1$ and the state of affairs $q$ is valid at $t_2$, so $t_2$ cannot precede or start earlier than $t_1$; and, in the case that $t_1$ and $t_2$ are not identical, the causal event itself takes place somewhere between $t_1$ and $t_2$. By contrast, Volitional RESULT is not constrained in the same way and the resultative event can in some cases precede the causal event in time, as in (10) above where $q$ (she left the party early) starts earlier than $p$ (her plane takes off tomorrow at 6 a.m.). This fact, as Pander Maat and Degand (2001:218) argue, proves that volitional causality does not relate to the states of affairs per se. Instead, it relates the representation of a state of affairs to the performance of a certain action by the protagonist.

Whereas this argument seems valid for all the instances of Non-volitional RESULT above, the picture becomes more complicated with a human protagonist where the course of events falls outside the domain of her intention, as in (11) above:

(19) Her plane takes off tomorrow at 6 a.m. She is afraid she will be late.

Also in this case the RESULT argument conveys a situation that is prior to what is a yet-unrealized causal event. Since feeling afraid is a state unrelated to any action, which one usually has not much control over, the event in S2
is a Non-volitional RESULT. This suggests that the presence of a conscious participant and her contribution to disambiguation between different relation types is an interesting question to investigate further. Another question is how discourse connectives contribute to the interpretation, particularly when the interpretation is not straightforward. The discussion and findings are presented in section 5.3 below.

5.3 Corpus study

The present chapter focuses on the interpretational potential of a stretch of discourse and will pinpoint the conceptual properties of the different types of RESULT relations with a SoC and those that lack an SoC. The discussion will also demonstrate the extent of the overlap between the connectives and the type of coherence relation, which should subsequently contribute to the fine-grained analysis of the interplay between the coherence relation type, the semantic features used to convey it and discourse connective present.

It is important to note that the semantic information contributed by the connectives was not treated as determinant in the process of coding for the relation type. The reason for that pertains to the goal of the present study, which is to test what kind of tendencies the connectives exhibit. Despite certain intuitions, the examples (17) and (18) above suggest that the investigation may yield results different from what could be intuitively anticipated. This decision is also in line with the more general assumption adopted here that discourse connectives do not unequivocally determine the coherence relation type; yet they definitely contribute to the interpretation.

5.3.1 Criteria for annotation of corpus instances

Recall from Chapter 3 (section 3.1.3) that the present corpus samples of as a result and for this reason were obtained from the written BNC material and include 250 examples of the target uses of each of the connectives. As mentioned, this part of the investigation will look specifically at the distinctions between RESULT relations with SoC and no SoC. Unless analytical criteria are already available, any quantitative study must necessarily be preceded by qualitative analyses that will lead to establishing suitable measures. In the previous studies on the topic the principles according to which volitionality and intentionality can be identified in discourse were discussed quite briefly and often illustrated by means of simple examples. For this reason the following sections set out to elaborate on this aspect. It is hoped that the discussion will help further refine the notion of volitionality so that the qualities of
Volitional and Non-volitional RESULT and the forms of their expression can be more easily identified in natural language.

Some of the problems discussed in the next sections are related to the specific discourse domain. Particularly the presence of an intentionally acting participant (SoC) is differently realized in different contexts – in the real-world domain the SoC is one of the relation’s participants (including the current speaker – I), while in the epistemic and speech act domains the SoC is identical with the implicit author/speaker. However, certain questions (at least potentially) can be valid across the domains, which will be signaled in the following. Recall that assigning the example to a particular discourse domain is based on Degand and Sanders’s (1999:5) paraphrasing tests (see section 2.1.2 in Chapter 2 for details).

5.3.1.1 Distinction between Volitional and Non-volitional RESULT in the real-world domain

To begin with, a rather straightforward example of a Volitional RESULT relation with a 1st person SoC making a conscious decision in the real world is provided in (20) below:

(20) Recognizing that the apparently low incidence of the sudden infant death syndrome was difficult to explain wholly in terms of currently recognized risk factors, we sought to identify other differences in infant care practices that may contribute to the lower incidence of such deaths in Bangladeshi babies. For this reason we did not work with families who had lost an infant: instead we investigated the ordinary patterns of beliefs about infants and their care in two different populations, mothers of Welsh and Bangladeshi infants in Cardiff. (BNC: CNA 360)

A caveat related to working with written genres concerns the question whether the volitional actions that pertain to the site of discourse organization should be perceived as real-world events:

(21) Historically the computer has been seen as a device for performing calculations (as evidenced by the term "computer") and for this reason we commence our discussion of data-types with the fixed-point binary format. (BNC: EUS 381).

Admittedly, reports on events in the outside physical world and those that convey volitional decisions pertaining to the process of discourse structuring could be distinguished as slightly different subtypes of real-world coherence relations. However, the present study does not intend to posit any potential subcategories and so volitional actions of the kind conveyed in (21) are
treated on a par with (20). There are two reasons for that: first, (21) does not convey an epistemic relation or a speech act, and in fact can be perceived as a decision made in the physical world; second, decisions made by writers result in certain organization and content of a text, which can be regarded as a tangible real-world outcome. Another study could develop the topic of potential differences between these two situation types, whereas in the current work they were both coded as real-world Volitional RESULT.

Recall from Chapter 2 that judging on volitionality and intentionality involved in the event is not always straightforward due to contextual attenuation of the Subject’s responsibility and involvement in the given Cause-RESULT relationship. The case of Farmington police taken from Mann and Thompson (1988) (repeated as (22) below; see Chapter 2, section 2.2, ex. (31)) can be understood in two different ways, since the verb *have* in ‘had to help’ may convey either a command that the police were obliged to fulfil, or a metonymic shortcut pointing to a voluntary choice:

(22) Farmington police had to help control traffic recently, when hundreds of people lined up to be among the first applying for jobs at the yet-to-open Marriott Hotel.

It seems this example could be categorized as ambiguous between non-volitional and volitional situation, given that naturally produced language instances do not have to be absolutes and will sometimes represent a continuum between the volitional and non-volitional poles. The present analysis, however, aims at creating two categories, which is a somewhat idealized approach, but every process of coding is inevitably based on the idealization chosen. Consider an example from the current BNC sample, which illustrates potential problems with the volitional-non-volitional distinction:

(23) The Ministry of Agriculture has said that sooner or later the pound will get an easier ride on the currency markets and that cereal farmers, who since Black Wednesday have almost doubled their projected income, must guard against being caught by sudden changes. *As a result*, grain farmers, who already include the latest reports from the agricultural futures markets in their morning reading, are learning to sniff the financial air through the latest exchange rate columns and business page comment. (BNC: K5H 2742)

---

54 Among the samples of 250 instances of *as a result* and 250 instances of *for this reason* there was a total of seven instances of *as a result* (4) and *for this reason* (3) deemed ambiguous. These were not included in the samples used for the quantitative analysis further on.
The relation was coded as Non-volitional RESULT, even though the verb learn itself implies intentional and volitional action. However, what we observe in S2 in (21) is the change in the verb’s status from generic to specific (Langacker, 2000:301), which is cued by the progressive aspect. In this particular case it is unlikely that the grain farmers have a volitional role in bringing about the result conveyed in S2. Recall from 5.2.1 above that the definition of a volitional action adopted in this study is based on the assumption that that the Subject is in control of the causal event (Huddleston & Pul-lum, 2002: 193). A simple ‘action test’ (Culicover & Jackendoff, 2003:525) can help judge the character of the situation conveyed in (23). The test consists in adding the chunk ‘what X did was Y’ to the event under consideration, which identifies actions and is infelicitous with non-actions. Consider:

(i) What the grain farmers did was learning to sniff the financial air through the latest exchange rate columns and business page comment.
(ii) What Anna did was learn French in three months.

As we see here, the test is infelicitous in (i), even though there is no real syntactic mismatch between ‘doing’ and ‘learning’; however, there is semantic difference between ‘learning’ and ‘learning to sniff’. Consequently, (23) cannot be categorized as an action instigated by a controlling and intentional SoC. Controlled actions can be also detected by adding the adverb voluntarily or on purpose to the context, which would not be possible with (i), but seems to work with (ii). It should be noted that the higher the level of attenuation in the degree of the Subject’s control over the event (Langacker, 2002:307), the more infelicitous the Action test becomes. In sum – examples like (21) above were coded as Non-volitional RESULT with the help of Culicover and Jackendoff’s action-non-action test.

The next section will be concerned with the potential problems with identification of participants responsible for causality in the relations (i.e. SoC).

5.3.1.2 SoC identification across discourse domains

One important question that has to be considered in the process of categorizing events as volitional or non-volitional is the animacy of the protagonist. This feature relates to the ability of the protagonist to bring about the event (i.e. being the relation’s SoC). Prototypically, only animate entities can be volitional and intentional, but inanimate nouns quite often occur as metonymic volitional participants, for instance: The White House announced (Lakoff & Johnsson (1980:38)). The degree of an SoC’s involvement in such relations certainly differs:
(24) ‘The issues raised are so important and fundamental that an effective response is required by the auditing profession, rather than merely further efforts to justify the status quo.’ As a result, instead of sweeping the criticisms under the carpet, as has happened in the past, the document takes a more positive stance. (BNC: CBT 798)

Even though the volitional action in (24) may not be as clear as in the case of the White House, the relation definitely involves a metonymic reading, as the verb *take* conveys an action undertaken typically by an intentional Agent (author). So this example was also coded as Volitional RESULT.

Another category to consider is animate non-human Subjects – potentially volitional and intentionally acting Agents, discussed also in Chapter 2 (section 2.2). Consider:

(25) It [clean coat] is vital for temperature control, for cleanliness, for waterproofing and for controlling the scent-signaling of the feline body. As a result, cats spend a great deal of time every day dealing with their toilet, and in addition to the typical licking movements they perform repeated scratchings. (BNC: BMG 656)

Example (25) is problematic because its first argument could in fact be perceived as a reason or even motivation for the cats’ behavior. However, as argued, intentional behavior requires mind and sentience of the instigator (see also Dowty, 1991:572) and these primarily are attributes of human beings. Cats are, certainly, in control of their own actions, but the procedures like those in (25) above are more likely a biological imperative, which can hardly be said to be an intentional decision made by the protagonist on the basis of her perception of the circumstances (Pander Maat & Degand, 2001:234). Thus they do not seem to convey a volitional action in its canonical understanding discussed in section 5.2.1 above. Further, the situation conveys the generic traits of the species as opposed to specific behavior of an individual cat (there were three examples of relations involving animals in the current samples and all of them were generic), which suggests the reading of (25) as a report of the state of affairs in the world with no SoC. This particular example also illustrates the difference between real world events and pragmatically marked cases of personification, as it is unlikely that somebody would question the cat’s in Perrault’s *Puss in Boots* motivation for wearing the shoes. For all these reasons the relation in (25) (as well as the remaining three instances involving animals in the current sample) was classified as Non-volitional RESULT.56

55 No such instances were identified in the present samples.
56 This decision was also made because of the small number of examples involving animate non-human participants in the current samples. It is, however, possible to argue that the more
The last problematic aspect of the corpus coding for the presence of an SoC concerns the situation types related to beliefs and attitudes. Recall the constructed case of Miranda (ex. (29), Chapter 2, section 2.2 above) who chooses to believe in her husband’s fidelity for her child’s sake. Similar examples can be found in natural language:

(26) It is important that children have time to play, pursue interests and hobbies and take part in informal organised activities with other children and alone. For this reason we do not believe in formal homework on a regular basis. (BNC: K5C 2185)

The verb believe in (26) is not felicitous with Culicover and Jackendoff’s ‘action test’, which suggests that it signals a non-action and thus a low responsibility of the Subject for bringing about the event. However, the context of S1 suggests that the attitude expressed in S2 is a deliberate choice, for which the Subject can be at least tenuously responsible. Also, since the example is construed from the point of view of the 1st person, this fact implies a potential for the relation to convey a belief under the scope of the SoC’s conclusion. The same observation applies also to relations which report on the participant’s attitudes and feelings:

(27) My right hon. Friend the Secretary of State and my hon. Friend the Minister have achieved in the Bill a delicate balance between encouragement of the private utilities so that they remain profitable and strengthening consumer interests, without excessive bureaucracy. As a result, I have never been less tempted to support an Opposition motion, although I assure my hon. Friend who is the Whip on duty that I am never tempted in that direction. (BNC: HHW 10606).

Even though the state of being (or not being) tempted is not a prototypically an intentional act of volitionality, the example also looks like a deliberate choice of certain attitude. However, since in both (26) and (27) the choice pertains to the participants’ mental domain, the relations were coded as epistemic. What has to be mentioned at this point is that, in contrast with (26) and (27), beliefs, attitudes and feelings expressed in a 3rd person or by nominal Subjects are often unclear as to the presence of an intentional SoC. What such relations most commonly convey is a descriptive indication of another person’s attitudes and not the speaker’s direct participation in the construction of causality via her personal stance (Biber & Finegan, 1988: 97). There-

advanced forms of life and also those that are more related to people’s daily life observations (e.g. home pets) will be more likely perceived as intentional and volitional agents (see also Delancey 1984:208 for a similar discussion).
fore those cases were coded as non-volitional. An in-depth discussion of this question is provided in Chapter 6 (section 6.3.1), as they are very closely linked to subjectivity construal in the relation.

5.3.1.3 Participants in passive sentences.

Another potential problem encountered in the corpus investigation of naturally produced examples is ‘implicit agency’ (Wanner, 2009:113) of passive sentences without an overt Agent. Consider:

(28) Despite the grave financial situation that Italy is in today, and despite the total suspension of spending on public works, parliament has indicated that Venice should have absolute priority on account of the grave risk of permanent damage if nothing is done. For this **reason** additional funds were voted last year for the city. (BNC: CKY 15)

Since the passive is an Agent-backgrounding construction, Wanner (2009:127ff) argues that agency becomes a kind of ‘implicit argument’, which still can be quite easily inferred from the process expressed in the sentence. Wanner also presents substantial psycholinguistic and language use evidence that the argument of implicit agency in passive sentences is accessible to both listeners and speakers of English. This view is also adopted in the present study. Therefore examples like (28) were categorized as instances of Volitional RESULT, as there must have been a volitional and intentional Agent behind the voting. The same observation applies to the cases of a deliberate strategy dubbed ‘masked subjectivity’ as in (29) below, which involves passive voice used in academic prose in order to background the author (Traugott & Dasher, 2002:126):

(29) It is hoped that the reader will participate to some extent in this activity by sharing the perspective of the workshop team who worked on this text. **For this reason**, the original Hemingway version will be withheld for the moment as attention is focused on both the jumbled version and the reconstructions by the workshop participants. (BNC: J89 53)

Note, however, that both examples above involve an inanimate Patient, which is why deciding on the primacy of the contribution of the animate and volitional Agent\(^{57}\) (albeit concealed) to causality in the relation seems natu-
The situation may be different in the case of an animate and thus potentially volitional Patient. Huddleston and Pullum illustrate the problem by means of the following example (2002:679):

(30) Dick was wisely taught the tricks of the trade by Donald.

As they claim, in (30), Dick must have had an Agent role in initiating Donald’s teaching him the tricks and therefore we can in fact distinguish two Agents and two volitional acts here. This suggests a kind of control that the Patient may have had on the situation. However, this argument cannot apply to all cases similar to (30), as it is easy to conceive of a similar situation, which was forced onto the Patient, for instance:

(31) The 12 [political prisoners] also refused to wear their prison uniform. As a result, they were transferred to different prisons. (BNC: A03 603)

The verb transfer typically does not allow the Patient much control over the situation, particularly if she is imprisoned. However, despite the inferable agency behind the action of transferring, very little is known about the intentionality, motivation or decision-making process of the implicit Agent in (31). As a consequence, the intentionality and volitionality of this example are hard to pinpoint, and the resultative event is outside the human Patient’s control. The connective is also compatible with such an interpretation and so the decision was made to code such instances as Non-volitional RESULT (see Li, 2014:66 for a similar approach to volitionality of the passive voice).

The last concern of this section is the contrast between adjectival and verbal passives (Huddleston & Pullum, 2002:1436ff). Adjectival passives have a stative (non-action) interpretation, which points towards the non-volitional category, while verbal passives describe an event (action) and therefore can be considered volitional. Consider:

(32) There is emphasis on the end purpose or objective with relatively less attention to the means, partly so as to allow for individual differences and partly because the evidence accumulating in particular cases may change the direction of progress. For this reason skill training is sometimes called strategic training. (BNC: CLP 1538) (verbal passive - volitional)

(33) Thus the distribution of positively and negatively charged particles inside and outside the membrane is usually uneven. As a result, at

---

58 Again, one can in fact easily imagine a situation involving a displeased hotel guest who, on request, has been transferred to another hotel.
resting potential, the membrane of the axon is polarized and the inside of the membrane is slightly negative compared with the outside. (BNC: HSC 1161). (adjectival passive – non-volitional)

The distinction between the two relation types is only seemingly straightforward. The complication stems from the fact that the atelic verb in (33) does not describe an action, but implies an innate property; however, the same could in fact be argued about (32), as being called something may also be perceived as a kind of incessant property (e.g. This process is called hydrolysis.).

Huddleston and Pullum (2002: 1436) offer several tests of the status of passives: modification by very, occurrence with other verbs taking predicative complements (seem, look, remain etc.) and the negative prefix un- all point to the adjectival character. The modification test and the predicative complement test apply in (33). By contrast, none of those tests is operative for the predicate is called in (32) – neither any other verbs than to be nor the negative prefix seem to be acceptable in this particular context. The adverb sometimes additionally points to the verbal character of the passive in this case. Consequently, examples like (32) were tagged as Volitional, while (33) as Non-volitional RESULT.

What should be noted at this point is that the passive voice as part of the author SoC’s reasoning is interpreted as epistemic, as in (34) below:

(34) The provision of a single accumulator does not really correspond to the way in which most programs are written, since at any given point there are usually several intermediate values all of which are in the process of being manipulated. For this reason, a small array of accumulators (typically a power of two, such as 8 or 16) may be provided instead of a single accumulator. (BNC: EUS 1080)

A detailed discussion of the linguistic features that indicate the presence of a SoC will be provided in Chapter 6, but section 5.3.1.4 below sheds more light on how epistemic RESULT can be distinguished from the other relation types.
5.3.1.4 Epistemic domain

Epistemic RESULT is the next type of relation that originates in the mind of an intentional participant – SoC. Such contexts can usually be interpreted without any clear linguistic signals, as in the classic example below:

(35) The lights are out. The neighbours are not at home.

However, the problem is that conclusions intrinsically convey the speaker’s judgment and commitment to the premise that the conclusion is based on (Verstraete, 2008:771ff). This is very often marked linguistically by features argued to express the speaker’s commitment to the truth of the proposition, which encode illocutionary force, emotional affect and assessment of predictability and possibility (Halliday, 1970:349; Bybee & Fleischman, 1986:54; Biber & Finegan, 1989; Bruce & Wiebe, 2000; Drubig, 2001:44, among many others).

The features most interesting for the current study are ‘evidentiality and affect markers’ (Biber & Finegan, 1989:110ff) and modal auxiliary verbs, as they are commonly believed to contribute to the subjective perspective of the context and for this reason they will be discussed in greater detail in Chapter 6, for instance:

(36) But funding has been significantly less than other programmes, dissemination of materials less effective and leadership less dynamic. For this reason and probably also because Social Studies is not an area where governments readily welcome international initiatives, support for the programme is distinctly lukewarm.

The RESULT argument in (36) conveys a real-world situation embedded under the scope of a conclusion. The word probably in S2 is a clear marker of stance (doubt adverb) towards the content of the proposition and signals the argument-conclusion relation, along with the other underlined expressions. (36) thus conveys the author’s voice and is also evidence of the presence of an intentional SoC responsible for the causality. Needless to say, the relation is pervaded by stance and evaluative markers (e.g. the phrase distinctly lukewarm, which is a subject complement and so most directly contributes to the interpretation of the causal relation as an opinion) and its epistemic status emphasized by the connective. Therefore the relation was coded as epistemic under the umbrella term ‘SoC RESULT’.

Another relevant category are modal auxiliary verbs. These verbs form a more complex category due to their multifunctional nature. The question of how they mark the presence of a SoC in the relation pertains to the fact that
modality does not always modulate the meaning of the sentence, for instance:

(37) President Reagan found it difficult to reduce the US budget deficit for the same reasons. *As a result* US interest rates **had** to be kept at a high level. (BNC: J15 1764)

The presence of a modal auxiliary often suggests an epistemic character of the relation (Biber & Finegan, 1989). However, deontic modals of the type present in (37) above do not render the context a conclusion. In fact, it has been argued in the literature that the modal operator sometimes merely validates the axiom of necessity and thus cannot be perceived as contributing to the meaning modulation in the context (Zwarts, 1995:287). This argument seems to be valid here and, consequently, the examples such as (37) were coded as instances of Non-volitional RESULT relations.

The same principle applies also to modal verbs which do not mark the SoC’s contribution to causality, because they are only part of the RESULT segment and not part of the relation:

(38) There is now more awareness of the problems that methane generated in landfill can cause, and improved methods for detecting methane are now available. *As a result*, investigators are finding situations where the methane **could** come from one or more of a number of sources. (BNC: CFW 1179)

The RESULT event in (38) is a non-volitional effect that the participant (investigators) experiences (this interpretation is additionally endorsed by the presence of *as a result* here). We must not be misled by the presence of the modal verb **could** in this context (embedded at a lower level) into looking for the potential presence of a SoC. Such an interpretation is unlikely, not only because the auxiliary conveys a deontic possibility, but also because of its indirect contribution to causality construal – it is the finding that is the result in this context. Therefore such instances were coded as Non-volitional RESULT. A more detailed discussion on modality follows in Chapter 6 (section 6.3.2.2).

Modal verbs and stance markers are not the only avenues to express epistemic contexts in naturally produced language, for instance:

(39) Papers dealing with the issues of peace and violence are therefore especially influenced by Western preoccupations. *For this reason,* it is important to examine those societies that appear to contradict much of scientific and commonsensical explanation. (BNC: CJ1 25)
The relation in (39) was categorized as epistemic RESULT, as it seems to convey the author’s strong recommendation and conclusion. This category of utterances often includes a non-referential *it*. However, evidentiality and affect elements can in some contexts receive quite neutral interpretations. Examples will be discussed in Chapter 6 (section 6.3.2), while the next section briefly discusses speech acts.

5.3.1.5 Speech acts.

The last interesting question encountered in the process of coding of naturally produced RESULT relations involves speech acts. Consider:

(40) You cannot issue a command from within a program that will remove it. *For this reason*, you should avoid the use of suspended CLI files wherever possible. (BNC: JXG 2134)

As Jackendoff (1995: 199) argues, speech acts typically involve the speaker’s intending the hearer to come to know something or to produce a response. According to Sanders at al. (2009:18), an utterance like (40) is represented as a causal relation where the SoC intentionally performs an act of making the utterance in order to achieve a goal. This is also in line with Austin’s (1962) and Searle’s (1975) definitions, which state that speech acts are part of the doing of an action and not just ‘saying something’. Since actions are always volitional (Culicover & Jackendoff (2005:427), then performing a speech-act can be considered a metalinguistic intentional/volitional act. Furthermore, requests/imperatives require the thematic role of the implied subject ‘you’ to be a volitional actor (which is why stative verbs and non-self-controllable events such as: “*Grow taller!*” are unacceptable as speech act) (Jackendoff, 1995: 217), which makes yet another criterion for the annotation of examples like (40) as an SoC RESULT-type.

However, in the literature a yet another type of speech acts has been proposed. As Pander Maat and Degand (2001:225ff) argue, speech acts appear in discourse as a response to the interactional needs of a specific/potential interlocutor. Since such acts involve an assumption about the hearer’s views on the ensuing action, they are also entirely hearer-oriented. According to this proposal, paraphrases and summaries also fall into a category of speech acts (2001:226), dubbed as Speech acts Type 2. Consider:

(41) The provision of a single accumulator does not really correspond to the way in which most programs are written, since at any given point there are usually several intermediate values all of which are in the process of being manipulated. *For this reason*, (a) a small array of accumulators (b) (typically a power of two, such as 8 or 16) may be provided instead of a single accumulator. (BNC: EUS 1080)
Following Pander Maat and Degand, it can be argued that in cases like (41) the phrase (a) *a small array of accumulators* is later re-expressed as (b) *such as 8 or 16*. The assumption is that the interpretation of (a) in this context licenses an inference identical to the interpretation of (b) and that the latter one is more comprehensible for the hearer. However, the question of the potential difference in the SoC’s involvement in the canonical speech act and speech act Type 2 is left open in the original paper. What is proposed in the current study is that the hearer-directness (Pander Maat & Degand, 2001:227), obviously present in both types of speech-acts, is greater in the canonical type (40). Not only are overt signs of the illocutionary force (‘illocutionary force indicating devices’ such as performative verbs, Searle & Vanderveken, 1985:110) absent in Type2, but the illocutionary force of such utterances does not seem very strong. As Searle and Vanderveken (1985:121) argue, it is in fact possible to distinguish between different degrees of strength of the illocutionary point, for instance: ordering is stronger than requesting. It seems that the way the hearer is addressed and the uptake of the information in Type2 speech acts are not as direct as in a canonical illocutionary utterance. Consequently, Speech acts Type 2 do not affect the interpretation of the relation in the same way as the speech acts in terms of Austin (1962). As we see in (41), the relation does not change its character from epistemic on the basis of the information added in the brackets. Therefore, despite Pander Maat and Degand’s (2001:227) suggestion that this type of content embodies a specific kind of hearer-directness and should be distinguished from epistemic relations, the present study will not multiply the speech act categories and treat such instances as additional signals of the presence of an SoC in the relations as categorized by Sweetser (1990) (see Chapter 6, section 6.3.4.2 for details).

Section 6.3.2 below provides the quantitative results of the corpus samples analysis.

### 5.3.2 Quantitative results of the corpus study

In the 250 instances of *as a result* the majority of cases (190) of the connective were followed by an event categorized as Non-volitional RESULT. The remaining cases were judged to convey either an epistemic RESULT (44) or a content Volitional RESULT relation (16). The connective *for this reason* shows gradient preferences, as the majority of instances (117) are followed by an epistemic RESULT, 94 by a real-world Volitional RESULT and 12 by a speech act. The remaining 29 instances were coded as Non-volitional RESULT. Table 5.1 below provides more detailed, domain-related results of the corpus investigation:
The results obtained for all the relations with SoC under the umbrella term ‘SoC RESULT’ were collapsed and generated a total of 60 relations with *as a result* and 221 with *for this reason*. These numbers were then compared with the figures for Non-volitional RESULT with each of the connectives. There is a statistically significant association between the connective and the type of RESULT it signals (X-squared = 210.6063, df = 1, p<0.01.) as well as a strong positive association (φ =0.64). Furthermore, there are also individual tendencies for each of the connectives to mark certain relation types – *as a result* is overwhelmingly predominant with Non-volitional RESULT (76% of the cases), while *for this reason* seems somewhat gradient between the epistemic (46%) and real-world volitional (37%) domains. Yet it is slightly more frequent with epistemic RESULT relations (Z=-2.0827.; p <0.05.).

The tendencies found in the corpus confirm the initial predictions as to the lack of one-to-one mapping between the connective and the discourse domain. The English *as a result* is very strongly preferred with Non-volitional RESULT, but not precluded from epistemic contexts and real-world volitional relations. However, the phrase does not seem to occur with speech acts. *For this reason* shows a clear preference for the epistemic domain, but it is also quite common in real-world volitional events. It is also not barred from speech acts and non-volitional events. These findings are quite revealing in the light of the examples (14) – (16) in 5.2.1 above, which suggested that the phrase *as a result* is compatible only with Non-volitional RESULT, whereas the character of *for this reason* seemed entirely unclear. However, those were rather simplistic constructed instances, which seldom provide the

---

**Table 5.1** Distributions of *as a result* and *for this reason* over SoC and No-SoC RESULT types

<table>
<thead>
<tr>
<th>Connective</th>
<th>RESULT with SoC</th>
<th>RESULT with No-SoC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Real-world</td>
<td>Epistemic</td>
</tr>
<tr>
<td></td>
<td>domain</td>
<td></td>
</tr>
<tr>
<td><em>as a result</em></td>
<td>16 (6.4%)</td>
<td>44 (17.5%)</td>
</tr>
<tr>
<td><em>for this reason</em></td>
<td>94 (37%)</td>
<td>117 (46%)</td>
</tr>
</tbody>
</table>

---

59 This is the case for the Dutch *daardoor* constrained only to non-volitional events (Sanders et al., 2009:21).
same kind of linguistic information as naturally produced discourse. Such information can endorse and enable the connective’s presence in a given discourse environment, which explains the distribution of for this reason across the three discourse domains. A more detailed discussion of the interplay between the connective and the semantic features of the relation context follows in Chapter 6, whereas the next section engages in experimental testing of how the presence of a volitionally acting subject in the context of the relation influences the connective and relation interpretation.

5.4 Experimental study

The present corpus investigation has provided quite a clear picture of what kind of discourse environment the two investigated connectives tend to occur in. The findings differ from both the arguments found in the theoretical literature and from the initial intuitions about how the phrases may be used. Recall from section 5.1 above that as a result was usually regarded as a signal of only non-volitional relations, whereas for this reason was assumed to be a real-world volitional marker. In the naturally produced language, however, the tendencies turned out to be different both for for this reason, which occurs most frequently in epistemic relations, and for as a result, which can be found in real-world volitional and also epistemic relations.

Corpus work thus provides much more reliable evidence than intuitions and introspection; however, discourse investigations inevitably rely on the analyst and her intuitions. Those are often supported, but may also be induced by the rich discourse context. As Chapter 6 will show, there is a plethora of language elements that can prompt specific interpretation. By contrast, in the experimental environment, most of the features that may have a strengthening or weakening effect on the interpretation can be controlled for in a set of minimal pairs. In the current study these factors were: the volitional and non-volitional character of the RESULT events, the discourse domain, the direct effect of a specific connective and the grammatical person of the RESULT relation participant.

The first experiment carried out here was a Sentence completion task similar to that conducted in Chapter 4 (see section 4.4.1). Since those particular findings were useful for understanding the differences between the nature of PURPOSE and RESULT relations, it was therefore justified to engage in the same type of an experimental task again in order to obtain possibly most natural examples of Volitional and Non-volitional RESULT. Subsequently, the harvested sentences tested the correlation between for this reason and as a result in the contexts of real-world Volitional and Non-volitional RESULT relations. All the participants of the RESULT events were human beings either conveyed by a 3rd person pronoun or a noun phrase.
5.4.1 Sentence completion task for obtaining stereotypical instances of Volitional and Non-volitional RESULT

In order to obtain Volitional and Non-volitional RESULT relations experimentally, 24 sentence beginnings in the present tense were manually constructed. They were all non-agentive and used stative (non-action) verbs as predicates. These two features were considered desirable in order to create the most neutral Cause segments compatible with both volitional and non-volitional events and to keep most items as comparable as possible.

56 native speakers of American English recruited via Amazon Mechanical Turks were asked to provide sentence continuations that best capture their intuitions about what kind of event types could be prefaced by the connectives *as a result* and *for this reason*, respectively. Half the subjects were presented with the sentence beginnings followed by the phrase *as a result* and the other half were presented with sentences followed by *for this reason*, see below:

(1a) The pancakes are really hot and *as a result*/ *for this reason*….
(1b) He won a million dollars and *as a result*/ *for this reason*….

The procedure here was similar to that followed in the previous completion task in Chapter 4, so the obtained responses were divided into three groups:

1. Most frequent response,
2. Responses that appeared more than once,
3. Responses that occurred only once.

The answers were analysed by searching for a generic event independent of a particular participant’s stylistic, formal and personal preferences. From the results 24 sentences were harvested, out of which the subjects made a distinction between events that followed *for this reason* and *as a result* 8 times, defined as events in the continuation that only occurred with one of the two connectives. Consider:

(2a) The red dress fits her very well and *for this reason* she wears it often.
(2b) The red dress fits her very well and *as a result* she looks sexy and hot.

As we see in (2a) and (2b) above, the distinction made by the subjects more or less converged with that between content Volitional (2a) and Non-volitional RESULT (2b). However, for the Volitional RESULT event pairs the rate with which the events chosen occurred as responses ranged from 14 – 46

---

60 More examples of the experimental items follow in Appendix 2. Recall that the numbering of the experimental items is independent of the corpus/constructed example numbering.
% of all responses with a mean of 30.62%. For Non-volitional RESULT relations the 8 unambiguous events made up between 11 – 29 % of all responses, with a mean rate of response of 21.12%. This means that the majority of the responses were ambiguous between volitional and non-volitional RESULTS, and so the task replicates the findings of the corpus study only partly. Recall from section 5.3.2 above that for this reason is more frequently used with real-world Volitional RESULT than as a result, which, by contrast, is strongly attracted to Non-volitional resultative events in comparison to for this reason. The completion task shows similar tendencies, but the number of ambiguous instances (16 out of 24) is probably higher than what could be expected after the corpus analysis.

There are several explanations to these findings. First, the two connectives analyzed here are normally used in more formal written registers, whereas the sentence beginnings in the Sentence completion task were rather informal. As a consequence, register clashes could have occurred. Needless to say, the formal character of the tested connectives probably differs from how causality tends to be signaled in everyday language and thus the fine-grained distinctions between the connective uses may not be very prominent for an average speaker. In fact, three subjects reported that they could not tell the difference between as a result and for this reason. As indicated in section 5.3.2, both phrases can signal RESULT relations across the discourse domains. For these reasons the differences in their use may have appeared too subtle for at least some experiment participants.

Another likely explanation of the experimental findings relates to the instructions given to the participants at the beginning of the task. Since one of the goals of this particular exercise was to find out whether the subjects had any own intuitions about the prototypical domains of use of the given connective, in order to get valid results, in the present task the subjects were not explicitly informed that the desired distinction was that between Volitional and Non-volitional RESULT relations. This kind of information was expected to introduce an undesirable bias to the interpretations. Consequently, the subjects were primed only with the connective phrases and anticipated to follow their intuitions on the most suitable sentence continuation.

As a consequence, for 16 experimental items the participants did not make any distinction between Volitional and Non-volitional RESULT, independently of the connective used. Consider example (3a) below, which presents one of such cases:

61 Only four target connective uses of for this reason and 91 of as a result were found in the entire spoken section of the BNC, versus 789 relevant instances of for this reason and 1960 of as a result in the written section
62 With the exception of as a result in speech acts.
63 In this respect the present task differs from that in Chapter 4, where the phrase in order to was involved and so the interpretative slant was directly induced by the strength of this unambiguous cue.
(3a) A doughnut contains a lot of sugar and as a result/for this reason it should be avoided/it is not good for you/you should only have one occasion-
ally.

Recall from section 5.3.2 that as a result does not seem to preface speech
acts and is rather infrequent in epistemic contexts. The clause it should be
avoided in (3a) is, in fact, ambiguous between the speaker’s conclusion and
a speech act (directive); yet both those subjects who were presented with the
connective for this reason and those who saw as a result, most frequently
proposed exactly this ending. This finding suggests that the participants may
have disregarded the semantic profile of the connective (in this case: whether
the connective “fits” in the context) in some cases and simply opted for the
most stereotypical scenario of the relations between the segments. The high
amount of sugar in doughnuts may prompt people to give advice (and hence
use directives) about not overeating on them. So (3a) actually instantiates
some kind of a generic situation. In contrast, the well-fitted dress in (2a and
b) induced event types typical of a more specific scenario. This finding can
certainly be justified by the character of the experimental task where the
connective choice was forced upon the subjects, but it also further suggests
that the connective is indeed not the ultimate source of information about the
relation. Finally, choosing the most stereotypical scenario regardless of the
semantic information provided by the connective may to some extent also
relate to the flexibility of both as a result and for this reason to occur across
discourse domains.

To sum up, unlike in the case of the empirically obtained RESULT-
PURPOSE event pairs, which were very suggestive about the nature of the
investigated relations (and provided reliable material for further analysis), in
the current part of the study the harvested sentences had to be manually ad-
justed to clearly express Volitional and Non-volitional RESULT event pairs.
These pairs were subsequently used for one more experiment, which will be
discussed in the next section.

5.4.2 Experiment 5.1 – testing the effect of a volitional Subject
and the connective presence on the relation identification

The goal of this experiment was to verify whether agentivity and volition of
the participant of the S2 segment of the RESULT relation increases the rate of
interpretation of the connective so as as a result or for this reason. Thus the
two factors investigated here are: the presence of an intentional SoC and also
the connective presence. In the light of the discussion and findings in Chap-
ter 4 (section 4.4), testing the latter factor may seem counterintuitive, as
RESULT relations can be retrieved without marking. However, recall that
according to the findings of the corpus study by Taboada (2006), Volitional
RESULT is more frequently marked than Non-volitional RESULT (82% vs. 62%). It is therefore interesting to check the influence of an overt signal on the interpretation of RESULT relations controlled for the feature of volitionality.

5.4.2.1 Method

32 native speakers of American English (19 women, 13 men; mean age = 37.88; age range: 19-67) recruited via AMT were presented with 16 target sentences (see examples below) and 16 fillers. They were asked to describe the relationship between the events as as a result, for this reason or although (filler). There were four non-target responses in Experiment 5.1 that were removed from the analysis. Participants were paid $0.35 for their participation.

Taking inspiration from examples of Volitional and Non-volitional RESULT obtained in the Completion task and studied in the corpus, 16 event pairs were manually constructed (examples of the items can be found in Appendix 2). The participants of the RESULT arguments were all expressed in the 3rd person or by a nominal phrase. While tentative proposals can be found in the literature that 3rd person SoCs may be cognitively closer to 1st person SoCs than it is intuitively believed (Sanders., J. et al. 2012), the mainstream view is that 1st person-SoC is more subjective than the other grammatical persons and nominal phrases (see Chapter 6 for discussion). This suggests that 1st person subjects may in general be more likely perceived as intentional doers, even if the event is of a non-volitional character. It would be beyond the ambition of the current study to verify the potential balance (or the lack of it) between the cognitive statuses of different discourse participants, so the decision was made to keep the subject-entities in the experimental items on a relatively neutral level. Eight items out of 16 included a 3rd person pronoun subject and eight a nominal subject in the RESULT argument. Further, the CAUSE arguments included eight non-volitional situations and eight volitional actions; however, the resulting events were in each case independent of the volition and power to act of the involved participant (e.g. Mary’s boyfriend treated her badly, so she ended up very depressed). Recall also from the discussion in section 5.2.1 above that the connective is assumed to be compatible with the character of the event in the RESULT segment. Finally, the prompt (3a) above was eliminated from the experiment.

Two versions of each event pair were created to obtain materials for the 2 x 2 design with the factors connective presence (so vs. no so) and a volitional Subject presence in S2 segments (Volitional vs. Non-volitional RESULT). Consider one of the constructed sentences in its four experimental versions:
Non-volitional RESULT

(4a) The pancakes were really hot, so the boy burnt himself.
(4b) The pancakes were really hot. The boy burnt himself.

Volitional RESULT

(4c) The pancakes were really hot, so the boy waited a while before he ate them.
(4d) The pancakes were really hot. The boy waited a while before he ate them.

As mentioned, in order to control for agency, intentionality and volition, the RESULT arguments were constructed with animate human subjects and a dynamic verb for Volitional RESULT and a stative verb for Non-volitional RESULT. Items were distributed over four lists using a Latin-square design where each item was presented once in a particular condition for each list. Each list contained equal numbers of items of each condition type. 16 filler items were added to each list containing contrastive sentences with the explicit connective but. Two randomized versions of each of the four lists were created to counteract ordering effects.

Subjects were presented with a test item and three multi-word connectives which mark the relations less ambiguously than so (or but): for this reason for Volitional RESULT, as a result for Non-volitional RESULT, and in contrast/unexpectedly for CONTRAST. The participants were asked to choose which connective best described the relationship between the events in the two clauses or sentences. The multiple choice answers were always presented in the same order: as a result, for this reason, and in contrast/unexpectedly with the latter category being expected to be chosen for the filler items with the contrastive connective but. The experiment began with an example of a but-marked sentence where the answer in contrast/unexpectedly was already filled in. Following the 32 sentences, subjects were asked to provide bibliographic information about age, gender, native language, and the language that they spoke in kindergarten (specified as “at age 5”). Any subjects that reported a language other than English were excluded but were still reimbursed for their participation and the experiment was reran for that particular list.

64 The fillers used here are the same as the list used for the experiments in Chapter 4 (see Appendix 2).
5.4.2.2 Results

Figure 5.1 The mean % ‘for this reason’ responses (±1SE) for sentences with or without so and with or without a volitional participant using RESULT relations.

Two-factor (‘connective presence’ vs. ‘volitional participant presence’) repeated-measures analyses of variance (ANOVAs) was performed, with participants (F1) and items (F2) as random factors. In Experiment 5.1, the presence of a volitional participant in the RESULT argument lead to a significantly higher rate of for this reason responses from 35% (M = 0.38; SE = 0.5) to 70% (M = 0.7; SE = 0.04) (F1 (1,31) = 32.67, p < 0.000 and F2(1,15) = 28.43, p < 0.000). The presence of the connective so did not have any effect on the readings of the tested coherence relations, but there was a significant main effect of the coherence relation, which suggests that people make a distinction between relations where a conscious participant is involved and those devoid of such a participant.

5.4.3 Summary and discussion of experimental results

As the results from Experiment 5.1 indicate, the presence of a volitionally acting participant significantly increases the rate of interpretation of the relationship between the clauses/sentences as for this reason (from 35% with a non-volitional Subject to 70% with a volitional one). This corroborates the earlier corpus findings which indicated that for this reason is preferred in
relations with a SoC, unlike as a result, which most frequently marks non-volitional resultative events. The tendencies found in the corpus are strongly significant and so it seems that agentivity, intentionality and volition of the relation’s protagonist are likely to have governed the decisions on the connective choice in Experiment 5.1 too. However, recall from section 5.3.2 above that neither as a result nor for this reason is barred from any of the two relation types. This might be the reason why the tendencies found in Experiment 5.1 are not as strong as those obtained for the distinctions between PURPOSE and RESULT relations in Chapter 4. The current findings are also interesting given the fact that all participants in the RESULT arguments and half of those in the CAUSE arguments were animate human subjects. Whereas the contrast between relations with no animate protagonists and those that include such entities is easily discernible, an involvement of a potentially volitional participant\textsuperscript{65} may have entailed certain confusion as to the interpretation of the event type. Further studies could investigate the extent of potential disturbances related to such cases, as well as potential issues related to interpreting volitionality/intentionality of different types of participants (e.g. 1\textsuperscript{st} person vs. 3\textsuperscript{rd} person pronoun).

The results of Experiment 5.1 are satisfying particularly in the light of what was said about the investigated connectives in section 5.4.1 above. The tested phrases exhibit a high level of formality, whereas the sentence pairs used in Experiment 5.1 convey simple events of a rather informal character. Needless to say, experimental items are usually more artificial than naturally produced language; yet the subjects were forced to make a choice. The effect of the forced-choice design was observable in the Completion task, where several unnatural discourse relations were produced (recall as a result prefacing a directive in (3a) above). Further, the number of the ambiguous relations obtained in the Completion task suggests that the tested phrases may substantially differ from an average speaker’s everyday language – it is generally acknowledged that stylistic variation related to specific uses of the connectives is a feature of proficient high quality writing\textsuperscript{66} (Spooren, 1997:162). Despite these issues, the results of Experiment 5.1 show significant correlations between the relation type and the semantics of the connectives. This is particularly important for for this reason, which in the corpus exhibits a gradient but clear preference for epistemic relations. However, the results show a significant association between for this reason and real-world Volitional RESULT relations, and thus they confirm the corpus analysis where the phrase was found also in this relation type.

\textsuperscript{65}Recall the example of such a participant from Stukker at al. (1999; see section 5.2.1 above): Monday his train to Amsterdam arrived at another platform. He got on the train to The Hague.

\textsuperscript{66}Recall that the current study does not include more specific demographic information, such as education or age.
One caveat to such an interpretation of the experimental findings is that neither *as a result* nor *for this reason* are constrained to marking one relation type. It is therefore not fully possible to estimate to what extent the relation type actually prompted the participants to choose one connective over another. Just as in the case of the Completion task reported on in 5.4.1 above, in the present experiment, too, two participants commented on the subtle difference between the investigated connectives. The conclusion is therefore that the answers could have been at least partly prompted by the subjects’ wish to distribute their choices evenly.

The last finding of Experiment 5.1 is suggestive of the impact of explicit marking on the distinction between the Volitional and Non-volitional RESULT. The presence or absence of *so* did not influence this distinction, despite prior corpus findings that Volitional RESULT is more frequently signaled with a connective (Taboada, 2006). Recall also that it has been argued in the literature that Volitional RESULT can be related to nonveridical readings (Trnavač & Taboada, 2012; see Chapter 4 and Chapter 6 for details). As discussed in Chapter 4, nonveridical relations are believed to require overt signals because of their intrinsically hypothetical character. However, the items tested in Experiment 5.1 convey only intrinsically veridical real-world events, which is in line with the prototypical nature of RESULT (Asher & Lascarides, 2003). Consequently, it seems that both the property of nonveridicality and the marking requirement cannot apply in the same way to Volitional RESULT as they do to PURPOSE. The purported relation between nonveridicality and Volitional RESULT should therefore be more closely investigated (see section 6.4 in Chapter 6 for discussion).

On a final note, since the current corpus study found a statistically significant association between *for this reason* and epistemic relations, another experiment could test the influence of marking on the interpretations of conclusions and speech acts. However, as Chapter 6 below will demonstrate, the design of such an experiment would have to involve multiple factors, which are not easily and clearly comparable (e.g. deontic and epistemic senses of modal verbs). Also, certain manipulations of discourse features can be expected to yield discernible differences between relation interpretations and, possibly, influence the marking requirement. For instance, a conclusion presented with and without modal verb may be interpreted differently:

(5a) The lights are out, *so* the neighbors are not at home.
(5b) The lights are out, *so* the neighbors may not be at home.

It seems that (5b) would be easier to interpret as a conclusion than (5a). This potential difference may actually not have much in common with the connective but more likely pertains to the presence of the additional discourse cue – the modal auxiliary *may*. Admittedly, the effect of the connective is likely to be different when an unambiguous phrase such as *so* is used. As Li
(2014:134ff) demonstrated in her investigation of Chinese connectives, epistemic causal relations are processed faster if a more specific causal connective is used versus an underspecified marker. Further, Traxler, Sanford, Aked and Moxey (1997:91ff) indicated that in English the cognitive burden related to the processing of conclusions marked with the general connective because is alleviated by adding a phrase explicitly marking a propositional attitude, such as perhaps or I think. According to the findings in Chapter 4, modality can be a very strong indicator of the relation type. This suggests that discourse signals of epistemicity and illocutionary force and their impact on the relation interpretation and marking should be experimentally tested. However, since the strength and role of such signals in discourse probably differ, more sensitive experimental techniques such as eye-tracking would prove useful. Finally, manipulations of this type of variables require isolating factors in natural language and thus it seems more helpful to first analyze natural corpus examples in order to spot features that can possibly be operationalized. This is the main reason underlying the decision to carry out only one experiment in the current part of the investigation. The question of a possible experimental setup will be tackled again in the context of the analysis of specific semantic features in the RESULT relations in Chapter 6.

5.5 Discussion and conclusions

The aim of the present chapter was to analyze naturally produced RESULT relations marked with two different English resultative connectives: as a result and for this reason. After the criteria for annotation of corpus samples were specifically established, the analysis of two BNC corpus samples of the connectives was carried out. The major finding of the investigation is that there is a statistically significant relationship between the resultative event type and the connective: as a result shows a strong preference for Non-volitional RESULT with no SoC and is barred from speech acts. The phrase for this reason, by contrast, was more dispersed across the domains, but was clearly preferred with the RESULT relations with an SoC (epistemic and real-world volitional in particular). Given the rather low frequency of for this reason in the written BNC material (789 instances) and its almost virtual absence from spoken language (both of which suggest rather limited functionality), the versatile function of this connective is quite a revealing finding.

The next step of the analysis was to perform two experiments in order to verify the corpus findings. The first experiment was a completion tasks where the participants were primed with manually created sentence beginnings and asked to provide most suitable sentence endings following either as a result or for this reason. That task generated only partly unambiguous
results, probably due to the formal and quite unconstrained character of the investigated connectives. Taking inspiration from the harvested sentences, additional experimental items conveying the intended volitional and non-volitional situation types were manually constructed. Subsequently, the relationship between *for this reason* and *as a result* and different RESULT relations types was tested in Experiment 5.1. The findings showed a strong positive association between the connective *for this reason* and Volitional RESULT and *as a result* and Non-volitional RESULT, which corroborates the earlier corpus findings.

The current analysis provides us with several insights. First, English connectives may, indeed, exhibit greater flexibility of use across discourse domains than the connectives in other languages. Despite their unambiguous semantics, both *as a result* and *for this reason* turned out not to be barred from any discourse domain, whereas *for this reason* shares its function between marking real-world and epistemic events. However, the connectives also showed significant tendencies, so their uses can be argued to reflect the speakers’ categorizations of causality. This is despite their similar syntactic and discourse (preference for the real-world events) functions.

Second, the reason underlying the identified preferences may in fact be related to the semantics that the connective contributes to discourse context (Schiffrin, 1987:182ff). For instance, the presence of *because* has been argued to presuppose the existence of an assertion (or implication) for which the *because*-clause provides a reason or cause (Halliday & Hasan, 1976; see also Lagerwerf, 1998 on causal and adversative connectives). Quite intuitively, the semantics of *for this reason* seems more felicitous marking the spectrum of human action and cognition. This presupposes the presence of a conscious participant in the causal chain and explains why *for this reason* shows gradient preferences across different domains. Consequently, the connective *as a result*, which appears better suited to signal factuality and implies a lack of a participant responsible for causality in the relation, has been found to be used less amenably.

These considerations bring us closer to the topic of the interplay between the connectives and their linguistic environments. Relatively little has been said about this aspect in the present chapter in order not to obliterate the significance of the other features of the relations and to avoid circularity of the interpretations. As mentioned, discourse connectives and their linguistic contexts interact and collaborate towards the intended discourse interpretation. The connective can be in fact strongly indicative of the intended relation type. Consider yet another modification of (11) (discussed in section 5.2.1 above):

(42) She fed him poisoned stew *and so/and as a result/*and *for this reason/*so she killed him.
Since the phrase and so is ambiguous between RESULT and MANNER, the relation in (42) can be interpreted in both ways. With and so the relation can be understood as “she fed him a poisoned stew and by this means/in this way she killed him”. The interpretations differ with the RESULT connectives. Interestingly, despite the ability to mark different RESULT types, a sole so is not felicitous in this context, as it introduces an irrelevant epistemic bias. As a result, by contrast, implies a factual reading of the RESULT argument as a report of the state of affairs in the real world. Such an interpretation seems apt, as the action in S1 of (42) can by no means be understood as the Subject’s reason to act in S2. S2 is simply an outcome of the events in S1 and not a volitional action motivated by prior circumstances. Consequently, she in S2 in (42) is not an intentionally acting participant who has control over the situation, which is why the phrase for this reason is not felicitous in this context.

In fact, the interplay between the connective and the causality type is so prominent in this case that it is possible to modify (42) and construct an explicitly non-volitional event marked with as a result, as (43) below:

(43) She accidentally fed him poisoned stew and as a result she killed him.

The sentence has now been altered into an ‘involuntary agent construction’ (Fauconnier, 2011:311). As a consequence, the relation became strongly biased towards a Non-volitional RESULT interpretation, but the contribution of the adverb accidentally to this reading is vital. This observation confirms that discourse connectives, along with a broader set of linguistic elements, are involved in the construal and interpretation of coherence relations. The interaction and specific contribution of these features to the construal of the intended RESULT relation type are the main theme of the discussion in Chapter 6 below.
As briefly mentioned in Chapter 2, it has been argued in the literature that the meaning and use of discourse connectives can be distinguished and characterized in terms of subjectivity construals typical of the discourse domain where they tend to occur. Consequently, these tendencies in the connective use can be seen as quite reliable indicators of the causal relation type, for they are likely to reflect the user’s conceptualizations and categorizations of causal events (Talmy, 1988; Knott & Sanders, 1998; Stukker & Sanders, 2012; Sanders, Sanders & Sweetser, 2012; Sanders & Spooren, 2015).

Chapter 5 has demonstrated quite suggestive distributional tendencies for the two connectives discussed in the present study. As a result turned out to be particularly frequent in Non-volitional RESULT relations, rare in epistemic contexts and absent from speech acts. For this reason, by contrast, exhibits a gradient preference, but is overall most frequent in epistemic relations and relatively common in real-world volitional relations. Certain tendencies can, therefore, be anticipated for the subjectivity analysis of the RESULT relations marked with these connectives. The indications of the differences already obtained are one of several reasons why this type of analysis is interesting to pursue. Another reason is that the results of the investigation in Chapter 5 are quite general. They tell us little about the kind of linguistic features that occur in the contexts of the analyzed connectives and their contribution to the interpretation of the intended relation. Also, the effect of the specific connective presence on the relational contexts cannot be fully derived from those findings. This is particularly interesting for for this reason with its gradient distribution. It can therefore be interesting to investigate what kind of linguistic environment is typical of the RESULT relations that the phrase marks.

However, as argued in the previous chapters, connectives are unlikely to bear the whole burden of signaling the RESULT relation type and therefore several other linguistic elements will be vital to the interpretation. Since the split between the RESULT relations with an SoC present in the context and those with no SoC to a great extent converges with the distinctions between subjective and objective construals (see 6.1 below), the current study will investigate how specifically the presence (and absence) of subjectivity features contributes to the realization of the different RESULT relation types. Further, it is important to note that non-volitional causal relations have not
been empirically studied in the literature on the topic, and Non-Volitional RESULT relations in English are no exception. However, Chapter 5 demonstrated that deciding on the distinctions between non-volitional events with no SoC and events with a volitionally/intentionally acting SoC is not always straightforward. The following analysis can further refine the criteria already established.

Further, it will be compelling to investigate to what extent causal connectives in English can be organized alongside the objective-subjective distinction. As discussed in 6.1 below, this distinction has been useful for describing the lexicon of German, French and Dutch connectives. English, however, appears less constrained in its connective uses than the other languages (Sweetser, 1990, Sanders & Spooren, 2015:55, but see Zufferey & Cartoni, 2012), although such observations are based on the characteristics of the ambiguous connectives such as because. The present study deals with connective phrases which show clear preferences for specific discourse domains, but indeed exhibit a functional flexibility, as discussed in Chapter 5. This finding carries a potential for an interesting subjectivity analysis.

Finally, following the hypothesis in the literature that Volitional RESULT may be related to nonveridical interpretations (Trnavač & Taboada, 2012), the concept of nonveridicality, extensively discussed in Chapters 2 and 4, will be revisited here and the potential of Volitional RESULT relations to be unrealized more closely investigated. This is a thought-provoking area to explore in the present part of the study, since the linguistic features commonly believed to be linked to greater subjectivity of the context, quite often converge with nonveridicality elements (see section 6.4 below). Also, in the light of the current assumption that the relations in epistemic and speech act domains share the property of an intentionally acting SoC with volitional real-world relations, Trnavač and Taboada’s tentative proposal that volition may be related to nonveridicality can be confirmed.

These considerations bring us to the more specific research questions for this chapter:

(i) What is the role of the connectives as a result and for this reason in the distinction between SoC RESULT and Non-SoC (non-volitional) RESULT relations? What are specific quantitative tendencies related to the connective used?

(ii) How do the other language elements commonly believed to be related to subjectivity construal in discourse contribute to this distinction? Can some of these features be regarded as more reliable/useful signals than others?

(iii) Is there a relationship between Volitional RESULT and the logical property of (non)veridicality?
The chapter is organized as follows: section 6.1 below is concerned with subjectivity and the current approach to this notion. Section 6.2 provides more specific criteria according to which the subjectivity analysis is carried out. Those criteria were adopted from Stukker and Sanders’ (2009) model of linguistic variables, which the authors derived from subjectivity patterns commonly occurring in naturally produced volitional causal relations. The corpus of the RESULT relations preceded by for this reason and as a result (see Chapter 5) will be manually analyzed for the presence of these features (section 6.3). Subsequently, in 6.3.4 below, the findings of a substudy of real-world volitional RESULT will be discussed. This part of the study was carried out in order to test how and whether the connective choice interacts with the other linguistic elements of relatively objective relations. Finally, section 6.4 provides an analysis of the present corpus material from the vantage point of the logical property of (non)veridicality. First, however, a brief discussion of the aspects of subjectivity construal relevant for the analysis of RESULT coherence relations is presented in the next section.

6.1 Present approach to subjectivity in RESULT coherence relations

As briefly mentioned in Chapter 2 (2.4), the mainstream view on subjectivity in coherence relations is that it is linked to the presence of a Subject of Consciousness (SoC) – a conscious participant whose role in discourse is that of an actor or a concluder. Following Lyons (1995:337), this role can be further specified as:

[...] the property (or set of properties) of being either a subject of consciousness (i.e., of cognition, feelings, and perception) or a subject of action (an agent). It denotes the property of being what Descartes called ‘a thinking entity’.

The utterance is subjective if its interpretation depends on the reference to the SoC’s mental domain. The more the meaning is grounded in her belief and attitudes, the more subjective it becomes (Traugott, 1995:31). SoC is argued to be maximally subjective when construed implicitly, as in speech acts and epistemic relations (Langacker, 1990; Pander Maat & Degand, 2001; Stukker & Sanders, 2009; Sanders & Spooren, 2013; 2015). On the opposite end of the spectrum there are non-volitional relations, where no SoC is involved in the causality of the relation and the utterance merely reports on the events causally related in the world (Sanders et al., 2102:194). These relations are regarded as objective.
The type that is perceived as somewhat problematic from the point of view of subjectivity analysis are volitional relations in the real world domain. Compare a real-world Volitional RESULT (1) and an epistemic RESULT relation (2):

(1) It was a hot day, *so* Jan went swimming.

(2) It is a hot day, *so* it may be a good idea to go swimming.

The mainstream view on the real-world volitional relations such as (1) is that they are relatively objective, because the speaker has no access to SoC’s mental domain, unlike in the subjective epistemic RESULT relation in (2), where an implicit SoC identical with the current speaker, draws a conclusion. However, the real-word volitional relations can actually be seen as an intermediate category between objective and subjective domains, for they exhibit the features of both. Similar to non-volitional relations, they convey events in the real world; yet they also share the vital property of the presence of the SoC with epistemic and speech-act relations. This intermediate character of the volitional RESULT relations is the view pursued in the current study and in this respect it is related to Pander Maat and Degand’s (2001:176ff; see also Pander Maat & Sanders, 2000) proposal that treats the differences in subjectivity levels between relations as ordinal positions on the subjectivity scale.

The scalarity view by Pander Maat and Degand (2001) is based on the ‘degree of the speaker involvement’ – the smaller the distance between the relation SoC and the actual speaker, the more subjective the relation. Consequently, also in this approach real-world volitional relations are perceived as more objective than epistemic and speech-act relations, but at the same time more subjective than non-volitional ones, since real-world volition falls within the mental domain of the SoC and her representation of causality. Non-volitional relations are therefore placed at the low end of the subjectivity scale, whereas volitional causality is assigned an intermediate position between epistemic relations and the most subjective type – speech acts (see Chapter 2, section 2.4 for discussion). Importantly, on this view the meaning and use of causal connectives is characterized in the same terms, i.e. as a position on the subjectivity scale.

Albeit descriptively adequate, Pander Maat and Degand’s (2001) subjectivity scale does not fully account for the occurrences of the connectives related to one specific causal category as markers within another category (Stukker & Sanders, 2009; 2012:178). According to Stukker and Sanders (2012), such ‘deviant’ connective uses can be described by taking into ac-

---

67 Pander Maat and Degand (2001) do not use the notion of an SoC of the relation. They refer to this role as ‘actor’, but the term SoC is kept here for clarity of the discussion.
count the cognitive structures associated with human categorizations of causality types. Their solution to the problem assumes the existence of two conceptually distinct categories of causality: subjective (epistemic/speech act) causality and objective (volitional and non-volitional) causality, which “function as the connectives’ prototypical, 68 and definitional contexts of use”. The ‘counterexamples’, i.e. the connective uses in other domains, should be interpreted as less prototypical, fuzzy edges of the same category (Stukker & Sanders, 2012: 171ff). Importantly, such non-prototypical uses are possible only in the relations that allow for an interpretation ambiguous between two causality types and include certain linguistic elements, so that the causal relation typical of the connective used becomes relevant for the interpretation (Stukker & Sanders, 2012:184).

It should be noted at this point that the scalar approach by Pander Maat and Degand (2001) and the categorization hypothesis by Stukker and Sanders (2009; 2012) are not mutually exclusive. In fact, the notion of a scale is relevant also in a non-scalar approach 69 given the indirect relation between the abstract linguistic system (containing ideal-typical abstract categories such as real-world or epistemic causation) and the level of language use, where the speakers employ these categories for rhetorical purposes. This is where scalarity comes into the picture: when rhetorically manipulating a connective, language users extend its meaning into the semantic area of another connective. However, at the same time, the possibilities for extension are restricted by the connective’s inherent, prototypical meaning. Consequently, it can be argued that the categories of use and the subjectivity scale exist simultaneously, but on different levels of analysis (Stukker, 2015, p.c.). This somewhat eclectic approach is adopted in the current investigation and will be briefly evaluated in section 6.5 below.

The idea that connectives are specialized in marking certain domains and may non-prototypically occur in others is particularly interesting to investigate further in English, as the lexicon of English connectives is less constrained to distinguish between subjective and objective causal relations in comparison to other languages. This has been argued particularly about backward causal relations, where because can be used in every domain; however, since commonly occurs in subjective epistemic and speech-act relations, while because has been found to prevail in objective contexts (Zufferey & Cartoni, 2012). Nevertheless, as demonstrated in Chapter 5, English connectives are indeed used more freely across discourse domains, but despite this fact, they exhibit significant tendencies for specific discourse domains. It is therefore likely that the analysis of the ‘non-prototypical’ uses

---

68 It is important to note that that prototypicality in this approach is seen in terms of usage frequency (Stukker et al, 2009:123).
69 In his later studies Sanders also orders causal relations according to a subjectivity scale (e.g. Sanders & Spooren, 2015).
will indicate further patterns of subjectivity construal in the English RESULT relations similar to those found in other languages (see section 6.3.4 for details).

Stukker and Sanders (2009) tested the idea of non-prototypical connective uses in the corpus of real-world volitional causal relations signaled either by the epistemic Dutch connective *dus* (‘so’) or a real-world relation marker *daarom* (‘that’s why’). Using a set of concrete linguistic variables considered to contribute to subjectivity in discourse (see 6.2 below for details), the authors found that volitional relations signaled with *dus* are construed more subjectively than those marked with *daarom*. Given the fact that *dus* is prototypically an epistemic marker, the study concludes that an intrinsically objective relation, such as real-world Volitional RESULT, will usually be more subjectively realized (i.e. include more subjectivity-related features) if signaled with a connective primarily used in subjective contexts (the principle applies, mutatis mutandis, to intrinsically subjective relations with objective connectives). Similar results were obtained in a comparative study of Dutch, French and German connectives (Stukker & Sanders, 2012).

This subjectivity analysis in real-world volitional RESULT relations is also related to the aforementioned mainstream view that they are relatively objective. However, as Stukker and Sanders (2009:7) elucidate, in this relation type the source of subjectivity is transferred from the speaker to another SoC (Agent) and the presence of this SoC opens the way to introduce subjectivity in the context of such events. Recall from the discussion in Chapter 2 (section 2.4) that the mere presence of the 1st person pronoun does not warrant an analysis of a subjective perspective (see also Scheibman, 2002:167, for a similar conclusion). Consider the following relation:

(3) I am on a high-protein diet, *so* I ate two eggs for breakfast this morning.

This sentence conveys an action in the physical world performed by a conscious SoC, but it can hardly be regarded subjective. However, it certainly differs from the objective factual report on a real-world event in (4) below:

(4) The hurricane hit the village last night. *As a result* many households lost electricity.

Thus the overt presence of a SoC in (3) may indeed invite an interpretation close to the writer’s beliefs or attitudes, unlike (4), which entirely lacks an SoC. It is, however, interesting to investigate how often real-world volitional RESULT relations are subjectively realized and whether this fact is related to the connective choice. The corpus study presented in this chapter seeks to remedy the fact that quite little is known about this type of subjectivity- re-
lated distinctions between English \textsc{cause-result} relations in naturally produced discourse.

Section 6.2 below discusses Stukker and Sanders’ approach to operationalization of linguistic features, which will be the starting point of the present corpus analysis.

6.2 Stukker and Sanders’ linguistic variables

A major goal of the present work is to analyze the coherence Result relations in English from the vantage point of the subjectivity elements present in their contexts.

Despite the mainstream assumption that subjectivity is ultimately a contextual feature (recall Chapter 2, section 2.4), subjective construal is in fact commonly associated with the presence of certain linguistic forms (e.g. modal verbs, stance markers, 1st person pronoun or speech acts; see Traugott & Dasher, 2002: 98). These forms have also been consistently identified as contributing to subjectivity of the context in several corpus studies (e.g. Scheibman, 2002; Kärkkäinen, 2006; Stukker & Sanders, 2009; Pander Maat & Degand, 2001; Sanders & Spooren, 2015). As argued above, they can be perceived as overt signals of the coherence relation type, which interact with the relation context and the connective present. Compare two BNC examples:

(5) While such states are central to literary studies, it is difficult to describe them precisely or effectively; and \textit{for this reason, although}^{70} they are of \textit{great} interest, they are also \textit{inevitably} \textit{weak} points in your argumentation. (BNC: HXH 752)

(6) (…) I was younger -I had protruding teeth and was the only child in my school at the time to wear braces. \textit{As a result} \textit{I} was ridiculed by the other children (BNC: CDK 1158)

(5) is an instance of the most subjective type of discourse where the speaker is identical with the SoC and so has full mental access to the events expressed in discourse and the relation between them (cf. Pander Maat & Sanders, 2001:253). The subjectivity of examples like (5) lies in the explicitness of the speaker’s commitment to the proposition (Traugott & Dasher, 2002:98) – the relation conveys the author’s own opinion and evaluation (\textit{it is difficult}…) and it is pervaded by affective stance features (\textit{inevitably},

\footnote{70 Subjectivity-related expressions are underlined throughout the chapter.}

150
great), intrusions (although…) and evaluative adjectives (weak, central). By contrast, in (6) the only subjectivity-related element is the 1st person pronoun. This example is particularly interesting, as it conveys an instance coded as Non-Volitional RESULT71 with a backgrounded agency (the children) reported on by the 1st person speaker. It is important to note that the phrase as a result additionally emphasizes the character of the situation independent on the character’s will. This example illustrates the interaction between the connective, the context of the relation segments and the scarcity of subjective elements in Non-Volitional RESULT. An in-depth discussion of subjectivity construal follows below and is hoped to provide illuminating insights into how different types of RESULT relations are constructed and signaled.

The first step of the corpus analysis is to identify and operationalize the features that figure in subjectivity construal. This seems a difficult task, but relevant proposals already exist in the literature. The model that offers a variety of potentially useful elements has been proposed by Stukker and Sanders (2009). On the basis of the subjectivity features identified in both their own and also previous corpus studies of Dutch and French connectives (Pander Maat & Sanders, 2000; Pander Maat & Degand, 2001; Stukker & Sanders, 2008), Stukker and Sanders (2009) identified several subjectivity patterns that can be encountered in naturally produced volitional causal relations. As a consequence, the authors provide a list of observable linguistic elements (variables) that help determine the degree of subjectivity of the relations (1, 2, 5 in Table 6.1 below)72 or its source (3, 4, 6, 7), but also distinguishes between the levels of usage. Table 6.1 reproduces the original model (2009:9) of analysis:

---

71 Recall the discussion of the annotation criteria for the passive voice established in Chapter 5 (section 5.3.1.3).
72 In the original article text by Stukker and Sanders (2009:9) the authors first erroneously assign the category ‘Embedding’ (5) as one that determines the source of subjectivity, while later on (2009:13) they argue that it does not specify this feature. The latter argument seems to be correct.
Table 6.1 Linguistic variables used to establish subjectivity in causal relations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Values (SUBJECTIVE... OBJECTIVE)</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. SoC reference</td>
<td>implicit author SoC below clause</td>
<td>Below clause</td>
</tr>
<tr>
<td></td>
<td>1st person pronominal</td>
<td>↓</td>
</tr>
<tr>
<td></td>
<td>2nd person pronominal</td>
<td>↓</td>
</tr>
<tr>
<td></td>
<td>3rd person pronominal</td>
<td>↓</td>
</tr>
<tr>
<td></td>
<td>3rd person nominal unspecified absent</td>
<td></td>
</tr>
<tr>
<td>2. Subjective elements</td>
<td>author (ground) character unmarked</td>
<td>↓</td>
</tr>
<tr>
<td>3. Deictic elements</td>
<td>author (ground) character unmarked</td>
<td>↓</td>
</tr>
<tr>
<td>4. Tense</td>
<td>future simple present present perfect</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Simple past Past prefect</td>
<td></td>
</tr>
<tr>
<td>5. Embedding</td>
<td>mental state complement embedding predicate quotation marks absent (no embedding)</td>
<td></td>
</tr>
</tbody>
</table>
The linguistic variables are summarized in the left-hand column. The middle column presents the categories distinguished within the variables starting from the most subjective on the top to the least subjective ones towards the bottom (for instance: the most subjective tense is Future, while the least subjective is Past Perfect). The right-hand column applies to three different levels of Stukker and Sanders’ original analysis: the construal of subjectivity and perspective within segments (below clause), further – at the level of segments (clause) as a whole and finally at the level of the causal relation (between clauses). As the authors put it, the arrows indicate that each level feeds into the next one, i.e. the clause-level (representation mode) can only be discussed on the basis of the analysis of the subclausal indicators (categories 1-5). Levels 6 and 7 of the original analysis (the white part of the table) will not be used in the present study. The primary reason for this is that is the main interest of the current analysis is subjectivity construal within the RESULT clause, but the rationale for this decision will be addressed in detail in section 6.3.3.3 below.

Stukker and Sanders’ (2009) model differs from previous work in that it provides a set of tangible criteria based on natural corpus observations. Whereas not all of them are equally useful and credible measures of subjectivity in discourse, they make a solid starting point for a quantitative analysis, particularly in the case where no previous research on the topic exists, as in English. Stukker and Sanders also provide a laudable attempt to order the subjectivity features from most to least subjective categories. For instance: the same relation is often believed to be more or less subjective depending on how the presence of the SoC is signaled. The pronominal *I* has sometimes been argued to be the most subjective expression of the SoC in discourse; however, as demonstrated in examples (5) and (6) above, subjectivity lies in

<table>
<thead>
<tr>
<th>6. Representation mode</th>
<th>subjective author’s discourse</th>
<th>Clause</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>subjective direct mode</td>
<td>↓</td>
</tr>
<tr>
<td></td>
<td>free indirect mode</td>
<td></td>
</tr>
<tr>
<td></td>
<td>indirect mode</td>
<td></td>
</tr>
<tr>
<td></td>
<td>report (+implicit perspective)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>report (-implicit perspective)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>objective writer’s discourse</td>
<td></td>
</tr>
<tr>
<td></td>
<td>neutral discourse</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7. Perspective carrier</th>
<th>author</th>
<th>Relation between clauses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>character</td>
<td></td>
</tr>
<tr>
<td></td>
<td>neutral</td>
<td></td>
</tr>
</tbody>
</table>
the explicitness of the speaker’s commitment to the proposition and not in the pronoun (Traugott & Dasher, 2002:98). Consequently, Stukker and Sanders rank the implicit author SoC higher than the use of pronominal I.

However, the weakness of the model adopted here lies in the rather perfunctory description of the subjectivity-related linguistic variables, their identification and specific role in the relation. The next section is therefore devoted to an in-depth analysis of the different variables, their character, operationalization and usefulness for a study of differences between different types of RESULT coherence relations.

6.3 Subjectivity features analysis in the corpus of naturally produced RESULT relations

The samples of the relations with as a result and for this reason used here are the same as in Chapter 5 (see 5.3.1). Taking the linguistic variables and their ranking from Stukker and Sanders (2009), a detailed corpus study of RESULT relations was carried out. The next sections go through each of the subjectivity linguistic features in their model and discuss the ease of annotation for each variable and any relevant problems. This discussion is important for two reasons. As mentioned, the other studies referred to in this chapter often lack more detailed descriptions of the criteria used for subjectivity coding, whereas the analysis of even seemingly straightforward variables (e.g. a pronominal SoC) may become quite complex. Furthermore, the previous studies on Dutch and French connectives focus on volitional relations only. In the present work non-volitional relations are also analyzed. This involves certain conceptual problems, which are discussed below.

6.3.1 SoC reference identification in the analyzed RESULT relations

The following section discusses identification of different SoC types. The most straightforward instances are those where a conscious participant whose intention can be identified as a source of the action conveyed is present. In such cases the relation is volitional (see also section 6.3.4) and this participant is the relation’s SoC (e.g. (1) above). In epistemic or speech acts relations, the SoC is either not explicitly expressed or (at least potentially) identical with the protagonist and author of the text, for instance:

154
This is because it is much more difficult to recognise being too high than being a little on the low side. For this reason, I would like to request the presence of another Adjudicator. (BNC: A0H 1164)

This is a rather clear-cut example of an explicit 1st person SoC, who makes an overt request marked with a subjective connective. Instances of implicit author SoC can also very often be identified without difficulty, even in contexts which seemingly do not involve a conscious participant, as in passivized sentences. As Stukker and Sanders (2009:14) argue, the passive constructions are not likely to be subjectified, since they involve an unspecified SoC. Also, the passive voice is commonly used in descriptions of, for example, research processes in order to foreground the procedures and background the author (Swales & Feak, 1994:91ff), as in (8) below:

(8) After the present study was designed, longterm studies using actuarial analysis were published, which showed that a longer follow up period than two years was required to establish reliable recurrence data. For this reason, and also to ensure that adequate numbers of patients had been recruited, the present trial was extended from two, to a maximum of five, years. (BNC: HU4 4735)

However, this example conveys the author’s references to her own work (the present trial) as well as an element of her implicit perspective expressed by means of the PURPOSE clause (to ensure that (...)) (Stukker & Sanders, 2009:18). Consequently, these features allow us to identify the SoC of (8) as ‘implicit author’. In fact, as Traugott and Dasher (2002:126) argue, cases like this are instances of ‘masked subjectivity’ when speakers for rhetorical purposes try to conceal their subjective stance behind objective expressions while the subjectivity can nevertheless be retrieved. Note how the connective for this reason emphasizes the volitional character (decision made by the SoC) of the RESULT argument.

A much more common category found in volitional RESULT relations expressed in the passive voice is ‘unspecified SoC’ and applies to examples like (32) in 5.3.1 (Chapter 5) repeated below as (9):

(9) The 12 [political prisoners] also refused to wear their prison uniform. As a result, they were transferred to different prisons. (BNC: A03 603)

Despite the presence of a volitionally acting participant in the CAUSE segment (the prisoners), the SoC of the CAUSE-RESULT relation in (9) is not explicitly marked, as the transfer is outside the domain that participant’s intentions (Pander Maat & Degand, 2001:217). Therefore, such instances were annotated as ‘unspecified SoC’ (see Chapter 5, section 5.3.1.3 for pre-
vious discussion of passive voice). Finally, verbal passives with overt Agents and a human Patient in the RESULT segments were coded as ‘ambiguous SoC,’ but only two such examples were encountered in the RESULT arguments (one with *for this reason* and one with *as a result* (see (6) in 6.2 above)) in the analyzed samples. It is important to note that this SoC type does not change the character of the relation, which is non-volitional from the point of view of the 1st person Subject/Patient.

Apart from certain passive constructions, the relations categorized as having ‘unspecified SoC’ are those that include evaluative/evidential linguistic elements that on the one hand do not unambiguously signal the presence of an author SoC (unlike, for instance, evidentiality and affect markers, Biber & Finegan, 1989:119ff) but can have been issued by a conscious participant. Consider:

(10) The population of Europe, including Russia, had grown steadily since the seventeenth century, and continued to do so after 1880. *As a result*, Europe’s share of the total world population does not vary greatly between then and 1945: it fell slightly, but continued to provide about a quarter of the world’s people. (BNC: CM6 337)

This is an example of a non-volitional RESULT with no SoC responsible for causing the effect. There are evaluative elements present in this context (e.g. *greatly; slightly*73), but they do not influence the non-volitional character of the relation (i.e. do not render it a conclusion or speech act). It is also hard to tell to what extent they are part of an objective description of the real-world effect or the author’s evaluations. Such instances were therefore coded as ‘unspecified SoC’.

Even more challenging are cases of explicitly present protagonists, who are potential candidates for SoC, but only participate in the RESULT segment and not in the relation as a whole. Consider an example of the former case:

(11) The Second World War broke out the day before the majority of deaf schools were due to reassemble after the summer holidays. *As a result*, in some schools, half the children did not turn up. (BNC: BM9 1168).

The situation referred to in S1 cannot be deemed a motivation to act; neither can the RESULT be regarded intentional action. The children participate in the S2 segment but they definitely are not responsible for the causality in this relation. Since the whole relation describes a factual situation and the participant of S2 is simply forced to follow the circumstances they have no control

73 The adverb *slightly*, however, is part of the concessive relation marked with *but*, which follows the RESULT relation in focus.
over, examples like (11) above were coded as ‘absent SoC’. The presence of the objective connective in this context contributes to such an interpretation.

However, the question is whether instances of this kind with 1st person Subjects can be treated in the same way. Consider:

(12) Phil was always a fearless seaman, and I am a very cautious one. As a result we often had differences of opinion. (BNC: H0C 660)

It seems that (12) reports on a factual real-world situation which does not seem to have any SoC responsible for the causality. The connective suggests a non-volitional interpretation, which can also be explicated in terms of Langacker’s ideas about the ranges of uses of the verb have. As he argues (2000:307), in certain contexts the Subject functions as a locus of experience (‘having’), but with quite limited abstract control. Indeed, (12) lacks a participant who would have control over causality; however, the 1st person pronouns may intuitively be interpreted as identical with the implicit author SoC responsible for the relation construal. The question is therefore whether I (and we) in (12) should be coded as ‘absent SoC’, like the children in (11),74 which would make the relation a Non-volitional RESULT. It is definitely possible to argue to this effect. According to Sanders, J., Sanders and Sweetser (2012:211), the interpretative choice of the domain where the relation is realized should be compatible with the content of the segments. As they further claim, the 1st person explicit SoC in the real-world domain may be cognitively closer to other grammatical persons than it is commonly believed and so the relation interpretation does not change due to factors such as a personal pronoun. However, if we assigned the 1st person pronouns in (12) the role of a SoC, the relation interpretation would probably become epistemic.

Such an interpretation of (12) is in fact also possible, because it can also be analyzed in keeping with Traugott’s (1995:31) view on subjectification as the process where “meanings become increasingly based in the speaker’s subjective belief state/attitude toward the proposition”. Subjectification involves a change from the syntactic Subject into the subject of the utterance (SoC in the current terms), who also is the starting point of a perspective (Traugott, 1995:39). Even though (12) does not include features which usually mark this change (such as epistemic stance markers or attitudinal elements), it nevertheless carries traits of evaluation (e.g. the adverb often) and,

74 Pronominal references are an instance of a quite subjectively construed SoC, as opposed to less anaphoric references such as repeated names or full NPs (Pander Maat and Sanders, 2001; Pander Maat and Degand, 2001; Stukker and Sanders, 2009). However, this fact does not seem relevant in the discussion of whether some participant can be assigned the role of SoC or not.
in conceptual terms, can be seen as a kind of conclusion. In terms of Traugott (1995), this example is the alignment with the speaker’s view. Consequently, even though the cognitive status of the 1st vs. 3rd (recall (11)) person participants of RESULT relations should be a subject of further research, for the purpose of the present investigation the decision was made to code relations similar to (12) above as ‘ambiguous SoC’. This category does not change the non-volitional relation character, but suggests that a certain perspective may be present in the context.

These considerations bring us to the last potentially problematic area concerning SoC, which was partly discussed in Chapter 5 (section 5.3.1.6) and concerns SoC identification on the basis of evaluations and propositional attitudes. Compare two examples:

(13) My right hon. Friend the Secretary of State and my hon. Friend the Minister have achieved in the Bill a delicate balance between encouragement of the private utilities so that they remain profitable and strengthening consumer interests, without excessive bureaucracy. As a result, I have never been less tempted to support an Opposition motion (…). (BNC: HHW 10606)

(14) At the time of her appointment, Fohrbeck, who is a distinguished sociologist and studied under the renowned philosopher Jürgen Habermas, made no mention of her firmly held and openly practiced faith. As a result, the city councilors feel they were misled; (…) (BNC: EBS 320)

Recall that 1st person evaluations and other propositional attitudes (e.g. individual knowledge, perception, and experience etc., Sanders & Spooren, 2015:66) were in Chapter 5 treated as members of the epistemic domain. These elements can be regarded as direct reports on the speaker’s inner feelings, as opposed to simple descriptions of evaluations in the 3rd person, which were deemed non-volitional. So while (13) by default gets a 1st person SoC, for (14) the question emerges about the presence of a potential SoC.

As Biber and Finegan (1988: 97) argue in their discussion on stance markers, despite their important discourse role, stance elements only give a secondary descriptive indication of attitudes or state of knowledge, unless expressed in the 1st person. In every other case they cannot be regarded as the speaker’s direct report on ‘here-and-now’. That was the case in (13), while in (14) the councilors simply experience a feeling, which falls outside the domain of their intentionality. Consequently, they cannot be assigned the SoC role. However, as Sanders and Spooren (2015:59) argue in the discussion of evaluations, only facts can be interpreted without a reference to any SoC (for instance: Paris is in France), whereas the proposition He thought Paris is nice depends on some SoC, who made this evaluation. Furthermore,
the relation in (14) can be seen as an external report of another SoC on the character’s feelings/attitudes, i.e. perspectivization. Such a report requires the presence of certain linguistic elements (e.g. verbs of cognition, perception, evaluation; feelings, attitudes, etc.) in the context of the relation (Pander Maat & Sanders; 2001:252). Consider Stukker and Sanders’ example:

\[Dus (so/therefore)\] brother Wout quit his job as a PR manager with the PvdA and stood on the barricades with the aim of promoting Theo.

As they argue (2009:17), the implicit perspective of the SoC (brother Wout) is created by mentioning the goal for the action: “with the aim of promoting Theo”. In this way the reader co-experiences the SoC’s process of decision making. However, we should keep in mind that Stukker and Sanders’ study concerns only real-world volitional relations that already have an SoC and in that case the question concerns only her closeness to the speaker. In the case of (14), the question is whether an SoC is present at all and so the problem concerns the more vital distinction between subjectivity and objectivity. Since it seems that the relation could be interpreted both as absent or neutral SoC, it was eventually categorized (similarly to the other instances of feelings and attitudes in 3rd person or with nominal subjects) as ‘ambiguous SoC’.

The decisions on the coding for SoC in the relations discussed in this section certainly invite further discussion. The main problem to consider is to what extent the descriptions of the participants’ mental states and attitudes give the reader an access to their mental domain and thus whether some relations are simply ambiguous or maybe deliberately construed as blends between several perspectives. This problem relates to the distinction between Volitional and all types of RESULT relations with SoC and Non-volitional RESULT. It is beyond the ambition of the present study to tackle such a high level of granularity in subjectivity construal, but a short discussion of blended perspectives will be given in section 6.3.3.3. The next section provides the quantitative results of the coding of the present corpus samples for the presence of SoC.

6.3.1.1 Quantitative analysis of linguistic reference to the SoC of the relations.

Table 6.2 below provides the results of the quantitative analysis of the two BNC samples of the RESULT relations with the connectives as a result and for this reason from the point of view of linguistic reference to the Subject of Consciousness of the relation. Recall that the corpus samples used for the present analysis are the same as in Chapter 5 (see also Chapter 3, section 3.1.3.2).
The investigation of the SoC types in the two samples of the RESULT relations in focus yields a statistically significant difference in distribution of the connectives over the different SoC types ($\chi^2 = 109.79.; \text{df} = 6; \ p < 0.001$).

Also, *for this reason* shows a preference for the most subjective ‘implicit author SoC’ and a dislike for the ‘absent’ type ($\chi^2 = 100.48.; \text{df} = 1; \ p < 0.001; \ \phi = 0.45$), whereas *as a result* is most frequent with the most objective type – ‘absent SoC’ in comparison to ‘implicit author’ ($\chi^2 = 8.4416.; \text{df} = 1; \ p = 0.003; \ \phi = 0.13$). The effect sizes for the connectives differ – whereas the effect size is relatively big for *for this reason*, by contrast, the association between the variables and *as a result* is quite weak. This finding seems related to the relatively high number of the ‘implicit author’ SoC-types, which occurred in the connective’s context 42 times. Recall also from Chapter 5 that *as a result* occurred 42 times in epistemic RESULT relations in the analyzed corpus samples. Table 6.2 shows that all these instances were related to the presence of an implicit SoC.

One more significant difference was found also between the ambiguous SoC types, which are much more frequent with *as a result*. This finding is related to the high number of non-volitional participants, whose perspectives are reported on and possibly blended with the writer’s perspectives (e.g. (12)). The category ‘unspecified SoC’ reflects the frequencies of passive constructions where the SoC was difficult to identify (see (9) above) or evaluations/emphatics without clearly marked source of origin (e.g. (10)).

### Table 6.2 Linguistic reference to the SoC of the analyzed RESULT relations – raw scores

<table>
<thead>
<tr>
<th>SoC type</th>
<th>as a result</th>
<th>for this reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implicit author</td>
<td>42</td>
<td>109</td>
</tr>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; person pronoun</td>
<td>8</td>
<td>32</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; person pronoun</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; person pronoun</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Nominal expression</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Ambiguous</td>
<td>41</td>
<td>9</td>
</tr>
<tr>
<td>Unspecified</td>
<td>74</td>
<td>62</td>
</tr>
<tr>
<td>Absent</td>
<td>69</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>250</strong></td>
<td><strong>250</strong></td>
</tr>
</tbody>
</table>
6.3.2 Subjective elements

The following sections provide a discussion and specific findings on subjectivity elements identified in the RESULT segments of the investigated relations. At this point the current methodology diverges from Stukker and Sanders’ (2009) original paper, which after the results for SoC’s identification, provides frequencies for each of the relation’s arguments separately. This approach is not adopted here, which can be justified in line with Sanders and Spooren’s (2015:66) reasoning about backward causality. As they claim, the site where relational subjectivity is most manifest in backward causal relations is the first part of the relation. It seems that this argument can be used à rebours for their forward counterparts, which are the focus of the present study. Furthermore, the coding of the RESULT segments is more vital for the current goals and so the frequencies of the remaining variables (see Table 6.1 in section 6.2) will be provided only for the RESULT arguments.

6.3.2.1 Appraisal in the RESULT relations

Following Martin (2000) and also Trnavac and Taboada (2012), all elements analysed in this section were collapsed into one category called Appraisal. This includes expressions of evaluation, evidentiality and attitudinal stance markers listed by Biber and Finegan (1989:119ff): certainty and doubt verbs (e.g. conclude and feel), certainty and doubt adjectives (e.g. alleged and evident) and adverbs, positive and negative affect verbs (e.g. enjoy and dislike), adverbs and adjectives (e.g. amazed and afraid), emphatics (e.g. a lot; for sure) and hedges (e.g. almost; maybe). Consider an example of an epistemic RESULT that includes several elements of Appraisal (underlined) issued by the author SoC:

(16) But funding has been significantly less than other programmes, dissemination of materials less effective and leadership less dynamic. For this reason and probably also because Social Studies is not an area where governments readily welcome international initiatives, support for the programme is distinctly lukewarm. (BNC: BLY 518)

For each example in the two corpus samples analysed here, Appraisal elements were identified and then classified according to the subjectivity source of origin (see variable ‘Subjective elements’; Table 6.1 in section 6.2
However, the original categories used by Stukker and Sanders (2009) were changed to ‘SoC-generated’ (including both author and character), ‘ambiguous’ and ‘unmarked’. The category ‘ambiguous’ was needed in the current analysis due to a number of instances where the origin of the Appraisal elements was difficult to determine between two (or more) discourse participants:

(17) Sociology and anthropology were the application of these principles to understanding how people behave. For this reason he had encouraged Claudia to enter these new, modern sciences. (BNC: FAJ 613)

It is not fully clear whether the evaluation of sociology and anthropology stems from the perspective of the 3rd person SoC or is an element of a factual description compatible with the neutral perspective of the Cause segment. The connective in this context marks the volitional decision of the SoC in the RESULT segment, but is not very informative about the perspective. This is in contrast with (16) above, where for this reason pertains to the site of the author’s reasoning. These examples confirm the connective’s flexible nature between marking epistemic and real-world volitional contexts.

One more category that should be addressed consists of linguistic elements which are commonly used as evaluations, but can also be found as part of factual contexts. Since no clarification of what kind of instances belong to the category ‘unmarked SoC’ is given in Stukker and Sanders’ (2009) original paper, the current study assumes that it is exactly those elements that belong to this particular category. Consider:

(18) In diabetics, the insulin-producing cells produce only small amounts of the hormone. As a result, diabetics suffer from very high levels of sugar in their blood. (BNC: A30 572)

Even though the emphatic adverb very is commonly found as an expression of the speaker’s attitude towards the proposition (Biber and Finegan, 1989:94), it can hardly be argued to have this role in (18). The adjective in this particular case is part of common, scientifically proved knowledge and not the speaker’s stance, which means that it does not contribute to the interpretation of the RESULT relation. This example further confirms that subjectivity is the feature of context and does not hinge upon the mere presence of elements that convey perspective. Note also how the semantic profile of as a result interacts with the content of the non-volitional situation in (18), as opposed to for this reason, which would suggest either the speaker’s respon-

75 In cases like (16) above, where there are several elements of Appraisal coming from the same source (author), they were counted as one occurrence of SoC-generated features.
sibility for causality (e.g. an act of reasoning) or some kind of volitional activity on the part of the S2 Subject.

The last category of signals included in this section are verbs of implicit perspective, which are private state reports such as verbs of cognition, perception, emotions, evaluations etc. (Stukker & Sanders, 2009:17). Examples of ambiguities were discussed in 6.3.1 above ((12)-(14)), but there are also instances that can make rather neutral part of the state of affairs reported:

(19) She was told not to look at other boys because they’d think she was fat and ugly. As a result the girl had become introverted. (BNC: K1C 2901)

The causality in (19) falls outside the domain of the Subject’s intention (the girl) and so this participant cannot be regarded as SoC. The evaluation ‘introverted’ is an element of a non-volitional factual description (note the connective choice which emphasises this character) and so it was categorized as ‘unmarked’.

Table 6.3 below provides frequencies for the subjective elements found in the RESULT arguments of the investigated relations:

<table>
<thead>
<tr>
<th>Subjectivity source</th>
<th>as a result</th>
<th>for this reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>SoC</td>
<td>65</td>
<td>109</td>
</tr>
<tr>
<td>Ambiguous</td>
<td>38</td>
<td>25</td>
</tr>
<tr>
<td>Unmarked</td>
<td>58</td>
<td>21</td>
</tr>
<tr>
<td>Total Appraisal elements</td>
<td>161</td>
<td>157</td>
</tr>
<tr>
<td>Total relations</td>
<td>250</td>
<td>250</td>
</tr>
</tbody>
</table>

The connectives show significant differences in their distribution over the SoC Appraisal elements ($\chi^2 = 31.99$; $df = 2; p < 0.001$). Further, the connective for this reason shows a strongly significant preference for the subjectivity elements issued by an SoC and a dislike of such elements from an unmarked source ($\chi^2 = 80.49$; $df = 1; p < 0.001; \phi = 0.401$), whereas as a result did not exhibit a significant tendency.

It is important to keep in mind that the members of the ‘unmarked’ category are very low on the subjectivity scale and therefore do not change the interpretation of the RESULT argument. Yet they differ from totally objective Non-volitional RESULT relations entirely devoid of subjectivity features like (20) below:
(20) On delivery the ventilator on top of the hopper was shut and nobody noticed. *As a result* nuts stored in the hopper became mouldy. (BNC: H7U 12 26)

6.3.2.2 Modal auxiliaries

Another kind of subjectivity-related elements investigated in the present corpus samples are modal verbs. In the study on the subjectivity in causal connectives Stukker and Sanders (2008:118f) order modal auxiliaries from least to most subjective: basic < deontic (root) < evaluative < epistemic causality based < epistemic non-causality based. A question that could be asked about this particular proposal is how it can be operationalized in order to yield more robust criteria useful in an empirical investigation. In the paper where the current model of the linguistic variables of subjectivity is proposed, Stukker and Sanders (2009) do not return to this particular categorization but simply discuss modal verbs as part of the group ‘Subjectivity elements’ from the point of view of the source of their origin (i.e. author, character etc.). The present study, in contrast to that approach, provides separate results for modal auxiliaries specifically in Table 6.4 below:

<table>
<thead>
<tr>
<th>Modal auxiliary source of origin</th>
<th>as a result</th>
<th>for this reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author</td>
<td>22</td>
<td>42</td>
</tr>
<tr>
<td>Character</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>Ambiguous</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Neutral</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Total modality</td>
<td>43</td>
<td>67</td>
</tr>
<tr>
<td>Total relations</td>
<td>250</td>
<td>250</td>
</tr>
</tbody>
</table>

No statistically significant association was found between the connectives and the modal categories ($\chi^2 = 7.16; \text{df} = 3; \ p = 0.06$). Since there is a discernible difference between the frequencies of the most subjective modality types (author and character) and least subjective types (ambiguous and neutral), the numbers were therefore collapsed. The association between the connective and the modality type approaches statistical significance ($\chi^2 = 6.3087; \text{df} = 1; \ p < 0.05; \ \phi = 0.239$), but the effect size is rather low.

It is clear from Table 6.4 that both the connectives analyzed are relatively common with the most subjective modals (60% of *as a result* – relations and
82% of those with *for this reason*. While this is quite expected with *for this reason*, it can be somewhat surprising for *as a result*. However, recall from Chapter 5 (Table 5.1 section 5.3.2) that 44 relations with *as a result* were coded as epistemic and thus including an SoC. Only 10 of them were judged to be epistemic on the basis of linguistic features other than a modal verb. The remaining 34 had a modal auxiliary as the governing facet of the relation. As Table 6.4 indicates, 26 of these verbs were issued by the two most subjective SoCs, i.e. author (20 instances) and character (four instances) and 10 by an ambiguous SoC. The remaining seven were deontic verbs issued by a neutral SoC⁷⁶ and thus not regarded as epistemic/volitional. It therefore seems that modal verbs are the main reason why the phrase *as a result*, overall strongly preferred in more neutral real-world RESULT arguments, can occur in epistemic contexts.

These observations suggest that the approach based on the source of origin of the modal verbs in discourse does not provide the whole picture of how modality contributes to the construal of different types of the RESULT relations. It seems particularly interesting to see what kind of modal verbs do not contribute to the meaning modulation, as in the case of the aforementioned seven instances of ‘neutral-SoC’ auxiliaries with *as a result*. For this reason, additional calculation was carried out, in line with Lyons’ (1977; 1982) and Coates (1983) approaches to subjectivity in modality (Lyons 1977:800):

Subjective epistemic modality can be accounted for (…) in terms of the speaker's qualification of the ‘I-say-so’ component of his utterance. Objective-ly modalized utterances (…) cannot be described as having an unqualified ‘I-say-so component’, but an ‘it-is-so’ component that is qualified with respect to a certain degree of probability.

In a similar vein Coates (1983:41f) suggests that there is a cline between a confident inference by a subjective speaker and an objective periphery meaning related to the state of affairs. Most importantly, neither Coates nor Lyons draws a discrete line between subjectivity and objectivity according to the two categories of modal verbs, i.e. deontic and epistemic. Lyons (1982) argues that the subjectivity of modals is context-dependent and thus interpretations of the verb *must* in the sentence *You must be very careful* can be as follows (1982:109):

\[
(21)
\]

a) You are required to be very careful (deontic, weakly subjective)
b) I require you to be very careful (deontic, strongly subjective)

⁷⁶ See (21a) below.
c) It is obvious from evidence that you are very careful (epistemic, weakly subjective)
d) I conclude that you are very careful (epistemic, strongly subjective)

On this account, we can interpret (21) as a quite objective requirement (a), if the context conveys generally understood requirement, or a weakly subjective conclusion (c), if it is the author’s subjective view. Owing to their modalizing functions, modal verbs interpreted as (b), (c) or (d) types were annotated as conveying speech-acts or epistemic RESULT relations. By contrast, since verbs with a function similar to that of must in (21a) do not play a modalizing role rendering the relation epistemic or speech act, they were all coded as instances of Non-volitional RESULT in Chapter 5. Recall (22) (section 5.3.1.1 in Chapter 5) repeated here as (22):

(22) Many of us are shallow breathers; we use only the upper part of our lungs, which means that toxic residues are not completely removed. As a result, the blood is deprived of much of the oxygen it needs to feed the body tissues, so we may end up feeling listless or suffer vagueness of thought. (BNC: B06 1767).

The modal verb need can be categorized as type (a) due to its very weak subjective character. However, the RESULT segment of (22) simultaneously serves as a Cause argument for the following epistemic RESULT prefaced with so. Similarly to the volitional/intentional and non-volitional distinctions, the distinction between the modal verbs found in the relations was made between those that directly govern the causality in the event under consideration and those that are present elsewhere in the context of the sentence. Since the latter group is outside the scope of the relation in focus, their presence was not taken into consideration as a factor that directly influences the relation interpretation.

Table 6.5 below provides the frequencies separately for auxiliaries as main verbs and those that are not part of the relation, like may in (22) above (numbers in parentheses). The totals include only the modal auxiliaries coded as part of the RESULT relations, as only they directly contribute to the subjectivity of the event analyzed. Also, the verb will in its function of a future tense operator was not included in the frequencies for modal verbs (two instances were found with for this reason77).

77 For instance: It is hoped that the reader will participate to some extent in this activity by sharing the perspective of the workshop team who worked on this text. For this reason, the original Hemingway version will be withheld for the moment as attention is focused on both the jumbled version and the reconstructions by the workshop participants. (BNC: J89 53)
Table 6.5 Modal verbs in the analyzed RESULT segments – raw scores

<table>
<thead>
<tr>
<th>Modal auxiliary</th>
<th>as a result</th>
<th>for this reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type (a) – deontic, weakly subjective</td>
<td>7 (1)</td>
<td>4</td>
</tr>
<tr>
<td>Type (b) – deontic, strongly subjective</td>
<td>1 (1)</td>
<td>10 (1)</td>
</tr>
<tr>
<td>Type (c) – epistemic, weakly subjective</td>
<td>32 (5)</td>
<td>33 (2)</td>
</tr>
<tr>
<td>Type (d) – epistemic, strongly subjective</td>
<td>3 (2)</td>
<td>20 (1)</td>
</tr>
<tr>
<td>Total relations with modal verbs</td>
<td>43 (9)</td>
<td>67 (4)</td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
<td>250</td>
</tr>
</tbody>
</table>

It is quite clear from Table 6.5 that *as a result* prefers the RESULT relations with modal verbs type (c), where it occurs in 74% of the cases. *For this reason* occur most frequently with the types (c) and (d) – 82%. The findings for *as a result* relate back to the results presented in Table 6.4 above. It seems that modality in general, but apparently subjective epistemic modality in particular, is one of the features that enable a connective with a more objective semantic profile to occur in the environment that conveys higher speaker involvement, for instance:

(23) The flow of water in and out of the Pool is so greatly impeded that evaporation under the grilling sun has made the waters very salty indeed. *As a result*, marine creatures such as molluscs, which would normally feed on blue-greens and keep them in check, cannot survive. (BNC: EFR 196)

What (23) brings to mind is Stukker and Sanders’ (2009; 2012, see 6.1 above) arguments that an objective connective marks a subjective relation for the causality type it typically occurs with and, consequently, the relation exhibits more objective traits. In (23), the objective connective *as a result* relates two events in the real world, i.e. salty water as a life-threatening condition for some marine creatures. The presence of the modal implies that evidence for the statement exists, which requires relatively weak subjective commitment of the SoC (type (21c)). As we see in Table 6.5 above, modal auxiliaries with this kind of evidential reading are much more frequent than the most subjective type (21 (d)) with *as a result*. This suggests that the connective indeed contributes a layer of objectivity in epistemic relations, which become ambiguous between factual and epistemic interpretations (see section 6.3.4 below for discussion).

By contrast, *for this reason* is significantly more frequent in the environment of the most subjective (epistemic) verbs, which reflect the speaker’s level of confidence and commitment to the truth of the utterance:
When investigated, they will reluctantly shed one layer of explanation at a time, but only to reveal another deeper level of complexity beneath. *For this reason*, something that is accepted as a satisfactory causal explanation at one point in time can become problematic at another. (BNC: B16 1210)

Even though the same modal verb is used in both (23) and (24), the interpretations differ. While in (23) *can* conveys an evidential assertion, in (24) its presence creates epistemic uncertainty. This observation explains the distributions of modal auxiliaries with *for this reason* in the current samples: the subjectivity encoded by this connective interacts more felicitously with more subjective modal verbs (type 21 (b) and (d)). However, *for this reason* quite freely occurs across all the types of modal verbs, which is in line with Pander Maat and Degand’s (2001:184) argument that connectives which encode a higher level of the speaker involvement are capable of introducing subjectivity into the relation and thus can be quite frequent also in relatively objective contexts. Such contexts are also likely to exhibit more subjective features owing to the presence of the subjective connective (*mutatis mutandis*, as in the case of the phrase *as a result* in the objective context of (23)).

6.3.2.3 Tense

Another feature often argued to have a potential relationship with contextual subjectivity is tense. While future and present tenses are commonly regarded as elements construing a conceptual closeness to the SoC of the relation, past tenses indicate a conceptual distance (Stukker & Sanders, 2012:183). Therefore tense can be used to convey differences in perspective, even though its role in subjectivity marking is somewhat questionable. For instance, in some genres (e.g. newswire) the present tense, which is regarded to be rather subjective (Fleichman, 1990:232), is the default mode of reporting events (Stukker & Sanders, 2009:16).

It is important to note that in the process of the coding of the modal verbs their grammatical tense was considered, as opposed to the temporal reference. Admittedly, there is a difference in the orientation of the two sentences below:

(25)

a) We are finished, *so* he *may* be finished as well.

b) We are enemies, *so* he *may* show us his true face now.

While (25a) can be argued to lean towards the ‘here and now’ of the utterance, (25b) has a future orientation (see also Narrog, 2012:4). However, in order to avoid complex theoretical considerations on this topic (see e.g. Enç, 1996; Jaszczolt, 2003), all modal verbs, with the exception of *will* (which
was coded as Future tense due to its unambiguous future-orientation), were
categorized as Present Tense. Table 6.6 below presents the results of the
tense investigation in the relations analyzed:

### Table 6.6 Tense in the RESULT arguments ordered by subjectivity

<table>
<thead>
<tr>
<th>Tense</th>
<th>as a result</th>
<th>for this reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Future</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>Simple present</td>
<td>122</td>
<td>173</td>
</tr>
<tr>
<td>Present perfect</td>
<td>21</td>
<td>19</td>
</tr>
<tr>
<td>Simple past</td>
<td>89</td>
<td>44</td>
</tr>
<tr>
<td>Past perfect</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>250</strong></td>
<td><strong>250</strong></td>
</tr>
</tbody>
</table>

The connectives show overall distributional differences over the types of
tense they co-occur with ($\chi^2 = 24.96; df = 4; p < 0.001$). More specifically, *as a result* is more frequent with the two most objective tenses, i.e. present perfect, simple past and past perfect, whereas *for this reason* with the most subjective tenses (future and present) ($\chi^2 = 20.89; df = 1; p < 0.001; \phi = 0.204$). The effect size is quite low for both the calculations. As suggested before, these findings may be to some extent register-related, but it is also likely that the preference of the connective *as a result* for the past tenses simply reflects its factual meaning, which implies a finite character of the following argument, as well as its function as a marker of a ‘report’ on a causal process. Also, the clear preference of *for this reason* for the present tense and its less frequent occurrence with the past tenses confirm that this connective is more prototypically used in the contexts of reasoning and volitional actions, which may not be realized. This finding is suggestive of the potential relationship between the feature of nonveridicality and the RESULT relation with an SoC, where the connective *for this reason* tends to occur.

### 6.3.3 Deictic elements and embedding of perspective

The role of deictic elements has been argued not to be fully clear in the
subjectivity construal, but their analysis seems to have a potential to provide
useful information about the RESULT relation type. Following Stukker and Sanders (2009:15), the focus on the current analysis is on ‘point of view
deictics’, i.e. the source of deictic elements (author, character, neutral). It is

---

78 Apart from few examples of clear past-tense forms of *can* and *have to*.
79 The frequencies were collapsed.
interesting to see how these elements contribute to the construal of intentionality and volition in the Result relations.

6.3.3.1 Deictic centre of the Result relations

The below examples demonstrate how the deictic elements were identified and coded in the present corpus:

(26) **NVR**: A man was fixing some faulty wiring in his caravan when he slipped and knocked his head. *As a result* he is *now* registered blind in one eye. (BNC: EE0 1634)

(27) **VR**: In any real case a variation of several hundred from the predicted value would be expected due to chance alone, while predictions based on the two methods do not differ by as much as one record in any file examined by the author. *For this reason* the simpler and more general Poisson calculations are used *from now on* in *this* book. (BNC: FPG 314)

The deictic *now* in (26) above was categorized as 'neutral', as no clearly identifiable SoC seems to be present in this example. This is compatible with the context of a non-volitional scenario. By contrast, in (27), the author’s voice is quite clearly conveyed via the underlined deictic elements (classified as coming from ‘author SoC’). Similarly to (8) discussed in 6.3.1 above, this example is an instance of ‘masked subjectivity’, where the writer, in this case due to the conventions of academic discourse, reduces the degree of subjectivity by using the passive voice (Traugott & Dasher, 2002:126).

Table 6.7 below presents the frequencies of deictic elements according to the ‘deictic center’ of the analyzed arguments. Following Stukker and Sanders (2009), the distinction is made between author, quoted speaker and speaker center as one category, embedded character as another category and also neutral and ambiguous (usually a mixture of the author’s and character’s perspectives) categories. The deictic elements analyzed include temporal (*then, now*), place (*here, there*), person – with the exception of first person pronouns, which are bound to the speaker (Stukker & Sanders, 2009:15) and therefore were collapsed with the author’s perspective and discourse (*this, that*) deixis.

---

80 It is important to note that the figures do not correspond to the number of all the deictic elements in the analyzed sentences. So (27) was coded as one instance of author SoC-related deixis and not as two deictic elements.

81 This, of course, does not concern embeddings, such as: *John said: ‘I’m a hero’.*
As Table 6.7 suggests, there are distributional differences between the connectives and the deictic center types they occur with ($\chi^2 = 40.92; \text{ df } = 3; p < 0.001$). Also, for this reason shows a significant preference for the elements issued by the most subjective SoC (author and 1st person) ($\chi^2 = 31.95; \text{ df } = 1; p < 0.001; \varphi = 0.315$). By contrast, as a result prefers the most objective-source neutral elements ($\chi^2 = 20.2; \text{ df } = 1; p < 0.001; \varphi = 0.224$).

### 6.3.3.2 Linguistic embedding of perspective

Linguistic embedding of perspective is related to the notion of perspectivization mentioned in the context of potential SoC-candidates in 6.3.1 above. Note that the variable ‘linguistic embedding of perspective’ classifies explicitly ‘perspectivized’ segments according to embedding type, but it does not specify for perspective type (author or non-author character, or neutral). Explicit linguistic signaling of perspectivization is done by quotation marks, embedding predicates or with verbs of communication or cognition which “invite an addressee to identify with a particular perspective on an object of conceptualization that is itself represented in the embedded clause” (Verhagen, 2005:79; Stukker & Sanders, 2009:13).

The first category, ‘mental state complement’, was not discussed in detail by Stukker and Sanders (2009). In the current study it includes common mental verbs related to understanding, planning, desiring etc. (e.g. think, know, like, want, doubt etc.) and verbs of implicit perspective, which convey perceptions, state of cognition, evaluations by the author etc. (see, feel, regard). The investigation in this section gives a more specific picture of the contribution of these to the RESULT construal than that in section 6.3.2.1., where they were analyzed together with the other elements of Appraisal from the point of view of their source of origin. Consider:

### Table 6.7 Deictic center in the RESULT arguments analyzed – raw scores

<table>
<thead>
<tr>
<th>Deictic center type</th>
<th>as a result</th>
<th>for this reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author/ quoted speaker/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st person speaker</td>
<td>49</td>
<td>92</td>
</tr>
<tr>
<td>Embedded character</td>
<td>30</td>
<td>16</td>
</tr>
<tr>
<td>Ambiguous</td>
<td>30</td>
<td>11</td>
</tr>
<tr>
<td>Neutral</td>
<td>92</td>
<td>42</td>
</tr>
<tr>
<td>Past perfect</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total elements</strong></td>
<td>201</td>
<td>161</td>
</tr>
<tr>
<td><strong>Total relations</strong></td>
<td>250</td>
<td>250</td>
</tr>
</tbody>
</table>
(28) Then the ghoul will rob the corpse of the interred jewelry and devour the newly dead flesh with its sharp fangs. *For this reason it is best* to carry out funerals with a minimum of pomp and fuss. (BNC: CAC 1216)

Instances of RESULT clauses similar to (28) are categorized as subjective author’s discourse, as they convey an epistemic type of a directive/instruction (cf. Stukker & Sanders (2009:13f).

‘Embedding predicates’ comprise verbs of communication such as *say* or *argue*. The category ‘other embedding’ includes speech acts Type 2, i.e. paraphrases and summaries (recall the character of speech acts Type 2 from Chapter 5, section 5.3.1.5) and PURPOSE clauses, as they convey either the SoC’s or other participants’ mental process of decision making (Stukker & Sanders, 2009: 18):

(29) Arguably, the operation of the ratchet confers a ‘special benefit’ within s80 Finance Act 1988. *For this reason*, inverse ratchets have been used in the past, to give management the maximum proportion of Newco’s equity at the outset, which reduces if the business does not achieve defined profit targets. (BNC: J6S 490)

Note that the reader becomes involved in the process of decision making here, but the type of the RESULT relation (real-world volitional) is not affected by the PURPOSE clause embedded under its scope. The same principle applies to summaries and paraphrases. Table 6.8 below provides the frequencies for the embedding types:

<table>
<thead>
<tr>
<th>Type of embedding</th>
<th>as a result</th>
<th>for this reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental state complement construction/(elements of implicit perspective)</td>
<td>10 (61)</td>
<td>11 (50)</td>
</tr>
<tr>
<td>Embedding predicate</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>Other embedding</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>Quotation marks</td>
<td>3 (3)</td>
<td>3 (10)</td>
</tr>
<tr>
<td>Total elements</td>
<td>27 (64)</td>
<td>39 (60)</td>
</tr>
<tr>
<td><strong>Total relations</strong></td>
<td><strong>250</strong></td>
<td><strong>250</strong></td>
</tr>
</tbody>
</table>

The numbers in parentheses with the quotation types refer to direct quoting of somebody else’s speech, in contrast with the indirect quotation, as in (30) below:
Out of the 167 women interviewed, nearly 70 per cent did stereotyped female work and/or held appointments in agencies carrying out tasks considered of particular concern to women. As a result, she epitomized the successful political woman’s role as that of a ‘supermother’ (Chaney 1979). (BNC: AN3 431).

No significant tendencies in the connective distributions over the embedding types were found ($\chi^2 = 6.45$; df = 3; p = 0.09). The numbers are overall very equal, which is probably related to the overall low frequencies of the analyzed features. The findings are, however, somewhat surprising for the mental state complement and implicit perspective (numbers in the parentheses) category. This category involves elements usually regarded as related to subjectivity construal, which can be anticipated more frequently with **for this reason**. While the reasons for the common occurrence of such elements with **as a result** could be a topic of further research, the ad hoc hypothesis is that in naturally produced discourse evaluative expressions may be added to otherwise objective and factual descriptions for rhetorical purposes (possibly register-related). Consider:

Certainly in the first 10 years that the two species overlapped, the proportion of magpie nests which were parasitized rocketed from a quarter to more than three quarters, as the cuckoos switched away from the more discriminating meadow buntings. **As a result**, the magpie population dropped dramatically: in one village, from 259 birds to just 77. (BNC: EFF 230)

Even though the adverb **dramatically** can be seen as highly evaluative, it does not endow the relation with a particularly subjective stance. Also, its presence in the context of **as a result** in (31) is likely to be aimed to convey certain emphasis of this significant factual outcome. With **for this reason**, by contrast, the relation could be perceived as a conclusion. The evaluative element would then contribute to the relation interpretation as epistemic. As it is now, (31) was coded as Non-volitional **RESULT** with a neutral SoC. Further, verbs of implicit perspective with **as a result** are often part of a 3rd person perspective independent of her intention and volition (recall (14) in 6.3.1 above):

They each believed that what they were doing was vital for the betterment of the world as each saw it and neither would give way to the other, or defer in any way to the other’s claimed priority in attention, preference or responsibility. **As a result**, the weeks passed, and the months and before they **knew** it, it was years. (BNC: ATE 475)
In (32) the cognition verb (*know*) is used as part of a non-volitional description. A closer analysis of the 61 implicit perspective elements with *as a result* (Table 6.8 above) indicated that in 41 cases (67%) they were generated by a neutral or ambiguous SoC (i.e. a more objective type, as opposed to author and character). By contrast, 40 out of 50 such features with *for this reason* (80%) come from either author or character’s SoC (only 3 cases of a 3rd person SoC). A more detailed analysis would be needed to verify this finding, but this distribution suggests that even though both (29) and (32) were coded as relations including elements of implicit perspective, the role such features play in the context of the RESULT relations can apparently be quite different. Also, some cases may, in fact, be less straightforward than the present analysis suggests; for instance, (30) could be regarded as an instance of a blend of the author’s and another character’s opinions. Further studies could establish whether combinations of different perspectives are more common in certain types of relations.

These considerations bring us closer to the topic of perspectivization and perspective blending on the sentence level in the analysed relations. Recall from 6.2 above that Stukker and Sanders’ (2009) analytical model includes two categories which were disregarded in the current investigation. The following section provides a brief justification of their exclusion.

### 6.3.3.3 Perspective blending

From the 7 categories presented in Table 6.1. in section 6.2, only categories 1–5 were annotated in the current corpus study. The two remaining sets, i.e. ‘representation mode’ and ‘perspective carrier’ were not included in the analysis, but deserve a brief commentary. The idea behind these categories relates to the incremental nature of Stukker and Sanders’ (2009) model. As the authors explain it, the subjectivity indicators in categories 1-5 add up to the representation mode of each segment of the relation, which indicates how speech or thought of the SoC in the text is represented (2009:16). For instance, the elements of author SoC-generated subjectivity are argued to contribute to the segment’s construal from the perspective dubbed ‘subjective author’s discourse’. However, the analysis of the contribution of the subjectivity indicators on the clausal level to the whole relation interpretation (sentence level) can become very convoluted (also because the ‘voices’ of two or more discourse participants are often blended in one relation) and seems to require a more structured approach than the original study offers. This is reflected in the rather vague character of the conclusions that follow the analysis of the ‘representation mode’ category in Stukker and Sanders’ (2009) paper.

Similar problems concern the notion of ‘perspective carrier’, which is meant to reflect the dominant perspective on the relation level (see Table 6.1). According to Stukker and Sanders (2009:10f), perspective carrier is a
linguistic concept construed by the author of the text in order to foreground her own subjective view, another character’s perspective or no particular perspective. The perspective carrier is the source of subjectivity not necessarily identical with the SoC and if it is present, then the causal relation is subjective. The main reason for disregarding this category is because (similarly to the case of ‘representation mode’ above) it does not provide clear-cut criteria to account for ambiguities in perspective construal in discourse relations and so can be problematic for a quantitative analysis (Stukker, 2014, p.c.). Consider one of Stukker and Sanders’ original examples (2009:18):

(33) ‘Schreijer felt it highly necessary to have a peasant woman in the House of Commons, and “dus” she went to the market to sell homemade sausage and cheese’.

As the authors claim, in the above relation the character SoC’s subjectivity is merged with the author’s subjectivity, since the nature and degree of the character’s feelings (i.e. highly necessary) is a subject of the author’s ironic evaluation. Thus this relation was coded in the original paper as ambiguous for the perspective carrier. However, a relation does not have to be ambiguous in a sense that it is impossible to establish from whose perspective it is actually construed, but it may simply involve deliberate blending of various SoC’s perspectives. Consequently, (33) can be interpreted as a blend of the 3rd person ‘non-speaker’ viewpoint with the speaker’s viewpoint. Sanders et al. (2012:196) explain this phenomenon in terms of a mental spaces network (BCSN) and argue that in case several inputs are blended in one relation, it is possible to set up a 3rd person mental space with features which are non-standard for a 3rd person description (here: the author’s evaluation). Perspective blending seems the most robust approach to otherwise ambiguous and unclear instances of perspective construal where a few perspectives are involved.

Instances of blends similar to (33) above constitute a way to bring a 3rd person space closer to the speaker’s space. Combinations of different perspectives may be particularly common in written discourse. Therefore deciding on the dominant perspective (i.e. who is the perspective carrier) is a common analytical problem, particularly in unclear cases. Consider:

82 The concept of the Basic Communicative Spaces Network (BCSN) (Sanders et al., 2009; 2012) is an integrated approach to differences in causal construals compatible with Sweetser’s (1990) idea of discourse domains and links it with subjectivity theory and mental space theory (Fauconnier, 1985).

83 Although perspective blends are probably genre-related, for instance narratives are intrinsically prone to blending, as they recuperate experience and allow multiple embeddings of perspectives (Sanders et al., 2012:193).
The success or failure of the England team has become pivotal to the financial health or sickness of the county clubs. Their relationship is inter-dependent. For this reason, the announcement this Thursday of the recommendations of the Murray committee for the future structure of county cricket from 1993 onwards will be keenly awaited by all in the game. (BNC: AKE 987)

The example looks like a mixture of the implicit author’s opinion and, possibly, another SoC’s (i.e. a member of the ‘all in the game’ group) perspective. Which of them was meant to be more prominent may be hard to establish and so the relation could be argued to represent an unclear case (Stukker, p.c.). However, it remains to be solved in future studies (possibly within BCSN) whether it is practical to posit two separate categories, i.e. ‘perspective blend’ and ‘unclear’, as the latter one also involves a kind of blending.⁸⁴

An in-depth qualitative investigation could provide a more reliable basis for this type of inquiry; yet, it would be beyond the scope or ambitions of the current study to provide an analysis of subjectivity on this level of complexity, also because the existing models such as BCSN require theoretical refinements. For this reason, the present study did not attempt the annotation of the subjectivity features on the sentence and relation levels of the analysed RESULT relations.

This section closes the analysis of the subjectivity features in the corpus of RESULT relations with as a result and for this reason. The next section presents the findings and observations from an investigation of a subset of real-world RESULT relations and subjectivity construal related to the presence of specific connectives in their contexts.

6.3.4 Comparison between real-world Volitional RESULT relations with for this reason and as a result

Since discourse connectives more commonly show tendencies rather than restrictions to one discourse domain (Sanders & Spooren, 2015:64), it is not uncommon that they occur in contexts where they can be regarded as non-prototypical⁸⁵ usages. Several studies of Dutch, German and French

---

⁸⁴ Admittedly, it can be argued that the category ‘unclear’ could involve cases of perspective blends whose participants are more difficult to identify than those included in the category ‘perspective blend’, but probably a separate study may be in order to confirm whether this is the case.

⁸⁵Recall that prototypicality is defined here in terms of usage frequency (Stukker et al, 2009:123).
connectives have confirmed this observation (Frohning, 2007; Günthner, 1993; Keller, 1995; Pander Maat & Degand, 2003; Pit, 2003; Sanders & Spooren 2013; Stukker & Sanders, 2009). Interestingly, it turns out that the relations marked with a connective typically used in another domain usually carry features of that particular domain. Stukker and Sanders (2009:24) elucidate this phenomenon in terms of causal construal and argue that the function of non-prototypical usages of connectives is to communicate that another causal category is relevant in the interpretation of the causal relation, in addition to the causality type which naturally resides in its segments.

In the overview based on investigations of subjective and objective causal relations marked with subjective/objective backward causal connectives in German, French and Dutch, Stukker and Sanders (2012:179ff) suggest that these arguments are cross-linguistically valid. It seems that, systematically, marking an objective causal relation with a subjective connective contributes to foregrounding of the subjective elements and hence subjective interpretation of the relation. The opposite effect of subjectivity has been observed in subjective relations marked with an objective connective (Stukker & Sanders, 2012:177). However, the existing corpus evidence is somewhat preliminary due to the small number of observations available. Thus the present substudy can be regarded as another contribution to this question. Not only are causal relations in English underresearched from this perspective, but they can be particularly compelling to analyze considering the previous observations of the connectives and their flexibility to occur across discourse domains.

Recall also (section 6.1 above) that real-world volitional relations are commonly regarded as relatively objective. The question addressed here is whether the presence of the two analyzed connectives has a similar effect on this relation type in English as in the other languages. This concerns first of all for this reason, given the fact of its flexibility between the epistemic and real-world volitional domains (albeit with a significant tendency to occur in the former type). The more constrained phrase as a result is anticipated to contribute a layer of factuality to real-world volitional events.

6.3.4.1 Sample analysis and quantitative results.

The same BNC sample of the RESULT relations used for the subjectivity analysis in sections 6.3.1–6.3.3 above was used also in the current section with the focus on the subset of the real-world volitional relations. Recall from the results of the analysis obtained in Chapter 5 that the samples of 250 examples of as a result and 250 of for this reason provided 16 instances of real-world Volitional RESULT with as a result and 90 instances with for this reason (see Table 5.1 in Chapter 5). The initial idea was to carry out a further manual analysis of the BNC material until the number of real-world Volitional RESULT relations reaches 100 instances with each of the phrases.
The entire written BNC material with *as a result* was mixed in a random order and the decision was made to search for pronominal and nominal collocations of the phrase in the subject position, as a volitional relation requires an animate subject. This analysis provided additional 24 target instances – six with Subjects expressed with pronouns and four with nominal expressions. As a consequence, a sample of 40 relevant instances was gathered. Interestingly, the remaining pronominal and nominal collocations that occurred in the collocation list expressed Non-volitional RESULT. Thus it can be concluded that the sample of 40 instances of Volitional RESULT may be quite close to the total number of this relation type prefaced by *as a result* in the BNC written material.\(^{86}\) Subsequently, to make the samples of the two connectives analyzed more equal, every second instance of *for this reason* with real-world Volitional RESULT extracted initially was discarded and a collection of 40 examples obtained. The samples are, admittedly, not large, but as several corpus studies quoted in this chapter indicate, even a small number of relations can be profitably investigated.

The next step was to analyze the two samples using Stukker and Sanders’ (2009) table of linguistic variables (see 6.2 above). Table 6.9 below presents the results for the linguistic marking of SoC:

<table>
<thead>
<tr>
<th>SoC type</th>
<th>as a result</th>
<th>for this reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implicit author</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>1\textsuperscript{st} person pronoun</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>2\textsuperscript{nd} person pronoun</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3\textsuperscript{rd} person pronoun</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Nominal expression</td>
<td>17</td>
<td>8</td>
</tr>
<tr>
<td>Ambiguous</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Unspecified</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Absent</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
<td><strong>40</strong></td>
</tr>
</tbody>
</table>

There are several problems related to these findings. First, the number of the implicit author SoC with *for this reason* comes from the passive relations deemed as volitional on the basis of the presence of a very prominent and

---

\(^{86}\) There may be instances of verbal passives, which would be categorized as real-world Volitional RESULT in the remaining part of the corpus. However, several random searches performed on the BNC material did not result in any satisfying findings, and the scope of the current substudy was too limited to extend it to more time-consuming manual analyses.
volitional author (e.g. (8) in 6.3.1 above). This is why this type of SoC is absent with *as a result*. Second, the categories ‘absent’ and ‘ambiguous’ SoC types are not present in this subcorpus, as both of them represent the cases where SoC either is impossible or difficult to identify. Consequently, the picture of the subjective and objective features in his study differs from what we saw in the SoC analysis in 6.3.2.1 above. Also, the frequencies are overall quite small, so the frequencies were collapsed into three categories: (a) most subjective author and 1st person SoC; (b) moderately subjective 3rd person and nominal expression SoC; (c) unspecified SoC. These distributions yield significant differences between the connectives ($\chi^2 = 18.27.; df = 2; p < 0.01$).

The lack of ambiguous SoC types suggests that it may be easier to identify the doer behind the real-world Volitional RESULT than another relation type. Further, the most objective category, i.e. unspecified SoC, is more common with *for this reason*, but not significantly. The reason for that is related to the number of passive relations with an unspecified SoC but deemed volitional. Overall, the frequencies in Table 6.9 above indicate that there are certain effects of the connective presence in the real-world volitional RESULT relations in English. Yet, due to the low frequencies and small sample sizes, these findings are quite preliminary.

The details of the analysis of the remaining features can be found in Appendix 3, but the other significant observations concern tense and deictic elements. The most subjective tenses found in the relations,87 i.e. Simple Present and Future, are significantly associated with *for this reason*, while the three more objective tenses, i.e., Present Perfect, Simple Past and Past Perfect (all frequencies collapsed) with *as a result* ($\chi^2 = 9.83.; df = 1; p < 0.01; \phi = 0.350$). Also, the most subjective deictic center of communication (i.e. author, quoted speaker, 1st person speaker, embedded character) vs. ambiguous and neutral types (all frequencies collapsed) yield positive association between the category and the connective ($\chi^2 = 14.62.; df = 1; p < 0.01; \phi = 0.587$). Again, *for this reason* is most frequently associated with the most subjective features, whereas *as a result* is attracted to most objective contexts. Finally, there were certain differences in the occurrence of subjective and objective source of Appraisal elements and embedding types (see Tables 6.13–6.14 in Appendix 3), but no statistically significant relationships were found.

6.3.4.2 Discussion of the quantitative results

The quantitative analysis in Table 6.9 above shows that real-world Volitional RESULT relations tend to be more subjectively realized with *for this reason* than with *as a result*. Admittedly, the differences in frequencies of the most

---

87 There was only one instance of the future tense (see Table 6.11 in Appendix 3).
subjective elements become statistically significant only if the numbers are collapsed (e.g. the case of SoC, where the frequencies for the 1st person pronoun and author were added), but this is at least partly caused by the small number of relations analysed. Apart from that, *for this reason* shows a rather strong preference for deictic elements related to the author as a centre of communication and the Simple Present tense, which is regarded subjective. No other strong tendencies were found. These particular results may be related to both the samples size and also to the overall rather low number of the Appraisal elements in the relations analyzed. Recall from section 6.3.2.1 above that these elements included the expressions of modality, evidentiality and attitudinal stance listed by Biber and Finegan (1989:119ff) and also verbs of implicit perspective (e.g. evaluations). Such features may be more common in epistemic relations and speech acts, where they contribute to the construal of the SoC’s point of view. The same applies to embeddings, which also often express a subjective point of view. Given the current findings on the real-world volitional RESULT, it can be tentatively concluded that the frequencies of the subjectivity elements presented in sections 6.3.1-6.3.3 above to a great extent stem from the presence of these elements in the epistemic and speech act relations.

The connective *as a result*, by contrast, was found to be more common in the contexts with more objective SoC types, most objective tenses and deictic centre of communication. As anticipated, the phrase contributes with an objective layer of meaning to the real-world volitional RESULT. This is the case even where the subjectivity elements are present in the relation. Compare the following examples:

(35) I came away from the Oxford seminar with a clear idea in my mind about what I should do to stimulate discussion on this subject in Wales. *As a result*, I have drafted a document which I am hoping to publish and circulate widely. (BNC: GXG 636)

(36) Many flowers are under threat of extinction because their bulbs are being uprooted from the wild to be replanted in the gardens of countries like ours. *For this reason* we now sell only artificially cultivated bulbs and this is indicated on the packaging. (BNC: HT6 59)

(35) conveys a situation which was not fully dependent of the SoC’s decision, even though it results in a volitional action. Yet, the CAUSE segment cannot be regarded a reason or motivation for the SoC to act, which is a prerequisite of a volitional action (see Chapter 5, section 5.2.1; Pander

---

88 This is also why certain passive constructions were identified as volitional (see (34) and (35) below).
Maat & Degand, 2001). Instead, the volitional action in the RESULT segment in (35) can be seen as induced by the prior event. The connective as a result has an objectifying function in the relation – situation X happened and Y is what happened next. Consequently, the volitional action and the SoC’s report of her feelings seem backgrounded and ‘nested’ under a more general non-volitional scenario.

Interestingly, the phrase for this reason does not seem felicitous in the context of (35). Its presence would give an insight into the mental domain of the SoC (Sanders et al. 2012:205) and imply the existence of an internal motivation to act. Such an interpretation is not compatible with the segments of (35), but is appropriate for (36). For this reason, which is used there, reinforces the impression of a mental process that led to the SoC’s volitional decision to act according to the circumstances. It therefore seems that the real-world volitional RESULT is construed more like an external report with as a result and an internal process with for this reason.

Similar traits can be found in the examples of verbal passives with both the connectives analysed. Consider two instances, both coded as real-world volitional relations ((37) was also discussed in section 5.3.1.3 as (30)):

(37) It is hoped that the reader will participate to some extent in this activity by sharing the perspective of the workshop team who worked on this text. For this reason, the original Hemingway version will be withheld for the moment as attention is focused on both the jumbled version and the reconstructions by the workshop participants. (BNC: J89 53)

(38) On the other hand, repeated reference was made in the debate ‘to the valuable contribution that assistance for family planning could make to the health of women’. As a result, a battery of new resolutions concerning childbearing patterns has been adopted, partly in the interest of women, partly of reducing infant, child and maternal morbidity and mortality. (BNC: H0P 58)

The difference in the connective choices resides in the nature of the events involved in the relations – (37) conveys an internally motivated decision of the author SoC whereas (38) reports on the real-world necessity recognized by a backgrounded Agent (again, an instance of a ‘nested’

---

89 This brings to mind the rule of universal causality, which applies to the most natural course of events (Searle, 1983: 118).
90 Recall from Table 6.9 above that several instances of implicit author SoC were identified in real-world volitional relations, which may at first blush look surprising, as actions in the real world seem to require overt agency. Yet examples like (34) demonstrate that agency can be implicitly realized not only on the level of the linguistic events, but also in content relations (cf. Stukker & Sanders, 2009:14).
volitional action). The relation in (37) includes several subjective linguistic elements (deixis and future tense) and a subjective connective, while (38) is devoid of such features (unspecified SoC, Present Perfect tense). *As a result* contributes to the factual and objective character of the events in this case again.

To sum up – what the results of the present substudy have shown is that, similarly to Dutch, French and German, in English, too, the real-world Volitional RESULT relations exhibit the features of more than one discourse domain if marked with a ‘non-prototypical’ connective. The linguistic elements that prevail in the relations marked with *for this reason* are typical of more subjective epistemic and speech act domains. By contrast, the real-world volitional RESULT marked with *as a result* foregrounds the most subjective elements significantly less often. The connective contributes a factualizing and objectifying trait to the relation interpretation. Following Stukker and Sanders (2009) and their findings on Dutch connectives and their impact on real-world volitional causal relations, it can be argued that the non-prototypical instantiations of prototypical connective meanings in English, too, occur in the contexts that allow for interpretations ambiguous between two causality types. This makes English similar to the other languages studied more extensively prior to the present analysis, which is an interesting finding given the more unconstrained nature of the English connectives.

It is, however, quite clear that more research is needed to confirm these preliminary findings. As mentioned, even though *for this reason* tends to preface epistemic contexts, it is also very frequent in real-world volitional relations (Table 5.1, section 5.3.2 above) – in fact, some researchers claim it is confined to real-world volition (Knott & Sanders, 1998:155). This suggests that other studies could investigate even more prototypically subjective connectives (for instance, *thus*) and the contexts of their occurrence for a fuller picture of real-world forward causality construal in English.

The current section closes the study of subjectivity construal in the RESULT relations marked with *as a result* and *for this reason*. The next section is also concerned with the Volitional RESULT relations and investigates their potential to be unrealized. As the following discussion indicates, this unrealized character of the relation may also be related to its subjective realization.
6.4 (Non)veridicality in the RESULT relations

Recall from the overview in Chapter 2 (section 2.4.) that function F is veridical if \( Fp \) entails or presupposes the truth of \( p \) (Zwarts, 1995: 287; Giannakidou, 2002). Nonveridical contexts, by contrast, are those where the truth of a proposition \( p \) is open (Giannakidou, 2014:2). As the study in Chapter 4 has tried to show, the main difference between the character of the PURPOSE and RESULT relations is based on the inherently irrealis nature of the former. Also, given the previous claims in the literature, it may be somewhat surprising that in the discussion of the relationship between rhetorical relations, nonveridicality and evaluation in discourse, Trnavac and Taboada (2012:306) subsume Volitional RESULT under the category of relations that can have nonveridical readings. The original paper does not develop this argument any further, but according to Taboada (2014, p.c.), the idea stems from the potential for the Volitional RESULT to be unrealized.

This hypothesis is not only against the mainstream view that RESULT is intrinsically veridical (Asher & Lascarides 2003; Jasinskaja, 2007), but seems to stem from the vague definition of Volitional RESULT in the RST framework.\(^9\) As mentioned in Chapter 5 (section 5.2.1), due to the lack of subtler distinctions between different types of relations between relations, it may sometimes be difficult to decide what event types can be categorized as Volitional RESULT. According to the present approach, however, this notion embraces events in the real world. Consequently, the purported ‘potential to be unrealized’ would have to concern such event types. This is, certainly, unlikely. As present corpus observations suggest, real-world Volitional RESULT perceived in terms of the protagonist’s control and understanding of the situation as a reason to act, is usually veridical. Consider:

(39) However, it seemed a shame to be able to design the forms using the computer and not be able to complete them on the same machine at a later point. For this reason the authors released Formgen Fill, a package which does allow you to enter details on a predefined form. (BNC: HAC 8454)

The truth of the outcome in (39) is clearly entailed. The relation is expressed in the indicative mood, which, as Giannakidou argues in a number of works (1998; 2009; 2011; 2014:5), reflects a full commitment of an individual towards the proposition. On this approach, the truth of the proposition is

\(^{9}\) Trnavac and Taboada’s (2012) paper is based on the RST definitions.
relativized to an individual’s epistemic state and so it is not only the availability of the truth inference that determines whether the relation is veridical or not, but also the speaker’s commitment to the truth of the proposition (Giannakidou, 2008:1889f; see also Farkas, 1992:84ff). According to Giannakidou (1998; 2009; 2011; 2014:5), the indicative mood reflects a full commitment and therefore indicative is veridical. By contrast, the subjunctive mood is nonveridical, as it conveys a weaker commitment. Consequently, even the epistemics such as think and believe on this account become veridical, since they imply doubts on the part of the speaker (Biber & Finegan, 1988:119).

What follows is that not only factually realized RESULTS like (39) above are veridical. Also RESULT relations in the imperfective aspect (i.e. with progressive and perfective operators), commonly argued to be related to counterfactual readings, are considered veridical, as they impose knowledge of at least partial actualization of an event (Giannakidou, 2014:15). The idea of (non)veridicality as based on the Subject’s commitment to the truth of the proposition includes also factives (know, regret), semifactives (discover, remember) and assertives (say, claim). This presently mainstream approach will also be adopted in the current study.

How, then, does the concept of (non)veridicality matter in the RESULT relations? It seems that the nexus between nonveridicality and RESULT can be more reliably established, if volitionality is understood as an intentional act originating from a conscious mind of an SoC, not only in the domain of factual events, but across all domains. The nature of the features listed in the literature as nonveridicality elements further suggests that this hypothesis may be confirmed in discourse. This list includes (Giannakaidou, 2009:1887ff) and Trnavac and Taboada (2012:304)):

a) volitionals (want, hope, try)
b) directives (advise, suggest, order)
c) modal auxiliaries
d) permissives (allow, forbid and also verbs of fear)
e) negative verbs (refuse, avoid)
f) questions and imperatives
g) subjunctive
h) dyadic connectives (if, if only)
i) habituals 
j) Future (including before)
k) negation (subcase of nonveridicality: not \( p \) does not entail \( p \))

l) \textit{perhaps}-clauses

As we see, basically all nonveridicality elements listed here (apart from the negation (k)) require a presence of a conscious SoC – either as an acting Agent or as a speaker. This confirms the hypothesis that nonveridicality spans across discourse domains. Furthermore, given the prototypically realized nature of \textsc{result}, it seems quite unlikely that Trnavac and Taboada’s (2012) proposal based on the properties of the \textsc{volitional result} as defined in RST would be confirmed in natural language. These observations provide a justifiable reason to propose that it is not \textsc{volitional result}, prototypically associated with the real-world domain, which is related to nonveridical interpretations. More likely – the \textsc{result} relations with an SoC may more often be nonveridical than those with no SoC, across all discourse domains.

This pragmatically oriented approach may show that there is in fact a transition from the formal logical property of veridicality to a richer pragmatic notion of ‘veridicality assessment’ (i.e. whether events mentioned in a text are viewed as happening or not, Marneffe, Manning & Potts, 2012:301; Giannakidou, 2014, p.c.). The veridicality assessment, which contains a layer of nonveridical evaluation, is sensitive to discourse and contextual features related to the speaker’s perspective and her pragmatic/rhetorical goals. Ultimately, then, the present part of the investigation illustrates the difference between the logical property of veridicality (expression meaning), and more subjective layers of nonveridicality (speaker meaning) in the \textsc{result} coherence relations.

Recall from Chapter 2 (section 2.3) that a potential relationship between nonveridicality and subjectivity in discourse was suggested in Giannakidou’s (2014: 6) argument that the sentence is true or false only with respect to the speaker’s perspective. The main difference between subjectivity and nonveridicality is that the former notion is believed to be context-related, whereas the latter is bound to the presence of the lexico-grammatical features (nonveridicality markers) listed here. However, as discussed and indicated in section 6.3 above, it is also possible to identify elements of linguistic realizations of subjectivity in discourse. Interestingly, the list of attested nonveridicality elements to a noticeable extent overlaps with subjectivity features and includes volitionals, directives, imperatives and questions, modality and the subjunctive mood, etc. The question is therefore whether these features interact with one type of the \textsc{result} relations (and connective) more than with another.

Finally, the suggested relationship between nonveridicality and volitionality implies that, by contrast, non-volitional coherence relations will
be most commonly veridical. This problem is also investigated below. Section 6.4.1 presents specific results.

6.4.1 Quantitative analysis of (non)veridicality in the RESULT relations.

Despite its obvious usefulness as one of the criteria for veridicality judgment, Giannakidou’s idea that veridicality relates to the speaker’s commitment to the truth of the proposition can be somewhat problematic for certain embedded contexts. As she argues (1998:112), in the case of embedded propositions, several models of an individual’s epistemic state can become relevant for the relation interpretation. But in a quantitative investigation, which requires most straightforward analytical criteria, the question arises as to which perspective should weigh more and why. Giannakidou (2014:7) explains this problem in terms of epistemic spaces, i.e. sets of worlds, representing an individual’s beliefs and knowledge (cf. BCSN, Sanders, J. et al., 2012). As she argues, a veridical modal space is homogenous and includes only \( p \) worlds. A nonveridical modal space, on the other hand, is not homogeneous: it contains \( p \) and non-\( p \) worlds. Consider:

(40) The NT File System (NTFS) has only adequate space efficiency, lacking many of the innovations some Unix file systems offer. Also it does not allow cluster fragments. As a result, Brown says, on the desktop, where the user creates many small files and receives mail messages, the fragmentation will consume a disproportionate amount of disk space. (BNC: CSK 358)

Following this definition and also the principle that the most important features for the present analysis are those that are part of the whole relation and not only of one segment, we could assign (40) to the category of nonveridical relations. The reason for that is the auxiliary verb \textit{will} used to convey the speaker’s prediction about the future,\(^93\) which is the main verb of the RESULT argument in this example. However, given the aforementioned idea of the speaker’s commitment to the truth of the proposition, which can be expressed by veridical verbs like \textit{say}, it seems counterintuitive to disregard its presence here. In such cases, as Giannakidou argues (2014; p. c.), the commitment concerns the possibility of \( p \) (meaning: “I have enough information to say \( p \)” ) and not \( p \) itself. What this leaves us with is that each of the two verbs operates on a different level – the veridical \textit{say} globally and the nonve-

\(^92\) Propositional.
\(^93\) The sense of \textit{will} here seems to be evidential.
ridical *will* – locally. So the relation carries traits of both veridicality and nonveridicality and therefore instances similar to (40) were labelled as ‘blends’.

Another question related to the presence of *will* in (40) is whether all modal verbs are nonveridical. Recall from section 6.3.3.2 above that the type (a) auxiliary verbs (deontic, weakly subjective) lack the modalizing function, and so it is uncertain whether they also should be categorized as nonveridical features. Despite proposals in the literature that certain modal verbs are veridical if they validate the axiom of necessity (Zwarts; 199594), according to the more recent approach all modal auxiliaries are considered nonveridical (Giannakidou, 1998, 2010, 2013; Tarnvac & Taboada, 2012). Consider:

(41) From the earliest days of the Community it was recognised that eliminating discrimination on grounds of nationality was as essential for securing the provision of services as it was for establishment. *For this reason* EC Directives in the 1960s provided for the repeal of such legislation (in so far as it affected nationals of member states) as the requirement of West German law that foreign companies wishing to pursue business activities in West Germany *must* obtain special authorisation from the West German authorities. (BNC: BP5 268)

The auxiliary *must* has a function similar to that of a lexical verb, so it does not epistemically modulate the context of (41). The relation does not convey any SoC’s conclusion.95 Yet even the deontic (type (a)) modal auxiliaries preserve their future-orientation and the *irrealis* mood and therefore are nonveridical.

The coding of the remaining RESULT relations follows the lists of nonveridical features provided by Trnavac and Taboada (2012) and Giannakidou (2009) discussed in section 6.4. Since the two connective phrases analyzed here do not consistently signal one type of the RESULT relations, Table 6.11 below provides the findings of how often a given type of the RESULT relation is veridical or nonveridical, independently of which on the two connectives was used to mark it (four ‘blends’ types of relations excluded):

---

94 According to Zwarts (1995:287), the two basic operators in modal con-texts, i.e. the possibility and necessity operators, differ as to the truth inference available. The possibility operator is nonveridical, while the necessity operator can be veridical in case it validates the axiom of necessity. However, the idea of ‘axiom of necessity’ is too imprecise to be operationalized.

95 The SoC was categorized as unspecified in this case, as the deontic elements (e.g. in the 1960) and also additional information in parentheses are part of an objective report and do not carry overt subjectivity traits. Yet they probably originate from some SoC. See 6.3.1 above.
There is a statistically significant relationship between the type of RESULT and the semantic feature of veridicality and nonveridicality ($\chi^2 = 142.0877$, df = 1, $p<0.01$) and a quite strong positive association ($\phi=0.53$) between the RESULTS relations with an SoC and nonveridicality and also Non-volitional (no SoC) RESULTS and veridicality. These findings are suggestive as to the interaction between the RESULT coherence relation type and the semantic feature of (non)veridicality. The relations with an intentionally acting SoC seem to have a greater tendency to be nonveridical than those with no SoC. Future research could verify Trnavac and Taboada’s (2012) tentative proposal that Volitional RESULT in the real-world domain is more commonly nonveridical. Another interesting endeavor would be a detailed study into a potential relationship between nonveridicality and subjectivity in CAUSE-RESULT relations.

### 6.5 Discussion and conclusions

The following were the research questions in focus of the present chapter:

(i) What is the role of the connectives *as a result* and *for this reason* in the distinction between SoC RESULT and No-SoC (Non-volitional) RESULT relations? What are specific quantitative tendencies related to the connective used?

(ii) How do the other language elements commonly believed to be related to subjectivity construal in discourse contribute to this distinction? Can some of these features be regarded as more reliable/useful signals than others?

(iii) Is there a relationship between Volitional RESULT and the logical property of (non)veridicality?

As question 1 indicates, one of the main current goals was to investigate how the linguistic elements commonly believed to contribute to subjectivity construal in discourse can signal different RESULT relation types. The

<table>
<thead>
<tr>
<th>Result with SoC</th>
<th>Non-volitional Result</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonverdical</td>
<td>188</td>
<td>15</td>
</tr>
<tr>
<td>Veridical</td>
<td>116</td>
<td>177</td>
</tr>
</tbody>
</table>
features that played an important role in this discussion were, certainly, discourse connectives. Since the findings in Chapter 5 (see Table 5.1) showed significant associations between the connectives and different types of RESULT relations, the present analysis was anticipated to be indicative of more fine-grained details of those relationships. This initial prediction was confirmed in the corpus study (section 6.3), which showed that the connective for this reason, which tends to occur in the epistemic and speech act contexts, is more commonly accompanied by linguistic elements regarded as subjective. By contrast, the connective as a result, which showed a preponderance for non-volitional RESULTS, occurs in the contexts where such elements are significantly less frequent. Even though these results were partly anticipated from results obtained in Chapter 5, given the common flexibility in the connective use across domains in English, the question about the characteristics of their prototypical contexts of their occurrence was worth investigating. The current work thus contributes to the scarce empirical evidence on how subjectivity is realized and signaled in English causal relations.

The subjectivity elements play a particularly vital role in the contexts of ambiguous or non-prototypical connective use, where discourse provides ‘support’ for the connective information. A good example of such a context is for this reason in speech acts. Recall from Chapter 5 (section 5.3.2) that there were 11 speech acts found with this phrase and all but two were accompanied by a modal auxiliary (should, must etc.):

(42) They have not been included in the examples given in Figs 2.1 and 2.2. For this reason the reader should resist the temptation to follow the figures given in the examples (...) (BNC: HSE 173)

The above observation seems to be in line with the previously mentioned findings on epistemic relations reported by Traxler et al.’s (1997:91ff). As that study indicated, the cognitive burden related to the processing of conclusions signaled via the general connective because is alleviated by adding a phrase explicitly marking a propositional attitude, such as perhaps or I think. A similar principle may be relevant to specific connectives in non-prototypical contexts. Further, as Pander Maat and Degand (2001: 213f) argue about connectives associated with real-world volitional relations, those elements are not acceptable in speech acts or epistemic contexts unless a speech act or modal operator is inserted. Such a strategy is apparently often

---

96 As Pander Maat and Degand (2001:225ff) argue (see also Chapter 2, section 2.4.), speech acts involve a specific hearer-directness, which is absent form epistemic relations. This is the reason why (42) above was coded as a speech act (directive), though it could be argued to evoke a conclusion as well.
used with *for this reason* in speech acts. The gradient preference of this phrase across all discourse domains suggests that it is not always capable of conveying the intended relational meanings on its own. These meanings are instead made explicit by other linguistic elements present in discourse. Interestingly, in English, where the character of the connectives is less constrained to one specific discourse domain than in many other languages, this is a strategy operative even for a prototypically non-volitional RESULT connective as a result, which occurs in epistemic contexts, if endorsed by modality or other subjectivity elements.

However, as the analyses in section 6.3 above suggest, some of these elements are more reliably indicative of the intended RESULT relation type than others. The question of their contribution to the relation construal undergirds the present investigation. It was established that only those features that directly influence the relation interpretation as an intentional act in one of the three discourse domains, can be treated as plausible signals of the presence of SoC (and hence volitionality/intentionality). The strongest indicators here are personal pronouns, noun phrases, modal verbs and Appraisal elements (epistemic stance markers in particular), as they most commonly presuppose the presence of a SoC. Further, the variable ‘SoC reference’ is also a reliable signal of a SoC, provided that other linguistic, textual or contextual elements point to the presence of a conscious participant. For instance, deictic elements can have this function (with the caveat that they can also be part of more or less factual descriptions), particularly if combined with a personal pronoun. This suggests that some features will be even more reliable signals of intentionality and volition as clusters. A cluster-based approach to subjectivity analysis was earlier suggested also by Pitt (2003) and a similar conclusion emerges from the current study.

Another element analysed here is tense. Tense not only is register-related, but does not matter for the distinction between real-world volitional and non-volitional events. However, the most subjective tenses, i.e. future and present tense, can be seen as suggestive of hypothetical/unrealized situation types in epistemic and speech act domains. As the findings in section 6.3.3.3 above show, these tenses are more common with *for this reason* and hence all types of RESULT relations with SoC (see also Table 6.11 in Appendix 3 for similar findings in real-world Volitional RESULT specifically). Further, embedding predicates and quotations are good indicators of an SoC presence (which is probably why they were more frequent with *for this reason*), as they in fact require an SoC; however, particularities of embedded voices and their contribution to the character of the relation have not been discussed in detail

---

97With the exception of certain deontic modals, see section 6.3.2.2.
here. Thus no strong conclusions should be drawn. This caution concerns first of all evaluations and verbs of implicit perspective, which very often contribute to the relation’s subjectivity, but also have been demonstrated to occur in the contexts with unspecified or ambiguous SoC as part of a factual description. Also in this case more research could possibly test whether these elements cluster with more reliable features (e.g. overt SoC presence) in subjectively realized relations. Finally, even though subjectivity is commonly believed to be a feature of the context, a lack of subjectivity elements is usually a quite a good indicator that a given context is non-volitional. A lack of an overt SoC reference is, of course, a determinant factor, as it prevents the interpretation of other linguistic elements as subjective (unless perspective blending is involved).

These observations bring us to the question of the connective contribution to the construal of the relation type. The substudy of real-world volitional RESULT (section 6.3.4) confirmed previous cross-linguistic findings that relatively objective event types comprise characteristics of the prototypical contexts of the non-prototypically used connective and, consequently, exhibit features of two causality types. This finding is particularly interesting in the case of for this reason, which in the corpus study showed a gradient preference for both epistemic and real-world Volitional RESULT. As mentioned, such a flexibility across discourse domains is quite typical of English connectives in general. Whereas the effects found were overall quite moderate, the relations marked with for this reason turned out to be more subjectively realized than those with as a result. Furthermore, due to the aforementioned gradient nature of for this reason, its influence on objective relations seems quite complex. Consider:

(43) Before flight can occur the thoracic flight-muscles must attain a sufficiently high temperature and for this reason some insects carry out preliminary vibrations of the wings before flight, thereby raising the temperature of the muscles to over 30°-C, for example, in Bombus, and some Lepidoptera. (BNC: EVW 664)

According to the criteria discussed in section Chapter 5 (see also 2.2. in Chapter 2), non-human animate subjects, particularly in the contexts of a biologically determined necessity, do not function as a SoC of the relation. (43) could therefore be regarded a Non-volitional RESULT, but as Pander Maat and Degand (2001:235) argue, non-volitional relations turn epistemic if a high speaker-involvement connective is inserted. Indeed, the role of for this reason in (43) could be seen as giving access to author’s reasoning, but

---

98This relation was among the seven instances of RESULT discarded from the quantitative analysis (see Chapter 5, section 5.3.1.1).
neither conceptually nor from the point of view of the linguistic elements present (deontic modal verbs in S1) does the relation appear to convey a conclusion (in fact, as a result seems also felicitous in this context). Most importantly, the frequent occurrence of for this reason in real-world Volitional RESULT implies a peripheral type of volitional action (see 6.3.4 above), i.e. an action where only an ability/power to act is present, whereas motivation is backgrounded. The relation in (43) was eventually deemed ambiguous, but this particular example demonstrates the influence that a specific connective can exert on the relation.

Similar kinds of observations apply mutatis mutandis to as a result in relations more subjective than a Non-volitional RESULT, where it typically occurs. As discussed, real-world volition can become quite complex with as a result. We saw this in 6.3.4 above with the example of a ‘nested’ volitional event (35). The close-reading of all the 40 current real-world RESULT examples indicates that all of them exhibit the same character with as a result. Furthermore, it seems that the phrase has a similar effect on epistemic RESULT as well:

(44) By the late fourth century, in fact, the Saxons were said to have been involved in raids which had previously been ascribed to the Franks. As a result, it is not always easy to distinguish between the two peoples in the context of attacks on northern Gaul. (BNC: HY0 565)

The relation in (44) conveys the speaker’s conclusion, but as a result in this context seems to refer directly to the factual circumstance (i.e. the consequence of the prior historic events), which is simply embedded under the scope of the author’s conclusion. By contrast, the phrase for this reason is capable of introducing a dimension of subjectivity into similar contexts:

(45) It is impossible for any glider pilot to make a high cloud climb and to be sure of his position. For this reason it is not acceptable to make climbs where the glider could possibly drift into Controlled Airspace. (BNC: A0H 1495)

The connective yields an impression of the speaker’s giving advice or even some type of directive. Since as a result seems not to preface this type of contexts in English, its presence in (45) would render the character of the RESULT argument factual, implying that what follows is the most expected outcome of the preceding situation. The conclusion is therefore that both as a result and for this reason in non-prototypical contexts have a role of an index of another type of reasoning and apparently can open the access to this particular domain.
The question can thus be raised about their role in the contexts where they frequently occur, particularly that those contexts usually include other contextual signals of the intended interpretation and could be marked by an ambiguous connective. The answer is more complex for for this reason. One explanation of its function is in line with the so called ‘subjectivity complexity hypothesis’, which says that subjective causal relations are harder to process, because they contain more information (Sanders, 2005). Therefore a specific connective is needed for a felicitous disambiguation. In the study of Chinese causal connectives, Li (2014:138ff) indicated that the cognitive burden is alleviated if a more specific subjective connective is provided instead of an ambiguous one. This suggests that a connective as specific as for this reason could indeed function as a disambiguating phrase in subjective relations. However, recall from the discussion in Chapter 5 (5.2.2) that for this reason is not felicitous with all types of epistemic and speech act relations, whereas so is operative in those contexts. This fact is related to the multifunctional character of so on the one hand, and to the specific nature of for this reason on the other. The specific semantics of for this reason may sometimes prevent it from occurring in the contexts where the SoC’s motivation to make an utterance is not overtly marked by the presence of certain linguistic elements such as modality or stance markers (but cf. (43) above). However, once this condition is met, the relation becomes rather complex and so the presence of a more specific connective is desirable. Moreover, a specific meaning contribution would be difficult to achieve with a more general connective and likely to be totally lost in an unmarked relation. The same observation concerns as a result in its prototypical contexts of occurrence. Compare:

(46) Since males were preferred for agricultural and draught purposes, cows rather than bulls were slaughtered for meat. As a result there were more males than females, unlike in Europe where milk was a relatively more important reason for keeping cattle. (BNC: CBA 1416)

(47) Because of rapidly changing circumstances, for example in policies or staff availability, there is a need for considerable flexibility in educational planning. For this reason, some people may even feel that there is little point in planning ahead. (BNC: AM7 607)

Even though so is operative in (46), its presence would presumably render the non-volitional character of the relation into a process of reasoning. In (47) the effect of so would be quite similar; however, so may actually not be fully sufficient in this context. For this reason has a dual role here: it marks the conclusion, but also emphasizes the multilayered character of the relation. The relation is a blend of the author’s voice and the actual
explication of the 3rd person Subject’s point of view (i.e. there is little point in planning). The ambiguous so could not convey this blend as precisely as for this reason. These observations suggest that despite its multifunctional character, the connective so may also exhibit preferences for certain discourse domains.99 Interestingly, with no marking the intended meaning of (47) would not be retrievable; also, the Non-volitional RESULT in (46) would change into a simple narrative. This suggests that retrieving the intended causality type from certain CAUSE-RESULT relations is impossible without the connectives (cf. Lagerwerf, 1998:147), despite the mainstream view that causality does not require marking.

This brings us to the last question related to marking tackled in the current investigation, which concerns the relationship between (non)veridicality and Volitional RESULT tentatively proposed in the literature (Trnavac & Taboada, 2012). Given both the prototypically realized character of real-world Volitional RESULT and also the nonveridicality features listed in section 6.4 above, it seems unlikely that real-world resultative events are more commonly nonveridical, as claimed by Trnavac and Taboada. However, the current analysis (section 6.4) indicated that the RESULT relations with a SoC present as an Agent or speaker/author indeed show a significant tendency to be nonveridical. But does this finding have implications for a potential marking requirement? Recall from Chapter 4 that the nonveridical character of PURPOSE was identified as one of the main reasons why the relation requires overt signaling. Therefore the obvious hypothesis is that RESULT relations with SoC may also tend to be explicitly marked. As Taboada’s (2006) corpus study of coherence relations showed, Volitional RESULT was marked 82% of the time in comparison to 62% of Non-volitional RESULT signaling, which suggests that the former type may in general more commonly occur with an overt connective. This prediction could be checked experimentally for the other RESULT relation types with SoC, but then the potential experimental design would have to test a variety of factors on several levels of discourse. For instance:

(48) It’s going to be really cold tonight, so should I go to and close the greenhouse?

The RESULT relation in (48) is a modalized question,100 which makes it very strongly nonveridical. However, even though this property apparently

---

99 The complication in a potential analysis of so would be its role in sentence-initial, as opposed to sentence-medial, position. Whereas (46) with so in the sentence-initial slot would indeed become epistemic, the same is not as clear if so was connecting two clauses with a comma in this example.

100 Recall that questions are inherently nonveridical.
contributes to the marking requirement of PURPOSE, it does not seem to have exactly the same effect with RESULT:

(49) It’s going to be really cold tonight. Do you want me to go and close the greenhouse?

(50) It’s going to be cold tonight. I should maybe go and close the greenhouse.

The operator do in (49) is sufficient to express the question, whereas in (50), the modal expressions should and maybe convey a conclusion with no connective present. This confirms that nonveridicality cannot have exactly the same effect on the requirement for marking RESULT as it had on PURPOSE. It therefore seems that the aforementioned conceptual complexity of subjective relations may be the main factor prompting overt marking in some contexts, particularly when the writer wants to specifically highlight one part of the message, for instance: a peripheral instantiation of certain category (e.g. (43)) or a nested context (e.g. ((44)). So in the case of RESULT relations it is not nonveridicality per se, but probably other factors, such as conceptual and, possibly, qualitative differences between the relation types, that prompt overt marking. Needless to say, experimental items usually have to be quite simplistic and so it would be a challenging task to include all these factors in a potential experimental design.

A problem that deserves a short commentary is the usefulness of the model of the linguistic variables by Stukker and Sanders (2009) for the subjectivity coding in causal relations in English. Since the subjectivity elements identified in the analyzed English relations do not differ substantially from those found in the other European languages studied earlier, such an approach could be generally quite suitable. However, the weakness of the original model lies in its somewhat vague characterization of the relevant categories. Whereas the role and function of some of the elements can be unambiguously identified in discourse (e.g. pronouns) and may therefore not require extensive elaboration, the somewhat perfunctory approach to other features (e.g. Appraisal elements) is not sufficient. The current investigation has tried to discuss some of the features more closely, which resulted in more detailed criteria for subjectivity analysis in natural discourse. Even so, it is not always clear how the identified elements in isolation contribute to the subjectivity of the context. One solution to this problem could be a study of the interactions between subjectivity elements and potential identification of clusters of features. Such a study could possibly provide insights in the question whether all operationalizations of subjectivity are equally important. The present analysis suggests that this is not the case (see also Sanders & Spooren, 2015).
Future research should also further investigate the usefulness of the approaches to modelling connective uses in terms of subjectivity as proposed by Pander Maat and Degand (2001) and Stukker and Sanders (2009; 2012). Recall from section 6.1 above that the former idea is based on characterizations of connective meanings as positions on subjectivity scale. Stukker and Sanders, by contrast, propose to consider the semantic profile of the connectives as a prototype structure with a core meaning/use related to two distinct conceptual categories (objective and subjective). The categorical approach excels in the accounting for the flexibility in the connective distributions across domains, which are described as rhetorically motivated ‘non-prototypical uses’. In the scalar approach proposed by Pander Maat and Degand (2001) the connectives are simply argued to allow for certain amount of variation in the contextual subjectivity. Given the fact that the connectives studied here exhibit functional flexibility across the discourse domains, the results could be interpreted as confirming the scalar view, where the connectives are taken to occupy a continuous area on the scale of the speaker involvement. However, the finding that the connectives overlap and both can mark the same relation types can be more accurately accounted for on the basis of prototypical distributional tendencies – while both phrases occur across different discourse domains, they show significant preferences for certain contexts. As discussed, the uses outside the prototypical domain are indeed rhetorically justifiable and endorsed by the relation construal. This is an appealing approach from the point of view of the less constrained nature of the lexicon of English discourse connectives.

Finally, one comment concerns the aspect which was left out from the present investigation, i.e. the effects of text genre on the relation interpretation, should also be addressed here. All other corpus work referred to in the current chapter is based on register analysis in diverse text types. It is quite predictable that a press editorial differs from a scientific paper and knowing the genre, which is often evident by the style, is likely to be an indication to the reader to treat texts as more or less subjective. For instance, as research shows, subjective perspective blends briefly discussed in 6.3.3.3 above, are very frequent in narrative texts (Sanders, at al. 2012; Hogeweg, de Hoop & Schepper, 2014). In journalistic texts, blending of the writer’s voice with the source information is common when referring to characters and events, but avoided in news reports (Sanders, J., 2010). In this respect the current analysis is certainly less exhaustive; however, the cross-genre picture of the tendencies, which confirms the previous register-oriented findings, can be seen as a starting point of more detailed investigations of subjectivity construal and its effects on English CAUSE-RESULT relations. Such studies could also compare written and spoken genres, as the use of connectives and subjectivity construal in spoken language differs from what is known about writing strategies (Sanders & Spooren, 2015:57). This is also where divergences between varieties of English could possibly occur.
The present study has discussed the semantic and conceptual properties of the RESULT coherence relations in written English. The specific aim of the investigation has been to map out the lexical signals available in discourse that convey and help distinguish between different types of RESULT, including PURPOSE. The conceptual structure and linguistic properties of RESULT have been underresearched in both corpus and experimental work in English, which makes the current analysis an important contribution to our knowledge of discourse relations. The analysis adopted a converging evidence approach combining a corpus-based investigation and the linguistic environments of three English RESULT connectives with an experimental study. The findings thus yield implications related to both language production and comprehension.

The general research questions asked here were:

I. How can we differentiate between RESULT and PURPOSE relations in English?

II. How can we differentiate between different types of RESULT in English?

Within the scope of those, several other (sub)questions were considered:

(i) To what extent is connective presence relevant for the distinction between the two relations analyzed?

(ii) What other explicit linguistic signals of the relation types apart from the connectives can be found in the relation segments and how do they affect the relation character and disambiguation?

(iii) What kind of semantic features contribute to the construal of the RESULT relations? Are some of them more common with certain relation types?

(iv) What is the role of the logical property of nonveridicality in the relations of RESULT and PURPOSE?
One of the most important theoretical assumptions of the present study was that the coherence relation of PURPOSE, despite being most commonly categorized as a type of CAUSE relation, can be more usefully described as a subtype of RESULT. What follows is that a family of RESULT relations can be established and graphically depicted as follows (see also Fig. 5.1 in section 5.2.1, Chapter 5):

![Figure 7.1 Taxonomy of RESULT coherence relations](image)

As Figure 7.1 shows, the common source of several resultative relation types is a more abstract notion of RESULT formalized at the beginning of this thesis as $X$, and as a result, $Y$. The branches which extend from that source inherit and share the same semantics and syntax, but also differ in many respects. Along these lines, the current discussion has been focused on the distinctions between RESULT and PURPOSE relations, as well as those between the RESULT relation types – their nature, structure and the strategies commonly employed for their expression in discourse.

The view that was argued for is that RESULT is not a unitary semantic feature but rather arises from the merger of other semantic features and cognitive schemas. Consequently, a variety of events can be regarded as resultative, PURPOSE included. While the close affinity between the two relations has been noticed in the literature before (e.g. Huddleston & Pullum, 2002; Schmidtke-Bode, 2009), the picture that emerges from the present findings is much more specific. Given the fact that the *sine qua non* of PURPOSE is in-
tentionality, it is clear that the notion can share features only with Volitional RESULT, or, more broadly, RESULT with SoC. Consequently, the set of prototypical components that differentiate between the relation types can be illustrated as follows:

Table 7.1 Prototypical semantic features of PURPOSE and RESULT

<table>
<thead>
<tr>
<th>Intentionality</th>
<th>Conscious participant</th>
<th>Veridical</th>
<th>Mood</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Main clause</td>
<td>Dependent clause</td>
<td></td>
</tr>
<tr>
<td>PURPOSE</td>
<td>+</td>
<td>+</td>
<td>–</td>
</tr>
<tr>
<td>SoC RESULT</td>
<td>+</td>
<td>+/–</td>
<td>–/+</td>
</tr>
<tr>
<td>No-SoC RESULT</td>
<td>–</td>
<td>–/+</td>
<td>+/–</td>
</tr>
</tbody>
</table>

Table 7.1 presents the features that are indispensable for PURPOSE and most typical of RESULT with and without SoC. The two features that are mandatory for both PURPOSE and SoC RESULT are the intentional character of the action involved and the presence of a consciously acting participant in the dependent clause. However, as discussed in Chapter 4, the responsibility of the relation participant for the causal link between events differs between the relations – in PURPOSE this entity is mandatory in the main clause and identical with the conceptualizer of a particular perspective in the dependent clause. In RESULT that role is much broader (although the actor does not have to participate in the main clause) and involves acting and/or conceptualizing in one of the three discourse domains: real-world, epistemic and speech act. This span of the SoC’s involvement in the causality of RESULT relations can be modelled in terms of both veridicality and subjectivity.

As discussed, veridicality is a semantic feature that prototypically distinguishes PURPOSE from RESULT. However, given the fact that RESULT can relate also to unentailed and unrealized events such as conclusions and the majority of speech acts, the current study extended the tentative proposals in the literature that Volitional RESULT is linked to nonveridical interpretations (Trnavac & Taboada, 2012), to RESULT relations with SoC in general. As it turns out, such relations are commonly invested with nonveridical elements.
Future research may judge the extent of overlap between nonveridicality and subjectivity, but a preliminary conclusion from the present study is that the \textit{RESULT} relations that are nonveridical are also the most subjective relations in the epistemic and speech act domains.

However, as it seems, intrinsically nonveridical relations are not necessarily the most subjective ones, because these two domains cannot be accessed by a \textit{PURPOSE} clause. As Verstraete puts it (2008:759), \textit{PURPOSE} clauses lack ‘illlocutionary organization’. While an intentionally performed action is the mainstay of both \textit{PURPOSE} and SoC \textit{RESULT}, the subjectivity elicitation in these two relation types differs according to the scope of the SoC’s involvement in the causality construal. The mood marker cross-linguistically present in purposive clauses reflects the judgment of desirability of the intended effect, which can be perceived as an intrinsically subjective trait. However, this judgment prototypically has to be linked to the Agent of the main clause (unlike in \textit{RESULT} relations, where illocutions do not require any participant in the main clause). Despite certain corpus evidence that the participant of the main clause in \textit{PURPOSE} can be an implicit speaker, prototypically it is a linguistically realized entity performing a real-world action. Importantly, since \textit{PURPOSE} is immanently related to the internal world of the Agent’s perspective and judgment, the relation may be prototypically more subjective than real-world Volitional \textit{RESULT}, which lacks a nexus to the SoC’s mental domain. However, as discussed, \textit{PURPOSE} is also barred from the most subjective illocutionary types of construal. This suggests that on the subjectivity cline, \textit{PURPOSE} occupies an intermediate position between the real-world Volitional \textit{RESULT} and the peripheral type of inferential \textit{RESULT}, deontic and evidential more likely than epistemic. If we then modify the scale-like take on subjectivity of causal relations from Sanders and Spooren (2015:68), the \textit{RESULT} relations could be ordered as follows: Non-volitional content < Volitional content < Purposive < Epistemic < Speech act. These observations along with the less-prototypical instances of \textit{PURPOSE} relations analyzed in Chapter 4 prompt a question for future research in how subjectivity can be operationalized in \textit{PURPOSE}.

Another vital assumption adopted in the current study was that the concept of \textit{RESULT} is encoded and signaled in language in various ways, not only via discourse connectives or other fixed phrases. Consequently, the view argued for was that coherence relation signaling is not to be conflated with the mere occurrence of discourse connectives, as often believed. While connectives undeniably play an important role expressing and guiding towards the intended meaning, language provides an abundance of other means that partake in the task of marking the conceptual structure of resultative events (see also Taboada, 2009). This fact makes the answers to the remaining research questions revisited above highly interrelated.

The linguistic features that differentiate between the senses of \textit{PURPOSE} and \textit{RESULT} and those that distinguish between much subtler types of RE-
SULT are quite different. The first matter to consider is overt marking. In the case of PURPOSE marking is connected to the aforementioned complex nature of the notion, which is a unique arrangement of both ‘tangible’ linguistic elements and abstract features. The integral conceptual components of PURPOSE which enhance disambiguation between the intended (PURPOSE) and realized effect (RESULT) were presented in Table 7.1 above. The most reliable combination of language signals, which forms the scaffolding of the required future-orientation of the intended effect and the unentailed character of the relation, is (in the finite English clause) the collocation of the connective with the modal verb can in the ‘root’ meaning. The most revealing finding, however, is that the mood marker can is the strongest indicator of the purposive nature of the relation, even stronger than the effect of so. This result is suggestive of a rather limited disambiguating role of a multifunctional connective as opposed to that of another lexical signal in certain contexts.

Being conceptually and cognitively basic to human mind and experience, we saw that RESULT can be retrieved from unmarked event pairs. The question about the role of overt marking in this case relates therefore to the merger between discourse connectives (if present) and other surface features in the relation context. However, the less constrained anatomy of RESULT in comparison to that of PURPOSE often requires us to rely on quite subtle semantic traits in the process of mapping out the features of relational types. The corpus study in Chapters 5 and 6 has confirmed that the conceptual and rhetorical environments of RESULT types diverge based on a phenomenological assumption of the presence and role of an intentionally acting participant (SoC; see Table 7.1 above) in different discourse domains. Since connectives are believed to reflect language users’ categorizations of causality types, they have been cross-linguistically found to exhibit specific distributional patterns and relate to specific types of linguistic construal. The current study confirms these observations for the two English connectives analyzed. The phrase as a result is predominant with Non-volitional RESULT, which intrinsically lacks an SoC and is usually devoid of linguistic features of subjective perspective. The subjective construal starts with the presence of an SoC, which in the current corpus was most commonly signaled with the connective for this reason and marked by frequent occurrence of linguistic signals of subjectivity. Importantly, despite significant preferences for certain domains, the substudy of Volitional RESULT relations in Chapter 6 indicated that the two connectives can also be used non-prototypically in the relations that are ambiguous between causality types. Such relations typically harbor linguistic elements typical of another domain and thus the presence of a non-prototypical connective is rhetorically and pragmatically justifiable (see Stukker & Sanders, 2012 for a summary of findings in other languages).

These observations not only provide additional evidence that different coherence relations can be signaled and identified via both established dis-
course connectives and also other types of linguistic features, but have implications for subjectivity-oriented research in English. English is believed to exhibit less pronounced tendencies to constrain discourse connective uses than those found in several other languages. Indeed, in spite of their specific nature, both *as a result* and *for this reason* studied here show functional elasticity and can be used across discourse domains. However, distributional tendencies have been found even for the multifunctional connectives *since* and *because* (Zufferey & Cartoni, 2012) and similar result was obtained in the current study. *As a result* and *for this reason* do exhibit significant distributional preferences related to the subjectivity of the context. It can therefore be tentatively concluded that the linguistic system of English connectives utilizes the cognitive categories of subjectivity and perspective; yet, more research is needed to fully estimate the generalizability of the current findings to the whole lexicon of discourse markers.

Nevertheless, as mentioned, the experiments carried out in Chapters 4 and 5 corroborate the mainstream view that overt marking can be omitted for RESULT, but the question could be asked whether the connective is optional in every case. This is, certainly, quite unlikely. As discussed in Chapter 6, an overt signal may be necessary to attend to processing difficulties potentially spawned by the multilayered linkages between the real-world and metalinguistic causality types (cf. Sanders’ ‘subjective complexity hypothesis’, 2005). In such cases discourse markers seem to have a particularly vital function calibrating the utterance towards the intended reading. This observation pertains also to the potential differences between the roles of a multifunctional *versus* a specific RESULT connective. Consider:

(1) In Britain the risk [of pelvic infection] in IUD users is approximately twice that of pill users. For this reason women who have no children may prefer to use another method of contraception. (BNC: A0J 115)

While the CAUSE-RESULT relationship in (1) would not be impossible to infer from the relation segments, the connective presence reenergizes the implicit link between the real-world situation and the writer’s reasoning. Most importantly, the phrase conveys the ambiguity of the perspective in the RESULT argument, which can be seen as a blend of epistemic elements related to the implicit author (*may*) and a possible volitional choice of the nominal participant (*women*). A multifunctional connective such as *so*, by contrast, could be less informative in this context, imposing a bias towards the author’s reasoning. So the connectives are both felicitous, but apparently highlight different aspects of the construal of (1) – the ambiguous *so* marks the epistemic layer, whereas the specific *for this reason* brings out also the volitional component of the relation. It seems that it is entirely the speaker’s choice as to which aspect to emphasize and, consequently, which connective to choose; however, the presence of the modal verb *may* is crucial in this
context, as it is exactly this element that conveys the author’s stance. Both the current study and the work published elsewhere (see Stukker & Sanders, 2012 for a summary) suggest that the presence of certain linguistic features in the context influences the connective choice for the relation. Modality, stance elements and pronominal elements have consistently proved to play this vital role and thus contribute to the construed and distinctions between different causality types. According to the findings in Chapter 4, such elements can be more essential for differentiation between relations than a discourse connective, if they directly relate to the underlying conceptual structure of the involved causal events and the semantic components of this structure.

This conclusion relates to the last problem considered in this investigation, which was the role of the semantic feature of nonveridicality in marking requirement and disambiguating between PURPOSE and RESULT and, possibly, different types of RESULT. As indicated in Chapter 4, nonveridicality is one of the most vital reasons behind the tendency to signal PURPOSE with an overt connective in language production. Based on the proposals in the literature that Volitional RESULT is linked to nonveridical interpretations (Trnavac & Taboada, 2012) and corpus findings that this type of RESULT is more commonly marked (Taboada, 2006), it could be assumed that this relation is harder to retrieve without an overt signal. However, the complication is that the RESULT relation does not cease to be resultative owing to its nonveridical character and this property may be given overriding precedence over the marking requirement. Consequently, while nonveridicality was a decisive feature for accounting for marking patterns and disambiguation between RESULT and PURPOSE, it seems to be less relevant for differentiating between RESULT relation types.

This brings us to the implications of the current study for future research. One avenue to explore would be experimental testing of the effect of discourse connectives versus other surface cues on the relation interpretation. As should be clear from the present discussion, comprehension may be more complex without marking in some cases. Consider:

(2) She fed him poisoned stew. For this reason/so her friends abandoned her.

(3) She fed him poisoned stew. Her friends abandoned her.

The character of (2) changes from causal to temporal succession (narrative) in (3), because it is the connective presence that draws out the otherwise rather tenuous causal link between events. As we know from the previous experimental studies, the effect of the connective may be related precisely to the strength of the causal links between events (Millis & Just, 1994; see Chapter 2, section 2.1.3). Strongly related events can be left unmarked, for
they provide sufficient information to generate a bridging inference, whereas in weak relations a connective may be needed (as in (2)) to integrate the causal relation into the discourse representation. The question can be asked, however, if other cues can play a similar role or, as in the case of PURPOSE and can, whether other linguistic cues can surpass the connective as signals of the RESULT relations. It would be interesting to pursue this question in order to determine whether the signaling strategies can be related to the presence of other disambiguating signals in the contexts. As the experimental study in Chapter 4 suggests, when the linguistic context provides enough information, the relations between events can be left unsignaled, whereas in the case of ambiguities marking is used (as in (2) above). In fact, unambiguous connectives may be used analogically with RESULT, i.e. when the correct relation disambiguation would be too hard without marking or with an ambiguous marker. Research proves that unambiguous connective presence can alleviate the processing burden related to the complexity of certain contexts (Canestrelli, et al., 2013; Li, 2014 on specific vs. underspecified connectives), but this effect could also be tested against other strongly disambiguating cues, such as modality. Such studies could also provide insights into the question of non-veridical RESULT relations marking. The problem is, however, how potential findings of such an experiment are reflected in language production.

This particular question is in turn related to the efficacy of the current converging evidence approach. Useful as it is, experimentation does not account for all strategies encountered in natural language, particularly if the relation nature, as in the case of RESULT, allows for inconsistencies in linguistic construal and marking related to genre, the writer’s rhetorical stance, objectives (informational and social), and the textual contexts relevant at the time. One conclusion that emerged from the experimental work in Chapter 4, and is also relevant at this point, is that experimental studies show us what is possible, whereas corpus material provides insights into what is preferred in language production. So while the influence of certain linguistic cues on steering the interpretation of RESULT relations could be tested in a controlled experimental environment, a lack of available corpus material reliably annotated for the same information is an obvious complication for a converging evidence approach. We saw the opposite of this situation in Chapter 4, where the conflicting corpus and experimental results in fact yielded quite a plausible picture of the existing constraints on language production and comprehension.

The PDTB sample of RESULT relations used in the current study is not coded for the fine-grained distinctions within the same discourse relation type as discussed above. The current PDTB 2.0 corpus version allowed annotators to label a relation as ‘Pragmatic Cause’, where Arg1 indicates a claim and Arg2, justification for the claim (‘epistemic because’) or in the opposition direction, where Arg2 indicates a claim and Arg1 justification for
the claim (epistemic so). However, no relations were annotated in the direction of ‘epistemic so’ (but not all have been adjudicated yet, Webber, 2015, p.c.). Further, for a set of nearly 1500 instances of ‘conjoined VPs’, about 150 are labelled as also conveying RESULT, and two are labelled as conveying ‘RESULT + Belief’ (Webber, 2015, p.c.). For instance:

(4) A spokeswoman for GE in Fairfield, Conn., said, “Absolutely no one spoke to Jack Welch on this subject” and added, “Anyone who claims they talked to Jack Welch isn’t telling the truth.” (PDTB: wsj_0449)

The conjoined VPs are headed by said and added, but the relation is taken to hold between the claims Absolutely no one spoke… and Anyone who claims... According to Webber, this relation is taken to be ‘RESULT + Belief’ because the claim of people’s lying is what justifies the speaker’s conclusion that no one spoke to Jack Welsh. So these relations and epistemic relations in the current broader understanding as the speaker’s belief, opinion or prediction are not quite the same things. However, a quick glance at the PDTB corpus proves that this type of RESULT relations is definitely present:

(5) S1: They, as well as numerous Latin American and East European countries that hope to adopt elements of the Spanish model, are supporting the direction Spain is taking. S2: It would be sad for Mr. Gonzalez to abandon them to appease his foes. (PDTB: wsj_0456)

This particular relation was originally not marked, but the categorization of its character as RESULT cannot have the source in real-world causation. The RESULT argument is clearly the author’s judgment based on the prior context, possibly blended with the perspective of a 3rd person participant (the PURPOSE clauses involved). One of the problems with PDTB is that the semantic annotations retain the ambiguity already present in the connectives — the relations are coded as RESULT, but not as a specific type of a RESULT relation. Consequently, no semantically annotated corpus of unmarked relations that could be signaled with an unambiguous connective exists, and so the question whether such relations more frequently comprise linguistic elements that have a role similar to that of can in PURPOSE (i.e. strong disambiguating signal of the relation type and conceptual structure) is quite theoretical.

This question is certainly related to the current debate within computational discourse work on whether or not Implicit coherence relations are qualitatively different from their Explicit counterparts or if the difference is simply quantitative. Computational studies using annotated corpus data provide evidence that features which identify Implicit relations may be different from those present in Explicit relations. As Sporleder and Lascarides 2010)
demonstrate, computational models trained on artificial implicit relations (i.e. explicit relations with a removed connective) do not generalize to manually annotated naturally Implicit relations when tested. By contrast, models trained on a small set of naturally Implicit relations, lead to better test results with naturally Implicit relations. Further, Webber (2009) in the PDTB analysis shows that for many connectives, the Implicit and Explicit versions have very different distributions in terms of what senses they are used with. In the current study of PURPOSE and RESULT, the connective so was found to exhibit similar traits, since one of the senses it can be used with in Explicit relations is entirely absent in Implicit cases. However, the findings do not support a hypothesis that there may be RESULT relations that form a qualitatively different subset, as RESULT was correctly identified as such even without marking in the experimental work reported in Chapters 4 and 5. As mentioned, the question to ask would be whether there are quantitative differences related to the frequencies of certain surface elements (e.g. modality) in certain RESULT relation types. Although such findings could yield insights into possible qualitative differences, those would ultimately have to be derived from the conceptual structures of the events involved. We saw this in (2) and (3) above, where causality was hard to retrieve from an unmarked relation, because the conceptual structure of the events did not generate a sufficiently strong causal link.

A point to note about future research concerns genres. The reason why the findings obtained in the current study of English RESULT connectives are revealing is because English has the multifunctional connective so, which in other languages is used mainly in epistemic contexts (evidence available from Dutch and French). In English so can cover relations in every discourse domain, which means that the division of labor between the connectives may be different than in other languages and probably related to genre. This is why both for this reason and as a result are so scarce and almost absent from spoken language – their semantics may be simply too specific and their nature too formal for certain contexts. From this it could have been anticipated that the two unambiguous phrases will be quite specialized in marking certain discourse domains. While they indeed exhibit significant distributional tendencies and thus corroborate what is believed about categorization function of causality markers, the findings also confirm the purported flexibility of English connectives. The reason why phrases so specific turn out to be quite freely used across domains, despite the existence of an unconstrained so, is thus presumably related to rhetorical strategies and genre-specific preferences of language users, as argued by Stukker and Sanders (2012; see also Sanders & Spooren, 2015). More research into other genres would be needed to investigate the stability of the English connective profiles. Recent studies of Dutch and Chinese show rather stable profiles of Dutch versus mixed result for Chinese connectives. In Dutch, subjectivity turns out to go across different language modalities (spoken and written; Sanders & Spooren,
2015:82), whereas in Chinese some phrases are more context-sensitive (but the study includes only written registers; Li, 2014:157). Similarly, it would be interesting to test for this reason, which shows gradient preferences and is quite evenly distributed between real-world and epistemic domains. However, given the fact that the two phrases analyzed here are not very frequent in language production and bound to the written discourse, they are likely to preserve stable profiles across genres. Finally, as Stukker and Sanders (2012:186) argue, it is possible that several other subcategories of subjectivity and objectivity exist and distinguish between connective use and causality types. Confirming this hypothesis would also require qualitative analyses of both prototypical and non-prototypical uses of these connectives and the underlying conceptual structure of their contexts.

On a final note, both corpus and experimental research could be done to test the ability of modal verbs other than can to convey PURPOSE. As we preliminarily saw in Chapter 4 with so that, the verbs may and might are likely to be operative at least in certain purposive contexts. A very interesting avenue would be to explore the rate of the multifunctional connective such as and with PURPOSE relations, as well as the nature and quality of Alternative Lexicalizations (ad hoc expressions) to convey PURPOSE. Such a study would require annotating of more corpus material in order to see what linguistic features can be operationalized for this purpose.

To sum up – the current study has provided and empirically tested several insights about the nature, linguistic construal, marking strategies and comprehension of naturally produced RESULT and PURPOSE relations in English. The corpus investigation provides several valuable observations, but the converging evidence suggests that questions about the link between linguistic realizations and conceptual structure of RESULT relations should be addressed in further experimental work. Hopefully future studies can provide us with more insights into the processes of conceptualization and linguistic realization of RESULT and hence into the architecture of the RESULT relations.
Appendices

Appendix 1

The prompts used in Experiments 4.1a and 4.1b - PURPOSE relations and fillers (CONTRAST relations, 17-32). The same fillers were used in every experiment throughout the study.

1a: Amanda writes a blog. She shares her thoughts and opinions with others.
1b: Amanda writes a blog, so she shares her thoughts and opinions with others.
1c: Amanda writes a blog. She can share her thoughts and opinions with others.
1d: Amanda writes a blog, so she can share her thoughts and opinions with others.
2a: Catherine drinks a lot of water. She stays hydrated.
2b: Catherine drinks a lot of water, so she stays hydrated.
2c: Catherine drinks a lot of water. She can stay hydrated.
2d: Catherine drinks a lot of water, so she can stay hydrated.
3a: Thomas consistently saves money every month. He is prepared for the future.
3b: Thomas consistently saves money every month, so is prepared for the future.
3c: Thomas consistently saves money every month. He can be prepared for the future.
3d.: Thomas consistently saves money every month, so he can be prepared for the future.
4a.: Elizabeth teases her husband about his weight. She motivates him to lose weight.
4b.: Elizabeth teases her husband about his weight, so she motivates him to lose weight.
4c.: Elizabeth teases her husband about his weight. She can motivate him to lose weight.
4d.: Elizabeth teases her husband about his weight, so she can motivate him to lose weight.
5a.: Ella studies Portuguese. She communicates with the locals when she goes on vacation to Portugal.
5b.: Ella studies Portuguese, so she communicates with the locals when she goes on vacation to Portugal.
5c.: Ella studies Portuguese. She can communicate with the locals when she goes on vacation to Portugal.
5d.: Ella studies Portuguese, so she can communicate with the locals when she goes on vacation to Portugal.
6a.: Eve prefers to file her tax return in March. She avoids the last minute rush.
6b.: Eve prefers to file her tax return in March, so she avoids the last minute rush.
6c.: Eve prefers to file her tax return in March. She can avoid the last minute rush.
6d.: Eve prefers to file her tax return in March, so she can avoid the last minute rush.
7a.: Harry hires a company to clean the windows at home. He avoids having to clean them himself.
7b.: Harry hires a company to clean the windows at home, so he avoids having to clean them himself.
7c.: Harry hires a company to clean the windows at home. He can avoid having to clean them himself.
7d.: Harry hires a company to clean the windows at home, so he can avoid having to clean them himself.
8a.: Alicia ignores comments about her smoking. She avoids feeling bad about her habit.
8b.: Alicia ignores comments about her smoking, so she avoids feeling bad about her habit.
8c.: Alicia ignores comments about her smoking. She can avoid feeling bad about her habit.
8d.: Alicia ignores comments about her smoking, so she can avoid feeling bad about her habit.
9a.: Julie reads to her two-year-old daughter every evening. She spends some quality time with her and helps her fall asleep.
9b: Julie reads to her two-year-old daughter every evening, so she spends some quality time with her and helps her fall asleep.
9c: Julie reads to her two-year-old daughter every evening. She can spend some quality time with her and help her fall asleep.
9d.: Julie reads to her two-year-old daughter every evening, so she can spend some quality time with her and help her fall asleep.
10a.: Katie donates to several charities. She helps those less fortunate than herself.
10b.: Katie donates to several charities, so she helps those less fortunate than herself.
10c.: Katie donates to several charities. She can help those less fortunate than herself.
10d.: Katie donates to several charities, so she can help those less fortunate than herself.
11a.: Leanne cleans the kitchen with bleach. She kills germs and bacteria.
11b.: Leanne cleans the kitchen with bleach, so she kills germs and bacteria.
11c.: Leanne cleans the kitchen with bleach. She can kill germs and bacteria.
11d.: Leanne cleans the kitchen with bleach, so she can kill germs and bacteria.
12a.: Luke buys the latest designer clothes. He impresses others with his wardrobe.
12b.: Luke buys the latest designer clothes, so he impresses others with his wardrobe.
12c.: Luke buys the latest designer clothes. He can impress others with his wardrobe.
12d.: Luke buys the latest designer clothes, so he can impress others with his wardrobe.
13a.: Maggie paints her fingernails black. She completes her unique Gothic look.
13b.: Maggie paints her fingernails black, so she completes her unique Gothic look.
13c.: Maggie paints her fingernails black. She can complete her unique Gothic look.
13d.: Maggie paints her fingernails black, so she can complete her unique Gothic look.
14a.: Maxwell only shops at the local grocery store. He supports local businesses.
14b.: Maxwell only shops at the local grocery store, so he supports local businesses.
14c.: Maxwell only shops at the local grocery store. He can support local businesses.
14d.: Maxwell only shops at the local grocery store, so he can support local businesses.
15a.: Mathilda often borrows her sister's clothes. She looks better and younger.
15b.: Mathilda often borrows her sister's clothes, so she looks better and younger.
15c.: Mathilda often borrows her sister's clothes. She can look better and younger.
15d.: Mathilda often borrows her sister's clothes, so she can look better and younger.
16a.: Martha always wears strong perfume. She attracts men.
16b.: Martha always wears strong perfume, so she attracts men.
16c.: Martha always wears strong perfume. She can attract men.
16d.: Martha always wears strong perfume, so she can attract men.
17f.: Laura does not care about her health, but she should because she is getting older.
18f.: Tony plans to start snowboarding this winter, but he needs to buy some more equipment.
19f.: Ella hasn’t yet filed her taxes, but she plans to do it this weekend.
20f.: Josh refuses to talk to his brother, but he has to try to forget about their conflict.
21f.: Helen goes for a walk every evening, but she may just skip it tonight.
22f.: Glen spends his days playing online games, but he ought to work.
23f.: Jenny does not like to watch TV, but she watches with her kids to be sociable.
24f.: Lawrence knows a lot about modern art, but he should read up on older styles as well.
25f.: Judith is interested in fashion. She needs to learn tailoring first.
26f.: Harry is trying to finish his essay as soon as possible. He has to write more than two pages a day.
27f.: Sandra never helps at home. She should at least start to do the laundry.
28f.: Walter believes his education is sufficient. He should take some courses in developmental psychology.
29f.: Vivienne likes to sleep in. She ought to take the dog out for a walk.
30f.: Richard always pays his bills using the phone banking service. He should learn to use the Internet.
31f.: Emily pretends she's not hungry. With that extreme diet she must be starving.
32f.: Thomas is taking a course in poetry. He gets very nervous when he has to read his work to the class.

The prompts used in Experiment 4.2. Relations ambiguous between RESULT and PURPOSE.

1a.: Paula always puts her towels in the dryer, so they come out soft and fluffy.
1b.: Paula always puts her towels in the dryer, so they can come out soft and fluffy.
1c.: Paula always puts her towels in the dryer. They come out soft and fluffy.
1d.: Paula always puts her towels in the dryer. They can come out soft and fluffy.
2a.: David subscribes to online news services, so he stays up-to-date with the current news.
2b.: David subscribes to online news services, so he can stay up-to-date with the current news.
2c.: David subscribes to online news services. He stays up-to-date with the current news.
2d.: David subscribes to online news services. He can stay up-to-date with the current news.
3a.: Jennifer always locks all the doors at home, so she feels safe.
3b.: Jennifer always locks all the doors at home, so she can feel safe.
3c.: Jennifer always locks all the doors at home. She feels safe.
3d.: Jennifer always locks all the doors at home. She can feel safe.
4a.: Eric plays chess twice a week, so he becomes a better player.

4b.: Eric plays chess twice a week, so he can become a better player.
4c.: Eric plays chess twice a week. He becomes a better player.
4d.: Eric plays chess twice a week. He can become a better player.
5a.: Diane takes a speed reading course, so she reads very quickly.
5b.: Diane takes a speed reading course, so she can read very quickly.
5c.: Diane takes a speed reading course. She reads very quickly.
5d.: Diane takes a speed reading course. She can read very quickly.
6a.: Bill makes his bed carefully in the morning, so his bedroom looks nice and tidy.
6b.: Bill makes his bed carefully in the morning, so his bedroom can look nice and tidy.
6c.: Bill makes his bed carefully in the morning. His bedroom looks nice and tidy.
6d.: Bill makes his bed carefully in the morning. His bedroom can look nice and tidy.
7a.: Mary sells her quilting projects on eBay, so she earns some extra money.
7b.: Mary sells her quilting projects on eBay, so she can earn some extra money.
7c.: Mary sells her quilting projects on eBay. She earns some extra money.
7d.: Mary sells her quilting projects on eBay. She can earn some extra money.
8a.: Tony bikes to work, so he saves gas money and gets some exercise.
8b.: Tony bikes to work, so he can save gas money and get some exercise.
8c.: Tony bikes to work. He saves gas money and gets some exercise.
8d.: Tony bikes to work. He can save gas money and get some exercise.
9a.: Kate washes the car every weekend, so it looks clean and shiny.
9b.: Kate washes the car every weekend, so it can look clean and shiny.
9c.: Kate washes the car every weekend. It looks clean and shiny.
9d.: Kate washes the car every weekend. It can look clean and shiny.
10a.: Philip eats only organic food, so he feels healthy and strong.
10b.: Philip eats only organic food, so he can feel healthy and strong.
10c.: Philip eats only organic food. He feels healthy and strong.
10d.: Philip eats only organic food. He can feel healthy and strong.
11a.: Susan makes her own lunch for work, so she saves money on food.
11b.: Susan makes her own lunch for work, so she can save money on food.
11c.: Susan makes her own lunch for work. She saves money on food.
11d.: Susan makes her own lunch for work. She can save money on food.
12a.: Theo irons his own shirts, so he always looks tidy and professional.
12b.: Theo irons his own shirts, so he can always look tidy and professional.
12c.: Theo irons his own shirts. He always looks tidy and professional.
12d.: Theo irons his own shirts. He can always look tidy and professional.
13a.: Julie follows her teacher’s advice, so she gets better grades.
13b.: Julie follows her teacher’s advice, so she can get better grades.
13c.: Julie follows her teacher’s advice. She gets better grades.
13d.: Julie follows her teacher’s advice. She can get better grades.
14a.: Martin always puts his tools in the garage, so he keeps track on them.
14b.: Martin always puts his tools in the garage, so he can keep track on them.
14c.: Martin always puts his tools in the garage. He keeps track on them.
14d.: Martin always puts his tools in the garage. He can keep track on them.
15a.: Maggie decorates her walls with big paintings, so the place looks nice and colorful.
15b.: Maggie decorates her walls with big paintings, so the place can look nice and colorful.
15c.: Maggie decorates her walls with big paintings. The place looks nice and colorful.
15d.: Maggie decorates her walls with big paintings. The place can look nice and colorful.
16a.: Steven uses extra strong hair gel, so his hair stays in place.
16b.: Steven uses extra strong hair gel, so his hair can stay in place.
16c.: Steven uses extra strong hair gel. His hair stays in place.
16d.: Steven uses extra strong hair gel. His hair can stay in place.

The prompts used in Experiments 4.3a and 4.3b. Unambiguous RESULT (items a and b) vs PURPOSE (items c and d)

1a.: Alicia ignores comments about her smoking. She has a lot of health problems.
1b.: Alicia ignores comments about her smoking, so she has a lot of health problems.
1c.: Alicia ignores comments about her smoking. She avoids feeling bad about her habit.
1d.: Alicia ignores comments about her smoking, so she avoids feeling bad about her habit.

2a.: Amanda writes a blog. She gets a lot of followers.
2b.: Amanda writes a blog, so she gets a lot of followers.
2c.: Amanda writes a blog. She shares her thoughts and opinions with others.
2d.: Amanda writes a blog, so she shares her thoughts and opinions with others.

3a.: Catherine drinks a lot of water. She takes frequent bathroom breaks.
3b.: Catherine drinks a lot of water, so she takes frequent bathroom breaks.
3c.: Catherine drinks a lot of water. She stays hydrated.
3d.: Catherine drinks a lot of water, so she stays hydrated.

4a.: Elizabeth teases her husband about his weight. He gets upset and they fight.
4b.: Elizabeth teases her husband about his weight, so he gets upset and they fight.
4c.: Elizabeth teases her husband about his weight. She motivates him to lose weight.
4d.: Elizabeth teases her husband about his weight, so she motivates him to lose weight.

5a.: Ella studies Portuguese. She is becoming fluent in two languages.
5b.: Ella studies Portuguese, so she is becoming fluent in two languages.
5c.: Ella studies Portuguese. She communicates with the locals when she goes on vacation to Portugal.
5d.: Ella studies Portuguese, so she communicates with the locals when she goes on vacation to Portugal.

6a.: Eve prefers to file her tax return in March. She gets her tax refund earlier.
6b.: Eve prefers to file her tax return in March, so she gets her tax refund earlier.
6c.: Eve prefers to file her tax return in March. She avoids the last minute rush.
6d.: Eve prefers to file her tax return in March, so she avoids the last minute rush.

7a.: Harry hires a company to clean the windows at home. They look spotless.
7b.: Harry hires a company to clean the windows at home, so they look spotless.
7c.: Harry hires a company to clean the windows at home. He avoids having to clean them himself.
7d.: Harry hires a company to clean the windows at home, so he avoids having to clean them himself.

8a.: Julie reads to her two-year-old son every evening. He learns a lot of new words.
8b.: Julie reads to her two-year-old son every evening, so he learns a lot of new words.
8c.: Julie reads to her two-year-old son every evening. She spends some quality time with him and helps him fall asleep.
8d.: Julie reads to her two-year-old son every evening, so she spends some quality time with him and helps him fall asleep.
9a.: Katie donates to several charities. She feels better about herself.
9b.: Katie donates to several charities, so she feels better about herself.
9c.: Katie donates to several charities. She helps those less fortunate than herself.
9d.: Katie donates to several charities, so she helps those less fortunate than herself.
10a.: Leanne cleans the kitchen with bleach. The kitchen smells fresh.
10b.: Leanne cleans the kitchen with bleach, so the kitchen smells fresh.
10c.: Leanne cleans the kitchen with bleach. She kills germs and bacteria.
10d.: Leanne cleans the kitchen with bleach, so she kills germs and bacteria.
11a.: Luke buys the latest designer clothes. He looks fashionable.
11b.: Luke buys the latest designer clothes, so he looks fashionable.
11c.: Luke buys the latest designer clothes. He impresses others with his wardrobe.
11d.: Luke buys the latest designer clothes, so he impresses others with his wardrobe.
12a.: Maggie paints her fingernails black. She gets comments and attention.
12b.: Maggie paints her fingernails black, so she gets comments and attention.
12c.: Maggie paints her fingernails black. She completes her unique Gothic look.
12d.: Maggie paints her fingernails black, so she completes her unique Gothic look.
13a.: Mathilda often borrows her sister’s clothes. Her sister gets angry.
13b.: Mathilda often borrows her sister’s clothes, so her sister gets angry.
13c.: Mathilda often borrows her sister’s clothes. She looks better and younger.
13d.: Mathilda often borrows her sister’s clothes, so she looks better and younger.
14a.: Martha always wears strong perfume. People avoid her.
14b.: Martha always wears strong perfume, so people avoid her.
14c.: Martha always wears strong perfume. She attracts men.
14d.: Martha always wears strong perfume, so she attracts men.
15a.: Maxwell only shops at the local grocery store. His food expenses are high.
15b.: Maxwell only shops at the local grocery store, so his food expenses are high.
15c.: Maxwell only shops at the local grocery store. He supports local businesses.
15d.: Maxwell only shops at the local grocery store, so he supports local businesses.
16a.: Thomas consistently saves money every month. He has built up a large savings account.
16b.: Thomas consistently saves money every month, so he has built up a large savings account.
16c.: Thomas consistently saves money every month. He is prepared for the future.
16d.: Thomas consistently saves money every month, so he is prepared for the future.
Appendix 2

The prompts used in Experiment 5.1 Items (a) and (b) convey RESULT without a volitional participant. Items (c) and (d) convey RESULT with a volitional participant.

1a.: It rained all night, so the family woke to loud sounds on the roof.
1b.: It rained all night. The family woke to loud sounds on the roof.
1c.: It rained all night, so the family decided to skip the picnic.
1d.: It rained all night. The family decided to skip the picnic.
2a.: Mary’s boyfriend treated her badly, so she ended up very depressed.
2b.: Mary’s boyfriend treated her badly. She ended up very depressed.
2c.: Mary’s boyfriend treated her badly, so she broke up with him.
2d.: Mary’s boyfriend treated her badly. She broke up with him.
3a.: The country is very polluted, so the researchers understand that the people here have allergies.
3b.: The country is very polluted. The researchers understand that the people here have allergies.
3c.: The country is very polluted, so the researchers have proposed several environmental solutions.
3d.: The country is very polluted. The researchers have proposed several environmental solutions.
4a.: The captain steered the ship closer to the shoreline, so the passengers avoided the worst of the storm.
4b.: The captain steered the ship closer to the shoreline. The passengers avoided the worst of the storm.
4c.: The captain steered the ship closer to the shoreline, so the passengers started to pack their belongings.
4d.: The captain steered the ship closer to the shoreline. The passengers started to pack their belongings.

5a.: The pancakes were really hot, so the boy burnt himself.

5b.: The pancakes were really hot. The boy burnt himself.

5c.: The pancakes were really hot, so the boy waited a while before he ate them.

5d.: The pancakes were really hot. The boy waited a while before he ate them.

6a.: My sister has narrow shoulders and big hips, so she looks like a pear.

6b.: My sister has narrow shoulders and big hips. She looks like a pear.

6c.: My sister has narrow shoulders and big hips, so she started running 5 miles every day.

6d.: My sister has narrow shoulders and big hips. She started running 5 miles every day.

7a.: The meeting started early in the morning, so the participants appreciated the new coffee machine.

7b.: The meeting started early in the morning. The participants appreciated the new coffee machine.

7c.: The meeting started early in the morning, so the participants arrived one day earlier.

7d.: The meeting started early in the morning. The participants arrived one day earlier.

8a.: Bill’s parents asked him to take care of the plants while they were away, so he had to drive to their place twice a week.

8b.: Bill’s parents asked him to take care of the plants while they were away. He had to drive to their place twice a week.

8c.: Bill’s parents asked him to take care of the plants while they were away, so he watered them every other day.

8d.: Bill’s parents asked him to take care of the plants while they were away. He watered them every other day.
9a.: Eggs only become hard after cooking for six minutes, so the old lady believes she needs a timer.
9b.: Eggs only become hard after cooking for six minutes. The old lady believes she needs a timer.
9c.: Eggs only become hard after cooking for six minutes, so the old lady always uses a timer.
9d.: Eggs only become hard after cooking for six minutes. The old lady always uses a timer.
10a.: Anne’s husband always wants to clean the windows himself, so she never finds them really spotless.
10b.: Anne’s husband always wants to clean the windows himself. She never finds them really spotless.
10c.: Anne’s husband always wants to clean the windows himself, so she usually doesn't help him.
10d.: Anne’s husband always wants to clean the windows himself. She usually doesn't help him.
11a.: The lightning lit up the whole sky, so the little girl was scared.
11b.: The lightning lit up the whole sky. The little girl was scared.
11c.: The lightning lit up the whole sky, so the little girl hid under the table.
11d.: The lightning lit up the whole sky. The little girl hid under the table.
12a.: The neighbors hired a small local company to do the plumbing in the house, so they expect the work to take longer.
12b.: The neighbors hired a small local company to do the plumbing in the house. They expect the work to take longer.
12c.: The neighbors hired a small local company to do the plumbing in the house, so they are planning on saving some money on this project.
12d.: The neighbors hired a small local company to do the plumbing in the house. They are planning on saving some money on this project.
13a.: The car kept making a clanking noise, so the driver got very frustrated.
13b.: The car kept making a clanking noise. The driver got very frustrated.
13c.: The car kept making a clanking noise, so the driver called the garage
13d.: The car kept making a clanking noise. The driver called the garage
14a.: Our neighbor bought a new sport car, so now he became popular among younger women.
14b.: Our neighbor bought a new sport car. Now he became popular among younger women.
14c.: Our neighbor bought a new sport car, so now he drives very fast.
14d.: Our neighbor bought a new sport car. Now he drives very fast.
15a.: The red dress fits Laura very well, so she looks sexy and hot.
15b.: The red dress fits Laura very well. She he looks sexy and hot.
15c.: The red dress fits Laura very well, so she wears it often.
15d.: The red dress fits Laura very well. She he wears it often.
16a.: Adam’s old friends remembered him after all these years, so he felt important.
16b.: Adam’s old friends remembered him after all these years. He felt important.
16c.: Adam’s old friends remembered him after all these years, so he invited them to his summer house.
16d.: Adam’s old friends remembered him after all these years. He invited them to his summer house.
Appendix 3

The remaining part of the analysis of Volitional RESULT relations with *as a result* and *for this reason* in section 6.3.4 (chapter 6).

**Table 6.11** Tense in the Volitional RESULT arguments ordered by subjectivity – raw scores

<table>
<thead>
<tr>
<th>Tense</th>
<th>as a result</th>
<th>for this reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Future</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Simple present</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>Present perfect</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Simple past</td>
<td>22</td>
<td>16</td>
</tr>
<tr>
<td>Past perfect</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
<td><strong>40</strong></td>
</tr>
</tbody>
</table>

**Table 6.12** Deixis in in the Volitional RESULT arguments according to the source of origin – raw scores

<table>
<thead>
<tr>
<th>Deictic center type</th>
<th>as a result</th>
<th>for this reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author/ quoted speaker/1st person speaker</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Embedded character</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Ambiguous</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Neutral</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total deictic elements</strong></td>
<td><strong>20</strong></td>
<td><strong>27</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
<td><strong>40</strong></td>
</tr>
</tbody>
</table>
### Table 6.13 Elements of Appraisal in the Volitional RESULT arguments according to the source of origin – raw scores

<table>
<thead>
<tr>
<th>Subjectivity source</th>
<th>as a result</th>
<th>for this reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>SoC</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Ambiguous</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Neutral</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total Appraisal elements</strong></td>
<td><strong>15</strong></td>
<td><strong>17</strong></td>
</tr>
<tr>
<td><strong>Total relations</strong></td>
<td><strong>40</strong></td>
<td><strong>40</strong></td>
</tr>
</tbody>
</table>

### Table 6.14 Embeddings in the Volitional RESULT arguments – raw scores

<table>
<thead>
<tr>
<th>Type of embedding</th>
<th>as a result</th>
<th>for this reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental state complement construction/(verbs of implicit perspective)</td>
<td>5 (11)</td>
<td>5 (7)</td>
</tr>
<tr>
<td>Embedding predicate/other embedding</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Quotation marks</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total embeddings</strong></td>
<td><strong>13 (11)</strong></td>
<td><strong>12 (7)</strong></td>
</tr>
<tr>
<td><strong>Total relations</strong></td>
<td><strong>40</strong></td>
<td><strong>40</strong></td>
</tr>
</tbody>
</table>


Callison-Burch, Ch., & Dredze, M. (2010). *Creating speech and language data with Amazon’s Mechanical Turk*. In Proceedings of the NAACL HLT 2010 Workshop on Creating Speech and Language Data with Amazon’s Mechanical Turk, Los Angeles, June (pp. 1–12).


Oxford Companion to the Mind, online version 2006.


Prasad, R., Joshi, A. K., & Webber, B. (2010). *Realization of discourse relations by other means: Alternative Lexicalizations*. In COLING (Posters) (pp. 1023-1031), Beijing, August.


Sammanfattning på svenska

Två grundläggande komponenter i kausalitet är ORSAK och VERKAN. På lingvistikens område är distinktionen mellan dessa aspekter vanligen suddig, förmodligen på grund av att forskningens primära fokus har legat på att beskriva hur språket kodar kausalitet. Den semantiska naturen hos de ingående händelserna och begränsningarna som gäller för deras inbördes förhållande diskuteras sällan. Detta arbete är avsett att belysa ett bredare spektrum av företeelser som ligger till grund för konceptet. Detta är en viktig grund för att förstå hur språket kommunicerar VERKAN. I denna uppsats undersöks konceptets natur med fokus på en relativt öppen uppsättning av språkliga element som kan spela en roll för att forma en diskursrelation förutom diskurskonnektiver. Detta står i kontrast till större delen av tidigare genomförd forskning, som tämligen intensivt har ägnats åt att undersöka en begränsad samling av väläggnings- kausalitetsmarkörer. Trots att engelska har använts i studier kring kausalitet, både som styrspråk och som metaspråk, har förvånansvärt lite arbete utförts kring semantiken i de relationer som uppstår specifikt i engelskan, för att inte tala om VERKAN-relationer.

Genom att låna från flera kognitivt orienterade strategier och kombinera empiriska data från två skriftliga korpusar (British National Corpus och Penn Discourse Treebank) med experimentellt arbete, undersöks i den aktuella studien systematiskt konceptuella och lingvistiska egenskaper hos flera nära relaterade typer av VERKAN-relationer (inklusive SYFTE), tillsammans med den gemensamma rollen hos diskurskonnektiver och andra diskurselement i att förmedla avsedd mening. Resultatet av denna diskussion är en beskrivning av hur engelskan utnyttjar den breda kategorin VERKAN och vilka språkliga element som används för att förmedla uppsättningen verkansrelaterade händelser.

Kapitel 1

Detta kapitel ger en kort introduktion till begreppet kausalitet, dess betydelse för människans kognition och förståelse av världen, men presenterar också flera problem relaterade till bristen på empiriska studier av kausalitet i det engelska språket och den teoretiska förvirringen mellan begreppen ORSAK och VERKAN. Kapitlet ger en kort översikt av avhandlingen, liksom av de följande frågeställningarna:
I. Hur kan vi skilja mellan VERKAN- och SYFTE-relationer på engelska?

II. Hur kan vi skilja mellan olika typer av VERKAN på engelska?

(i) I vilken utsträckning är närvaro av konnektiver relevant för distinktionen mellan de två relationerna som analyseras?

(ii) Vilka andra explicita språkliga signaler för typer av relationer, förutom konnektiver, kan hittas i relationssegmenten och hur påverkar de relationens karaktär/disambiguering?

(iii) Vilken roll spelar den logiska egenskapen icke-veridikalitet i relationer med VERKAN och SYFTE?

(iv) Vilken typ av semantiska egenskaper bidrar till analysen av Verkanrelationer? Är vissa av dem vanligare med vissa relationstyper?

Kapitel 2


Kapitel 3

Kapitel 3 belyser de metoder och material som använts för analysen, nämligen British National Corpus (BNC) och Penn Discourse Treebank (PDTB), liksom den crowdworking-plattform som utnyttjats i den experimentella delen av studien – Amazon Mechanical Turk (AMT). Diskussionen handlar om alla aspekter och potentiella problem (inklusive etiska aspekter på den försök som utförts med hjälp av AMT) i samband med sampling av kor-
Kapitel 4

Detta kapitel innehåller en omfattande diskussion om likheterna och skillnaderna mellan VERKAN- och SYFTE-relationer som bygger på en korpusstudie av explicit markerade relationer i BNC och PDTB och omarkerade relationer i PDTB. Det huvudsakliga målet för detta kapitel är att bevisa att SYFTE är en typ av VERKAN, men att skillnaderna i de konceptuella strukturerna för de båda relationerna medför att overt markering är ett krav för SYFTE men är frivilligt för VERKAN. Den frågan testades också experimentellt.

Resultaten tyder på att de språkliga signalerna från den konceptuella strukturen hos relationen tycks spela en mer betydande roll i tolkningen än explicit markering. I korpusstudien analyserades två korpusprov (BNC och PDTB) av engelska finita meningar markerade med det flertydiga konnektivet so. Det visade sig att den mest frekventa kollokationen som förmedlar Syfte är kombinationen so + can/could (80 % i BNC och 55 % av instanserna i PDTB). Viktigare var att inga fall av omarkerade SYFTE-relationer hittades. I den experimentella studien visar sig det modala hjälpverbet can vara mer avgörande för disambiguering än det multifunktionella konnektivet so. Verbet visade sig ha kapacitet att både öka graden av SYFTE-identifieringar för den avsedda SYFTE-relationen och att tvinga relationer, avsedda att vara VERKAN, in i SYFTE-tolkningar. Effekten av närvaron av konnektiver underlättade tolkningar av SYFTE, men den var mycket mindre än effekten av det modala hjälpverbet (och obetydlig när det gällde avsedda VERKAN). Det multifunktionella konnektivet konstaterades bara uppfylla det obligatoriska markeringskravet som hör samman med den intrinsikalt icke-veridikala natu- ren hos SYFTE.

Kapitel 5

Kapitel 5 beskriver skillnaden mellan de volitionella och icke-volitionella typerna av VERKAN-relationer i engelska. Diskussionen belyser typer av aktiva deltagare, agens och volitionell analys i olika verkansmässiga händelsetyper. I detta kapitel identifieras preferenser i markeringen av de undersökta typerna av VERKAN samt betydelsen hos funktionerna agens och volition för den resulterande händelsen och den konnektiva tolkningen (experimentell studie). Som resultaten visar är konnektivet as a result signifikant mera frekvent i relationer som saknar en volitionellt agerande deltagare (medvetandesubjekt – kallas fortsättningssvis: SoC – Subject of Consciousness) (76 % av korpusprovet BNC), medan frasen for this reason uppvisar en gradient preferens för epistemisk och reell kausalitet (83 % av korpusprovet) (preferensererna är relaterade till olika diskursdomäner så som de definieras av
Sweetser, 1990). Dessa resultat bekräftades senare i en experimentell studie som testade verkliga VERKAN-relationer markerade med so – i händelsepar där SoC förekommer tolkades det multifunktionella konnektivet som for this reason. I relationer som saknar SoC var den vanligaste tolkningen as a result.

Detta kapitel belyser flera implikationer kring funktionerna hos engelska VERKAN-konnektiver. Som hävdas i litteraturen kan diskursmarkörer också återspeglar hur språkanvändare kategoriserar kausala händelsetyper. Detta påstående har bekräftats i flera tvåspråkliga analyser, men lexikonet över engelska konnektiver har inte undersökts systematiskt utifrån denna synpunkt. De få befintliga studierna har funnit att användningen av engelska konnektiver är ganska oinskränkt över kausala kategorier. I kapitel 5 antyds dock att engelska konnektiver även används för att markera användarens kategoriseringar av kausala händelsetyper.

Kapitel 6

Kapitel 6 behandlar de språkliga realiseringarna av olika typer av VERKAN-relationer. Analysen av korpusproverna (samma som i kapitel 5) inkluderar konnektiverna as a result och for this reason och deras bidrag till analysen av subjektivitet/objektivitet, tillsammans med andra språkliga medel som kan markera subjektivitet i diskursen. Som nämnts förekommer språkliga signaler om subjektivitet mer frekvent i relationer markerade med for this reason än i sådana markerade med as a result. Dessa skillnader i relations- analys och markering avser distinktionerna mellan domäner av diskurstolkningar (Sweester, 1990). De domäner som innehåller en volitionell deltagare betraktas allmänt som mer subjektiva än de som saknar en sådan entitet.

Kapitel 7

Detta kapitel redovisar slutsatser och konsekvenser för framtida arbete. De funktioner som upprätthåller den konceptuella strukturen hos VERKAN och SYFTE kan sammanfattas på följande sätt:

Tabell 1 Prototypiska semantiska egenskaper hos SYFTE och VERKAN

<table>
<thead>
<tr>
<th></th>
<th>Intentionalitet</th>
<th>Medveten deltagare</th>
<th>Veridikal</th>
<th>Modalitet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Hvudsats</td>
<td>Bisats</td>
<td></td>
</tr>
<tr>
<td><strong>SYFTE</strong></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td><strong>VERKAN</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>med SoC</td>
<td>+</td>
<td>+/-</td>
<td>+</td>
<td>-/+</td>
</tr>
<tr>
<td><strong>VERKAN</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>utan SoC</td>
<td>-</td>
<td>+/-</td>
<td>-</td>
<td>+/-</td>
</tr>
</tbody>
</table>

Som vi kan se i Tabell 1, skiljer sig de konceptuella strukturerna i relationerna. Det förefaller som att SYFTE delar flera vitala funktioner med VERKAN med SoC (avsiktlig påverkan, medveten deltagare i bisatsen, modalitetsmarkör, icke-veridikalitet) men inte är kopplad till VERKAN utan SoC. Eftersom denna studie bekräftar hypotesen att SoC-VERKAN tenderar att vara icke-veridikal kan framtida forskning undersöka frågan huruvida det finns VERKAN-relationer som är svårare att identifiera utan overt markering. Detta kan i synnerhet vara fallet för subjektiva relationer markerade med entydiga konnektiver.

Föreliggande arbete visade också att två entydiga markörer, *as a result* och *for this reason*, omfattar ett brett spektrum av orsakshändelsetyper, vilket är typiskt för engelska konnektiver i allmänhet. De uppvisar dock även signifikanta tendenser att uppträda prototypiskt i vissa relationstyper. Dessa tendenser avser närvaron av och rollen hos en intentionellt agerande diskursdeltagare vilket gör funktionerna hos engelska VERKAN-konnektiver liknande dem som finns i andra språk (se Stukker & Sanders, 2012 för en sammanfattning; Li, 2014 om kinesiska konnektiver). Resultaten visar också att vissa språkliga element deltar i att etablera avsedd tolkning i nivå med diskurskonnektiverna. Fler experimentella studier kan svara på frågan om rollerna hos andra språkliga element i tolkningen av VERKAN-händelser. Sådana studier skulle inte bara vidare undersöka frågan om vilken roll uppen-
bara konnektiver har i vissa typer av VERKAN-relationer utan också ge mer insikt i kopplingen mellan den konceptuella strukturen och den lingvistiska strukturen hos VERKAN-händelser.