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L2 Instruction and Collocation Learning

Classroom intervention research on input processing with L1 Swedish adolescent learners of English

Per Snoder

Doctoral Thesis in Language Education at Stockholm University, Sweden 2019

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Classroom intervention research on input processing with L1 Swedish adolescent learners of English

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Abstract

An important dimension of learning a second language (L2) is to build up a store of recurring word combinations that native speakers use. These so-called formulaic sequences (FSs) serve many functions in fluent language use. One category of FSs is collocations, defined in the present thesis as combinations of a verb and a noun in English with a significant attraction to each other, for example 'carry a risk'. Research has shown that L2 English learners struggle with the appropriate use of collocations but reviews of instructional interventions have concluded that few guidelines for effective pedagogical treatment of collocations are available.

The thesis has investigated the impact of L2 instruction on collocation learning by manipulating the conditions for input processing of treatment materials containing target collocations (TCs). Three classroom pre-test/post-test intervention studies (Studies I-III) were conducted, with a total of 165 L1 Swedish adolescent learners of English. Study I compared a form-focused approach to a meaning-focused approach to the same materials to find out why the former may be more effective than the latter as shown in previous studies. Study II focused on the effects of three manipulations of the materials: how deeply the learners process the TCs, whether re-exposures to TCs are spaced or concentrated, and whether the learners process TCs with or without post-test announcement. Study III examined the potential for a collaborative text reconstruction task to facilitate TC learning. Two modified versions of the task were created that contained different types of priming to the TCs in a pre-task activity.

Results of Study I show that learners in the form-focused condition, having studied decontextualized TCs and been introduced to the term 'collocation', were able to connect words that they previously only knew as single words into collocations. Results also show that a researcher-developed version of stimulated recall interviews was successful in probing learners' mental processes. As for Study II, surprisingly, neither deep processing nor a spaced re-exposure schedule was effective for TC learning, while post-test announcement was. Results of Study III reveal that a pre-task activity that induced learners to elaborate on TC meaning outperformed a pre-task activity with a form-focused elaboration of TCs, notably for the delayed post-test of productive TC knowledge.

Taken together, the results of Studies I-III show that L2 English teachers, with relatively small changes in their classroom procedures, can actively contribute to increasing their learners' collocational competence, an integral part of more advanced proficiency. It is hoped that the successful implementation of the three studies will inspire more instructional interventions on L2 vocabulary learning in Swedish schools and universities, targeting single words and FSs.

Keywords: *L2 English collocation learning, instructional intervention, Swedish adolescent learners, input processing.*

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To Rut and Signe

The present thesis is based on the following three studies, reprinted with kind permission of the publishers:

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Stockholm, February 25, 2019
Per Snoder

Table of Contents

1. Introduction

> To know a language you must know not only its individual words, but also how they fit together (Wray, 2002, p. 143)

1.1 Input in second language collocation learning

Words are basic building blocks of language and learning a language essentially means learning its words. However, theoretical and empirical research has argued and demonstrated that single words are not the basic unit of linguistic analysis but that language is formulaic in nature, consisting to a large extent of more or less fixed recurring word combinations, as demonstrated for example by Erman and Warren (2000). Without these conventionalized and supposedly pre-fabricated 'chunks', fluent language use under real-time pressure would be very taxing for the human brain (Bolinger, 1976; Pawley & Syder, 1983; Sinclair, 1991; Wray, 2002; Schmitt, 2004). One category of recurring word combinations is called 'collocations', and they are the focus of the present thesis. An example of a collocation as they are approached in this thesis is the word pair *carry (a) risk* (verb + noun), deemed important for learners of English, and the research rationale for selecting this collocation type as target items will be specified in chapters 4 and 6 below.

Single words and recurring word combinations are learned when first language (L1) users and second language (L2) learners are exposed to and process linguistic input, a necessary condition for lexical growth: without input no language learning can ever occur (Barcroft, 2015, p. 1). L1 users under normal circumstances receive abundant input of the language from early infancy, which leads to mastery of the linguistic system, including the ways words are naturally combined in the native-speaking communities. This occurs without conscious or deliberate effort. The situation for L2 learners, however, is different. In relation to the learning of recurring word combinations, Long (2015, pp. 310-311) hypothesizes that the learning capacity and the learning opportunities of L2 learners are unfavourable compared to those of L1 users. L2 learners have a reduced capacity for *instance learning* (i.e., non-rule-based learning), which is required for recurring word combinations, and they also encounter them more rarely and with too long intervals between encounters to leave durable memory traces in their minds. As a result, L2 learners' knowledge of recurring word combinations in the target language (TL) lags behind that of L1 users, particularly in productive use (see e.g., Bahns & Eldaw, 1993).

This situation is problematic for L2 learners who aspire to go beyond a beginner level of proficiency, as this particular kind of knowledge is an essential component at high-intermediate to advanced proficiency levels. It follows that some kind of intervention is required to address this problem (Pellicer-Sánchez & Boers, 2019, p. 154). In this thesis the intervention focuses on manipulating the conditions for input processing in L2 classroom settings to identify effective instructional practices for facilitating learning of English verb-noun collocations. It should be noted that the position taken in the thesis is that it is only the conditions for input processing that can be manipulated, and not the idiosyncratic mental processes that actually occur inside the learner's mind, and which are beyond the control of the researcher or teacher (cf. Doczi & Kormos, 2016, p. 120).

The past decade has witnessed an increase in instructional interventions that have investigated how L2 English teachers can facilitate the learning of collocations. One oft-cited study is Laufer and Girsai (2008), who made the case for contrastive analysis and translation to this end. They categorize these interventions as form-focused instruction and contrast them with meaning-focused instruction, with no teacher-induced attention to TL features. Subsequent studies also found superior collocation learning effects of the former approach over the latter (e.g., Szudarski, 2012). So, asking learners to compare TL collocational patterns to those in their L1 may be an effective approach. But what other types of pedagogical intervention may give equal return on investment? There are no clear answers to this question. Several studies have investigated how manipulating the conditions for input processing affects learning, but found inconsistent results of, for example, input flooding[1]. Two reviews of intervention research on various types of recurring word combinations yielded no clear guidelines for L2 teachers (Boers & Lindstromberg, 2012; Meunier, 2012). Furthermore, in their review of the slow acquisition of L2 collocations, Boers, Lindstromberg and Eyckmans (2014, pp. 56-57) concluded that "[e]stablishing empirically what pedagogic interventions are comparatively effective in fostering collocation knowledge /…/ is an ambitious project, most of which is waiting to be accomplished". In addition, a recent review of instructed L2 collocation learning research by Szudarski (2017) concluded that no universal solutions for practical implications are currently available (p. 212).

Instructed L2 collocation learning is thus an area ripe for investigation, where the research conducted for the thesis attempts to make a timely and important contribution, particularly in Sweden where such studies are notably absent. Given the crucial role of input in language development mentioned above, the avenue selected for this research is to focus on the instructional

[1] Input flooding is a technique used in intervention studies whereby the researcher adds extra occurrences of a TL feature (e.g., a target word) in treatment materials to increase its perceptual salience (cf. Szudarski & Carter, 2016, p. 248).

materials – i.e., the texts and exercises that contain collocations – that learners study, and how they may be manipulated by the teacher with a view to facilitating collocation learning. This focus may thus provide answers to the question posed in the previous paragraph on what pedagogical interventions are effective to this end.

1.2 Aim and central questions of thesis

The thesis aims to empirically investigate the impact of L2 instruction on collocation learning in classroom settings. This aim is motivated by a knowledge gap identified in the research literature mentioned above and reviewed in more detail in chapter 4 below. The specific focus of the thesis is on what L2 English teachers can do in their classroom practices to improve learners' productive English verb-noun collocation knowledge by manipulating the conditions for input processing in the materials learners study. It was deemed relevant to focus on controlled productive written knowledge, which is operationalized as being able to translate target collocations from L1 into L2. This is because research evidence shows that it is this type of knowledge, rather than receptive knowledge, that learners struggle most with.

The aim qualifies the thesis as applied linguistics research, defined by Schmitt and Celce-Murcia (2010, p. 1) as "using what we know about (a) language, (b) how it is learned, and (c) how it is used, in order to achieve some purpose or solve some problem in the real world". To achieve the aim, three pre-test/post-test instructional interventions – Studies I-III – were conducted in classrooms with a total of 165 adolescent (mid-teen) L1 Swedish learners of English. Two central questions derived from the stated aim and the literature reviews were examined in the studies:

1. Why is form-focused instruction more effective in facilitating instructed L2 collocation learning than meaning-focused instruction?
2. What are the most effective input processing procedures for facilitating instructed L2 collocation learning?

The first question was investigated in Study I and the second question in Studies II-III. Seven input processing constructs in L2 instruction were used as theoretical frameworks and rationales for the studies. When designing the studies, only easy-to-implement (i.e., paper-and-pen-based) activities that operationalized the constructs were included. This choice was intended to make the outcomes as useful as possible for English language teachers and to strengthen the *ecological validity* of the study outcomes, a concept referring to "how well a research study aligns with the context it is investigating" (Loewen & Plonsky, 2016, p. 199). The research conducted for the thesis

attempts to stimulate further empirical studies and pedagogical discussions on instructed L2 vocabulary learning of single words and collocations (and other types of recurring word combinations) in Swedish secondary school contexts, with classroom researchers, teacher educators, and L2 English teachers. The ultimate aim of such studies and discussions is to benefit L2 English learners.

1.3 Outline of thesis

The thesis is structured as follows. Chapter 2 introduces the context of Studies I-III: the teaching and learning of English in Swedish secondary schools. Chapters 3-5 are background chapters that review, in turn, the research literature on L2 vocabulary acquisition and knowledge, collocation in L2 learning, and the seven input processing constructs that were investigated in chapter 5. Chapter 6 discusses methodological considerations of the studies, setting the scene for chapter 7 which presents the implementations of the constructs in the studies and the results that were produced. Chapter 8 answers the two central questions, discusses the studies in relation to L2 classroom research, the implications they have for L2 teaching practice and their limitations, and draws conclusions. Chapter 9 summarizes the studies in Swedish. The studies are reprinted in their entirety at the very end of the thesis, after the references and the appendices.

2. Context of Studies I-III

This chapter situates Studies I-III of the thesis in their societal and educational contexts: the teaching and learning of L2 English in secondary schools in Sweden. This contextualization is intended to allow the reader to understand the results of the studies in light of the circumstances in which they were produced. Attention is also drawn to the fact that active vocabulary study is not prioritized in the Swedish curricular documents for English instruction, and that instructed L2 vocabulary learning research – i.e., pre-test/post-test studies – on single words and recurring word combinations is absent in Sweden.

2.1 English in Swedish society

English is a strikingly common feature of the Swedish linguistic landscape, visible in the public expression in advertising and shop names, just to mention a few salient domains. Furthermore, films and television series in English are as a rule not dubbed but subtitled in Swedish, with the exception of content intended for young children. Swedes not only receive abundant English input, they also use the language often. For example, in Hammermo's (2006) survey based on a representative sample of 1,094 Swedes, 39% reported having made active use of English in speech or writing over the past week in their work life (p. 227). In addition, many multinational Swedish companies have adopted English as the language of choice for corporate communication (Josephson, 2011, p. 69).

The role of English in Swedish society clearly affects how Swedish adults use it in, for instance, their professional contexts. Even more affected, it seems, are young and adolescent Swedes, who in their spare time meet and use English on a massive scale through their computers and mobile phones (Statens medieråd, 2015). From a pedagogical perspective, this phenomenon is frequently labelled extramural English (EE) and it has been the object of an increasing number of studies (see Sundqvist & Sylvén, 2016 for overview). These studies have demonstrated the beneficial effects of EE on participants' oral proficiency and vocabulary knowledge in English. As a result of this quasi-immersion, many adolescent Swedes are competent users of English. In fact, according to the European Survey of Language Competence (ESLC), 82% of Swedish secondary students were assessed to reach an 'independent user' level of English as a foreign language (EFL) (Araújo & Dinis da Costa, 2013). According to Hyltenstam (2004, pp. 53-54), plausible reasons for this advanced English language proficiency include – other than the extensive use and exposure mentioned above – frequent international travel, lexical

similarities between Swedish and English, and a general interest among Swedes to learn and use English. The limited number of speakers of Swedish, approximately ten million, and the concomitant need to learn more internationally viable languages such as English, may be an additional factor involved. Moreover, according to two national evaluations of the Swedish compulsory school done by the National Agency for Education (Skolverket; 2004), English instruction in Swedish schools is highly valued and regarded by both pupils and teachers. The evaluations showed that 92% of the pupils expressed positive or very positive attitudes towards English as a school subject, and 98% declared that it was important to know English. Among teachers of English, 97% reported enjoying English instruction (Skolverket, 2004).

2.2 English instruction in Swedish secondary schools

Two official documents that influence English instruction in Sweden are the syllabi and the national tests for the school subject English, emanating from Skolverket. They are therefore relevant to consider for the focus of the thesis. A study by Johansson (2015) was also based on the assumption that the two documents in question have a major impact on how a school subject is taught. She did a comparative study of Swedish and French upper secondary schools students' reception of a narrative text as a function of secondary school L1 instruction and she based the concept of received instruction on the syllabi and the national tests.

The syllabi for English in compulsory school for learners aged 7-16 (Skolverket, 2011b) and English in upper secondary school for learners aged 16-19 (Skolverket, 2011a) endorse a communicative approach to English instruction (see next section). A case in point is the following wording taken from the section 'aim of subject' for English: "Through teaching, pupils should be given the opportunity to develop all-round communicative skills" (Skolverket, 2011b, p. 32). Similarly, the mandated national tests in English build on a "communicative and action-oriented view of language" (Skolverket, n.d.). The national tests constitute the national baseline for assessment of English occurring at the end of year six and nine in compulsory school, and after course completion of the first and second year in upper secondary school. This entails that, although there is inevitably variation in classroom implementations across the country, English instruction in Swedish schools is presumably strongly influenced by communicative approaches to L2 instruction, in being highlighted in the syllabi and the national tests.

2.2.1 Vocabulary study in English instruction in Sweden

Communicative language teaching (CLT) needs to be introduced at this point. It should be noted that unlike other more easily defined L2 instruction approaches, for example the Grammar-translation method, CLT is a fuzzy concept that can be implemented in many ways and to different degrees. Richards and Rodgers (2001, p. 155) define the primary aim of CLT being to "make communicative competence the goal of language teaching" and also point out that the overall focus of CLT is on meaningful and authentic language use. Vocabulary learning in CLT is assumed to occur naturally with communicative exposure in L2 (Zimmerman, 1997, p. 15). An early critic of the message focus of CLT was Cowie (1992), who contended that L2 instruction should focus on both learners' expressive needs and the means – the language forms – for conveying them, in his study the many recurring multiword units that occur in native language use (p. 11). Relatedly, Laufer and Girsai (2008), comparing the effectiveness of three instructional conditions on L2 vocabulary learning, found that the condition which operationalized CLT made virtually no gains compared to the two other ones with various foci on language form. The authors concluded by arguing that "[m]eaningful communication has been the goal of communicative language teaching, but the best method for achieving this goal may not be identical to the goal itself" (p. 712).

So how much classroom time and effort is devoted to actively boosting learners' English vocabulary in Swedish schools and what is the nature of such activities? These are difficult questions to answer, but there are indications. Active vocabulary study is all but absent in the syllabi for English in compulsory and upper secondary school (Skolverket, 2011b; Skolverket, 2011a). No mention is made in the section 'aim of subject' of the importance of building up a large vocabulary in English for communicative purposes and as a basis for proficiency. The syllabi do mention "fixed language expressions" and "words and phrases" for each level of schooling (Skolverket, 2011b, p. 35; Skolverket, 2011a, no page number). However, the mentions are downplayed as they are found at the bottom of bullet point lists related to reception and production of English in the context of how the lexical elements are used as discourse markers and for expressing temporal relations. Moreover, the "knowledge requirements" for grading – a newly coined term for 'grading criteria' – specify that learners should be able to express themselves "in relatively varied ways" (Skolverket, 2011b, p. 38). This assumes a rich vocabulary but the reference to vocabulary study is thus only implicit.

Furthermore, active and deliberate vocabulary study techniques in English classrooms in Sweden have often been reduced to what is referred to as the 'word list model', according to which learners are assigned a glossed list (translation L1-L2) of 10-20 decontextualized single words for homework, to be memorized for an announced subsequent written translation test (Tornberg,

2009, p. 122; Lundahl, 2012, p. 347). One caveat with this particular practice is that it instils in learners the notion that single isolated words are the basic unit of linguistic analysis. This runs counter to what the research evidence shows: words tend to systematically occur with certain other words, and a large repertoire of such recurring word combinations is an integral part of advanced TL proficiency. Lewis (2000, p. 62) makes the following point on the importance of learning recurring word combinations in the L2, in his terms collocations:

> A student with a vocabulary of 2,000 words will only be able to function in a fairly limited way. A different student with 2,000 words, but **collocationally competent** with those words, will also be far more **communicatively competent** (emphases in original)

2.2.2 English instruction as a second or a foreign language?

For English instruction aimed at non-native speakers, a distinction between English as a second or a foreign language (ESL/EFL) has generally been upheld in the second language acquisition (SLA) and applied linguistics literature (Celce-Murcia, Brinton, & Snow, 2013). It draws on Braj Kachru's (1985) influential three concentric circles: the inner/outer/expanding circles. The inner circle was conceptualized to include countries where English is the first and often only official language, for example the US and Australia. The outer circle comprised countries where English is not learned as a mother tongue but is important for historical, often colonial, reasons and may therefore be one of several official languages, for example India and Kenya. The expanding circle was intended to include countries where English is not an offical language but is widely used as a foreign language or lingua franca, for example most of the European countries – including Sweden – and Japan.

The distinction between the three circles of the Kachruvian approach relates in theory to the amount of English input learners receive outside the classroom. In an ESL context, learners reside in an English input-rich milieu where they are surrounded by English, in most cases as it is the official language of the country. One example of ESL is learning English in the US, which implies that learners receive extensive exposure to the language and have a constant need to use it to perform daily tasks. The contrast is an EFL context, an English input-poor environment, in which learners receive little or no exposure to English outside the classroom walls, and have little need and/or few opportunities to engage in authentic use of the language. For example, learning English in Morocco. In some cases, however, the distinction made using the three circles is coarse and borders on misleading, particularly in this globalized Internet age. One frequently cited case is the teaching and learning of English in Scandinavian countries such as Sweden which – given the circumstances described in section 2.1 – defies such neat categorization. The position taken in this thesis is therefore, following Sundqvist and Sylvén

(2016), to discard the ESL/EFL distinction altogether as it no longer correctly describes the sociolinguistic reality: English in Sweden does not belong to any of the three circles. Instead the label 'L2 English' is used to describe all situations where English is taught and learned after a first language has been acquired, in the case of the present thesis – Swedish. L2 English thus includes both formal (instructed) and informal (outside school) learning of English at all proficiency levels.

2.3 Instructed L2 vocabulary learning research in Sweden

There is a considerable amount of descriptive/non-interventional research on collocations and other types of formulaic sequences (FSs) with L1 Swedish learners of English, French and Spanish. This research focuses primarily on high level proficiency learners and often involves participants in study abroad contexts. These studies have shown, among other things, that the use of FSs follows the development of TL proficiency (Forsberg, 2010), and that learners underuse collocations, and not the other types of FSs under study, in oral production compared to native speakers (Erman, Denke, Fant, & Forsberg Lundell, 2015).

To my knowledge, there are however no pre-test/post-test instructional intervention studies of L2 single word learning conducted in Swedish schools or universities, nor of collocations or other types of FSs. This is surprising considering that such research abounds in other parts of the world. Such research draws on the broad consensus since the 1980s among theoretical and applied linguists that a large L2 vocabulary, with knowledge of single words and FSs, is a crucial component of language proficiency and one that L2 teachers should prioritize (Nation, 2001; Folse, 2004; Schmitt, 2008; Milton, 2009). That said, instructed L2 vocabulary learning as a concept is not completely absent in language teacher education in Sweden. For example, two course books on language education – Tornberg (2009) and Lundahl (2012) – used in pre-service English language teacher training courses and programmes at many Swedish universities[2], highlight the importance of instructed L2 vocabulary learning, each devoting one chapter to the topic (Tornberg, 2009, ch. 7; Lundahl, 2012, ch. 9). But, again, there is as of yet no instructed L2 vocabulary reseach conducted in Sweden to refer to, to expand on, or to inform teaching practices. The present thesis is in that sense a first step.

[2] A Google search (on June 13, 2018) on these two titles revealed that they are listed in the course literature for language teacher training courses and programmes at, among others, Stockholm University, Gothenburg University, Uppsala University and Umeå University.

2.4 Summary

This chapter has contextualized Studies I-III, the most important features of which being (1) the use of the label 'L2 English' in the thesis to avoid the now irrelevant distinction between English as a second and a foreign language in the context of this thesis, (2) that the curricular documents for English instruction in Sweden marginalize active vocabulary study, and (3) that instructed pre-test/post-test L2 vocabulary learning research on single words and FSs is absent in Swedish secondary schools and universities.

The next chapter is the first of three background chapters and focuses on L2 vocabulary acquisition and knowledge, two central aspects of the focus of the thesis.

3. L2 vocabulary acquisition and knowledge

The thesis focuses on L2 collocation learning and this background chapter therefore reviews the literature on how L2 learners acquire vocabulary and what it is involved in knowing a word. A recurrent focus is on how words regularly combine with certain other words: formulaic sequences (FSs), including collocations. The chapter also describes input processing in L2 vocabulary acquisition. A short historical overview opens up the chapter.

3.1 Brief historical perspective

Publications in the 1980s by the applied linguists Paul Meara (1980), Paul Nation (1982), and Batia Laufer (1986) drew attention to the importance of a large L2 vocabulary for effective communication. They also stressed the need for more empirical research on how learners acquire words. As has regularly been pointed out, L2 vocabulary acquisition research had until then been neglected in SLA and applied linguistics research due to the influence of structuralism. Structuralism saw language as a closed and manageable system comprised of a limited set of grammatical rules to be taught, while vocabulary was open, unlimited and arbitrary in nature (Vermeer, 2001, p. 219; Milton, 2009, p. 1; Chacón-Beltrán, Abello-Contesse, & Torreblanca-López, 2010, p. 1). Relatedly, Thornbury (2002, p. 14) reports that teaching the target language (TL) grammar was seen as more productive use of the limited classroom time because the grammar is a system of rules that could generate a large number of sentences, while the vocabulary is separate items. Another explanation for this neglect is that the learning of L2 vocabulary was assumed to occur on its own – incidentally – as a by-product when learners are exposed to the TL. This assumption has been advocated strongly by Krashen in theoretical terms with his influential Input Hypothesis (1985) and in a subsequent extensive review article (1989).

Since the early 1990s, L2 vocabulary acquisition research is a multi-faceted and active scientific discipline. One of the most salient expansions of the discipline is a shift from a focus on single words to the study of formulaic language around the beginning of the third millenium (e.g., Wray, 1999, 2000, 2002; Schmitt, 2004). Despite this surge in research interest, several core questions in the L2 vocabulary acquisition process remain partly or fully unanswered (Gass, 1999, p. 319).

3.2 How learners acquire vocabulary

Two reservations should be made at this initial stage. First, how L2 vocabulary acquisition actually occurs inside the learner's mind and develops the mental lexicon is unknown as it involves complex neurobiological processes that are still beyond empirical study (Chacón-Beltrán et al, 2010, pp. 2-3). Second, there is no overall theory of the lexical acquisition process (Nation, 1995, p. 5). The literature reviewed below may therefore be labelled descriptive in attempting to account for the how-question (Meara, 1997, p. 109). The thesis investigates instructed L2 collocation learning, which necessitates a definition of vocabulary acquisition germane to that context. The following definition of vocabulary acquisition by González-Fernández and Schmitt (2017, p. 280) is therefore used in the thesis:

> All the processes involved in learning lexical items (i.e., single words, and formulaic language) in sufficient depth to be able to use them both productively and receptively, by means of multiple incidental and intentional encounters with these items in varied contexts

This definition comprises four aspects of L2 vocabulary acquisition relevant to the thesis: (1) formulaic language; (2) depth of word knowledge; (3) productive and receptive word knowledge; (4) incidental and intentional learning conditions. Aspects 2-4 are reviewed in this chapter, while the first aspect, relating to collocations, is reviewed in depth in chapter 4. The definition above uses the terms vocabulary 'learning' and 'acquisition' interchangeably, which is also the case in the thesis.

Three core components of the L2 vocabulary acquisition process are input, memory, and incrementality. First, L2 vocabulary acquisition occurs when learners are exposed to and process linguistic input, a concept defined by Richards and Schmidt (2013) as "language which a learner hears or receives and from which he or she can learn" (p. 286). No word, or other language feature, is ever learned without input processing (Barcroft, 2015, p. 1). This is the rationale for focusing on manipulating the conditions for input processing in Studies I-III of the thesis. Second, it is self-evident that vocabulary acquisition implies remembering previously unknown words: if a learner does not remember the word or FS in question, he/she has not learned it. A case in point relevant to the thesis is the study by Foster, Bolibaugh and Kotula (2014). They found that phonological short-term memory, together with early TL immersion, best predicted their participants' ability to identify non-nativelike word combinations in a manipulated text. One example of such a collocation relevant to the thesis is the infelicitous verb-noun combination **get success*. Third, word knowledge is multi-faceted and L2 learners and native speakers acquire words incrementally – gradually – when interacting with input. Languages are not static systems: new word forms are continuously coined or borrowed from other languages, and new meanings

and uses of existing word forms are added. This entails that full mastery of the knowledge of a word is improbable and unrealistic, even for native speakers (cf. Schmitt, 2010a, p. 37). Collocational knowledge in an L2 is one aspect of word knowledge that tends to develop late in this incremental process (Laufer & Goldstein, 2004, p. 422).

Word frequency is a crucial factor for vocabulary acquisition. As a general rule, more frequent words are learned before less frequent words, as learners encounter the former kind more often in input (Milton, 2009, p. 28). One of the explanations for the slow acquisition of L2 collocations is that they occur rarely in input (see Boers & Lindstromberg, 2009, pp. 42-43 for an example with verb-noun collocations). An important basis for L2 vocabulary acquisition research is analyses of word frequency in large corpora of English produced by native speakers. A frequently used corpus of English is the British National Corpus (BNC), comprising around 100 million words of spoken and written British English, 93% of which were collected between 1985-1994 (Leech, Rayson, & Wilson, 2001, p. 1). The BNC was also used in the present thesis. The standard operationalization of word frequency is to run word searches in a corpus and divide search items into frequency bands of 1,000 words: the first 1,000 words, the second 1,000 words, etc. Single words among the 2,000 most frequent words are labelled highly frequent, and Shin and Nation (2008) found that 308 collocations, according to their definition and inclusion criteria, for example *you know*, were frequent enough in the spoken part of the BNC to meet this cut-off point.

An illustrative metaphor for L2 vocabulary acquisition is the 'learning burden' of a word, defined by Nation (2001, p. 23) as "the amount of effort required to learn it". From a semantic perspective, the concreteness or imageability of the target word plays a role, in that abstract nouns such as *sensitivity* are more difficult to represent visually than a concrete noun such as *pencil* (cf. Gairns & Redman, 1986). From a formal perspective, sound combinations that are not present in the learner's L1 may impede learning (Milton, 2009, p. 35). Furthermore, word length may intuitively seem like an important form-related factor – the longer the word, the heavier the learning burden – but the evidence on the issue is mixed, as reported by Singleton (1999, p. 141). It is not given that a 'gig', defined by the *Oxford Advanced Learner's Dictionary* (OALD) as 'a small light two-wheeled carriage pulled by one horse' (Cowie, 1989, p. 521), is easier to learn than 'misunderstanding'. This is because learners may know the morphemes of the latter word. An additional factor at play is cognateness, that is, when the target word is similar in form and meaning to an L1 word. One example is the Swedish-English couple of homographs *latent-latent*. English *latent* is in the sixth 1,000 frequency band (Nation, 2017), and thus low-frequent. Cognateness reduces the learning burden considerably, thus mitigating the effect of word frequency (cf. Bardel, Gudmundson, & Lindqvist, 2012). A related, but converse, concept is interlingual incongruence, a lack of L1-L2

translational overlap that increases the learning burden. It has been found to be particularly demanding for L2 collocation learning, as demonstrated by Peters (2016). This concept is elaborated on in section 4.3.1 below.

A recurrent distinction in the discussion of how L2 vocabulary acquisition occurs is that between intentional and incidental learning (Hulstijn, 2001, 2003; Rieder, 2003; Bruton, Garciá López, & Esquiliche Mesa, 2011; Reynolds, 2012). Intentional learning refers to the deliberate committing of target words to memory, induced by post-test announcement or explicit and decontextualized study of target words, or by both. Incidental learning refers to word learning occurring as a by-product of another primarily meaning-focused activity, for example extensive reading, without post-test announcement (Pellicer-Sánchez & Boers, 2019, p. 153). The distinction should be problematized as it is less clearcut than it seems. This is because intentionality – whether or the degree to which a learner consciously chooses to direct his/her attention to a target feature in input to learn it – is elusive and subject to individual variation. For example, a study by Jahan and Kormos (2015) showed that learners did not notice target features in input, even though their attention was explicitly drawn to them through visual enhancement using bold characters. Conversely, Bruton et al. (2011) argue that learners in an incidental intervention study may idiosyncratically decide to consciously learn target words even though their attention is not explictly drawn to them or no post-test announcement is made. Dóczi and Kormos (2016, p. 120) suggest a solution to this problem by separating learning processes, which cannot be controlled, from learning conditions, which can be controlled by the researcher/teacher. Intentional or incidental learning conditions can thus be induced in an experiment and it is in this methodological sense that intentionality was operationalized in Studies I-III. This is further elaborated on in section 5.5 below.

3.3 What is involved in word knowledge?

How learners acquire words hinges on what is meant by knowing a word. The most basic and important aspect of word knowledge is arguably the ability to connect the form of a word to a meaning, for example that the three-letter sequence ‘cat’, or its aural representation /cæt/, refers to a domestic animal that meows (Laufer & Goldstein, 2004, p. 409; Schmitt, 2008, p. 333). Knowing just one of the two aspects form and meaning is useless from a functional point of view. However, word knowledge is multidimensional and includes more aspects than making this initial form-meaning link. Nation (2001, p. 27) breaks down word knowledge into three areas – word *form*, *meaning*, and *use* – with 18 sub-components, as displayed in table 3.1 below:

Table 3.1 What is involved in knowing a word (based on Nation, 2001, p. 27)

Form:	Spoken	R	What does the word sound like?
		P	How is the word pronounced?
	Written	R	What does the word look like?
		P	How is the word written and spelled?
	Word parts	R	What parts are recognizable in this word?
		P	What word parts are needed to express this meaning?
Meaning:	Form and meaning	R	What meaning does this word form signal?
		P	What word form can be used to express this meaning?
	Concepts and referents	R	What is included in the concept?
		P	What items can the concept refer to?
	Associations	R	What other words does this make us think of?
		P	What other words could we use instead of this one?
Use:	Grammatical functions	R	In what patterns does the word occur?
		P	In what patterns must we use this word?
	Collocations	R	What words or types of words occur with this one?
		P	What words or types of words must we use with this one?
	Constraints on use	R	Where, when and how often would we expect to meet this word?
	(register, frequency …)	P	Where, when and how often can we use this word?

In the current context it is worth pointing out that Nation here uses 'collocations' in the broadest possible sense, to refer to any kind of recurring word combinations. In this thesis, however, a more precise definition and operationalization of collocations is used. The capitals 'R' and 'P' in table 3.1 refer to the distinction between receptive and productive word knowledge. It is based on empirical evidence revealing that productive target item knowledge amounts to only 50-80% of receptive knowledge (for reviews see Milton, 2009, chapters 4-6). The reason for this discrepancy lies in the complexity of speaking and writing – productive knowledge – compared to the less demanding task of understanding input when reading or listening – receptive knowledge. In essence, message comprehension is facilitated mainly by the presence of contextual clues, and for reading the relative absence of time pressure. In contrast, message production is more cognitively demanding, notably the time pressure involved in real-time spoken interaction (cf. Schmitt, 2014, pp. 919-920). This distinction is elaborated on in section 6.6 below on measuring L2 vocabulary knowledge, when the terms 'active' and 'passive' word knowledge are preferred over 'productive' and 'receptive', respectively.

There are supposedly different degrees of word knowledge. A learner who has made the initial form-meaning link knows, at most, six of the 18 sub-components of word knowledge in table 3.1 above: i.e., the four Spoken and Written sub-components of *Form* and the two Form and meaning sub-components of *Meaning*. He/she may also have partial knowledge of a word in knowing how it sounds or is pronounced but not how it is spelled. This last point is relevant for English, where spelling is irregular and unpredictable

compared to, for example, Spanish. Clearly, this learner knows qualitatively less than another one who also knows several of the other 12 sub-components, for example how it co-occurs with certain other words to form collocations. This difference was first conceptualized by Anderson and Freebody (1981) in terms of breadth versus depth of vocabulary knowledge in relation to word meaning. The introduction of these two metaphorical concepts has generated a diverse literature with theoretical discussions and empirical investigations (see Schmitt, 2014 for an extensive review), and has in this sense advanced the field. However, an unresolved issue is whether depth of vocabulary is an independent construct, conceptually separate from breadth of vocabulary. In other words, is L2 collocation learning increasing learners' vocabulary depth? Gyllstad (2013) argues that his L2 English collocation tests (Gyllstad, 2007) do not measure depth of vocabulary, for two reasons. First, they only tap into one of Nation's depth of vocabulary sub-components – collocations – and not the other ones, such as word associations and grammatical functions. Second, several studies he reviewed found very strong correlations between measures of breadth and depth of vocabulary and in his own study, Gyllstad (2007) found that the three tests he administered – of collocation knowledge, and of vocabulary breadth and depth – correlated strongly with each other. This entails that they measure essentially the same thing (Gyllstad, 2013, p. 25).

3.4 Summary

Learners acquire a lexical item, i.e., a single word or a formulaic sequence, through input processing and by remembering it. The acquisition occurs incrementally. L2 words differ in the learning burden they pose for learners as a function of their frequency and different overlaps between the learner's L1 and the L2. Word length may not be decisive for the learning burden of a word. Intentional and incidental learning in instructed L2 learning research are valid constructs only when referring to the learning conditions that an experiment induces. Word knowledge is based on making the form-meaning-link of a word but is also multidimensional. Depth of word knowledge cannot be argued to be an independent construct.

The next chapter focuses on the role of collocations in L2 learning, the central topic of the thesis.

4. Collocation research

This background chapter reviews the extensive research literature on collocation. The focus is on verb-noun collocations in L2 learning as they were targeted in Studies I-III. Sections 4.1-4 introduce collocations as subsumed under formulaic language, definitions of collocation, the difficulties L2 learners have in using collocations, and instructed L2 collocation learning research.

4.1 Collocations and formulaic language

In layman's terms, collocations are words that often occur together in a language, and this is their fundamental characteristic. However, it is an imprecise description, insofar as all types of recurring word combinations in a language would fall under it, regardless of their properties: formal (how many and what types of words they contain), semantic (what they mean), or pragmatic-functional (when and why they are used). A more precise description of collocations is that it involves recurring word pairs – two main word components – but even more precision is needed. It will be provided when the two main views on collocations are presented in the next section, after a brief historical overview of collocations and an introduction to formulaic language.

The term collocation is old and is according to the *Oxford Dictionary of English* (Stevenson, 2010) rooted in the Latin verb *collocare*, which can be decomposed into *col-* ,'together', and *locare*, 'to place'. It dates back to the early 16th century, and was originally used in a non-linguistic sense with the English verb *to collocate*, meaning to 'place side by side or in a particular relation'. According to Bartsch (2004, p. 29), the first attested printed use of collocation in a linguistic sense was in 1750 in the *Oxford English Dictionary*, where it was used to cover the closely related term 'colligation', referring to the "grammatical company a word keeps" Hoey (2004, p. 28). One example of colligation is that 'tea' often functions as a premodifier of another noun, as in *tea pot* and *tea party*. Collocation did thus at that time not carry the same markedly lexical connotation that the concept has developed in contemporary use.

Collocations are frequently categorized as a subset of formulaic language (e.g., Henriksen, 2013; Boers, Demecheleer, Coxhead, & Webb, 2014; Wood, 2015; but see Yamashita & Jiang, 2010, p. 649 for an opposing view). One basic assumption of research on formulaic language is that language users, to varying degrees, process linguistic input and produce linguistic output in chunks and not by piecing together single words. In doing so, they rely on a

large store of prefabricated conventionalized word combinations, which are hypothesized to be processed, stored and reproduced holistically (e.g., Wray, 2002; 2008; Schmitt & Carter, 2004; but see Siyanova-Chanturia, 2015, who questions this hypothesis). These often-called formulaic sequences (FSs) are argued to serve both social and cognitive functions in fluent communication (Sinclair, 1991; Wray, 2002; 2008).

The formulaic nature of language is not a recent observation. As a matter of fact, more than a century ago, Saito (1915, p. 1) recognized the importance of word partnerships when pointing out that "Words are nothing in themselves, and everything in combination". A 1983 essay by Pawley and Syder deserves mention in this context. The authors helped pave the way for formulaic language research in making a case for how native speakers are able to produce fluent speech by using only a few of all the grammatically possible word combinations. They use the illustrative example of how a wish to marry someone typically is worded as "I want to marry you" and none of the other eight listed possible alternatives, including "I wish to be wedded to you" and the cumbersome "My becoming your spouse is what I want" (Pawley & Syder, 1983, p. 196). Importantly, their line of argument opposed the then dominant generative account of language use, which emphasized creativity when proficient users combine words in language production (Chomsky, 1965; see Foster, Bolibaugh, & Kotula, 2014 for a relevant study with a clarifying discussion on the topic).

Formulaic language has grown into a diverse research field, with a range of subordinate terms in circulation that sometimes are and can be used interchangeably: 'FSs', 'collocations', 'multiword units', 'prefabs', 'chunks', etc. This is because researchers have defined and operationalized formulaic language differently. It is beyond the scope of this introduction to synthesize the whole field of formulaic language and categorize the plethora of terms in use. The reader is instead referred to overviews by Woods (2015), and Siyanova-Chanturia and Pellicer-Sánchez (2019). The former is an accessible introduction, and the latter is a recent and more comprehensive state-of-the-art overview. The diversity of the field of formulaic language has impacted on how collocations are defined.

4.2 Defining collocations

Collocations are essentially recurring word pairs that often comprise other lexical elements as in *I will never make the same mistake again*, which contains the definite article (*the*) and a premodifier (*same*). It can still be argued that the collocation essentially is the word pair *make + mistake* (cf. Gyllstad, 2007, p. 32). Collocations have been defined and investigated in two main ways by linguistic researchers: from a quantitative view and a qualitative view. Sometimes the two views have been combined. Before introducting the

two views, it is no exaggeration to say that the concept of collocation has attracted extensive attention in the research literature. The reader is referred to the following volumes for comprehensive overviews: for a detailed historical perspective on collocations, see Barnbrook, Mason and Krishnamurthy (2013); for collocations from a cross-linguistic perspective, see Sanromán Vilas (2016); for collocation extraction from a Natural Language Processing perspective, see Seretan (2011); for collocations in L2 research, see Barfield and Gyllstad (2009). The importance of knowing collocations has also been highlighted by L2 educators, notably by Michael Lewis, whose Lexical Approach centres on collocations (1993, 1997, 2000; see section 4.4.1). Some instructional materials also focus on collocations, for example 'English Collocations in Use' (McCarthy & O'Dell, 2005) and 'Blueprint B' (Lundfall, Nyström, Röhlk Cotting, & Clayton, 2008). The latter is an L2 English textbook used in Swedish upper secondary schools that, unfortunately, contain learning activities with the matching format. This entails that collocations are not processed as intact wholes, evident in the task instruction "Combine the verbs with the nouns that they would normally collocate with" (p. 146). The reason for calling them unfortunate is elaborated on in section 4.4.2 below.

4.2.1 The frequency-oriented view

The quantitative view uses corpus tools to search for either statistically significant or strong reciprocal relationships between the two components of a word pair. This approach is referred to as the *frequency-oriented* view and it investigates the difference between the observed frequency (OF) of a word pair and its expected frequency (EF) in a corpus by using hypothesis testing measures or mutual information measures (Schmitt, 2010b, p. 124). Before introducing the measure types, it is necessary to introduce some terminology that will be used hereafter. The word under study is the 'node', the co-occurring word is the 'collocate', and the textual distance between them is the 'span'. The span is often set at ± 4, implying that collocates are searched four words to the left and four words to the right of the node. This is because it is the textual environment in which 95% of the collocational influence occurs (Gyllstad, 2007, p. 9).

Hypothesis testing measures test the null hypothesis that the OF of a word pair is not significantly higher than the EF, and often use the *t*-score (e.g. Webb, Newton, Chang, 2013). If the *t*-score exceeds 2, then the word pair is a collocation in statistical terms (Hunston, 2002, pp. 71-72). A caveat with the *t*-score is its high-frequency bias: if the OF of the word pair is sufficiently large in the corpus, then any difference between the OF and EF will be significant, no matter how small it is. It follows that word pairs made up of highly frequent words in a huge corpus will count as collocations although the two words are not strongly associated with each other. As a consequence, if

intervention study participants are at intermediate to advanced proficiency levels as in Studies I-III of the thesis, they will already know collocations identified using the *t*-score. One example is the adjective-noun combination *small town*, which yielded an extremely high *t*-score in a search in the BNC using the *BNCweb* (Hoffman, Evert, Smith, Lee, & Berglund Prytz, 2008): 16.6925.

Mutual information (MI) measures, by contrast, calculate the strength of the attraction between two words in a word pair, a question of exclusivity: if I see word X, how likely am I to see word Y within a ± 4 span? An MI score above 3 is the threshold for counting a word pair as a collocation (Hunston, 2002, pp. 71-72). A caveat with the MI score is its low-frequency bias: if the OF of the word pair is low and the EF also is low because the word pair is made up of low-frequency words, then it will lead to extremely high MI scores for word pairs that are less relevant from a learning point of view, either because they are proper names or technical terms. Schmitt (2010b) mentions the adjective-noun combination *tectonic plates*, in which the two word components are highly attracted to each other, evidenced in their MI score in a search in the BNC: 15.43. Many collocation researchers (e.g., Bartsch, 2004; Evert, 2008) therefore stress the need for a threshold of minimum frequency when using the MI score to identify collocations and Schmitt (2010b, p. 131) recommends 3-5 occurrences in the corpus. It should be noted that the directionality of the collocation – whether one word attracts the other one more strongly – is not taken into account in the association measures. This feature is evident in the case of *tectonic plates*, where *tectonic* more strongly predicts *plates*, than the other way round (Schmitt, 2010b, p. 130).

4.2.2 The phraseological view

The other main view of collocations investigates word pairs qualitatively in terms of their compositionality, their semantic transparency, and the restrictions on the substitutability of the two words. This is referred to as the *phraseological view*. It is more pedagogically oriented than the frequency-oriented view in focusing on L2 learners' knowledge and use of word pairs, particularly the difficulties they pose. This view does not use corpus tools to identify the word pairs under study but native speaker intuition of recurring word combinations. A collocational continuum proposed by Howarth (1998b) unpacks the phraseological view on word pairs and is outlined in table 4.1:

Table 4.1 A collocational continuum (adapted from Howarth, 1998b, p. 164)

'free combinations'	'restricted collocations'	'idioms'
pay a bill	*pay a visit*	*pay the price*

Pay a bill is compositional as the meaning of the word pair as a whole is the added meanings of the two words. It is semantically transparent as both words are used in a literal sense. There are no restrictions on the substitutability of the words, provided that they are used in a literal sense. It is therefore a 'free (or 'open') combination', and it is unproblematic to use for the learner provided that s/he knows the form and meaning of the two words. *Pay a visit* is compositional, provided that the learner knows that the verb component is used in a non-literal sense. It is semi-transparent in that only the noun is used in a literal sense. It has arbitrary restrictions on the substitutability of the two words: the noun *stay* is a synonym for *visit*, but using it together with *pay* is unidiomatic and results in a free combination (by adding the preposition *for*). *Pay the price* is non-compositional, as its meaning cannot be reached by adding the meaning of the two words. It is semantically opaque as the two words are used in a non-literal and figurative sense, respectively. The meaning of *pay the price* is according to the OALD "suffer a disadvantage or loss in return for sth one has gained" (Cowie, 1989, p. 909). The words cannot be replaced with other synomous words with the meaning kept intact: the verb *remunerate* is a synonym for *pay*, but using it together with *the price* is unidiomatic. It is therefore an 'idiom'. Some phraseologists (e.g., Howarth, 1998b, p. 164) break down idioms into two types: figurative idioms and pure idioms. The former type also has a literal meaning, as in *do a U-turn*, while the latter is fully semantically opaque, as in *spill the beans* (Granger & Paquot, 2008, p. 36).

There are two caveats with the phraseological view on word pairs described above. First, it is not empirical but theoretical: word pairs under study are selected based on researcher intuition rather than verification by objective (corpus) data; it is thus subjective. Second, the distinction between collocations and idioms in this view are upheld partly as a function of their different semantic transparencies, which is hypothesized to impact on the learning burden: the more transparent the word pair, the lighter the learning burden. However, it is not necessarily the case. Let us compare, for example, the collocation *pay tribute* to the idiom *pay the price*. The former, consisting of a verb used in a non-literal sense together with an abstract noun, may well be just as, or more, semantically opaque than a figurative idiom such as *pay the price*, though admittedly not as opaque as a pure idiom. The boundaries between the two categories can therefore be considerded fuzzy (Handl, 2008, p. 51).

The definition of collocations that was adopted in the present thesis is explicitly stated in section 6.5 below, together with a description of how the 62 target collocations used in Studies I-III were identified. Section 6.6 introduces the measurement of target collocation knowledge that was used.

4.3 Collocations in L2 learning

The focus of the thesis is on instructed L2 collocation learning research and it will be reviewed in section 4.4 below. The theoretical and empirical bases for conducting such research come from three other fields of linguistic inquiry: (1) psycholinguistics, (2) corpus studies, and (3) language testing and assessment. These fields investigate L2 learners' acquisition, processing, knowledge and use of collocation, typically against L1 data as a baseline for comparison. The L2 learners involved in these studies are as a rule at the advanced proficiency level, apart from cross-sectional studies in which a range of proficiency levels are represented. The general finding of research in these fields is that L2 learners differ from their L1 peers in both quantitative and qualitative terms. The following literature reviews only include lexical collocations – verb-noun, adjective-noun and adverb-adjective collocations – and all participants are learners of L2 English. Verb-noun collocations are used in examples as they were the target collocations in Studies I-III.

4.3.1 Psycholinguistic theory and research on collocation

There are various accounts for the slow acquisition of collocations in L2 learners (for overview see Boers, Lindstromberg, & Eyckmans, 2014). Two psycholinguistic models are considered below, one highlighting input processing mode, and the other the effects of exposure frequency together with the influence of a psychological 'chunking' mechanism.

One model (Wray, 2002) hypothesizes that pre-literate child L1 learners process input holistically, as they are unaware of orthographic boundaries between words in the stream of speech they hear. It follows that the collocation *make a mistake* is processed as one chunk by L1 English learners and conveying the message it represents in productive use becomes a relatively simple cognitive task for them. In contrast, literate L2 learners are aware of the concept of the single word and therefore tend to process input analytically, by breaking it down into separate words: *make + a + mistake*. When the need arises to reassemble the meaningful units of the concept they wish to convey, other semantically motivated candidates may be deemed just as appropriate, such as **do a mistake* (see Boers, Demecheleer, Coxhead, & Webb, 2014, pp. 6-7 for discussion). This implies that collocations may not be intrinsically formulaic for L2 learners. A laboratory study by Durrant and Schmitt (2010) found counter evidence for Wray's hypothesis, in that adult learners of English did retain information about collocating words when exposed to adjective-noun collocations twice.

The other model is proposed by N. Ellis (2002; 2003) and is known as usage-based. It emphasizes frequency effects rather than input processing modes (holistic/analytical) when L2 learners acquire collocations: the more often the collocating words are encountered together, the stronger their

association in the mind, and the more deeply collocations are entrenched in long-term memory. The reason why collocational errors persist even in advanced learners is thus that L2 learners lack sufficient exposure to collocations. In addition, N. Ellis (2003, pp. 72-74) argues that frequency effects of exposure to collocating words drive the 'chunking' mechanism when L1, and possibly L2 learners, process input. This occurs at all levels of linguistic description: single phonemes are recoded into words, collocating words into collocations, etc. The processing advantage is that it allows language users to store vast amounts of linguistic information and to communicate fluently.

Relatedly, Long (2015, p. 311) argues that child L1 learners not only are exposed to collocations more frequently than L2 learners, but also more intensively, with shorter time intervals between re-encounters with items. This may be the reason why collocations are more salient and memorable for L1 learners. A relevant concept is Hoey's (2005) theory of lexical priming, which predicts that every encounter a language user has with a word primes it for collocational use, that is the context and co-text in which it is encountered (p. 8). Sinclair (1991) proposed two separate principles for how meaning is created in text. His Principle of Idiom stipulates that native speakers operate mainly by using "semi-preconstructed phrases", rather than by constructing messages word by word as in the "slot-and-filler open-choice principle" (1991, pp. 109-115). L2 learners, by contrast, have been found to alternate between them much more extensively, and draw on influence from their L1 (Wang, 2016).

Collocations lack salience in input for L2 learners for other reasons than limited frequency of occurrence. The perceptual salience of collocations may be reduced through interruption caused by embedded words. One example is the verb-noun collocation *declare war* in the sentence "The *war* everyone had feared so long was finally *declared* on December 1st" (Long, 2015, p. 308, emphases in original). This sentence also illustrates the openness to morphological and syntactic variation of verb-noun collocations to denote the passive voice (cf. Laufer, 2011). These features reduce the perceptual salience of verb-noun collocations compared to adjective-noun and adverb-adjective collocations. This is because the latter two types comprise word components that are found directly adjacent to each other and may be processed as intact wholes, making them easier to learn, for example *fast food* and *highly unlikely*. Furthermore, verb-noun collocations lack semantic salience in the numerous cases when they are made up of a 'light' verb, such as *have*, *make*, and *do* with little or no independent meaning, and which combine seemingly arbitrarily with semantically 'heavy' nouns such as *lunch*, *speech*, and *dishes*, respectively. However, Liu (2010) questions the arbitrariness of the selection of such verbs, for example as the light verb *make* is primarily used with a noun to denote an action requiring planning and effort as in *make a trip*, while the light verb *do* is used for routines as in *do the shopping* (p. 24).

Another obstacle to learning L2 collocations is interlingual incongruence, or lack of word-for-word translational overlap between the learner's L1 and the L2 in question. For example, the English verb-noun collocation *keep a diary* corresponds to *föra dagbok* in Swedish (literally 'conduct diary'), and not the literal translation from English **hålla en dagbok*. Yamashita and Jiang (2010) found strong congruency effects for the acquisition and processing of L2 English verb-noun and adjective-noun collocations. They compared how Japanese ESL users residing in the US and EFL learners residing in Japan performed on a phrase-acceptability task with congruent and incongruent target collocations. Reaction times and error rates were measured and compared against a baseline of native English speakers. Results showed that the native speakers of English reacted as quickly and as correctly to target collocations that were incongruent and congruent with their Japanese equivalent, providing support for the construct validity. Unsurprisingly, the ESL learners outperformed their EFL peers on both measures. More interestingly, it was difficult to acquire incongruent collocations, even for the ESL learners who, despite having received massive input, made more errors on incongruent than congruent collocations. Furthermore, the ESL learners showed no difference in reaction times for collocations that they knew – congruent or incongruent – which means that they had developed a direct link between the concept and the L2 lexicon. The authors recommend that L2 English teachers (1) focus on incongruent collocations, (2) use corpus tools and (3) raise learners' awareness of collocations. Studies II-III of the thesis did (1) and Study I did (3) but none of the studies did (2) as it is outside the scope of the thesis aim.

4.3.2 Learner corpus studies on collocation use

Research using learner corpora investigates L2 writing by extracting collocations from argumentative essays based on stringent inclusion criteria, and by analysing them quantitatively and qualitatively. The learner data is typically matched against data from a comparable L1 corpus, frequently the BNC. A majority of these studies have targeted verb-noun collocations (e.g., Howarth, 1998a; Nesselhauf, 2005; Laufer & Waldman, 2011; Wang, 2016). A recurring finding is that learners' use of collocations deviates in several respects from that of their L1 peers.

Error analysis is a dominant feature in this field. Studies show that, in general, L2 learners misuse collocations compared to L1 users and many errors are attributed to L1 influence. Nesselhauf (2005) found that 50% of the erroneous verb-noun collocations her L1 German learners produced were due to such interlingual incongruence, for example **make homework* instead of *do homework*, based on a literal translation from German. An even larger proportion of negative transfer was found in Laufer and Waldman (2011), who reported that 89% of error types were literal translations of the learners' L1

(Hebrew) into English. Other researchers have argued differently. Howarth's (1998a) qualitative analysis demonstrated that error sources of non-nativelike use of collocations go beyond just L1 influence and include blending, as in **pay care*, mixing up *pay attention* and *take care*. Wang and Shaw (2008) found that their learners, with L1 Chinese and L1 Swedish that are typologically radically different from each other, produced the same type and proportion of collocational errors in English. This led the authors to conclude that intralingual problems, in terms of insufficient grammatical knowledge of the TL, may also explain many collocational errors.

Another frequent deviation in L2 learners' use of collocations is under- and overuse. Granger's (1998) analysis actually displayed both features, as her L1 French learners overused *completely* and *totally*, while underusing *highly* as adverb amplifiers for adjectives. Laufer and Waldman (2011) found that their L2 learners, regardless of proficiency levels, used fewer collocations than the L1 counterparts. Tsai (2015) reported that her L1 Taiwanese learners used more tokens (i.e., numbers) of collocations than the L1 users, but fewer types (i.e., different ones). Such high density and low diversity of collocation use aligns with previous observations of L2 learners' tendency to have 'collocational teddy bears' (Nesselhauf, 2005, p. 69). One notable exception to this trend is Siyanova and Schmitt (2008), who found no significant difference in the number of collocations that their L1 Russian learners used, compared to L1 users.

4.3.3 L2 collocations in language testing and assessment

Language testing and assessment research focuses on L2 learners' knowledge of collocations based on various test formats that tap receptive or productive knowledge of items under study. These two facets of collocation knowledge are relevant to consider for the review of instructed L2 collocation learning studies in the next subsection. Receptive collocation knowledge (RCK) involves the ability to select the correct collocate for a given node in multiple choice tests, or acceptability judgment tasks of true or pseudo collocations. Productive collocation knowledge (PCK) involves the ability to supply the correct collocate for a given node or to translate a cue – a complete target collocation, either in isolation or in a full sentence – into or from English. Similar to single word knowledge, studies have shown that learners' RCK is more developed than their PCK (e.g., Marton, 1977; Laufer & Girsai, 2008; Szudarski, 2012).

As for RCK, Gyllstad (2007) developed two reliable test formats for his advanced L1 Swedish learners of English. He found that scores on the two tests correlated strongly with single vocabulary size and proficiency level, and that the most advanced learners' RCK matched that of native speakers. Another RCK study is Foster, Bolibaugh, and Kotula (2014), who investigated the influence of six factors – exposure, memory, age of onset, motivation and

contexts of learning (foreign language/immersion settings) – on L1 Polish learners' ability to detect non-nativelike selections in a manipulated text. The target items included several infelicitous verb-noun combinations, for example **tried many efforts* and **get success*, more nativelike renderings of which are *make efforts* and *have success* according to the *Oxford Collocations Dictionary of English* (OCDE; McIntosh, Poole, & Francis, 2009). The only category of L2 learners who reached nativelike ability to identify non-nativelikeness were the early starters in an immersion context. Nguyen and Webb (2017) investigated the influence of five factors – node word frequency, collocation frequency, MI score, congruency and part of speech – on their L1 Vietnamese English learners' RCK. They found that their learners, despite having had seven years of English instruction and the fact that they were adult English majors, had poor RCK, with less than 50% correct answers. They also found that node word frequency – and not collocation frequency – was the strongest predictor of RCK.

An influential study by Bahns and Eldaw (1993) that focused on PCK drew attention to the problems collocations pose for learners in this mode. The authors administered a translation task and a gap-fill task that targeted collocations to their L1 German learners. They found that learners' PCK was much lower than that of single words, as collocational errors were twice as common as single word errors, and that PCK was important as learners were unable to paraphrase themselves out of the situation. A more recent study by González Fernández and Schmitt (2015) showed that their L1 Spanish learners had a surprisingly substantial PCK, as they were able to translate on average 56% of the target collocations and that, similar to Foster, Bolibaugh, & Kotula (2014), TL immersion was most strongly correlated with collocation knowledge. Nizonkiza's (2017) cross-sectional study of PCK showed that it develops with increases in L2 proficiency and that word component frequency strongly predicted was the strongest predictor of PCK.

4.4 Instructed L2 collocation learning

L2 English learners experience difficulties in producing collocations appropriately and correctly as evidenced by the reviews in the preceding sections. This is the rationale for the steady flux of intervention studies in classroom settings that have investigated various ways in which L2 instruction may facilitate this task for L2 learners. These studies started to appear after 2005 and with few exceptions they either draw on or refer explicitly to the pedagogical guidelines suggested in Lewis' (2000) edited volume *Teaching Collocation*, which is introduced first.

4.4.1 Teaching Collocation

Teaching Collocation (TC; Lewis, 2000) is the third and final publication in the *Lexical Approach* (LA; Lewis, 1993; 1997; 2000). The LA is an approach to L2 teaching that emphasizes the prominence of lexis over grammar in a description of language. TC argues that the core of lexis is recurring conventionalized word combinations – collocations – and that this has important implications for L2 teaching. Drawing on various cognitive theories of language acquisition (e.g., Schmidt, 1990; Skehan, 1998), TC recommends that L2 teachers focus on increasing learners' collocational competence in English in two ways: (1) by exposing learners to non-fiction texts that are rich in collocations and spend classroom time on processing intact language 'chunks', and (2) by encouraging learners to independently notice collocational patterns in English that they meet outside class to raise their awareness of collocation as a pervasive phenomenon. TC has exerted a strong influence on the research literature related to instructed L2 collocation learning, for example Boers, Eyckmans, Kappel, Stengers, & Demecheleer (2006) who put it to empirical test, and Pellicer-Sánchez (2017) who endorsed it. There is also skepticism. Critics have argued that the LA lacks a coherent theory of learning (Thornbury, 1998), as well as support from empirical evidence (Alali & Schmitt, 2012). Furthermore, in their attempt to optimize a lexical approach to L2 instruction, Boers and Lindstromberg (2009, pp. 19-21) argue that the specific pedagogical recommendations of TC are misdirected for three reasons:

1. learners need help in identifying collocations outside class,
2. they are not necessarily willing to do so, and
3. the recommendations of TC disregard the role of memory in internalizing previously unknown langugage chunks.

This line of argument is an intergral part of the rationale for the research agenda of the present thesis as it investigates which teacher-induced manipulations of input processing are most effective in facilitating collocation learning. Boers and Lindstromberg (2009) focus their suggestions for an optimization of a lexical approach to L2 instruction on idioms as they contain a good deal of phonological repetition with mnemonic potential for L2 learning, for example alliteration as in ***a close call*** (2009, p. 114). However, the thesis focuses on English verb-noun collocations and not idioms. This is because idioms occur rarely in language, as demonstrated by corpurs research (Grant, 2005; McGavigan, 2009), while collocations are more frequent (Siepmann, 2005; Howarth, 1998b).

4.4.2 Intervention studies on L2 collocation learning

The intervention studies reviewed below share four features: (1) they targeted L2 English collocations; (2) they induced incidental learning conditions; (3) they included a comparison between different treatment conditions; (4) they took place in a classroom setting and were based on paper-and-pen materials. This last feature follows from the aim of the thesis and entails that intervention studies using corpus tools are not considered (e.g., Sun & Wang, 2003; Chan & Liou, 2005; Wu, Witten & Franken; 2010), though they are recommended by several researchers (e.g., Yamashita & Jiang, 2010; Timmis, 2015).

Several studies investigated the learning effects of artificially increasing the salience of target collocations. One line of such research focuses on frequency of exposure to target collocations using the 'input flooding' technique. This entails that the researcher manipulates the input participants receive by adding extra occurrences of target collocations. Positive learning effects were found in some studies (e.g., Webb, Chang, & Newton, 2013; Peters, 2014), but other studies yielded inconsistent effects of the same manipulation (e.g., Szudarski & Carter, 2016; Pellicer-Sánchez, 2017). A caveat with input flooded instructional materials is their lack of ecological validity: how often do reading texts for classroom use contain 15 occurrences of the same collocation, as in Webb, Newton, and Chang's 2013 study of graded readers (Pellicer-Sánchez & Boers, 2019, p. 167)? Target collocations may also be made more salient to learners by 'input enhancement' (Sharwood Smith, 1991). This technique involves high-lighting target collocations through **bolding** and *italicizing*, which has produced more consistent results. Sonbul and Schmitt (2013) found that visually enhancing target collocations was more effective than teaching them in isolation, and a study by Szudarski and Carter (2016) found an advantage of visual enhancement over input flooding.

Other instructed L2 collocation learning studies have investigated the learning effects of different tasks learners perform. Webb and Kagimoto (2009) compared receptive and productive tasks (RTs/PTs), and found that both types outperformed the control group. They also found that a significant difference between RTs and PTs only emerged when learners' proficiency level was considered: high proficiency learners benefitting more from the PT, and low proficiency learners from the RT. Another take on task quality is the comparison between meaning-focused and form-focused instruction (MFI/FFI). The rationale for contrasting these two instructional approaches is the observation that mere TL exposure – as induced by MFI – is insufficient for developing the L2 system, and the research therefore focuses on which type of FFI is most effective to this end. Laufer and Girsai (2008) compared MFI with two types of FFI: non-contrastive and contrastive plus translation. They found superior results for the latter. In a similar study, Szudarski (2012) found that the condition with MFI plus an FFI component – written exercises that focused on the target items – outperformed mere MFI.

The effects of written collocation exercises were also examined in Boers, Demecheleer, Coxhead, and Webb (2014), who found moderate gains of all four formats under study, which made them question the *raison d'être* of written exercises for the purpose of facilitating collocation learning. The most problematic finding was the 'unlearning' that occurred for items in the matching exercise format. One example is the participant who knew the target collocation *take an approach* at the pre-test, but later produced the infelicitous verb-noun combination **give an approach* at the post-test. The authors attribute this mistake to the exercise format used in the treatment, where *give/run/take* were presented as collocate options to participants. They recommend that learners always process target collocations as intact wholes. In a recent partial replication of this study, Boers, Dang and Strong (2017) found support for that recommendation, as the exercise format where target collocations were processed as holistic units was more effective than the one in which they were decomposed.

4.5 Summary

This background chapter introduced collocation research relevant to the present thesis. The focus of sections 4.2-3 was on definitions of collocations and comparisons between L1 and L2 speakers' acquisition, processing, knowledge and use of collocations. L2 English verb-noun collocations were recurrently highlighted as they are problematic for learners in productive use, which is the rationale for targeting them in Studies I-III. This point is further elaborated on in section 6.5 below. The intervention studies on instructed L2 collocation learning reviewed in section 4.4 demonstrated that the pedagogical guidelines of Lewis' (2000) *Teaching Collocation* can be improved if the L2 English teacher more actively facilitates the learning of collocations in the classroom. The review also showed that most instructional interventions to foster L2 collocation learning were either problematic or yielded inconsistent results. The exceptions were the superior effectiveness of FFI over MFI, and the importance of keeping target collocations as intact wholes when learners process them. These two exceptions are expanded on in the present thesis, along with five other previously unexplored ways of manipulating the conditions for input processing of L2 English collocations.

The next chapter moves closer to the empirical investigations that were made in Studies I-III by, so to speak, entering the L2 classroom. The chapter introduces seven input processing constructs in L2 instruction that are deemed relevant for the aim of the thesis.

5. Input processing in L2 instruction

This chapter introduces seven core input processing constructs in instructed L2 learning research that formed the theoretical bases for the L2 collocation learning investigations in Studies I-III. It was decided to have the introduction of the constructs separate in this chapter 5 and how they were implemented in the studies later on, in chapter 7. This was intended to create a clear division of theory and previous work in chapters 3-5 and everything directly related to the studies in chapters 6-8. The separation also allowed for the embedding of chapter 6 on methodology in a logical slot in the thesis chapter structure. Section 5.1 specifies the definition of the term 'construct' and the rationale for including the seven constructs in the thesis. Sections 5.2-6 introduce the seven constructs under investigation: *form-focused instruction* and *meaning-focused instruction* in Study I, *involvement load*, *spacing*, and *intentionality* in Study II, and *semantic elaboration* and *structural elaboration* in Study III. Section 5.7 restates the aim of the thesis and states the specific research questions that each study investigated.

5.1 Core constructs in the thesis: definition and rationale for inclusion

The thesis adopts Loewen and Plonsky's (2016, p. 31) definition of a construct as:

> [a]n underlying concept that researchers attempt to measure and include as a variable in a study. It is a bit of an abstraction that needs to be operationalized in order to measure

The thesis aims to investigate the impact of L2 instruction on collocation learning. This aim can be conceptualized as the relationship between the independent and dependent variables (IV/DV), where the focus is on the effect of the former on the latter. The IVs in the thesis are the teacher-induced manipulations that were investigated in Studies I-III, and the DV is the measured learning effects of these manipulations, as evidenced by post-test scores. In L2 research, the construct under study is typically the DV, for example the construct of receptive collocation knowledge investigated in Gyllstad (2007). However, the adopted definition of a construct above is not restricted to DVs, as it says "a variable in a study". It was therefore deemed justified to refer to the key features of the IVs in the studies as constructs. Furthermore, the manipulations in the studies centre on the materials, i.e., the input (texts and exercices containing target collocations) that learners

processed during the treatment phases. In essence, the seven constructs induced learners to process the input differently, for example by focusing on its form or meaning in Study I, or by inducing semantic or structural elaboration of target collocations in Study III. This is the rationale for labeling the IVs in the studies input processing constructs.

The seven input processing constructs forming the theoretical bases for the studies share several features, which is the rationale for their inclusion in the thesis. First, the constructs lend themselves to be investigated empirically for L2 collocation learning in classroom settings, as they do not necessitate laboratory facilities. Second, the constructs are easily implemented in classroom practice, as they do not require extensive preparation nor resource-demanding facilities, such as corpus tools. These two features are crucial as they align with the aim of the thesis and strengthen the ecological validity of study outcomes. Third, the constructs have been investigated in the context of single word learning. The exceptions are form-focused and meaning-focused instruction, where a few studies have targeted FSs, but the way in which they are investigated in the thesis is original. Fourth, the constructs are flexible to suit learners at most proficiency levels, and for a variety of learning materials. The outcomes of the investigations may therefore be useful for a wide range of contexts of L2 English teaching and learning.

In the following reviews of the seven constructs in L2 instruction, 'learning activity' denotes any kind of L2 lesson activity assigned to learners in which they process TL input and/or produce TL output. The related terms 'exercise' and 'task' are avoided, the latter because it has a specific sense in task-based language teaching (cf. Robinson, 2011; Long, 2015).

5.2 Form-focused instruction and meaning-focused instruction

An important terminological clarification before discussing the two constructs in the next paragraph: 'form' in the terms 'focus on form/focus on forms' reviewed below refers not only to form but to form-meaning mapping, for example that the morpheme *-ed* denotes past time action, or that the word 'alibi' is pronounced so its meaning is understood by listeners (R. Ellis, 2016, p. 409).

Form-focused instruction and meaning-focused instruction (FFI/MFI) are two constructs in L2 learning theory and empirical research that refer to two opposite poles of a continuum on how classroom learners approach TL features. On the FFI pole, the features – grammatical, lexical or phonological – are brought to learners' attention in two ways, according to Long (1991, pp. 45-46). It either occurs briefly, self- or other-generated, during a learning activity whose primary focus is on meaning: this is called focus on form (FonF). Or, the features are explicitly taught as discrete decontexualized

linguistic structures: this is called focus on forms (FonFs). On the opposite pole is MFI, where TL features receive no instructional focus but are left to be learned incidentally and implicitly in learning activities with an emphasis on message expression and comprehension. Each of these three foci has its own theoretical rationale. FonF draws on Schmidt's (1990) Noticing Hypothesis, holding that learners must consciously notice forms and their meanings in input to learn them. FonFs is underpinned by skill acquisition theory (DeKeyser, 1998), positing that frequent practice of linguistic structures ultimately leads to desirable automatized procedural knowledge. MFI is based on Krashen's (1985) Input Hypothesis, according to which L2 acquisition occurs unconsciously, provided that learners are exposed to sufficient comprehensible input.

FFI research has focused on grammatical form (for reviews see Norris & Ortega, 2000; R. Ellis, 2016), but the last decade has seen an increase in research activity related to FFI in vocabulary acquisition. Based on a comprehensive literature review, Laufer (2005) concluded that vocabulary learning through exposure to reading input alone in line with MFI is ineffective, and that FonFs is a an effective and necessary complement to FonF. This is because FonF occurs too rarely and is insufficient to help learners develop all aspects of word knowledge. Laufer (2006) compared the effectiveness of FonF and FonFs treatments in an incidental (post-test unannounced) learning condition followed by an intentional (post-test announced) learning condition and a delayed unannounced post-test. FonFs significantly outperformed FonF for incidental learning, but the advantage did not hold for intentional learning, nor for the delayed post-test with non-significant differences in learning gains between treatments. Both types of FFI were thus effective. Laufer and Girsai (2008) compared the effectiveness of MFI versus two types of FFI on learning gains. Participants in all three conditions first read the same text containing target items for comprehension. The MFI participants then did two communicative learning activities related to the text, while the other participants did two FFI learning activities with target items: a multiple choice test and a gap-fill activity in one condition, and contrastive analysis and translation (CAT) in the other. The CAT condition significiantly outperformed the MFI and the other FFI condition on all post-test measures. Importantly, the MFI participants learned virtually no vocabulary: their mean scores out of 10 were 0.12 and 0.35 for delayed active recall of single words and collocations, compared to 4.12 and 6.12 for the CAT participants. These results constitue empirical evidence that CLT, operationalized as MFI, is ineffective in fostering L2 vocabulary acquisition.

Empirical studies have thus compared the effectiveness of FFI against MFI for instructed L2 vocabulary learning and found an advantage for FFI. This has been the case for single words (see also e.g., File & Adams, 2010) and FSs such as collocations, as in Laufer and Girsai (2008) and Szudarski (2012) reviewed above. These studies report on the results of the instructional

approach to target items – that FFI was more effective than MFI – but leave no clue as to why that was the case. Such information is relevant to obtain for both L2 teachers and classroom researchers, as it may inform the development of more effective instructional practices and also suggest avenues for future studies. L2 vocabulary researchers have argued that qualitative methodologies may add valuable information to research findings, for example Peters (2009, p. 207) and Schmitt (2010b, pp. 149-150). A case in point is the following quote from Peters (2009), who in her L2 collocation learning experiment juxtaposed quantitative post-test data with qualitative interview data:

> These data were revealing since they provide us with information about what the students were actually doing while taking part in the experiment. This may be different from what we as researchers think they are doing /…/ [H]ad I not asked students what their approach was, I might still be in the dark about the reasons why the collocation-oriented task did not have an effect on vocabulary learning. Therefore, I would still argue strongly in favour of qualitative research techniques in addition to quantitative ones since they can help us refine our understanding of the learning activity that is taking place (2009, p. 207)

More specifically, R. Ellis (2001, p. 17) calls for more experimental FFI research that enters "the minds of the participants" through the collection of self-report verbal data. In a similar vein, Coxhead (2015) discusses replication studies of two studies on instructed learning of L2 English FSs: Jones and Haywood (2004) targeting various types of FSs, and Alali and Schmitt (2012) targeting idioms. Her discussion is quoted in two separate quotes below:

> The Jones & Haywood (2004) study included interviews with three participants in the second week, focusing on the participants' views on their writing. A conceptual replication could keep and expand on this qualitative data, perhaps through increasing the number of interviews with participants, introducing pre- and **post-test interviews**, and extending these interviews to find out more about how the learners approached their learning of formulaic sequences (Coxhead, 2015, p. 117, my emphasis)

> A conceptual replication [of Alali & Schmitt (2012)] could introduce a qualitative aspect, such as **interviews** or focus groups, to find out more about how the participants approached learning the idioms (Coxhead, 2015, p. 120, my emphasis)

Study I of the thesis responds to these calls by using two types of verbal reports, think-aloud protocols and stimulated recall interviews, to probe learners' mental processes when learning collocations as a function of whether they processed the collocations in FFI or MFI conditions. Dörnyei (2007) argues that verbal reports are versatile and may be used for various types of research, specifically for test responses (p. 151). The implementation of FFI and MFI for instructed L2 collocation learning in Study I is presented in section 7.1 below.

5.3 Involvement load

What is the effect on learning gains of unknown L2 words of a given form-focused or meaning-focused learning activity? The answer to this question may be found when investigating the activity in terms of its involvement load (IL), a construct introduced by Laufer and Hulstijn (2001) to encourage theoretical and empirical inquiry on the topic (p. 22).

The IL hypothesis (ILH) predicts that retention of unknown L2 words depends on the motivational-cognitive involvement imposed on the learner while processing these words incidentally: an increase in IL should result in relatively better word retention. IL is expressed in a numerical index that ranges from 0-5 and comprises three components that may be manipulated by the teacher: *need* (0-2), *search* (0-1), and *evaluation* (0-2). *Need* is the motivational IL component and is the incentive to learn a word to complete a learning activity. It is absent if completion is possible without processing the word, 'moderate' when induced by the teacher, and 'strong' when learner-imposed. *Search* and *evaluation* are the cognitive IL components and relate to the attentional resources directed at establishing the form-meaning link. *Search* refers to learners' attempts at finding the meaning of an unknown word, for example in a dictionary, and is either absent or present. *Evaluation* can be absent, 'moderate' or 'strong'. Moderate evaluation involves learners making a conscious decision about the appropriateness of a word compared to other possible candidates, and strong evaluation occurs when learners produce their own sentence in an original context.

To exemplify the IL, a learning activity with an IL of 0 is to read a text with target items glossed (translation L2-L1) in the margin, and then answer comprehension questions that do not necessitate consideration of the target items. There is no need to learn the words, they do not require search as they are provided, and learners do not need to evaluate their appropriateness. The ILH predicts that learners are unlikely to learn the words. In contrast, learners may be asked to write a composition on a self-selected topic and choose themselves which concepts to include in it. This is hypothesized to induce a strong need to process and learn new words to complete the activity, the words would be self-selected and thus looked up by learners (search is present), and evaluation would be strong as composition writing entails consideration of surrounding discourse elements in an original context. The IL is 5, which is the maximum level, and the conditions for word retention are thus optimal.

The ILH has been tested empirically in intervention studies with three treatment conditions inducing different ILs and unannounced post-tests. The studies have produced mixed results: from full support in Keating (2008), Kim (2008b), and Eckerth and Tavakoli (2012), to partial support in Hulstijn and Laufer (2001), Nassaji and Hu (2012), Bao (2015) and Zou (2017), to no support in Hu and Nassaji (2016). Importantly, most of these ILH studies used a *between-subjects* design, in which each participant performed one treatment

condition only and mean post-test scores were compared in search of statistically significant differences between conditions. The caveat with this design is that individual learner characteristics, such as proficiency, are an extraneous variable that risks invalidating the results: what if participants in one condition, on the group level, were more proficient than participants in another condition, and as a result of that performed better at the post-test, and not because the conditions were different? Relatedly, the so-called Matthew Effect – or 'the rich get richer' – has been found to exist in L2 vocabulary learning research (e.g., Horst, Cobb, & Meara, 1998). It is therefore motivated to test the ILH using a *within-subjects* design, in which all participants perform all treatment conditions, to control for confounding variables, such as proficiency. Eckerth and Tavakoli's (2012) study did use a within-subjects design, but it lacked control for intentional learning. Their participants performed all three conditions consecutively, with a one-week interval. Each treatment condition was followed by a post-test and there is an imminent risk that participants realized that post-tests would follow also after the second and third condition. Participants may therefore have processed the target items intentionally, with the awareness that they would be tested on them. This circumstance may invalidate a test of the ILH, which draws on incidental learning. It is thus crucial that participants in ILH studies are not aware that a post-test follows the treatment. One solution to this problem is to have participants perform all conditions during one single session, followed by an unannounced post-test.

There is more room to expand on previous ILH studies. To my knowledge, no ILH study has focused exclusively on target items beyond single words, not counting Hulstijn and Laufer (2001), whose ten target items included four FSs, two of which were adverb-adjective collocations (*morally derelict* and *deeply ingrained*). It therefore seems motivated to test the ILH on FSs, in the thesis on collocations. Another relevant design feature is that participants find the target text(s) that they read interesting to boost motivation. A study by Lee and Pulido (2017) compared the learning gains of having their L1 Korean learners read a text they rated as low-interest – on the Middle Ages – with one they rated as high-interest – on the popular artist Psy. Both texts contained target items. Results showed a significant advantage for the latter text, which they related to an increase in the 'need' component of IL, i.e., the motivational factor. Measures therefore need to be taken to establish that participants are likely to find the content of the text used in the treatment interesting.

These four expansions of testing the ILH – using a within-subjects design, controlling for intentional learning, focusing on collocation, and controlling for learner interest – were integrated into the test of the ILH in Study II described in section 7.2 below. The design of Study II with three exposures to target collocations also allowed for the investigation of two other L2 vocabulary teaching constructs that were deemed relevant for the aim of the thesis: spacing and intentionality. They are reviewed in the next sections.

5.4 Spacing

Instructed L2 learning by default takes the form of a number of scheduled classes per week, sometimes occurring on consecutive days and sometimes with a two-to-three day interval. This implies that L2 teachers may make conscious choices of when they expose learners to target features of the TL, with a view to facilitating learning. The constructs cramming and spacing are antonyms in this context. Cramming is what students tend do the night before an exam, when they attempt to squeeze as much information as possible into their heads to be able to pass the exam the next day. However, this is as a general rule counterproductive, as demonstrated by a body of research evidence on spacing effects dating back to the turn of the previous century: spreading out opportunities for learning new material – spaced learning – is more effective than massed learning, as in cramming (see Cepeda, Pashler, Vul, Wixted, & Rohrer, 2006 for review).

Spacing has been investigated in the context of instructed L2 vocabulary learning with single words as target items, where expanding learning schedules – in which intervals between exposures to target words become gradually longer – have proven more effective than equally spaced schedules, in which intervals are kept constant (e.g., Nakata, 2015; Schuetze, 2015). There is no reason why the same result should not apply to L2 collocations, and it therefore seems less relevant to investigate it. A middle ground between cramming and equally spaced learning schedules, the latter thus being inferior to expanding learning schedules, is an intensive learning schedule. This is a term coined for Study II, in which learners were re-exposed to target collocations on consecutive days, or with a maximum of two days between re-exposures. The advantage of investigating the effectiveness of an intensive learning schedule is that it reflects the reality of most L2 classrooms, and thus strengthens the ecological validity of the study. So: Is an expanding learning schedule more effective than an intensive learning schedule for L2 collocations? This question has not been empirically investigated and the question was therefore integrated into Study II described in section 7.2 below.

5.5 Intentionality

The position taken in the thesis is to view intentionality as comprising two constructs: intentional learning and incidental learning. They were introduced in section 3.2 on how learners acquire words, where it was argued that the distinction between them cannot be established empirically. A theory serves double duty in scientific inquiry: it should explain an observed phenomenon, but also predict what will happen to it under particular circumstances (VanPatten & Williams, 2015, p. 2). It may be hypothesized that incidental learning exists and explains how learners acquire a large vocabulary without

explicit instruction: indeed, this is the gist of the 'default' explanation of vocabulary acquisition for L1 learners[3]. However, intentionality in learning, given its elusive and idiosyncratic nature, is untestable and therefore has no strong theoretical meaning (Hulstijn, 2003, p. 373). Other researchers have conceptualized L2 vocabulary learning on a continuum between the extreme poles intentional and incidental, following the constant fluctuations of learner attention (Gass, 1999; Barcroft, 2009; Eckerth & Tavakoli, 2012).

For instructed L2 learning research purposes, Doczi and Kormos (2016, p. 120) make a useful pragmatic methodological distinction between learning conditions and learning processes related to intentionality. The former are controlled by the teacher when setting learners a task, while the latter are governed idiosyncratically by the learner. The only thing an L2 vocabulary learning researcher can safely say about the causality in the intentionality of a classroom experiment is that the learning conditions it induced were intentional (+post-test announcement and/or +explicit study of words) or incidental (–post-test announcement and/or –explicit study of words). The investigation of intentionality in the thesis therefore only concerns intentional learning vs. incidental learning in a methodological sense, operationalized as the presence (intentional learning) and absence (incidental learning) of prelearning instructions of a pending retention test (cf. Eysenck, 1982, p. 198).

Incidental L2 collocation learning has been the focus of several studies that adopted the methodological sense of incidental and produced mixed results, some of which lacked ecologocial validity, as reviewed in section 4.4.2. There are to my knowledge no previous L2 collocation studies that have investigated intentional learning conditions per se, or compared the effects of incidental and intentional learning conditions. This may be because previous research on single L2 words has demonstrated the superior effects of intentional over incidental learning in this sense (for review see Hulstijn, 2003, pp. 365-366), and further research therefore does not seem motivated. However, given the incremental nature of collocation learning, it seems motivated to investigate the effects of introducing intentional learning condititions at different stages of the learning process in relation to repeated exposures to target collocations. The results of such a study may increase our understanding of the L2 collocation learning process and provide L2 (English) teachers with recommendations for when an intentional learning intervention is likely to be most effective. Study II described in section 7.2 below explored this issue by using the three exposures to target collocations for the investigation of spacing effects on L2 collocation learning.

[3] Landauer and Dumais (1997, p. 211) summarize the default position as "A typical American seventh grader knows the meanings of 10-15 words today that she didn't know yesterday. She must have acquired most of them as a result of reading, because: (a) the majority of English words are used only in print, (b) she already knew well almost all of the words she would have encountered in speech, and (c) she learned less than one word by direct instruction."

5.6 Semantic elaboration and structural elaboration

In a recent English language teaching (ELT) handbook chapter on the lexical approach as it relates to the learning of collocations and other chunks, Racine (2018) concludes with the following words:

> Any activity that increases the likelihood that the material will be remembered may be useful. Such activities may involve **structural** or **semantic elaboration** (i.e., deep cognitive processing) or mnemonic techniques (p. 6, emphases added)

Semantic elaboration is a cognitive construct in memory and learning research that refers to "increased evaluation of an item with regard to its meaning" (Barcroft, 2002, p. 323). One example is asking English learners to consider whether the English word 'squid' is an example of an animal, of a fish, of food or another category (Barcroft, 2015, p. 60). In contrast, the construct of structural elaboration implies that learners focus extensively on word form when new words are processed (Barcroft, 2015, p. 60). Counting the number of letters in the word 'squid' is an example of structural elaboration.

An increase in semantic elaboration is hypothesized to generate deeper processing of the item which facilitates memory and learning, compared to the shallower processing of structural, word form-oriented, elaboration. Boers and Lindstromberg (2009) review intervention studies of L2 idiom learning that consistently demonstrated positive effects of so-called dual coding, a frequent operationalization of semantic elaboration, whereby participants associate verbal stimuli with non-verbal ditto. For example, Boers, Demecheleer and Eyckmans (2004) had their participants process English idioms by either hypothesizing about their origin domain of use, or select their meaning in a multiple-choice-format. Participants in both conditions were subsequently given the correct answers. Post-test scores were superior for the category of participants who hypothesized about the origin domain, thus the semantic elaboration condition.

In contrast, Barcroft (2015) reviews research on L2 vocabulary learning that found inhibitory learning effects of semantic elaboration compared to structural elaboration of target items for novel word form learning. He interprets these results in light of the type-of-process-resource-allocation (TOPRA) model, which predicts that semantic elaboration will enhance learning of word meaning to the detriment of word form, while the situation is reversed for structural elaboration. This is because when lexical input processing demands are high on learners, limits in cognitive resources will lead to such a trade-off effect. According to Barcroft's TOPRA model, structural elaboration is more effective in promoting learning of target word form than semantic elaboration on the basis of a body of empirical studies that revealed an advantage in this direction (Barcroft, 2002).

Chapter 6 in Boers and Lindstromberg (2009, pp. 106-125) is entitled "Structural elaboration" and reviews evidence in support of the observation that phonological repetition is common in language chunks. It also reviews intervention studies investigating ways in which it may be exploited in the L2 classroom for learning collocations and other types of FSs. A distinction is made between three types of such repetition as the operationalization of structural elaboration: alliteration, in the collocation *bad breath*, assonance, as in the collocation *small talk*, and rhyme, as in the proverb *when the cat's away, the mice will play*. The authors refer to several studies that demonstrated positive memory effects of drawing participants' attention to phonological repetition in English FSs. For example, Lindstromberg and Boers (2008) asked their participants to categorize 26 word combinations into an alliterative set (e.g., *green grass*), and non-alliterative set (e.g., *fresh air*). They found a memory advantage at immediate and delayed unannounced post-tests for the former set. A partial replication study reported in the same publication (Lindstromberg & Boers, 2008) found a similar pattern for assonant phrases over non-assonant ones, for example *home phone* and *sea breeze* vs. *storm cloud* and *bad luck*. However, Boers, Lindstromberg, and Eyckmans (2014) surprisingly found that target collocations with alliteration were not better remembered by participants than non-alliterating control items. Less is known about the effects of structural elaboration operationalized as rhyming and it is therefore motivated to investigate it.

To date, no studies have compared the effects of semantic and structural elaboration on instructed L2 collocation learning, only of single words (see Barcroft, 2015, ch. 5 for review). Furthermore, the bulk of intervention studies that have compared semantic and structural elaboration of target items has been done on adult participants who were learners of L2 Spanish in an input-poor environment. The question that begs for answer is whether the same strong empirical support of structural elaboration over semantic elaboration is found with adolescent participants with another TL who reside in an input-rich environment as in Sweden. To investigate the relative effectiveness of having learners do semantic and structural elaboration of target items, it was necessary to identify a language learning activity that allowed for that. The activity should be easy to implement in L2 practice, in line with the aim of the thesis. It was also deemed important that the activity include a collaborative feature, as L2 research has emphasized the beneficial learning effects of peer interaction (see Sato & Ballinger, 2016 for a recent volume of studies), and participants in Studies I-II worked individually. Furthermore, the activity should involve learners receiving frequent and intensive exposures to target collocations, as these two input circumstances are lacking in instructed L2 learning, and yet have been argued to be crucial for collocation learning (Long, 2015, pp. 310-311). In addition, L2 researchers (Oxford, 2001; Usó-Juan & Martinéz-Flor, 2006) have advocated the integration of the four language skills – reading, writing, speaking, and listening – in L2 instruction.

A language learning activity that ticks all these boxes is the 'dictogloss' (Wajnryb, 1990), which was implemented in Study III. The dictogloss is a collaborative text reconstruction task, intended for L2 grammar instruction. The original dictogloss procedure comprises four stages (p. 7):

1. Preparation, when the learner finds out about the topic of the text and is prepared for some of the vocabulary;
2. Dictation, when the learner hears the text and takes fragmentary notes;
3. Reconstruction, when the learner reconstructs the text on the basis of the fragments recorded in stage 2;
4. Analysis and correction, when learners analyse and correct their texts.

Wajnryb (1990, p. 8) specifies that stage 3 involves interaction between learners who are instructed to "pool their notes and work on their version of the text". This feature separates dictogloss from a traditional dictation, which is performed individually. A second separate feature is that learners listen to the text read out loud at normal spoken speed, which entails that they are unable to copy down the text verbatim. These two features induce learners to engage in the co-construction of linguistic knowledge when using their notes to complete the task, which is argued to be L2 learning in progress (Swain & Lapkin, 1998, p. 321). The peer interaction that occurs during the reconstruction phase has been the subject of many studies, which have analysed the metatalk, so-called language-related episodes, that learners engage in (e.g., Leeser, 2004). In Study III, the peer interaction during the dictogloss plays another role, as will be explained in section 7.3 below.

Most dictogloss studies have focused on grammatical features in the TL, but more recently lexical issues have been investigated. One example is Kim (2008a), who compared the effectiveness of performing the dictogloss in pairs versus individually on L2 vocabulary learning, and found an advantage for the collaborative condition on post-test measures. Several L2 researchers have argued that dictogloss may be used to facilitate learning of FSs (Meunier, 2012, p. 122; Wood, 2015, p. 152). This was the focus of a study by Lindstromberg, Eyckmans and Connabeer (2016), who compared the effectiveness of two versions of the dictogloss in helping their English for Specific Purposes students remember FSs. One version was the standard procedure and the other a modified version, in which participants received a glossed list of target items before performing the task. The modified version outperformed the standard procedure on post-test measures. The authors suggest that an extension of their study could be to examine ways of incorporating other attention direction techniques (Lindstromberg, Eyckmans, & Connabeer, 2016, p. 18). Study III responded to this call by comparing the effectiveness of two different pre-task activities (cf. Beglar & Hunt, 2002, p. 101) in inducing a bond between the collocating words in the target items as intact wholes before the dictogloss proper is performed.

5.7 Aim and research questions of thesis

As was mentioned in section 1.2 above, the thesis aims to investigate the impact of L2 instruction on collocation learning, with a focus on what English language teachers can do in their classroom practices to improve learners' productive knowledge of English verb-noun collocations. Based on reviews of the literature, two central questions were derived from the aim: (1) Why is form-focused instruction more effective in facilitating instructed L2 collocation learning than meaning-focused instruction? (2) What are the most effective input processing procedures for facilitating instructed L2 collocation learning? These two questions were subsequently formulated into specific research questions investigated in each of Studies I-III stated below:

Study I, investigating central question 1:

1. *To what extent can student think-aloud protocols and stimulated recall interviews probe participants' memory processes in formal L2 collocation learning?*
2. *Is the answer to the first research question a function of whether learner were induced to focus on form or meaning when exposed to target items?*

Study II, investigating central question 2:

1. *Do collocation tasks with a higher involvement load consistently generate higher learning gains of target collocations than tasks with a lower involvement load?*
2. *Is an expanding spaced learning schedule more effective in facilitating learning gains of target collocations than an intensive learning schedule?*
3. *What are the effects of intentional learning during the third exposure to target collocations compared to a third incidental encounter?*

Study III, also investigating central question 2[4]:

1. *Is STRUC dictogloss or SEM dictogloss significantly more effective in inducing learners to produce target items as intact wholes in speech and/or writing during the co-reconstruction phase?*
2. *Is STRUC dictogloss or SEM dictogloss significantly more effective in promoting learning gains for receptive and/or productive knowledge of target items?*
3. *If #2 revealed a significant difference in favour of STRUC dictogloss or SEM dictogloss, does the effectiveness apply to immediate and/or delayed post-tests?*

[4] STRUC dictogloss refers to a modified dictogloss version with a pre-task activity in which participants elaborated on the form of target collocations before doing a standard dictogloss. In SEM dictogloss, by contrast, the pre-task activity involved elaboration of target collocation meaning.

5.8 Summary

This chapter introduced the independent variables that were investigated in the thesis – the seven input processeing constructs in L2 instruction – and spelled out the rationale for focusing on them in Studies I-III. The thesis aim and the specific eight research questions of the studies were also (re)stated. The ways in which these research questions were investigated are the focus of the next chapter, on methodology.

6. Methodology

This chapter discusses issues that were considered when designing and implementing Studies I-III related to the methodological choices made on how to achieve the aim of the thesis. The specific research site – authentic classrooms – was intended to strengthen the ecological validity of the studies. Issues pertaining to quasi-experimental classroom research are therefore discussed in sections 6.1 and 6.3 on research design and sampling. Embedded in section 6.2 is an overview of the studies. Section 6.4 introduces the two types of data analysis that were performed: thematic analysis on the verbal data and inferential statistics on the numerical data. Section 6.5 explicitly states the definition of collocations in the studies and section 6.6 presents how they were tested in the studies. Section 6.7 describes the measures taken to align the studies with regulations for research ethics in Sweden.

6.1 Research design

The thesis attempts to provide answers to two central questions: (1) Why is form-focused instruction more effective in facilitating instructed L2 collocation learning than meaning-focused instruction? (2) What are the most effective input processing procedures for facilitating instructed L2 collocation learning? The rationale for asking the two questions is provided in the literature reviews in chapters 4 and 5, and the two questions are formulated in eight specific research questions guiding the investigations in Studies I-III and stated in section 5.7. Which research designs may produce valid and reliable empirical data that can be analysed and form well-grounded answers to the two questions? The first central question requires a research methodology based on qualitative data, for two reasons outlined by Dörnyei (2007): qualitative research is an effective way of exploring an unknown phenomenon (p. 39), and it can answer a why-question, which is beyond the scope of quantitative data (p. 40). The second central question requires a research methodology that can establish that one way of doing something is more effective than another, where "effective" entails operationalizing independent and dependent variables to measure the effect of the former on the latter: the task of quantitative research (Loewen & Plonsky, 2016, p. 49). However, one word in the first central question signals quantitative research: "effective". Study I was therefore a case of a mixed-methods design, with two independent variables (form-focused and meaning-focused instruction) constituting the treatment as its quantitative feature, and the collection of in-depth verbal data through introspective methods as its qualitative feature.

Investigating the impact of one or more factors on learning outcomes requires a research design capable of establishing and making a case for causal relationships between the independent and dependent variables. In the thesis, this relationship translates to the effects of the manipulations of input processing on collocation learning in Studies I-III. This could not be achieved by means of descriptive research by, for example, merely observing L2 English teachers and learners in action in their classroom practices. Instead, an experimental research design was necessary, the characteristics of which are spelled out by R. Ellis (2012, p. 35) as:

1. The independent and dependent variables are identified and clearly defined.
2. Some form of intervention in the domain under study is devised with the purpose of investigating what effect the independent variable(s) has on the dependent variable(s). This is referred to as the 'treatment'.
3. A number of groups are formed, some constituting the experimental group(s) and one the control group (i.e. a group that does not receive the treatment).
4. Participants are assigned to the different groups randomly.

These four conditions characterize a true experiment. However, in most studies of applied linguistics – notably those set in authentic L2 classrooms – the strictness of the conditions for true experiments must be relaxed for logistical reasons, in relation to condition 3 and mainly to condition 4. Such studies are therefore referred to as quasi-experiments and may, well designed and conducted, produce scientifically robust results (Dörnyei, 2007, p. 118).

Studies I-III were quasi-experimental in two ways and for the following reasons. First, none of the studies used a control group. Study I, though containing features of an experimental design, analysed qualitative data and a control group was therefore not motivated. Study II focused on three vocabulary teaching constructs. One of them, the ILH, had previously been tested without a control group and it was therefore not needed to allow for a comparison. For each of the other two constructs under investigation (spacing and intentionality), one of the treatment conditions functioned as a control group, and an additional true control group was therefore not necessary. Study III drew on a previous study (Lindstromberg, Eyckmans, & Connabeer, 2016) that compared a modified version of the instructional intervention procedure under investigation (dictogloss) with the standard one, where the former version outperformed the latter. The same scenario had also occurred in another relevant previous study by R. Ellis and He (1999). The focus of Study III was on which type of other modified versions would be more effective and a 'no instruction' control group was therefore not motivated. Second, random assignment of participants to experimental groups was not practically feasible and instead intact classes of learners were used. This was however not

considered a threat to the validity of the results as the quantitative studies II and III (bar one construct in Study II) used within-subjects designs, in which all participants performed all tasks. As a consequence, any individual learner or group-level characteristics that may have constituted extraneous variables were factored out (cf. 5.3 above).

Another important design feature of the quantitative studies II-III was that they used a counter-balanced design, which is related to the chronological order of the treatment conditions in preparation for the immediate unannounced post-test. In essence, participants are likely to remember target collocations that they processed most recently before the post-test better, which may skew the results. To mitigate this risk, a Latin square design (Loewen & Plonsky, 2016, p. 98) was used in which the order of the treatment conditions was reversed for half of the participants. For example, in Study III half of the participants did treatment A and then B before the immediate post-test, while the other half did treatment B and then A.

6.2 Overview of Studies I-III

Table 6.1 below summarizes Studies I-III to give an overview of the studies.

Table 6.1 Overview of Studies I-III

	Design	Analysis
Study I	Two experimental groups (n = 42) processed the materials in FFI or MFI conditions in three lessons. Verbal data from 14 participants were collected during and after post-test administration.	Thematic analysis was used to analyse the data.
Study II	Two classes (n = 59) processed the materials during three lessons when involvement load, spacing and intentionality were tested. Three post-tests were administered.	Inferential statistics were used to analyse the post-test scores: ANOVA and t-tests.
Study III	Sixty-four learners performed both experimental conditions: modified dictoglosses inducing semantic or structural elaboration in a pre-task activity. Immediate and delayed post-tests were administered and learners' verbal data were collected: when target items were verbalized as intact wholes.	Inferential statistics were used to analyse the post-test scores and the verbal data: t-tests.

6.3 Sampling

For practical reasons of expense and time, a quantitative study never includes the whole population of participants of interest. It is also unnecessary as a limited number of participants purposefully sampled from the population can be argued to suffice in being representative of that population, and allow for generalizations to be made. Study I was qualitative in nature, where non-representativeness is not a problem (Dörnyei, 2007, p. 98). Issues related to sampling considered below are therefore only relevant to Studies II-III. The way the sample of participants in the studies was recruited is also described.

Sample size in a study is crucial as it determines the sampling error, i.e., the difference between the test statistic calculated on the sample and the value of the same statistic for the population. In essence, the larger the sample, the smaller the sampling error and the greater the reliability and validity of the analysis. A sample of 30 participants is held to be large enough to generalize study results to the whole population. This follows from the central limit theorem, positing that 30 is a threshold beyond which the influence of individual variation among participants is mitigated (Loewen & Plonsky, 2016, p. 173). Relatedly, Lindstromberg and Eyckmans (2017, p. 127) cite reviews of non-replicated quasi-experimental SLA studies where sample sizes ranged between 19 and 26 participants. Such small samples are held as problematic by statistical theory as they lower the power of a study, increasing the risk of missing a significant effect in the sample that actually exists in the population. However, the authors maintain that small sample sizes may produce robust findings if original studies are replicated several times and meta-analyses are made on these replications. Studies I-III were not replicated, but the first avenue suggested for further research is that they are. The sample sizes were large in Studies II-III ($n = 59$ and 64), when considering that within-subjects designs were used for all but one construct under investigation.

The sample of Studies I-III were 165 L1 Swedish adolescent learners of English: 42 in Study I, 59 in Study II and 64 in Study III. They attended one of seven lower secondary or upper secondary schools in a major Swedish city at the time of the studies, and were aged 15 or 16. As in most applied linguistics research, convenience sampling was used to select these learners for inclusion in the studies based on three practical criteria: they attended schools in reasonable geographical proximity, they were available at the time of the studies, and they and their teachers were willing to volunteer to participate (cf. Dörnyei, 2007, p. 99). The first step of the recruitment process was to contact teachers of English at the relevant levels of schooling who I had a personal connection with. For the teachers who accepted to participate, permission for conducting the study was then sought and granted from the principal. The third step was to visit the class in question, introduce the research project and ask them to volunteer to participate. All further issues regarding research ethics are described in section 6.7 below.

6.4 Analysing the participant data

Two types of participant data were collected for the thesis: verbal data in Study I and numerical data in Studies II-III. This section introduces the analyses that were made on these data – thematic analysis and inferential statistics – and presents the rationales for using them.

6.4.1 Thematic analysis of verbal report data

The two research questions of Study I focused on participants' mental and cognitive processes when learning target items in instructional treatment conditions that induced either a focus on the form or meaning of target collocations. The only way to access such non-observable phenomena is through participant verbal self-reports (Dörnyei, 2007, pp. 150-151). The verbal data collected in Study I comprise spoken think-aloud protocols data produced by four participants (two for each treatment condition) and written and spoken stimulated recall data produced by ten participants (five for each treatment condition).

The analytic method used to make sense of the verbal data collected in Study I was thematic analysis (TA), defined by Braun and Clarke (2006, p. 79) as "a method for identifying, analysing and reporting patterns (themes) within the data". This definition made TA an appropriate strategy to provide answers to the research questions of Study I, and was the rationale for using it as an analytic method of the collected data. Furthermore, Braun and Clarke (2006) describe TA as a flexible, useful and accessible research tool, which motivated its use. The first and fundamental decision to make when using TA is what counts as a theme when coding the data. This is a matter of prevalence in the space the theme occupies in the data item (e.g., one particular interview), and across the data set (all the data that is being analysed). As TA is qualitative research, quantifiable measures do not determine the prevalence of an identified theme; it is left to researcher judgement and hinges on whether the theme captures an important aspect of the research question. Another decision is whether themes are identified using inductive or theoretical TA, the former being data-driven 'bottom up', and the latter analyst-driven 'top-down'. If the researcher codes openly without considering themes identified in previous studies, it is inductive. An additional decision is to specify whether themes are identified at the semantic or latent level. This implies choosing to only look at what participants actually said explicitly (semantic), or going beyond the surface of their words to identify underlying ideas and conceptualizations (latent). The six-phase process of performing TA is outlined in Braun and Clarke (2006) in table 6.2 as:

Table 6.2 The six phases of thematic analysis (based on Braun & Clarke, 2006)

1. Familiarizing yourself with your data
2. Generating initial codes
3. Searching for themes
4. Reviewing themes
5. Defining and naming themes
6. Producing the report

The two methodologies that were used in Study I – think-aloud protocols and stimulated recall interviews – are introduced in section 7.1 below, together with the analytic procedures and the results of the thematic analysis of the verbal data.

6.4.2 Inferential statistics of post-test scores

Studies II and III investigated the quantitative effect of five independent variables (IVs), i.e., the various instruction-induced manipulations of input processing, on the dependent variable (DVs), i.e., post-test scores of target collocations and the number of times they were verbalized as intact wholes. The collected data were thus numerical and aspects of how the post-test scores were measured are described in the next section. This section introduces the inferential statistical analyses that were used on the data with *SPSS* version 24 to identify statistically significant differences between mean scores and also effect sizes on the differences.

Study II investigated the effect of three IVs (the constructs of involvement load, spacing, and intentionality) on the DV (participants' post-test scores on three administrations). For the test of involvement load, 59 participants performed all four treatment conditions consecutively in which target collocations were processed. This occurred during one long session and participants were unexpectedly post-tested on the 28 target collocations: seven target collocations per condition. Each condition thus generated a mean score that theoretically could range from 0-7. Are the four mean scores significantly different from each other? This was a test of the null hypothesis that the no significant difference exists for the means in the population of 16-year-old L1 Swedish learners of English that the sample was drawn from. There were more than two conditions and an analysis of variance (ANOVA) was required, as it reduces the risk of a type I error (false positive) involved in running multiple *t*-tests (cf. Brown, 1990). Furthermore, each participant was measured four

times, which required a one way repeated measures ANOVA. For the test of spacing, 45 participants followed one of two conditions: intensive or spaced learning schedules for the three exposures to the target collocations with a maximum score of 14 points per condition. Each participant was measured once and an independent samples *t*-test was therefore used to compare the means for the two conditions. For the test of intentionality, three comparisons were made between two incidental and an intentional exposure to 14 of the 28 target collocations (2INC + INT), and three incidental exposures to other 14 target collocations (3INC). Each of the 45 participants was measured twice and three paired samples *t*-tests were therefore run on the mean scores.

Study III investigated the effect of two IVs (the constructs of semantic and structural elaboration in a pre-activity) on the DVs (post-test scores and the number of items target collocations were verbalized as intact wholes). There were 64 participants who performed both treatment conditions and 12 target collocations, six per condition. Six comparisons were made of the means for the two conditions, which could theoretically range from 0-6 points: four post-tests (productive and receptive target collocation knowledge on immediate and delayed post-test), and two counts of the number of times participants in pairs verbalized target collocations as intact wholes (spoken and in writing). Each participant was measured twice and six paired samples *t*-tests were therefore run in search for significant differences between the means.

The results of the inferential statistical analyses performed on the numerical data in Study II and III are presented in sub-sections 7.2.2 and 7.3.2 below.

6.5 Definition of collocations in the thesis

Two background factors should be discussed before the definition of collocations in the thesis is explicitly stated. First, the initial inclusion criterion for collocations in the thesis was that they are verb-noun combinations listed in the *Oxford Collocations Dictionary for students of English* (OCDE; McIntosh, Poole, & Francis, 2009). However, as pointed out by Gyllstad and Schmitt (2019, p. 184), the OCDE – and other collocation dictionaries – is intended for learners and teachers, not researchers. The OCDE editors do not specify in corpus terms how they went about selecting collocations for inclusion in the dictionary, other than that the two billion word Oxford English corpus was used "as the basis for our dictionary entries" (p. vi).

Second, before specifying the statistical measures used to include target collocations, a few words about the choice of syntactical category of word pairs in the thesis. It was decided to focus on verb-noun collocations, broadly speaking, as the research literature indicated that they were more important to focus on for learners than other types of collocations. Verb-noun collocations constitute the gist of messages, where the most important information is placed (Altenberg, 1993, p. 227). They are also the most frequent type of

collocations (Howarth, 1998b, p. 185; Siepmann, 2005, p. 412). These two features made verb-noun collocations the optimal choice when designing the three instructional intervention studies for the thesis. This is because the studies were text-based in that participants processed target collocations in coherent texts, either exisiting authentic texts as in Study I, or researcher-developed texts as in Studies II-III. Another type of collocations, for example adjective-noun collocations, would have been impractical to investigate: they would have been too low-frequent for Study I, or too challenging for the creation of coherent and meaningful original texts for Studies II-III. Furthermore, both words in verb-noun collocations are compulsory elements to express meaning. This separates them from other types of collocations investigated in empirical research, such as adjective-noun (e.g., Siyanova & Schmitt, 2008) and adverb-adjective collocations (e.g., Granger, 1998), where the first word can be left out without violating any syntactical rule. Most importantly, and the main rationale for focusing on them in the thesis: verb-noun collocations are problematic for learners, notably in productive use as demonstrated by learner corpus research (e.g., Nesselhauf, 2005; Laufer & Waldman, 2011; Wang, 2016).

The definition of collocations in the thesis is statistical-syntactical and draws on Henriksen's (2013, p. 30) definition of collocations as "frequently recurring two-to-three word syntagmatic units which can include both lexical and grammatical words, e.g. verb + noun (*pay tribute*)". It is statistical in operationalizing "frequently recurring" as an MI score of the word pair above 3 in a large corpus of English. It is thus syntactical in that it includes "two-to-three word syntagmatic units" of a verb and a noun. Here is the definition of collocations used in the thesis:

> Collocations are defined in the thesis as combinations of a verb and a noun in English that show a significantly strong attraction to each other as evidenced by their frequent co-occurrence in a large corpus of English

The 62 target collocations investigated in Studies I-III meet this definition as they are verb-noun combinations with an MI score between 7.71 and 19.77 (M = 13.73, SD = 2.60) and a minimum frequency of four occurrences in a search in the BNC or in the English Web 2015 (EW15). The target collocations are listed in Appendix A together with their MI scores and raw corpus frequencies in the two corpora along with a comment on why one of the target collocations included in Study I was excluded later. The EW15 is a corpus included in Sketch Engine, a corpus tool developed by Adam Kilgariff and colleagues (Kilgariff, et al., 2014). The EW15 comprises more than 15 billion words of English used on the Internet. Fifty-eight of the target collocations were found in the BNC using the Word Sketch option in Sketch Engine for collocation searches. The remaining four target collocations – *send a text message*, *receive a text message*, *flag a taxi* and *thumb a ride* – were not

found in the BNC, either because they refer to technology that did not exist around the turn of the 1990s when the BNC was compiled (the first two of them), or are typically American English (the last two of them). This is why the EW15 was used instead of the BNC for these four target collocations.

The definition of collocations used in the thesis aligns with the one adopted in the incidental L2 verb-noun collocation learning study by Webb, Newton, and Chang (2013). They included all three phraseological categories of verb-noun pairs – free combinations, collocations, and idioms – as long as they occur together more frequently than by chance, as evidenced by *t*-scores above 2. The *t*-scores of their 18 target collocations ranged from 5.44 for *buy time*, to 28.39 for *meet demand*. Revisiting the phraseological view on collocations from section 4.2.2, the former is thus an idiom and the latter a collocation. The authors address the disadvantages of including all three types of word pairs in their study, namely that the word pairs differ in terms of concreteness and transparency of meaning, and degree of L1-L2 congruence. These three factors may impact on the learning burden their target collocations present to learners. However, the authors cite two reasons for using above-chance co-occurrence as the only inclusion criterion for their target collocations: (1) it removes the subjective component of selecting target items, as it is based on objective corpus data, and (2) it enhances the ecological validity of the study, as in authentic contexts learners are exposed to FSs of different degrees of semantic transparency (2013, p. 93). Given that the researcher has established that participants do not know the target collocations before the study, it can be argued that it does not matter what phraseological category they belong to, as long as the two words are statistically significantly related to each other. This is the rationale for the operationalization of collocations in the thesis.

However, unlike Webb et al's (2013) study, the thesis used MI score as the association measure to include verb-noun combinations as target collocations. There were three reasons for this choice. First, the L1 Swedish participants in Studies I-III have a high proficiency of English and using the *t*-score as the association measure would have resulted in collocations made up of highly frequent words that the participants therefore already knew, either due to their high proficiency or due to L1-L2 congruence. The latter feature is common, for example, among the 18 target collocations used in Webb et al's study, where more than half stand out as having direct translational overlap between English and Swedish based on my own assessment as a native speaker of Swedish, for example item no. 13: *read thoughts = läsa tankar*. In contrast, the MI score gives prominence to less frequent collocations, made up of low-frequency words, but with a strong mutual attraction to each other. They therefore lend themselves better to be included in the thesis. Second, according to Hunston (2002, p. 74), the *t*-score focuses on the grammatical behaviour of a node – the type of grammatical words it is often surrounded by – while the MI score focuses on its lexical behaviour, which is in line with the topic of the thesis. Third, it was decided to include another corpus to find

evidence for the strength association of four of the target collocations mentioned above. The MI score is not sensitive to corpus size (as is the *t*-score) and it was therefore the better alternative.

6.5.1 Identifying the target collocations

The 62 target collocations were identified in two ways. For Study I, it was decided to do the intervention in line with the regular instructional procedures of the two involved classes in order to strengthen the ecological validity of the study. The two regular teachers of English described how they taught English through modules with thematic projects based on texts in English that revolved around an age-relevant and therefore potentially interesting topic. In the case of Study I, one of the teachers had planned to work on getting a driver's licence, as her students were approaching the age when they could start taking driving lessons. One text in the textbook they used in the class touched directly on that topic and was therefore included. The other texts were a newspaper article and a web page with content related to driving and getting a driver's licence that were endorsed by the two regular teachers. All verb-noun combinations that occurred in these texts and are listed in the OCDE were included in Study I (for statistical measures, see above).

For Study II-III, a different approach was employed. All verb-noun collocations occurring in the OCDE were carefully analysed and a list was created with potential target collocations that met the following criteria: (1) they also occurred in either of *Norstedts Comprehensive English-Swedish* or *Swedish-English Dictionary* (Petti, 1993); (2) the verb component was incongruent between English and Swedish based on my own judgment as a native speaker of Swedish, for example the target collocation *carry a risk*, translated into Swedish as *innebära en risk*, and not the literal translation **bära en risk*; (3) the verb-noun combination was a collocation in statistical terms in having an MI score above 3. This process generated a list of 71 potential target collocations that formed the basis for two pre-tests (see Appendix B). The Swedish cue in the translation test format was based on either of Petti's (1993) dictionaries cited above. Two classes (n = 44) of comparable learners, of the same age and from the same district as the study participants, sat the two pre-tests which tested active recall knowledge of the target collocations in the following translation format based on Laufer and Goldstein's (2004) active recall:

Bedriva forskning __C_____ research

The prompt was the target collocation in the test-takers' L1 (Swedish) and they were asked to complete the missing verb in English, the first letter of which was provided to avoid possible and correct but undesirable alternatives. The correct answer in the example above is 'Conduct'. Twenty-eight of the

potential 71 target collocations qualified for inclusion in the study in that less than 10% of test-takers were able to correctly translate them (see Appendix C). Twelve of the target collocations were later also used in Study III. This was the same percentage as in a comparable study by Hulstijn and Laufer (2001) and lower than another relevant study by Sonbul (2012) with 20%.

6.6 Measuring target collocation knowledge in the thesis

Nation and Meara (2010, p. 44) identify four purposes of vocabulary tests:

- to measure vocabulary size (useful for placement purposes or as one element of a proficiency measure);
- to measure what has just been learned (a short-term achievement measure);
- to measure what has been learned in a course (a long-term achievement measure);
- to diagnose areas of strength and weakness (a diagnostic measure).

The second purpose is relevant for the instructed L2 collocation learning research that was conducted for the thesis. Such pre-test/post-test intervention studies necessitate an achievement test that, unlike proficiency tests, measure language learning with specific reference to, for example, a programme of instruction (see Richards & Schmidt, 2013, pp. 6-7 for an elaboration on how the two test types differ). A second corollary of such research is that a forced-answer test format is required as specific target items are investigated. It is therefore necessary to elicit participants' target item knowledge. Other test formats are inadequate as it is unlikely that target items will crop up unsolicited to any considerable extent in them. One example of such test formats is measuring participants' free language production in composition writing.

6.6.1 Measuring learning gains in a pre-test/post-test study

The implementation of a pre-test/post-test study involves making a range of methodological choices, including how learning gains are to be measured in the pre- and post-tests. One issue of administering pre-tests is the risk that participants' attention is inadvertently and undesirably drawn to the target items. This issue may be addressed using three strategies. One way of reducing this risk is to add distractor items to the pre-test which, if they are plentiful, can be argued to divert test-takers' attention away from the target items. A way to eliminate this risk is to test other comparable learners on the target items and then only use items in the actual study that none or very few of these non-participant test-takers knew. A third way is to use pseudo- or nonce words as target items, as in for example Reynolds (2015) and Pellicer-Sánchez

(2017). However, while strengthening the methodological robustness, this option is questionable in compulsory education as participants learn useless information; cf. section 6.7 on research ethics. In this thesis, the first strategy was used in Study I and the second one in Studies II-III.

Another methodological choice is the format of the forced-answer test, a decision with implications for the type of target item knowledge that will be measured. It is well established that learners' knowledge of the form, meaning and use of a word develops incrementally through experience with the language. A similar principle seems to apply to how strongly learners have made the form-meaning link of a word, in terms of what they can do with the word: recognize it or recall it, passively or actively. This principle does not take depth of vocabulary into consideration, but uses another metaphor: strength of word knowledge. The position in the thesis to focus on strength rather than depth of vocabulary knowledge is based on the lack of theoretical and empirical support for depth as an independent and measurable construct (cf. Read, 2000; Gyllstad, 2013). Laufer and Goldstein (2004) found empirical evidence through a series of tests that learners progress steadily upwards in a hierarchy of strength of word knowledge: passive recognition > active recognition > passive recall > active recall. Active recall is thus the most advanced and strongest degree of knowledge of the form-meaning link of a word. This is exemplified in table 6.3 below with the English word 'computer' ('dator' in Swedish). The alternatives for the active and passive recognition formats are translations between Swedish and English.

Table 6.3 Hierarchy of strength of vocabulary knowledge (based on Laufer & Goldstein, 2004)

Hierarchy	**Example**
1. Active recall (supply L2 word)	c_____ = dator
2. Passive recall (supply L1 word	computer = d_____
3. Active recognition (select L2 word)	dator a. house b. dog c. computer d. pen
4. Passive recognition (select L1 word)	computer a. hus b. hund c. dator d. penna

The first letter of the target word is provided for active and passive recall to avoid semantically possible non-target words (Laufer & Goldstein, 2004, p. 406). This testing format has advantages and disadvantages. On the upside, it is quick to administer and allows for many items to be tested without exhausting test-takers. Scoring the test is also relatively simple, with 1 point

for a correct answer and 0 for an incorrect one. While the two recognition tests obviously do not require scoring criteria, the two recall tests do. In Laufer and Goldstein's version, only correctly spelled answers received 1 point (2004, p. 412). However, it can be argued that incorrectly spelled answers still represent adequate knowledge of target word form. This applies to cases where the spelling invokes the reading of the target word and not the reading or the pronunciation of another word, or is an inflected form of the target word. One example is the misspelled verb *to *compleat* for 'to complete', or the gerund form *completing* for the same verb. This principle was used in the post-tests for Studies I-III, where for example one participant received 1 point for writing **exeed the speed limit* (and not *exceed*). On the downside, target words are tested in isolation, which entails that true productive knowledge – the ability to use the target word correctly (i.e., syntactically) and appropriately (i.e., sociolinguistically) – is not tapped. This shortcoming is discussed in Laufer and Goldstein (2004, p. 401) in terms of a 'trait' view versus an 'interactionalist' perspective of linguistic knowledge as it relates to communicative competence. While the ultimate goal of language education should be the ability to use newly acquired TL features in fluent communication and interaction, the position taken in the thesis is that testing active recall – the ability to supply the target item in writing when prompted by an L1 cue – is sufficient to demonstrate that test-takers have formed a strong initial form-meaning link. Testing their ability to use the target items correctly, appropriately and fluently requires a different research design and measurement techniques, which are beyond the scope of the thesis. This, for a lack of a better word, depth of word knowledge develops incrementally and a longitudinal study is needed to track this development.

6.7 Research ethics

One of Borg's (2010) criteria for good quality research in English language teaching is that it is ethical in ensuring that research participants do not suffer any negative consequences as a result of their participation (pp. 10-11). It should be noted that, compared to research in psychology or medicine, educational research such as the one conducted for the thesis rarely if ever risks inflicting physical or mental harm on study participants (Johnson & Christensen, 2014, p. 140). Several measures were taken to protect the rights of the participants in Studies I-III in compliance with regulations for research ethics in Sweden. Two publications by Vetenskapsrådet, the Swedish Research Council, were considered when implementing Studies I-III: 'Good Research Practice' (Vetenskapsrådet, 2011) and 'Principles for research ethics in humanities and the social sciences' (Vetenskapsrådet, n. d.). The latter outlines four main requirements for research ethics relating to information, consent, confidentiality, and usage. These requirements entail that participants

must receive adequate information about the research; that participants themselves decide if they want to participate and may opt to drop out without motivation; that the researcher must collect consent from participants to participate[5]; that participants' anonymity is guaranteed; and that the data collected will be stored securely and used for research purposes only. To comply with these requirements, written informed consent was granted from all 165 participants in Studies I-III. This occurred during an introduction which was given to potential participants before the studies were launched. The introduction centred on the written consent form which contained specific information related to the four requirements mentioned above (see Appendix D for the consent form). Furthermore, the Swedish Ethical Review Board (www.epn.se) approved the application to conduct the research for the thesis.

Following Dörnyei's (2007, pp. 67-68) recommendation, it was also deemed important to offer participants some form of benefit from participating in the research. For one thing, participants in Studies I-III learned a large number of English verb-noun collocations, as evidenced by post-test scores. Furthermore, one participant in Study I, self-reportedly speaking on behalf of the whole class, expressed in the stimulated recall interview that all students had internalized the concept of collocation (Snoder, 2016, p. 210). In addition, the learner participants in Study II were debriefed about the results of the study and engaged in a discussion about research and research methodology. I also gave several workshops on L2 vocabulary research to their regular teachers of English with colleagues.

6.8 Summary

This chapter described methodological aspects that were considered when designing Studies I-III. The aspects relate to research design, sampling, data analysis, definition of target collocations, measurement of target collocation knowledge, and research ethics. The next chapter describes the implementation of the seven input processing constructs that were investigated in the studies: the participants, the materials, the procedures for teaching and data collection, and the results of the analyses.

[5] For participants below the age of 15, written informed consent must be granted also from their legal guardians/parents (Vetenskapsrådet, n. d., p. 9). This did not apply to Studies I-III as all participants had turned 15 at the time of the data collection.

7. Implementing the constructs in Studies I-III

Chapter 7 centres on how the seven input processing constructs were implemented in Studies I-III in Swedish L2 English classrooms. Section 7.1 focuses on form-focused instruction and meaning-focused instruction, investigated in Study I. Section 7.2 focuses on involvement load, spacing, and intentionality, investigated in Study II. Section 7.3 focuses on semantic elaboration and structural elaboration, investigated in Study III. Each section describes the participants, materials and treatment procedures for each study, followed by data collection, description and analysis. The reader is informed that the descriptions by necessity are detailed and extensive, notably for Studies I-II.

7.1 Form-focused instruction and meaning-focused instruction in Study I

7.1.1 Participants, materials, treatment procedures

Study I (Snoder, 2016) took place in two secondary schools in a Swedish city. Two classes (n = 42) of ninth-grade learners of English aged 15 participated in the study, 20 from class A and 22 from class B. Fifty-six learners volunteered to participate in the study, but 14 were excluded from the pool of participants, either because of absence during at least one of the three treatment sessions (n = 13), or having another L1 than Swedish (n = 1).

The study stretched over a period of three weeks during four separate sessions: one pre-treatment session and three treatment sessions. The data were collected after the third treament session. During the pre-treatment session, participants were informed about the study and they signed consent forms. Pre-tests of the 35 target collocations (see Appendix E) were also administered. The pre-test contained 32 distractor items to reduce the risk of drawing participants' attention to the target collocations. The pre-tests revealed a difference in the mean scores out of 35 points between the two classes: the mean of class A was 19.40, with a standard deviation (SD) of 3.83, and for class B the mean was 12.59, with a SD of 6.05. The difference was statistically significant, as shown by an independent samples t-test using *SPSS 24*: $t(40)$: 4.310, $p. < .0001$. This difference in mean pre-test score was not a design problem, as Study I investigated qualitatively whether two verbal reports, think-aloud protocols (TAPs) and stimulated recall interviews (SRIs), could be used to probe learners' mental process during instructed L2 collocation learning, and whether it was a function of the treatment condition

(FFI/MFI). The focus of the study was therefore on the post-tests administered after the treatment, which was when the verbal data were collected: concurrently (the TAPs), and retrospectivly (the SRIs).

The treatment sessions in Study I centred on a thematic project on an age-relevant topic suggested by one of the two teachers: getting a driver's licence. This aligned with the regular instructional practices, thus strengthening the ecological validity of the study. Three authentic texts on the topic were selected[6] and 35 target collocations were identified in the texts. Tailor-made exercises were developed based on the texts in collaboration with the two teachers as operationalizations of FFI and MFI (see Appendix F). During the treatment sessions, the classes were instructed by their regular teacher of English, who followed my detailed instructions. The two treatment conditions were similar in three ways: the teacher first read the texts out loud to the participants, the participants were exposed to the target collocations in the materials five times, and time-on-task was kept constant. The two conditions differed in the following ways. The FFI participants were introduced to the term 'collocation', they were encouraged to use it and they did various form-focused exercises with the target collocations, such as gap-filling exercises. The MFI participants were not introduced to the term 'collocation', but instead answered comprehension questions on the texts and discussed issues raised in the texts that necessitated consideration of the target collocations. The two teachers followed the instructions for the treatment sessions to the letter, based on my observations from the back of the classroom.

Upon finishing the third treatment session, participants took unannounced post-tests, which formed the basis for the collection of verbal data in Study I. The post-tests were analysed quantitatively before the qualitative analysis. This involved comparing the mean gain scores (i.e., post-test score minus pre-test score) turned into percentages of the two classes, using an independent samples *t*-test. The mean gain score of class A it was 31.95%, with a SD of 22.59%, and for class B it was 40.76%, with a SD of 25.21%, The difference in favour of class B was not statistically significant due to the extremely high SDs: $t(40)$: -1.179, $p. < .245$. The procedures used for collecting the verbal data for the study are specific and need to be described in detail, notably for the SRIs as they deviate from the standard procedures. In the two sections that follow, each of the two verbal reports is introduced, followed by a description of the data collection procedures, of the data, of how the thematic analysis was performed, and what results were generated.

[6] The three texts were a text from the participants' current text book in English, a newspaper article, and a web page (see Appendix G). Written permission to use the three texts for research purposes was granted from all three copyright owners.

7.1.2 Think-aloud protocols: data collection, description, and analysis

Think-aloud protocols (TAPs) is a research methodology which collects introspective verbal data to access participants' mental processes while performing another – primary – task. An example is a teacher who marks student compositions and concurrently verbalizes his/her thoughts about it. A potential validity problem when collecting TAPs data in L2 research is the so-called reactivity issue, i.e., the risk that thinking aloud triggers changes in learners' cognitive processes during task performance. Leow and Morgan-Short (2004) investigated this issue by comparing two groups of learners who performed the same task but that differed in type of condition: ± think-aloud. They found no support for the reactivity issue as the mean performance of the two groups on three post-test measures did not differ significantly. TAPs were used in a project by Malmberg, Bergström, Håkansson, Tornberg and Öman (2000), with 10- to 15-year-old L1 Swedish instructed learners of English, German, Spanish, and French, who verbalized their strategies when processing input and producing output in the cited languages. On the whole, learners were successful in completing the dual task, despite initial concerns from the authors (p. 9). The relative success of this project was the rationale for designing a similar data collection scheme in Study I, as the contexts and participants were comparable.

TAPs have been used successfully in L2 vocabulary processing and learning research, mainly to access participants' mental processing during lexical inferencing of unknown words when reading (Fraser, 1999; Paribakht & Wesche, 1999), and for implicit and explicit learning in incidental L2 vocabulary acquisition (Rieder, 2003). Previous TAPs studies focused on the processing phase in L2 vocabulary research and, to my knowledge, not on the post-test phase of the intervention. During the post-test phase learners may be asked to verbalize their mental processes when taking the post-test. This was done for Study I and the following step-by-step procedures were employed to collect the verbal data:

1. Two learners from each condition (MFI/FFI) were randomly selected to take the immediate unannounced post-test after the third treatment session: their aliases are *MF19*, *MF28*, *FF04*, and *FF13*. 'MF' hereafter refers to the meaning-focused condition and 'FF' to the form-focused ditto. They all demonstrated learning gains in the post-test, which thus was the primary task: *MF19* = 7, *MF28* = 4, *FF04* = 4 and *FF13* = 4.
2. Following Li's (2012) principles for conducting TAPs, the four learners first received training in performing a TAP on an unrelated task in which they were asked to think aloud while analysing a cartoon comic (see Appendix H).

3. They sat alone in adjacent group rooms when doing the TAPs, while their classmates took the same post-test in the classroom, invigilated by their regular teacher.
4. The four learners received oral and written instructions on how to perform the TAPs when taking the post-test for Study I and confirmed that they had understood how to go about the task, including the procedure that the set phrase "Jag tänker att…" ("I'm thinking that…") should be repeated for each post-test item. They performed the TAPs in Swedish and were audio-recorded.

The four TAPs comprise a total of 64.04 minutes of monologic verbal data, amounting to a total of 4,130 words when they had been translated into English: *MF19* = 1,483 words, *MF28* = 702 words, *FF04* = 1,075 words, and *FF13* = 870 words. The TAP of *FF04* is found in Appendix I as an example. The 4,130 words encompass all the words spoken out loud by the participants, except for when they stated the number of the post-test item as it was considered irrelevant meta data. The four TAPs all contain stretches of silence, hence the low number of words for more than an hour of recordings. There were two foci when analysing the TAP data: Are the participants capable of performing the dual task of the TAP to account for the instructed L2 collocation learning they had gone through, and is the answer to that question a function of the type of instructional treatment they had received (MFI/FFI)?

Thematic analysis was used (TA; Braun & Clarke, 2006) to make sense of the TAP data by searching for patterns in the guise of themes. Phase 1 of doing a TA, the familiarization with the verbal data, occurred when the TAPs were transcribed and translated. Phase 2, the generation of initial codes, took place during two readings of the data: the first time to get an overview, and the second time when doing a close reading. Six initial codes that appeared relevant for the focus of Study I were listed. First, *MF19* and *FF04* produced elaborate accounts of their mental processes while translating the target collocations from Swedish into English, whereas *MF28* and *FF13* in most cases simply stated the Swedish cue and how they chose to translate it. Second, *MF19* and *MF28* did not verbalize how they learned target collocations with reference to the instructional treatment they had received, but referred instead to films or TV series they had watched. Third, *MF28* explained his choice of translation by saying that it was "pretty obvious" on several occasions. Fourth, *FF04* learned four target collocations as a result of the treatment and for two of them he referred to the two words either working together or used the term 'collocation', as in the following quote in which he first reads the L1 cue out loud:

> "'De överskred hastighetsbegränsningen': Let's see if there is a connection between them…. 'Speed limit'. 'They exceeded!' 'Exceeded the speed limit!' As there is a collocation between 'exceeded' and 'speed limit'"

A gain score of four, as was the case for *FF04*, may appear limited. However, he was one of top pre-test scorers in the FFI condition, 22 correct target collocations out of 35, and his gain score comes across as non-negligible when taking the ceiling effect into account. Fifth, contrary to her classmate, *FF13* did not account for learned target collocations with reference to the instructional treatment she had received, but merely stated the correct answer. Sixth, *FF04* used the term 'collocation' on seven occasions during his TAP, thus for both learned target collocations and ones he already knew, and he stated that the two words of the target collocation he was translating were "connected" or "work together" on 18 occasions.

As for phases 3 and 4 of doing the TA, phase 3 occurred during the search for themes based on the six initial codes, and that were related to the two research questions of the study. Three themes were found. The first theme was that the four participants differed markedly in how capable they were of performing the dual task of the TAPs in general, non-target collocation-specific, terms, and it appeared unrelated to treatment condition. The second theme was that FFI allowed for metalinguistic awareness in providing one of its two participants with linguistic terminology – specific (the term 'collocation') or general (the words 'work together') – that he used pervasively to discuss word partnership, and also to account for learned collocations. The third theme was that MFI did not provide its participants with metalinguistic awareness as they discussed the target collocations, notably the ones they had learned in the study, related exclusively to exposure to extramural English or in non-specific terms, and thus not to the instructional treatment they had received. The two last themes can be amalgamated into one: that FFI, and not MFI, developed facilitative metalinguistic awareness of collocational patterns. Phase 4 involved reviewing the identified themes, for which the transcriptions were read through a third time with an eye to the themes and checked that they were consistent with the TAP monologues. One feature that had been overlooked in the previous perusals was that *MF28* repeatedly referred to the initial letter provided for the verb component in the post-test format, while none of the other three participants mentioned it. However, this formal feature did not lend itself to be formulated as a meaningful theme and was therefore ignored.

Defining and naming the themes is the penultimate phase of the TA, before producing the report. The two themes for the TAPs in relation to instructed L2 collocation learning specifically are thus: (1) limited possibility of TAPs to account for it, and (2) facilitative affordance of FFI in promoting metalinguistic awareness of it. It should be pointed out that these themes, though salient in the data, are tentative conclusions based on a limited number of participants. Further limitations of the TA for the TAPs are addressed in section 8.3 below.

7.1.3 Stimulated recall interviews: data collection, description and analysis

Stimulated recall interviews (SRIs) are a qualitative research methodology that aims to capture thought processes retrospectively in an interview format. This is done by eliciting a participant's thoughts about a prior activity through prompts in some form. Ryan (2012, p. 145) offers the following definition:

> It is a method to elicit qualitative data relating to the thought processes associated with performing an action or participating in an event. To assist recall of these thought processes, a stimulus is used, such as a video-recording of the activity. It is argued that such stimuli may enable a participant 'to relive an original situation with vividness and accuracy' (Bloom, 1953: 161)

The implementation of SRIs in Study I was different from the standard procedure in that the stimulus was not a video-recording of participants performing a task. It was decided instead to use participants' own hand-written answers as stimulus to help them mentally return to when they took the post-test. This decision drew on Dörnyei's (2007, p. 151) aforementioned suggestion that retrospective interviews can be used for test responses. In a similar vein, Coxhead (2015) suggested using "post-test interviews, and extending these interviews to find out more about how the learners approached their learning of formulaic sequences" (p. 117). The hand-written answers were intended to help participants relive the experience of taking the post-tests and the thoughts they had when selecting verb-noun combinations. This entailed a detailed analysis of the pre- and post-tests. The procedures for collecting the SRI data are listed in chronological order below:

1. Five learners from each condition were randomly selected and agreed to voluntarily take part in the SRIs. They took the post-test with the rest of the class in the morning and came back to the same classroom four hours later for a post-test follow-up.
2. The post-tests for these ten learners were scored immediately after the administration and learned target collocations were identified by comparing post-tests with the pre-tests. Learned target collocations were photocopied, cut out and glued on to a SRI form (see an example in Appendix J). As they had learned different target collocations, each learner's SRI form was unique.
3. The learners first received training on an unrelated task (see Appendix K) and were given written and oral instructions on how to fill out their SRI form.
4. The learners were invited to take part in follow-up SRIs to allow them to elaborate orally on their written answers and five of the ten learners opted to do so. The five interviews were conducted in Swedish and were audio-recorded.

The written and spoken SRI data from the ten learners were translated into English. The written data from the SRI forms amount to a total of 1,367 English words, and the spoken SRI data to a total of 8,107 English words, from a total of 42.21 minutes of interviews with 647 interviewer-interviewee turns. It should be specified that the five SRIs were divided into two parts: one part on each learner's SRI form that asked them to elaborate on their written answers, and another part that asked them to evaluate the treatment they had gone through. The latter is not included in the TA as it is irrelevant data in not focusing on the learned target collocations. Appendix L is the transcribed SRI for *FF10*, where the shaded part is the evaluation part. The total amount of time for the non-analysed evaluations in the five interviews is 15.09 minutes with a total of 3,469 English words.

Table 7.1 presents the numerical data for the ten learners who took part in the SRIs: their alias, how many target collocations they learned, the number of written words in their SR forms, and the number of SR interview turns and words for those who were interviewed.

Table 7.1 Participant data for the ten SRIs

Alias	Learned collocations	Words in the SRI forms	SRI turns and words
MF09	5	128	126 (turns) and 1,579 (words)
MF10	3	104	Not interviewed (NI)
MF23	4	69	58 and 755
MF25	2	70	NI
MF26	2	69	NI
FF02	5	99	115 and 1,390
FF10	6	172	133 and 1,662
FF14	6	142	NI
FF19	7	237	NI
FF25	8	277	215 and 2,721

It is a small sample of ten participants and statistical analysis of the difference between the mean learning gains for the two conditions is therefore neither possible nor meaningful. There is a numerical difference in learning gains in

favour of the FFI condition, despite the ceiling effect: the FFI participants had significantly larger mean pre-test scores than their MFI peers. However, the way the target collocations were tested – in an active recall format (translation L1-L2) – gives the FFI participants an advantage in resembling the way they processed the target collocations during the treatment; cf. Barcroft's (2015) types of processing-resource allocation model.

Similar to the TAPs, thematic analysis (TA) was used on the SRI data. The familiarization with the data occurred when translating and transcribing it. During phase 2 of the TA, initial codes were generated using a colour-coding system. The analysis of the SRI data was conducted in the following chronological order. The 10 SRI forms were read through first, since the participants completed them first, before the optional follow-up interview. After the first reading for gist, a second careful reading followed, which resulted in a list of 11 initial codes identified in the SRI forms and colour-coded as presented below; all non-coloured text is the 'other', eleventh, category. Braun and Clarke (2006, pp. 82-83) state that what counts as a theme in TA – which thus is based on the initial codes – is a question of prevalence in the data. Prevalence relies on researcher judgement whether a theme captures something important in the data related to the research questions. When generating initial codes, the focus was on statements in the SRI forms with some reference to either how the participants had learned their target collocations, or to some account of how they had been able to translate them correctly at the post-test. They were to be categorized and attributed according to treatment condition, MFI or FFI:

1. from extramural English: pink marker
2. from the treatment: green marker
3. unspecific account, referring to the translation feeling/sounding right/natural or being obvious/evident: yellow marker
4. misunderstood pre-test instruction on how to translate the L1 cue word: orange marker
5. from looking at the initial letter that was provided in the test format: underlined blue pen
6. already knew the words: underlined red pen
7. already knew the words and the treatment enabled them to combine them to a collocation: red box made by pen
8. the verb component was the source of difficulty: underlined black pen
9. from someone – classmate or teacher – saying it out loud: underlined grey pencil
10. use of the term 'collocation': blue box made by pen
11. other: non-applicable/irrelevant account: no colour/unmarked text

The ten SRI forms were colour-coded using the 11 initial codes. Appendix M is the first page of the colour-coded SRI forms for *MF09*, *MF10*, *FF02* and

FF10, scanned and reprinted as an example. Once the SRI forms had been colour-coded, the next step was to read through the SRI transcriptions to see if the five participants had made any relevant oral elaborations of their written accounts, or added other accounts of how they had learned the target collocations in question. The same colour-coding system was used for the five transcriptions as for the ten SRI forms. It turned out that no new initial codes emerged from the close reading of the five interview transcriptions, but additional accounts relating to one of the ten initial codes were identified in all five transcriptions. On reflection, four of the initial codes were discarded for not revealing anything important relating to the research question: initial codes 3-6. Initial code 3 was pervasive in the SR data for the MFI participants, but was not informative and therefore irrelevant.

During phase 3, themes were searched for among the initial codes, i.e., if the codes may be amalgamated into superordinate categories with new explanatory power in response to the relevant research questions. The first theme is that, based on the amalgamation of the ten initial codes (1-10), SRIs can be used to a large extent to account for instructed L2 collocation learning when adapted and adopted as in Study I. Though there were irrelevant accounts categorized as initial code 11, they were clearly overshadowed by the other ten more or less illuminating initial codes. This theme is related to the first research question of Study I, i.e., "To what extent can student think-aloud protocols and stimulated recall interviews probe participants' memory process in formal L2 collocation learning?" with its reference to SRIs.

The second theme pertains to the observation that participants from both conditions expressed having learned target collocations from the instructional treatment they had received. This was pervasive in the FFI condition as all five FFI participants elaborated on it at least twice in the SRI data, while less substantial for the MFI condition, as two of the five MFI participants mentioned it briefly once. Relatedly, several MFI participants repeatedly referred to exposure to extramural English to account for how they learned the target collocations, while it occurred once in the SRI data for the five FFI participants. Furthermore, one FFI participant (*FF10*) stated on several occasions that she had learned target collocations from someone – classmate or teacher – who said them out loud or repeated them during the treatment. The second theme is therefore that the FFI condition to a considerably larger extent than the MFI condition enabled its participants to account for learned target collocations with reference to the instructional treatment they had received. Appendix M with the coded SRI forms of *MF09*, *MF10*, *FF02*, and *FF10* gives several examples of this theme. The second theme is directly related to the second research question of Study I, i.e., "Is the answer to the first question a function of whether learners were induced to focus on form or meaning when exposed to target items?".

The third theme concerns the fact that all five FFI participants accounted for the learned target collocations by stating that they already knew the

individual words of the collocation in question, but that the form-focused instructional treatment they had received enabled them to connect them and translate them correctly at the post-test. This feature was absent in the MFI SRI data. Examples of this theme are cited in Study I (Snoder, 2016, p. 207) and one of them, from the SR form by *FF19*, is restated below as a case in point:

> I knew what both the verb and the noun were, but during learning I got the chance to repeat their connection which strengthened my possibility to use them as a kollikation

Furthermore, a relevant feature is the pervasive use of the term 'collocation' in the FFI SRI data: four out of five FFI participants used it, three of them more than once. It should be noted that some of them used various deviant spellings of the term as in the quote just above, another example being 'colocation', but it can still be argued that they refer to the same concept. The fifth FFI participant (*FF14*) used less specific but still relevant metalanguage in writing in the SFI form that "the exercises we did improved my knowledge of verb + noun". Moreover, two FFI participants stated twice that what had been difficult at the pre-test was the verb component of the target collocation and that the instructional treatment helped them find the correct one, as in the following quote, again by *FF19*:

> During the first test I had a vague idea of what the verb was but when it was repeated a lot during the lessons my connections were made stronger which made it easier to use it

The third theme is therefore that the FFI condition equipped its participants with metalinguistic awareness that helped them to connect the already known verb and noun of the target collocations, either specific through the term 'collocation', or general in instilling the concept of two words being 'connected' or something to that effect, with a recurring focus on the challenging verb component of the target collocations. The third theme is directly related to the second research question of Study I and provides an answer to the first central question of the thesis: "Why is form-focused instruction more effective in facilitating instructed L2 collocation learning than meaning-focused instruction?".

The penultimate stage 5 of the TA involves defining and naming the identified themes. The three themes related to the SRI data can be grouped under the heading of SRIs being a vehicle for instructed L2 collocation learning in (1) probing mental processes, and (2) facilitating such learning through the provision of metalinguistic awareness in form-focused instructional treament.

7.2 Involvement load, spacing, and intentionality in Study II

7.2.1 Participants, materials, treatment procedures

For Study II (Snoder, 2017), two classes (n = 59) of learners of English aged 16 from an upper secondary school in a Swedish city were recruited to participate, 29 from class A and 30 from class B. Twenty-eight target collocations were selected from an initial pool of 71 potential items that were pre-tested on 44 comparable non-participants learners: only test items that less than 10% of the comparable learners knew were included in the study. The 28 target collocations with their pre-test familiarity percentages are, again, found in Appendix C. The target collocations were included in the researcher-developed materials that were produced in collaboration with a native speaker of English and that operationalized the three constructs. The materials consist of a total of ten texts (1-10) that contained the target collocations and exercises that went with each text (see Appendice N-O for examples). The study comprised five classroom sessions with the two classes: an introduction, three treatment sessions (treatments 1-3) and a delayed post-test three weeks after the third treatment session. Unlike Study I, it was I and not the regular teacher of English who instructed the two classes during the study. This was a practical solution intended to relieve the regular teachers of the pressure of the high-stakes situation and to ascertain that the two classes received the same treatment.

To align with previous studies testing the involvement load hypothesis (ILH), the operationalization of IL in Study II necessitated a comparison between at least three treatment conditions which theoretically induced different ILs on learners as they processed target collocations occurring in the materials. It was decided to create four conditions, hereafter tasks A-D, in order to investigate whether the ILH was borne out empirically for instructed L2 collocation learning. The four conditions induced IL2 (task A), IL3 (tasks B and C) and IL4 (task D). This allowed for a comparison between three tasks with the different ILs and also between two tasks with the same IL, which theoretically should be equally effective in promoting learning gains. Four of the researcher-developed texts (1-4) with accompanying exercises were used. The operationalizations of the ILH in Study II involved manipulations of gap-filling exercises, original-sentence-writing and dictionary look-ups (see Appendix N for examples). For each task, the instructor first read the texts out loud and then gave instructions to participants who, to control for task performance, worked individually and in silence. An immediate unannounced post-test was administered after treatment 1.

To operationalize the construct of spacing, it was necessary to organize the study so that participants were exposed to target collocations at least three

times to constitute a spacing study proper. The first exposure occurred during treatment 1 when the ILH was tested, and the third exposure took place when intentionality was tested as reported in the next section. The second exposure occurred in treatment 2 and involved a second incidental exposure to target collocations. Participants were asked to read six short texts (texts 5-10) containing the target collocations and answer comprehension questions on the texts. Participants were given a key to check that they had answered them correctly. No post-test was administered after treatment 2. It was randomly decided that class A followed an expanding spaced learning schedule, with the three exposures to target collocations during treatments 1-3 occurring with gradually longer intervals: day 1, day 7 and day 16. For the intensive learning schedule, class B were exposed to target collocations as intensively as practically possible, which occurred on day 1, day 2 and day 4.

The construct of intentionality in Study II was operationalized as whether participants were explicitly told (intentional learning) or not (incidental learning) that they would be post-tested on the target collocations. This was investigated during treatment 3. Prior to this treatment, participants had received two incidental exposures to the 28 target collocations during treatments 1 and 2. During the first half of treatment 3, participants processed 14 of the 28 target collocations a third time incidentally, that is, without being explicitly told that they would be post-tested on them. They received the texts from the second exposure in treatment 2, and were asked to read the texts again and come up with and write down an original title for each text as the title had been removed (see Appendix O). Having completed that task, participants were then given a glossed list (translations L2-L1) of the remaining 14 target collocations and instructed to spend 15 minutes individually in silence on studying them intentionally in their own preferred way for an upcoming announced post-test. The post-test included all 28 target collocations, though only 14 of them had been announced. This procedure allowed for a comparison between the two types of intentionality.

7.2.2 Data collection and analysis

Three post-tests were thus administered in Study II: post-test 1 immediately after treatment 1, post-test 2 immediately after treatment 3, and post-test 3 three weeks after treatment 3. Two versions (A and B) of all post-tests were created, in which target collocations were in different orders. During post-test administration, participants sitting directly adjacent to each other were given A and B versions alternatively to minimize the risk of undesired collaboration between them. No such behaviour was observed. The post-tests tapped controlled productive target collocation knowledge in a cued translation – 'active recall' – format as exemplified below:

Friska upp minnet _J_____ one's memory.

Table 7.2 below displays the results of the statistical analyses that were run on the three post-tests.

Table 7.2 Statistical analyses of post-test scores for Study II with gain scores in bold

Construct	Method and statistical analysis	Mean gain scores (out of 7 points)	Results
ILH	- compare four tasks (A-D) with different involvement loads: low (A), medium (B-C), and high (D) - a one-way repeated measures ANOVA	A = **3.24** B = **3.42** C = **3.14** D = **2.66**	A vs. B: *p*. = .345 A vs. C: *p*. = .597 A vs. D: *p*. = .006* B vs. C: *p*. = .188 B vs. D: *p*. = .000* C vs. D: *p*. = .014*
Spacing	- compare two learning schedules: spaced learning (SL) vs. intensive learning (IL) - an independent samples *t*-test	SL = **7.72** (out of 14 points) IL = **5.85**	SL vs IL: *p*. = .063
Intentionality	- compare two learning conditions: three incidental exposures (3 INC) vs. two incidental exposures + one intentional exposure (2INC+INT) - three paired samples *t*-tests: (1) initially learned target collocations, (2) target collocations still available for learning, (3) retention of target collocations	(1) 3INC = **71.47** (in %) 2INC+INT = **90.42** --- (2) 3INC = **30.09** (in %) 2INC+INT = **76.69** --- (3) 3INC = **6.89** (out of 14 points) 2INC+INT = **9.62**	*p*. = .003* *p*. < .001* *p*. < .001*

Note: * = statistically significant difference

As for the test of the ILH, the effectiveness of the four tasks A-D was measured by calculating and comparing mean gain scores for each task. The

results were as follows out of a maximum of seven points: Task A: 3.24 points; Task B: 3.42 points; Task C: 3.14 points; Task D: 2.66 points. There were thus numerical differences between the four tasks, the most striking one being that the task with the highest IL (task D) generated the lowest mean score. The mean scores were submitted to statistical analysis using a one-way repeated measures ANOVA in *SPSS 24* to find out whether the differences were statistically significant, in other words generalizable to the population of 16-year-old L2 English learners. These results did not provide empirical support for the ILH, as the task with the highest IL (task D) was statistically significantly less effective in promoting learning gains than the other three tasks A-C. Furthermore, tasks B and C with an IL of 3 were not statistically significantly more effective than task A with IL2 as predicted by the ILH. The difference between task B and C was not statistically significant, which in itself is empirical support for the ILH, but the result is invalidated by the lack of significant difference between tasks B and C versus task A.

The investigation of spacing effects in Study II centres on the comparison of mean scores for the two learning schedules: expanding spaced versus intensive. There was a numerical difference between the scores in favour of the expanding spaced learning schedule – 7.72 points vs. 5.85 points – but the difference was not statistically significant according to the independent samples *t*-test that was run, with a *p*-value at .063. It should be noted that such a low *p*-value, approaching the default limit for statistical significance of .05, indicates that the difference may have become statistically significant with a larger sample.

Unlike the first two constructs under investigation in Study II, statistically significant differences were found in the comparison between intentional versus incidental learning of collocation on all three measures 1-3, all in favour of intentional learning. Measures 1 and 2 were in mean ratios, i.e., percentages, and measure 3 was raw scores out of 14 points. On measure 1, for target collocations initially learned after the first exposure, the mean ratios were 90.42% vs. 71.47%. On measure 2, for target collocations still available for learning after the first exposure, the mean ratios were 76.69% vs. 30.09%. On measure 3, for durable retention of target collocations at the delayed post-test, the mean scores were 9.62 points vs. 6.89 points. Paired samples *t*-tests were run on the three comparison of mean ratios and scores with the following *p*-values: for measure 1: $p. = 0.003$; for measure 2: $p. < 0.001$; for measure 3: $p. < 0.001$.

7.3 Semantic elaboration and structural elaboration in Study III

7.3.1 Participants, materials, treatment procedures

Participants in Study III (Snoder & Reynolds, 2019) were 64 L1 Swedish adolescent learners of English aged 15 from four secondary schools in a Swedish city. Twelve target collocations used in Study II were re-used in Study III, a time-saving decision as they had already been pre-tested on comparable learners. The materials consisted of two researcher-developed texts produced in collaboration with two native speakers of English. Each text contained six of the target collocations and two glossed lists of the target collocations (see Appendix P for the texts and the lists). The two modified dictoglosses comprised a specific pre-task activity, in which learners were initially given a glossed list of the target collocations to ascertain that they had made the form-meaning link. One pre-task activity induced induced semantic elaboration of target collocations in that learners wrote original sentences which included the target collocations. They subsequently shared the sentences with the other pair member and then did the standard dictogloss. This was the SEM dictogloss. The other pre-task activity induced structural elaboration of target collocations in that learners provided their own made-up phrases that rhymed with the target collocations, shared them with the other pair member and then did the standard dictogloss. This was the STRUC dictogloss. These two adaptations were based on Barcroft's (2015) operationalizations of semantic elaboration and structural elaboration of target items in his lexical input processing theory (see Barcroft, 2015, ch. 6 for details). Participants worked in pairs and performed the two modified dictogloss versions in a counterbalanced design. This entails that half of the learners did STRUC dictogloss first and then SEM dictogloss, while the order was reversed for the other half. The advantage of this counter-balanced order is that it controls for recency effects, i.e., that learners may remember target collocations that were processed more recently better.

7.3.2 Data collection and analysis

Three types of learner output data were collected: (1) audio-recordings of learners' collaborative dialogues while co-reconstructing the texts, (2) learners' hand-written co-reconstructed texts, and (3) immediate and delayed unannounced post-tests of receptive and productive target collocation knowledge. The post-tests were administered in large classrooms with only four pairs of learners, which facilitated supervision as the eight learners were spread out (unlike in Study II where they were around 30 learners in the same room). No sign of undesired participant collaboration was observed. These

data were analysed in two steps. First, notes were made when learners reproduced target collocations as intact wholes in the dialogues and in the co-written texts. The post-tests were also corrected. These numerical data were reported separately for the two modified versions of the dictogloss. Second, repeated measures were run comparisons on the means in search for significant differences between the two versions.

The numerical data for the two modified dictogloss versions were submitted to statistical analysis with six pairwise comparisons of the mean scores for the SEM and STRUC dictoglosses, respectively. The results of the six comparisons are displayed in table 7.3 below.

Table 7.3 Pairwise comparisons of the learner output in Study III

Learner output	Modified dictogloss	*M* (out of 6 points)	*SD*	*t*
1. Post-test productive	SEM	4.06	1.70	5.78***
	STRUC	2.75	1.81	*d* = .72
2. Post-test receptive	SEM	5.81	.47	5.06***
	STRUC	5.22	.97	*d* = .70
3. Delayed post-test productive	SEM	3.59	1.59	7.62***
	STRUC	2.19	1.68	*d* = .86
4. Delayed post-test receptive	SEM	5.81	.47	4.24***
	STRUC	5.47	.84	*d* = .50
5. Spoken target items	SEM	3.88	1.70	4.49***
	STRUC	2.88	1.65	*d* = .56
6. Written target items	SEM	3.75	1.71	5.15***
	STRUC	2.69	1.58	*d* = .64

As can be seen, SEM dictogloss outperformed STRUC dictogloss on all six measures of learner output. The advantages thus apply to mean post-test scores for productive and receptive knowledge on immediate and delayed post-tests. Paired samples *t*-tests were run on the mean scores, which revealed statistically significant differences as all four *p*-values were below the .05

level of significance. In fact, the three asterisks indicate that the differences were significant at the .001 level of significance. Participants in the SEM dictogloss also verbalized the target collocations as intact wholes both in speech and in writing statistically significantly more often than in STRUC dictogloss as indicated by the numerical comparisons of mean scores and *p*-values. The *d* in Table 7.3 stands for effect size, which magnifies the difference between two means. It was introduced by Cohen (1988) and is calculated by dividing the difference between the two means under investigation with the pooled standard deviation. The *d* is the basic statistic for doing meta-analyses. There are various guidelines in circulation for interpreting effect sizes in applied linguistics research. According to Loewen and Plonsky (2016, p. 57), a *d* of .40-.69 is a small-ish effect size, .70-.99 a medium-ish one, and 1.00 and above a large-ish one. The effect sizes of the differences in the six comparisons for Study III are thus small to medium-ish, the highest one being the one for the advantage of SEM dictogloss over STRUC dictogloss on the delayed productive post-test.

The results of Studies I-III are discussed in the next chapter.

8. Discussion

This chapter discusses implications of Studies I-III related to instructed L2 learning and research. Section 8.1 presents the answers to the two central questions of the thesis. Section 8.2 highlights considerations for L2 classroom research. Section 8.3 discusses pedagogical implications for L2 teaching practice. Section 8.4 addresses limitations of the studies. Section 8.5 concludes by proposing avenues for future research.

8.1 Answers to the two central questions

The first central question, investigated in Study I, was "Why is form-focused instruction more effective in facilitating instructed L2 collocation learning than meaning-focused instruction?". The answer is that form-focused instruction (FFI) – operationalized as the introduction and use of linguistic terminology (i.e., 'collocation') and the decontextualized study of target collocations – fostered metalinguistic awareness in FFI participants that enabled them to connect L2 words into collocations, words that they previously only knew as single words. This result emanated from thematic analysis of introspective participant verbal data collected using think-aloud protocols (TAPs) and a modified version of stimulated recall interviews (SRIs). The second type of data collection instrument worked best in the study, as demonstrated by the 14 participants' ability to verbalize their mental processes in the SRIs, while the TAPs were too demanding for three of the four participants.

The second central question, investigated in Studies II-III, was "What are the most effective input processing procedures for facilitating instructed L2 collocation learning?". The answer to that question is two-fold. First, Study II showed that asking learners to study target collocations intentionally, with an announced pending post-test, and decontextualized in a glossed list (L2-L1 translations) was the most effective procedure. It outperformed inducing relatively higher involvement loads on learners when processing the target collocations in various learning activities, as well as spacing re-exposures to target collocations as opposed to being re-exposing them to learners intensively. This was a surprising finding as both involvement load and spacing have documented facilitative effects on L2 vocabulary learning from previous studies. Second, Study III showed that having learners perform a modified version of a dictogloss with a pre-task activity that induced semantic elaboration of target items significantly outperformed a dictogloss that induced structural elaboration in the pre-task activity. The advantage of the

former was consistent across all six measures, notably for productive target collocation knowledge on the delayed post-test.

8.2 Considerations for L2 classroom research

Doing L2 classroom research presents many challenges as it is a complex environment in which unpredictable factors may intervene and potentially invalidate the study. Some factors are relatively speaking minor, for example participant absence, a recurring feature of classroom research (Schmitt, 2010b, p. 150) that also occurred in Studies I-II as they involved a series of treatment sessions, unlike the single treatment session in Study III. Other factors are major, for example undesirable participant collaboration during post-test administration, and measures were taken in the studies to avoid such behaviour. While most SLA experimental research takes place in laboratory settings, allowing for strict control of extraneous variables and scientifically robust findings, classroom-based research has greater face validity for L2 teachers and is therefore more likely to convince them of its practical value (R. Ellis, 2012, p. 345). It is also more ecologically valid than laboratory-based research and therefore more transferable to the classroom situation. Two implications of the studies for L2 classroom research should be addressed and considered relating to the instructor and the participants.

First, in future intervention studies it is recommendable that the researcher plays the role of the instructor, as was the case in Studies II-III. In Study I, the regular teachers of English instructed their learners based on my detailed instructions, which they managed to follow well. It was assumed that the study would be more ecologically valid if it was the regular teacher and not the researcher who instructed learners. However, on balance, it was not the optimal methodological choice, as writing such detailed and explicit instructions, and the pressure to follow them to the letter, was feasible but excessively demanding for myself and the teachers, respectively. Since learners were informed at the outset of the study that they were participating in an experiment, which in itself is a somewhat contrived situation, at least initially, it was not motivated to have the regular teachers instruct their learners. A corollary of the researcher (temporarily) replacing the regular teacher is the need to initially establish a good rapport with the learners.

Second, it is important to problematize the performance of the participants in an intervention study, in the case of Studies I-III: adolescent learners. In the vast majority of instructed L2 vocabulary research, participants are supposedly motivated adult learners taking a university course taught by one of the study authors. The co-author/teacher therefore knows the learners and can make an assessment if they are appropriate for the study: if they will comply with instructions and perform at the top of their ability, a requirement for the validity and reliability of study outcomes. In the context of L2 research

with adolescent learners, the situation is different as the researcher does not know the participants beforehand, except for the case of action research. The participants volunteer to participate, having received adequate information about the purpose and procedures of the study, but may lack the incentive to do their best during the treatment phase and at the post-test(s). What complicate matters is that adolescent instructed learners in Sweden are normally constantly assessed by their regular teachers, but their performance in the study cannot be assessed as it is voluntary. During Studies I-III, no indication was observed of participants either failing to complete learning activities during the treatment phase, or not performing at their maximum level at the post-tests. In future intervention studies I will still be more explicit at the outset of the study that the learners are participating in an experiment from which they are intended to learn more English provided that they do their best, and that the scientific value of the study is contingent upon it.

8.3 Implications for L2 teaching practice

The following pedagogical implications apply to L2 English teaching and for learners at the post-beginner level. Studies I-III targeted L2 English and the outcomes are therefore not automatically transferable to other L2s though they may still be relevant in certain contexts. The outcomes are not relevant for learners of English at the beginner level because the classroom activities and learning materials used in the studies – texts and exercises – are deemed appropriate for an intermediate proficiency level and beyond. For other L2s, for example the instructed learning of Spanish or French in Sweden, learners rarely reach the same high proficiency levels as in L2 English in Sweden.

First, a general implication of the literature review conducted for the thesis is that teachers should devote a considerable amount of classroom time and effort to sensitizing learners to the fact that words in the target language (TL) frequently combine with certain other words to form recurring word combinations – FSs – and that productive knowledge of such expressions is an essential component of advanced language proficiency. In other words, it is important to move learners' focus away from single words over to FSs. An illustrative example and potentially effective procedure to convey this message to learners is to characterize single words in the TL as human beings in that they also are social, in need of company; just like human beings, words have preferred company and friends: collocations and other types of FSs. The studies conducted for the thesis demonstrated three effective instructional practices for facilitating learning of English verb-noun collocations and they will be elaborated on further below. But the first priority is this change of mindset of the teacher to do what is possible to instil that notion in learners for the benefit of their L2 development. A requirement for a shift in L2 instruction away from a focus on single words is that pre-service teachers are

made aware of the prevalence of formulaic language and that teacher educators provide them with effective instructional procedures for improving learners' knowledge of collocations and other types of formulaic language, some of which have been identified in Studies I-III.

Second, one implication of Studies I-III is relevant for the country under study, Sweden, where the syllabi and the mandated national tests for the English subject in school are strongly influenced by a communicative approach to L2 teaching, that downplays explicit vocabulary teaching for the benefit of production- and meaning-oriented lesson activities. Such activities do play an important role in L2 teaching, for example in boosting motivation to learn the TL, but they should be systematically complemented with explicit form-focused instruction targeting FSs. This recommendation is illustrated by the following point made by Lewis (2000, p. 159): "I must point out that you cannot acquire a language by producing it". Moreover, when explicit vocabulary teaching and learning does occur in Swedish classrooms, it reportedly does so in the form of the 'word-list model' that emphasizes single words. The results of Study II showed that intentional learning of collocations in a decontextualized glossed list for an announced immediate test was highly effective, outperforming different types of written exercises or a spaced learning schedule. It is therefore recommended that L2 English teachers adopt the word-list model to focus on FSs, either by setting learners a limited number of items for homework and test them a few days later, or by following the procedures adapted in Study II in which the study phase and the test phase occur on the same lesson.

Third, formulaicity is a diverse linguistic phenomenon with a range of categories of FSs: collocations, idioms, lexical bundles, etc. Defining each category is essentially a technical issue and researchers do not always agree. For the identification and selection of FSs to target in the classroom, it is therefore recommended that teachers consult specialized dictionaries or other learning resources such as activity books that target specific categories of FSs. Such learning resources are offered by most major publishing houses and should be a standard equipment in all L2 English classrooms, whether in paper or electronic format. Instant access to these resources means that teachers and learners can spend valuable classroom time on elaborate processing of target FSs rather than losing time on potentially confusing technical definitions. Having said that, for learners at the high intermediate and advanced proficiency levels, it may still be relevant and potentially educational to set them the task of giving short presentations to classmates on particular categories of FSs – based on the study of appropriate learning resources – and as a follow-up design and implement short 'mini-lessons' where they take the role of the teacher and attempt to teach classmates target FSs by whichever means possible. It is necessary to introduce some terminology to allow more advanced learners to reach a metalinguistic awareness as did the FFI participant in Study I. However, the terminology in formulaic language

research is complex and sometimes incompatible. Nevertheless, the two terms 'node' and 'collocate' are required for identifying, selecting and discussing verb-noun, adjective-noun and adverb-adjective collocations and it is therefore recommended that L2 teachers introduce and use these terms consistently in the classroom and invite their learners to do the same.

Fourth, out of the many categories of FSs, lexical collocations should be prioritized in the L2 English classroom as they are made up of content words and therefore are crucial for conveying meaning. They are also frequently used by native speakers. The following three types of lexical collocations merit extra classroom time and attention: verb-noun ('take a test'), adjective-noun ('heavy rain') and adverb-adjective collocations ('increasingly difficult'). As demonstrated in the review in section 4.4.2 above, these three types have also been frequently targeted in instructed L2 collocation learning research, a clear indication of their importance among L2 vocabulary researchers and applied linguists. Phrasal verbs ('catch up') and idioms ('pay the price') are two other types of FSs that deserve L2 English classroom attention and that may be incorporated in the effective teaching procedures used in Studies I-III. Corpus research by Gardner and Davies (2007) found that phrasal verbs such as *look up* – i.e., two-to-three word FSs made up of a verb and one or two prepositions or participles – are frequent in English. A learner will on average encounter two phrasal verbs per written page, assuming an average of 300 words per page (p. 347). The same study also found that phrasal verbs are highly polysemous, the most frequent phrasal verbs averaging 5.6 meaning senses, which makes them difficult for learners. To remedy this problem, Garnier and Schmitt (2015) compiled a list of the 150 most frequent phrasal verbs and their core meanings: the PHaVE List. This list is a much-needed and useful resource for L2 English teachers and learners. As for idioms, Simpson and Mendis (2003) make the case for the analysis of discourse functions that idioms serve and the use of corpus data to promote learning, particularly in cases where target items are presented in larger contexts. Furthermore, a range of intervention studies by Frank Boers and his colleagues have investigated how semantic and structural elaboration of idioms may facilitate learning for L2 English learners. The reader is referred to Boers and Lindstromberg (2009) for a comprehensive literature review and pedagogical implications.

Fifth, the aim of the syllabi for English in compulsory and upper secondary school (Skolverket, 2011b; Skolverket, 2011a) highlights that the teaching of English should help students develop knowledge of how a language is learned outside teaching contexts. Classroom time is clearly not sufficient to cover more than a limited number of all collocations and other FSs. It is therefore recommended that teachers instil in learners, not only the pervasiveness of formulaicity in language, but also the notion that learners themselves should take the responsibility for accumulating a rich repertoire of FSs outside the classroom walls and in the future as language learners. A common recommendation is the use of personal vocabulary notebooks (Lewis, 2000;

Schmitt, 2008; Walters & Bozkurt, 2009) and they can be effective for the purpose intended if learners are encouraged to use it alongside a dictionary or other learning resource targeting FSs. It is also recommended that teachers encourage learners to use specialized learning resources for L2 writing as it induces a focus on form (for definition, see Long, 2015, p. 27). This brief breakdown in communication is particularly conducive to L2 learning in cases when the learner, for example, hesitates between which verb to use together with the noun *speech* to convey the idea that he/she will talk in front of a group of people as at a wedding; it is either *give* or *make* according to a look-up in the OCDE (McIntosh, Poole, & Francis, 2009, p. 790).

8.4 Limitations of Studies I-III

Three limitations of Studies I-III should be recognized and addressed. First, there is a relative lack of control for the 62 target collocations implemented in the studies. Section 6.5 above spells out the criteria that were used for including the target collocations in the studies. However, they vary in three ways that may have had an impact on their learnability: (1) in frequency, (2) in word length, and (3) in learning difficulty. For example, a BNC search yielded nine occurrences of the target collocation *extend hospitality*, while *carry a risk* yielded 96 occurrences. These two target collocations also differ in terms of word length, where the former is made up of 17 letters, 70% longer than the latter at 10 letters. In addition, the target collocations were not counter-balanced in Study III. This means that the 64 participants in the study processed *extend hospitality* and five other target collocations only in the structural elaboration condition, and that they processed *carry a risk* and the remaining five target collocations only in the semantic elaboration condition. The target collocations could have been counter-balanced by changing the two pre-task activities around for 16 of the 32 pairs of learners. Alternatively, an item analysis could have been run on the 12 target collocations used in the study, which may have showed that certain of them were more difficult to learn than others and that this impacted on the effectiveness of the modified dictoglosses. As for the different frequencies of the target collocations, it may be argued that target items in an instructed L2 vocabulary inevitably vary and that frequency, important as it is, is not the only factor impacting on learnability (cf. section 3.2 above). Regarding word length, the evidence on whether it has a considerable impact on learning burden is mixed, as reported in section 3.2 above. With regards to counter-balancing the target collocations, Study III counterbalanced the treatment conditions for the immediate post-test to mitigate recency effects and used a within-subjects design as described in 6.3 above; thus two design measures taken to control for extraneous variables. Implementing a third design measure – counter-balancing the target

collocations – was impractical for logistical reasons but is something that I will include in future studies.

Second, the post-test format used in Studies I-III, tapping controlled productive target collocation knowledge in the 'active recall' format, is not sensitive to tap syntactic, pragmatic and sociolinguistic aspects of the target collocations. It is therefore not possible to claim that participants are able to use learned target collocations correctly and appropriately, only that they are able to translate them into English from Swedish in a forced-answer test format. R. Ellis (2012), in reference to Chaudron's (1988) critical review of L2 classroom research, discusses this issue in terms of an over-reliance of classroom studies on "discrete-point testing of learning outcomes which may not be indicative of acquisition if this is conceptualized as the development of implicit knowledge of the L2" (2012, p. 339). Though progress has been made since Chaudron's review was published, R. Ellis goes on to argue that the validity and reliability of the instruments used to measure L2 progess in classroom studies still are questionable due to a lack of theoretical underpinnings of learning. The solution to this problem is to use psycholinguistic measures that tap automatised knowledge of L2 features (R. Ellis, 2012, p. 340). While desirable, they require laboratory equipment which was not a realistic option for logistical reasons for the three studies of the thesis.

Third, there are two methodological limitations of Study I using think-aloud protocols (TAPs) and stimulated recall interviews (SRIs) to collect data. Firstly, ten participants took part in the SRIs and provided rich verbal data for analysis. However, though the two identified themes were prevalent in the TAP data, they emanate from only four participants and another four-six participants would have provided a more solid empirical basis. Secondly, no measure of interrater-reliabilty was used in Study I. Johansson's (2015) comparative study of Swedish and French upper secondary school learners' reception of a narrative text used thematic analysis to analyse participants' written comments. She included a trained co-rater who analysed 10% of the data and found 100% (sic) agreement on the codings (2015, p. 93). The influential Braun and Clarke (2006) paper that outlines thematic analysis does not mention such measures in the 15-point checklist of criteria for good thematic analysis (p. 96) and their applicability to qualitative research is not clear (see Armstrong, Gosling, Weinman, & Marteau, 1997 for a discussion and a relevant study). I will still implement such a reliability measure in future qualitative studies.

8.5 Conclusion and avenues for future research

By way of conclusion, Studies I-III conducted for the thesis demonstrated that for instructed L2 collocation (1) form-focused instruction is beneficial in

fostering learners' metalinguistic awareness, (2) intentional learning with announced post-test was the only effective instructional procedure, and (3) a dictogloss with pre-task semantic elaboration was highly effective. The studies were the first instructed L2 vocabulary studies in Sweden, at least to my knowledge, and it is hoped that more related research will follow. How may these studies be expanded on in further research? The obvious expansion are replications of the studies to establish the generalizability and reliability of the results in other contexts and with other teachers and participants. This is one of the take-home messages of Lindstromberg and Eyckmans' (2017) conceptual review article introduced in section 6.3 above. Coxhead (2015) draws on intervention studies on instructed L2 learning of formulaic sequences by Jones and Haywood (2004) and Alali and Schmitt (2012) to suggest a range of options for exact and conceptual replications of the cited studies, including other categories of participants with different L1s.

Another avenue for future research is to investigate the use of corpus tools to faciliate learning. Timmis (2015) focuses on the contribution of corpus linguistics in English language teaching and it is a valuable resource to this end in providing hands-on examples and procedures on how collocations and other types of formulaic language may be extracted from corpora and presented to learners. There are still, however, challenges involved in computer-assisted language learning (CALL), which are of both practical/technical and educational nature. Equipment is expensive and requires maintenance and specialist training for smooth operation. The optimal use of computers for educational purposes in classrooms is not clear, but given that today virtually all adolescents and adults have mobile telephones with access to the Internet, an avenue for future studies is to investigate how mobile phones may be used to faciliate learning. One example is Lu (2008), who found positive effects on L2 vocabulary learning in the condition where participants received a text message by the teacher with target items, compared to a condition with traditional paper-based presentation of target items.

The potential for collaborative and interactive tasks for facilitating the learning of collocations and other types of formulaic language is far more exhausted. The dictogloss task used in Study III is practical to implement and may be expanded in several ways to this end, for example by focusing on the analysis stage after the text has been constructed: what attention drawing techniques may be used for highlighting target items when presenting learners' reconstructed texts? Another unchartered territory is whether it is possible and effective to draw learners' attention to target items acoustically when the teacher reads the text aloud, for example by pausing or emphasizing them in some manner which would constitue input enhancement with documented facilitative learning effects (cf. Barcroft, 2015, ch. 13).

9. Sammanfattning på svenska

I detta kapitel ges en sammanfattning på svenska av avhandlingens teoretiska och empiriskt grundade utgångspunkter samt de tre studiernas design, metod och resultat.

9.1 Bakgrund

Ord är fundamentala byggstenar i ett språk som bärare av betydelse. Kunskap om vad enstaka ord betyder och hur de används isolerat räcker emellertid inte. Lingvistisk teori och forskning har nämligen argumenterat och visat att en central komponent i en förstaspråkstalares (L1) språkliga kompetens bygger på ett stort förråd av mer eller mindre fasta ordkombinationer som på svenska kallas formelstrukturer. En övervägande del av denna teori och forskning är inriktad på engelska som första eller andra språk (L2) (t.ex. Pawley & Syder, 1983; Sinclair, 1991; Wray, 2002, 2008). Exempel på kategorier av formelstrukturer på engelska är *idioms* (idiomatiska, bildliga, uttryck såsom 'beat around the bush') och *collocations* (kollokationer såsom 'pass a test'). Den aktuella avhandlingen handlar om den senare kategorin.

Formelstrukturer antas fylla flera viktiga funktioner för L1-talare. De sägs reducera den kognitiva belastningen i realtidskommunikation genom att användaren får färdiga, prefabricerade, sjok av ord för att snabbt och effektivt benämna något. De är också viktiga i sociala sammanhang som signaler för grupptillhörighet inom exempelvis yrkeslivet (Wray, 2002). Av detta följer att formelstrukturer är viktiga även för L2-inlärare. Formelstrukturer är emellertid generellt problematiska för L2-inlärare att använda, oavsett vilken språklig nivå de befinner sig på. Detta har framkommit i analyser av inlärarkorpusar, dvs. datoriserade textsamlingar med texter som L2-inlärare har skrivit (t.ex. Nesselhauf, 2005; Laufer & Waldman, 2011). Det finns flera teoretiska förklaringar varför L2-inlärare ligger efter L1-talare i detta avseende. En hypotes är att L2-inlärare i regel är läskunniga när de börjar lära sig målspråket och därför tenderar att bryta ner det i enstaka ord istället för holistiskt som L1-talare gör (Wray, 2002). En annan hypotes är frekvensinriktad och menar att L2-inlärare möter formelstrukturer alltför sällan i språkligt inflöde (*input*) och med alltför långa intervaller mellan möten för att kunna lära sig dem (N. Ellis, 2003; Long, 2015).

Mot bakgrund av detta har klassrumsbaserad L2-inlärningsforskning sedan början av 2000-talet undersökt hur undervisning kan främja inlärningen av formelstrukturer, framför allt med fokus på kollokationer. Fyra översikter av effektstudier (Boers & Lindstromberg, 2012; Meunier, 2012; Boers, Lindstromberg, & Eyckmans, 2014; Szudarski, 2017) har visat att det till dags

dato saknas entydiga rekommendationer för hur undervisning mest effektivt kan bidra till att öka inlärarnas förråd av formelstrukturer.

En avgörande faktor för alla språkinlärning är att inlärare möter och bearbetar input: utan inputbearbetning sker ingen språkinlärning (Barcroft, 2015, p. 1). Att undersöka effekterna av att manipulera den input inlärarna bearbetar förefaller därmed vara en framkomlig väg. Vad gäller inlärning av kollokationer har flera klassrumsstudier undersökt om och hur *input enhancement* kan påverka inlärningen. *Input flooding* är en typ av sådan visuell förstärkning av målkollokationer, dvs. de kollokationer som undersöks i studien. Input flooding innebär att forskaren har manipulerat materialet (texter och övningar) som deltagarna i studien bearbetar genom att lägga till extra förekomster av målkollokationer. Denna intervention har dock gett inkonsekventa resultat i fyra studier: två studier (Webb, Chang, & Newton, 2013; Peters, 2014) fann positiva inlärningseffekter av att öka antalet förekomster, medan två senare (Szudarski & Carter, 2016; Pellicer-Sanchéz, 2017) inte gjorde det. Två andra sätt att bearbeta input i klassrummet är genom forminriktad eller betydelse-inriktad undervisning. Den förra fokuserar på språkets form (t.ex. ord) och den senare på att inlärarna ska kommunicera budskap, vilket innebär att formella aspekter av språket är starkt nedtonade. Den förra är mer effektiv för att ordinlärning än den senare men än så länge vet man inte varför.

Syftet med den aktuella avhandlingen är att undersöka hur L2-undervisning kan främja inlärningen av kollokationer med fokus på hur inlärarna bearbetar input i en klassrumsmiljö. 62 engelska verb-substantivkollokationer, t.ex. ’carry a risk’, förekom i det skapade undervisningsmaterial som användes i avhandlingens tre interventionsstudier: Studier I-III. Kollokationer definierades utifrån en syntaktisk (verb + substantiv) och statistik synvinkel (dvs. stark ömsesidig attraktion orden emellan, etablerat genom korpuslingvistiska metoder). Verb-substantivkollokationer valdes som målkollokationer eftersom det är den vanligaste typen av engelska kollokationer, den som innehåller mest central information i kommunikation och samtidigt den som är svårast att använda korrekt för L2-inlärare. Sju konstrukt med fokus på inputbearbetning användes som teoretiska utgångspunkter för studierna. Konstrukt definieras i avhandlingen som ”[a]n underlying concept that researchers attempt to measure and include as a variable in a study” (Loewen & Plonsky, 2016, p. 31). Sektionerna 9.2-4 nedan beskriver hur varje delstudie undersökte konstrukten och vilka resultaten var: Studie I undersökte konstrukten forminriktad och betydelseinriktad undervisning (FFI, MFI); Studie II undersökte engagemangsgrad (*involvement load*, IL), spridningseffekter (*spacing*), och intentionalitet (*intentionality*); Studie III undersökte semantisk elaborering och strukturell elaborering (*semantic and structural elaboration*).

9.2 Studie I

Studie I (Snoder, 2016) undersökte med kvalitativ ansats om två verktyg för insamling av verbal introspektionsdata – *think-aloud protocols* (TAPs) och *stimulated recall interviews* (SRIs) – kan redogöra för inlärning av kollaktioner. Två klasser om totalt 42 elever deltog i studien. Eleverna förtestades på de 35 målkollokationerna och bearbetade sedan tre autentiska måltexter. På tre punkter var bearbetningen i klasserna jämförbar: läraren läste texterna högt för eleverna, eleverna exponerades för målkollokationer fem gånger och lektionstiden var densamma. Skillnaden var att klass 1 bearbetade måltexterna forminriktat (FFI) medan klass 2 fokuserade på betydelse (MFI). Det innebar t. ex. att i FFI-klassen använde läraren och eleverna termen ”collocations” för att beskriva målkollokationerna och att eleverna fyllde i dem i lucktexter. MFI-klassen använde inte termen utan diskuterade t.ex. innehållsfrågor om måltexterna. Efter lektionerna genomfördes eftertester och den verbala datan samlades in. Fokus var på de målkollokationer eleverna lärt sig genom bearbetningen, vilket fastställdes genom att jämföra förtestsvar med eftertestsvar. Två elever från varje klass genomförde ljudinspelade TAPs när de gjorde eftertestet enskilt medan de övriga eleverna gjorde eftertesten i sina klassrum. Fem andra elever från varje klass valdes sedan slumpvis ut för att genomföra SRIs senare samma dag. Den stimulus som användes i SRIs var elevernas egna handskrivna eftertestsvar av inlärda målkollokationer. De tio SRI-eleverna ombads i ett individanpassat formulär och en uppföljningsintervju redogöra för hur de lärt sig målkollokationerna ifråga. Datan transkriberades och bearbetades med tematisk analys.

Resultaten visade att TAPs var alltför krävande för tre av eleverna, oavsett hur de bearbetat måltexterna. Trots initial övning i tekniken och instruktionen att börja varje verbalisering med ”Jag tänker att…” förmådde eleverna inte sätta ord på hur de lärt sig målkollokationera. En elev i FFI-klassen avvek däremot från det mönstret då han sju gånger använde termen ”collocations” och vid 18 tillfällen kommenterade på något sätt att verbet och substantivet var ”sammankopplade”. Vad gäller SRIs visade analysen att de fem eleverna i MFI-klassen lämnade ospecifika redogörelser för hur de lärt sig målkollokationerna, såsom att det var ”uppenbart att det ordet skulle vara där”. För FFI-eleverna framträdde ett annat mönster: alla fem rapporterade att de som en följd av bearbetningssättet kunde koppla ihop verb och substantiv de redan kunde separat, illustrerat av följande utsago från en FFI-elev: ”Jag visste både vad verbet och substantivet var men under inlärning fick jag repetera deras koppling vilket stärkte min möjlighet att använda dem som kollikation (sic)”. En utsago från en annan FFI-elev visar hur hen hjälptes i att veta vilket verb som skulle kombineras med det givna substantivet, den största svårigheten med använda verb-substantivkollokationer: ”Den här visste jag i princip fast jag hade svårt med verbet och övningarna vi gjorde förbättrade mina kunskaper om verb + nouns”.

9.3 Studie II

Studie II (Snoder, 2017) var en effektstudie av hur tre konstrukt relaterade till undervisning av L2-ordförråd påverkar inlärningen av 28 kollokationer: *involvement load*, *spacing*, och *intentionality*. Dessa konstrukt har använts i andra ordinlärningsstudier men i princip endast för enstaka ord. Involvement load (IL; Laufer & Hulstijn, 2001) förutspår att högre IL för en viss övning i vilken nya ord bearbetas är mer effektiv för inlärning än lägre IL. Spacing förutspår att det är mer effektikt för ordinlärning att sprida ut exponseringstillfällen för nya ord än att klumpa ihop dem. Intentionality förutspår att avsiktlig (*intentional*) inlärning genom att ett eftertest explicit annonseras är mer effektivt än oavsiktlig (*incidental*) inlärning där eleverna bearbetar nya ord utan vetskap om att ett eftertest följer. 59 elever från två klasser deltog i studien. Målkollokationerna hade testats ut på 44 andra jämförbara elever. Eleverna i studien bearbetade målkollokationerna vid tre lektionstillfällen genom att göra olika uppgifter som operationaliserade de tre konstrukten. Varje tillfälle räknades som en exponering för mål-kollokationerna. Vid tillfälle 1 testades *involvement load* genom att eleverna gjorde fyra olika typer av skriftliga uppgifter som skiljdes åt på denna punkt. Ett oannonserat eftertest genomfördes; oavsiktlig inlärning testades alltså. Vid tillfälle 2 bearbetade eleverna målkollokationerna en andra gång, även nu oavsiktligt, genom att läsa måltexter och besvara innehållsfrågor på dem. Inget eftertest genomfördes. Vid tillfälle 3 bearbetade eleverna målkollokationerna en tredje gång: hälften oavsiktligt genom att läsa måltexter och föreslå nya rubriker, andra hälften avsiktligt genom att studera dem i en lista för ett omedelbart annonserat eftertest. Alla 28 målkollokationer ingick i eftertestet. Ett oannonserat fördröjt eftertest genomfördes tre veckor senare.

De tre konstrukten testades med inlärningsresultaten på de tre olika eftertesten. *Involvement load* testades genom eftertestet vid tillfälle 1. *Spacing* testades i det fördröjda eftertestet i form av att klass 1 hade sina tre exponeringar utspridda över en treveckorsperiod medan klass 2 hade de ihopklumpade. *Intentionality* testades på tre sätt[7] relaterade till de tre exponeringarna där avsiktlig och oavsiktlig inlärning jämfördes. Statistiska analsyser av inlärningsresultaten på eftertesten visade att empiriskt stöd för *involvement load* inte fanns eftersom den uppgift som borde varit mest effektiv visade sig var minst effektiv, att empiriskt stöd inte fanns för *spacing* eftersom det inte var någon statistiskt signifikant skillnad i inlärningsresultaten mellan de utspridda och sammanklumpade exponseringarna och att avsiktlig inlärning var mer effektivt än oavsiktlig inlärning för de tre sätten som undersöktes.

[7] De tre sätten *intentionality* testades var: för målkollokationer som eleverna hade lärt sig efter tillfälle 1, de målkollokationer som de inte hade lärt sig efter tillfälle 1 och för varaktig inlärning av målkollokationerna (dvs. det fördröjda eftertestet).

9.4 Studie III

Studie III (Snoder & Reynolds, 2019) undersökte om den kollaborativa textrekonstruktionsuppgiften *dictogloss* (Wajnryb, 1990) kan modifieras för att främja inlärning av tolv målkollokationer. Dictogloss är ett slags diktamen som innehåller flera moment som skulle kunna främja språkinlärning, främst att inlärarna samarbetar för att skriva ihop en gemensamma version av ursprungstexten (Swain & Lapkin, 1998, p. 321) och att de möter samma språkliga former (i detta fall kollokationer) flera gånger under en kort period. Två nya versioner av dictogloss skapades, baserade på två teorier om inputbearbetning: *involvement load* (se sektion 9.3) och Barcrofts (2015) lexical input processing theory (Lex-IP). Dessa teorier gör motstridiga förutsägelser om vad som är effektivt för ordinlärning och jämfördes i studien med avsikt att prajma eleverna att bearbeta målkollokationerna som intakta helheter: SEM dictogloss och STRUC dictogloss. I SEM dictogloss föregicks originalproceduren av att eleverna bearbetade sex av målkollokationerna med semantisk elaborering i form av att de skrev nya meningar med dem i enlighet med involvement load. I STRUC dictogloss innebar det att de bearbetade de sex andra målkollokationerna med strukturell elaborering i form av att de hittade på engelska fraser som rimmade med dem i linje med Lex-IP.

64 elever deltog i studien och alla gjorde de två versionerna i par. Sex typer av numerär data samlades in. Fyra oannonserade eftertest genomfördes: eleverna gjorde omedelbara och fördröjda eftertest av produktiv och receptiv kunskap om målkollokationerna. De två andra datatyperna fokuserade på huruvida eleverna verbaliserade målkollokationerna som intakta helheter under textrekonstruktionsfasen: den muntliga (ljudinspelningar av dialogerna) och skriftliga (de rekonstruerade texterna) datan analyserades med den aspekten i fokus. Statistiska analyser av den insamlade datan visade att SEM dictogloss var mer effektiv än STRUC dictogloss för alla sex jämförelser. Särskilt anmärksningsvärt var det faktum att det fördröjda eftertestet av produktiv kunskap om målkollokationerna, som ägde rum tre veckor efter att klassrumsinterventionen genomfördes, så var effektstorleken skattad som medel på väg mot stor enligt Cohens (1988) riktlinjer. Det innebär att SEM dictogloss inte bara var statistiskt signifikant mer effektiv än STRUC dictogloss utan att skillnaden också hade medelstor till stor praktisk betydelse.

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Appendices

Appendix A

Mutual information score and raw frequency of the 62 target collocations from BNC or the English Web 2015

*34 target collocations used in Study I**

Target collocation	*BNC/English web*	*MI score (+/-4)*	*Raw frequency*
1. take a turn	BNC	12.51	128
2. take care	BNC	9.33	2,070
3. drive a car	BNC	12.40	495
4. pass a test	BNC	12.27	255
5. deliver a letter	BNC	14.11	58
6. teach a lesson	BNC	13.61	48
7. take a ride	BNC	9.33	41
8. make a sign	BNC	9.04	89
9. exceed a limit	BNC	15.17	103
10. turn a corner	BNC	11.05	224
11. alert the police	BNC	15.73	37
12. suffer an injury	BNC	13.20	387
13. stand trial	BNC	11.75	126
14. face a task	BNC	11.29	85
15. apply for a (driver) license	BNC	14.29	41
16. apply for a (learner) permit	BNC	14.19	8
17. save time	BNC	13.18	275
18. complete a form	BNC	12.49	269
19. take a course	BNC	9.31	436
20. take a test	BNC	9.32	159
21. suspend a (driver) license	BNC	14.46	18
22. commit a violation	BNC	14.01	13
23. revoke a (driver) license	BNC	14.46	24
24. raise the risk	BNC	12.44	9
25. dial a number* [only for dialled]	BNC	18.90	72
26. measure speed	BNC	12.64	39
27. increase the risk	BNC	11.39	398
28. reach for a phone	BNC	13.51	24
29. send a (text) message	English Web	12.08	11,102
30. receive a (text) message	English Web	11.32	5,675
31. publish result	BNC	13.14	151
32. do research	BNC	7.71	367
33. underestimate the risk	BNC	12.91	4
34. ban the use	BNC	14.32	63

* The item *try one's best* was included in Study I, but later omitted from the analysis as *best* on closer inspection is the superlative form of an adjective and not a noun, though at first sight it behaved and therefore appeared as one in that it was immediately preceded by a possessive pronoun

28 target collocations used in Study II-III: 35-62 in Study II and the ones ticked in the last column were used in Study III as well

Target collocation	*BNC/English web*	*MI score*	*Raw frequency*	*Used in Study III as well*
35. approach problem	BNC	12.21	73	X
36. attach importance	BNC	14.43	218	X
37. bear child*	BNC	12.57	433	
38. carry risk	BNC	11.85	96	X
39. contract disease	BNC	12.69	47	
40. dent confidence	BNC	18.20	11	
41. entertain the hope	BNC	16.24	22	
42. extend hospitality	BNC	13.53	9	X
43. foot bill	BNC	12.43	103	X
44. flag taxi	English Web	14.85	65	
45. harbour suspicions	BNC	15.91	6	
46. jog memory	BNC	17.58	45	X
47. kick habit	BNC	14.39	44	X
48. kindle interest	BNC	19.77	7	
49. level accusations	BNC	11.52	15	
50. pitch tent	BNC	14.89	41	X
51. reap benefits	BNC	17.83	123	X
52. relax restrictions	BNC	14.58	18	
53. rivet attention	BNC	18.64	20	X
54. stir imagination	BNC	15.32	5	
55. strike balance	BNC	13.22	136	
56. shed clothes	BNC	15.40	8	
57. spell trouble	BNC	14.87	14	
58. sack employee	BNC	15.50	10	
59. shelve plan	BNC	18.78	19	
60. score success	BNC	13.34	41	X
61. slash costs	BNC	17.10	14	X
62. thumb ride	English Web	16.74	67	

Appendix B

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Namn: _____

Vilket engelskt verb ska det vara?

I det här testet ska du skriva i det engelska verb som saknas för att översätta ett uttryck från svenska till engelska. Du får den första bokstaven på verbet som jag söker och i vissa fall de två första bokstäverna – se exemplen i rutan. Försök att skriva något på alla 46 uppgifter, även om du är osäker (vissa är svårare än andra). Du ska bara skriva ett verb på engelska. Lycka till!

Ex. 1: Göra ett val	__M_____a choice
Ex. 2: Föra ett samtal	__Ho_____ a conversation

1. Använda tiden	__U_____ the time
2. Arbeta tillsammans	__W_____ together
3. Avsluta en affär	__C_____ a deal
4. Be en bön	__S_____ a prayer
5. Bedriva forskning	__C_____ research
6. Bekämpa ett problem	__C_____ a problem
7. Betala räkningen	__F_____ the bill
8. Bli av med beroendet	__K_____ the habit
9. Borsta tänderna	__C_____ the teeth
10. Fatta eld	__C_____ fire
11. Fylla i ett formulär	__C_____ a form
12. Få lift	__Th_____ a ride
13. Ge en komplimang	__P_____ a compliment
14. Genomföra en analys	__C_____ an analysis
15. Gå och öppna dörren	__A_____ the door
16. Göra ett fel	__M_____ a mistake
17. Göra ett prov	__S_____ a test
18. Ha en fest	__T_____ a party

Var god fortsätt på nästa sida!

19. Innebära en risk	__Ca_____	a risk
20. Komma överens	__R_____	an agreement
21. Lägga skulden på	__Pl_____	the blame on
22. Lämna företräde	__G_____	way
23. Löpa en risk	__R_____	a risk
24. Motionera	__T_____	exercise
25. Närvara vid ett möte	__A_____	a meeting
26. Odla skägg	__G_____	a beard
27. Rasta hunden	__W_____	the dog
28. Singla slant	__T_____	a coin
29. Skaffa vänner	__M_____	friends
30. Stå inför en kris	__F_____	a crisis
31. Ställa en fråga	__Po_____	a question
32. Slå ett rekord	__B_____	a record
33. Skära ner kostnader	__S_____	costs
34. Sätta upp ett tält	__P_____	a tent
35. Ta itu med ett problem	__A_____	a problem
36. Ta hand om	__T_____	care of
37. Ta upp en fråga	__R_____	an issue
38. Träda i kraft	__T_____	effect
39. Tränga sig före i kön	__J_____	the queue
40. Tycka synd om	__F_____	sorry for
41. Utgöra ett problem	__Pr_____	a problem
42. Utgöra ett hot	__P_____	a threat
43. Visa respekt	__P_____	respect
44. Väcka intresse	__P_____	interest
45. Väcka känslor	__S_____	emotions
46. Väcka åtal	__P_____	charges

Tack för att du deltog!

Appendix C

Pre-test familiarity of the 28 target collocations used in Studies II-III: raw frequencies and percentages

Target collocations	Pre-test familiarity (raw frequencies and percentages)
C1. approach problem	4/44 (9.1%)
2. attach importance	0/44 (0%)
3. bear child	3/44 (6.8%)
4. carry risk	0/44 (0%)
5. contract disease	1/44 (2.2%)
6. dent confidence	1/44 (2.2%)
7. entertain hope	0/44 (0%)
8. extend hospitality	0/44 (0%)
9. foot bill	0/44 (0%)
10. flag taxi	0/44 (0%)
11. harbour suspicions	1/44 (2.2%)
12. jog memory	2/44 (4.5%)
13. kick habit	3/44 (6.8%)
14. kindle interest	0/44 (0%)
15. level accusations	0/44 (0%)
16. pitch tent	3/44 (6.8%)
17. relax restrictions	0/44 (0%)
18. reap benefits	2/44 (4.5%)
19. rivet attention	0/44 (0%)
20. stir imagination	0/44 (0%)
21. strike balance	1/44 (2.2%)
22. shed clothes	3/44 (6.8%)
23. spell trouble	0/44 (0%)
24. sack employee	2/44 (4.5%)
25. shelve plan	1/44 (2.2%)
26. score success	1/44 (2.2%)
27. slash costs	0/44 (0%)
28. thumb ride	1/44 (2.2%)

Appendix D

Medgivandeblankett om medverkan i forskningsprojekt

Till elever i årskurs 9 på [skolans namn],

Jag heter Per Snoder och är doktorand på Institutionen för språkdidaktik vid Stockholms universitet. Under januari-februari 2015 kommer jag tillsammans med er engelsklärare att genomföra en undersökning i ert klassrum för att samla in information till mitt forskningsprojekt. Syftet med undersökningen är att beskriva hur undervisning påverkar elevers inlärning av engelska ord.

Enligt god forskningsetik[1] ska de som deltar i undersökningar ge sitt skriftliga medgivande till det. Vårdnadshavare ska också informeras. Deltagandet i undersökningen är frivilligt och ni elever har rätt att avbryta er medverkan utan motivering (dock fortsätter ni att följa undervisningen). I min undersökning kommer elever och lärare att spelas in med mikrofon, både under lektionstid och efter i samband med individuella elevintervjuer. Dessa ljudupptagningar kommer bara att användas för forskningsändamål och deltagarna får påhittade namn. Alla insamlade uppgifter kommer att förvaras på en säker plats som bara jag har tillgång till. Slutprodukten är en skriftlig avhandling som kommer att publiceras om ca fyra år. Stockholms universitet och jag som enskild forskare är ansvariga för materialet.

Vänligen fyll i formuläret nedan:

Jag förstår förutsättningarna för min medverkan i forskningsstudien och jag ger mitt medgivande till att delta:

1. Elevens namn och namnförtydligande:

_____

2. Ort och datum:

_____

Jag ger INTE mitt medgivande till att delta i undersökningen:

1. Elevens namn och namnförtydligande:

_____

2. Ort och datum:

_____

Avs: Stockholms universitet (forskningshuvudman), Inst. f. språkdidaktik, 106 91 Sthlm
Huvudansvarig forskare: Per Snoder: per.snoder@isd.su.se. Handledare: Camilla Bardel: camilla.bardel@isd.su.se och Tore Nilsson: tore.nilsson@isd.su.se

Med vänlig hälsning

[1] Vetenskapsrådet. (2002). *Forskningsetiska principer inom humanistisk-samhällsvetenskaplig forskning*. Hämtad från: www.codex.vr.se/texts/HSFR.pdf *(2014-12-11)*

Appendix E

Namn: _____

Test av ordkombinationer på engelska

I det här testet ska du försöka översätta vissa svenska uttryck till engelska. Alla uttrycken på engelska ska bestå av ett verb + ett substantiv (och ibland ord emellan) – se exemplen i rutan nedan! Du får hjälp med första bokstaven på verbet jag söker. Försök att skriv något på alla uttryck även om du är osäker. Lycka till!

Ex1: Ingen är perfekt, alla gör fel ibland.	Nobody is perfect, everyone _____ _____ now and then.
Ex2: Hon behöver glasögon för att kunna köra bil.	She needs glasses in order to _____ _____.

1. Det här kommer att lösa problemet.	This will _____ _____.
2. På KI bedriver man forskning (de forskar) om cancer.	At KI, they _____ _____ on cancer.
3. Vi uppnådde vårt mål.	We _____ _____.
4. Att röka ökar risken för cancer.	Smoking _____ _____ of cancer.
5. Hon visade oss hur man viker ett papper.	She showed us how to _____ _____.
6. Jag fyllde i en blankett för att få mitt visum.	I _____ _____ to get my visa.
7. Var vänliga och sänk rösten!	Please _____ _____!
8. Vi åkte en tur i deras nya Volvo.	We _____ _____ in their new Volvo.
9. Denna åtgärd kommer att spara tid.	This measure will _____ _____.
10. Han blev förkyld igår.	Yesterday he _____ _____.
11. Pappa tog hand om disken efter middagen.	Dad _____ _____ of the dishes after dinner.
12. Bandet släppte skivan igår.	The band _____ _____ yesterday.
13. Pam gjorde ett tecken med höger hand.	Pam _____ _____ with her right hand.
14. Bob slutade skolan när han var 13 år gammal.	Bob _____ _____ at the age of 13.
15. Jag hoppas att det kommer att lära dig en läxa.	I hope this will _____ _____.
16. Presidenten höll ett tal till nationen.	The president _____ _____ to the nation.
17. Du kommer att klara provet!	You will _____ _____!
18. Jag gick ner i vikt förra året.	I _____ _____ last year.

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19. Hon slog numret med darrande hand.	She _____ _____ with a trembling hand.
20. Vad är detta? Odlar du skägg?	What is this? Are you _____ _____?
21. Per ansökte om övningskörningstillstånd.	Per _____ _____.
22. Ron skrev på kontraktet utan att tveka.	Ron _____ _____ without hesitating.
23. Överträd inte hastighetsbegränsningen!	Don't _____ _____!
24. Soldaterna avfyrade en missil.	The soldiers _____ _____.
25. De larmade polisen på en gång.	They immediately _____ _____.
26. Vi bokade in ett möte.	We _____ _____.
27. Armén har förbjudit användningen av gas.	The army has _____ _____ of gas.
28. De tjänade pengar på andra sätt.	They _____ _____ in other ways.
29. Mia sträckte sig efter mobilen.	Mia _____ _____.
30. Vi anordnade en fest för honom.	We _____ _____ for him.
31. Spelaren ådrog sig en allvarlig skada.	The player _____ a serious _____.
32. Polis står åtalad för mord.	Police officer _____ _____ for murder.
33. Pilen träffade målet.	The arrow _____ _____.
34. Hon kommer att göra provet idag.	She will _____ _____ today.
35. Föraren förlorade kontrollen över bilen.	The driver _____ _____ of the car.
36. De drog in hennes körkort i två år.	They _____ _____ for two years.
37. Röda Korset samlar in pengar till behövande.	The Red Cross _____ _____ for people in need.
38. Mitt liv tog en vändning (förändrades) förra året.	My life _____ _____ last year.
39. Jag förnyade mitt medlemskap i Amnesty.	I _____ _____ in Amnesty.
40. Hon går en kurs i första-hjälpen.	She _____ _____ in first aid.
41. Min pappa berättade en sann historia.	My father _____ _____.
42. Vi står inför en uppgift.	We are _____ _____.
43. Min mamma skriver dagbok.	My mum _____ _____.
44. Han svängde runt ett gathörn och där låg bion.	He _____ _____ and there was the cinema.
45. Vaktmästaren bytte ut glödlampan.	The caretaker _____ _____.

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46. DN publicerade resultaten igår.	DN _____ _____ yesterday.
47. De valde en ny president.	They _____ _____.
48. Fick du mitt sms?	Did you _____ _____?
49. Kan du bevara en hemlighet?	Can you _____ _____?
50. Polisen använder en speciell manick (apparatur) för att leta efter fingeravtryck på brottsplatser.	The police _____ _____ to look for fingerprints at crime scenes.
51. Mike lämnade tillbaka boken igår.	Mike _____ _____ yesterday.
52. Många underskattar riskerna med att köra mc.	Many people _____ _____ of driving a motorcycle.
53. Kocken rev osten och strödde den över pastan.	The chef _____ _____ and sprinkled it over the pasta.
54. Polisen drog in hennes körkort i två månader.	The police _____ _____ for two months.
55. Ökar risken för cancer om du dricker alkohol?	Does drinking alcohol _____ _____ of cancer?
56. I armén måste man lyda order.	In the army you have to _____ _____.
57. Hon ansökte om körkort.	She _____ _____.
58. De planerar att bilda familj snart.	They plan to _____ _____ soon.
59. Ett lätt sätt att mäta hastighet.	An easy way to _____ _____.
60. De delade samma erfarenhet.	They _____ _____.
61. Advokaten begick en lagöverträdelse.	The lawyer _____ _____.
62. Det täcker kostnaderna för resan.	This _____ _____ for the trip.
63. Han skickade ett textmeddelande (sms).	He _____ _____.
64. Boken förmedlar ett budskap.	The book _____ _____.
65. Försök så gott du kan!	_____ _____!
66. Filmen väckte ett intresse för konst.	The film _____ _____ in art.
67. Brevbäraren levererade brevet i tid.	The postman _____ _____ on time.

Appendix F

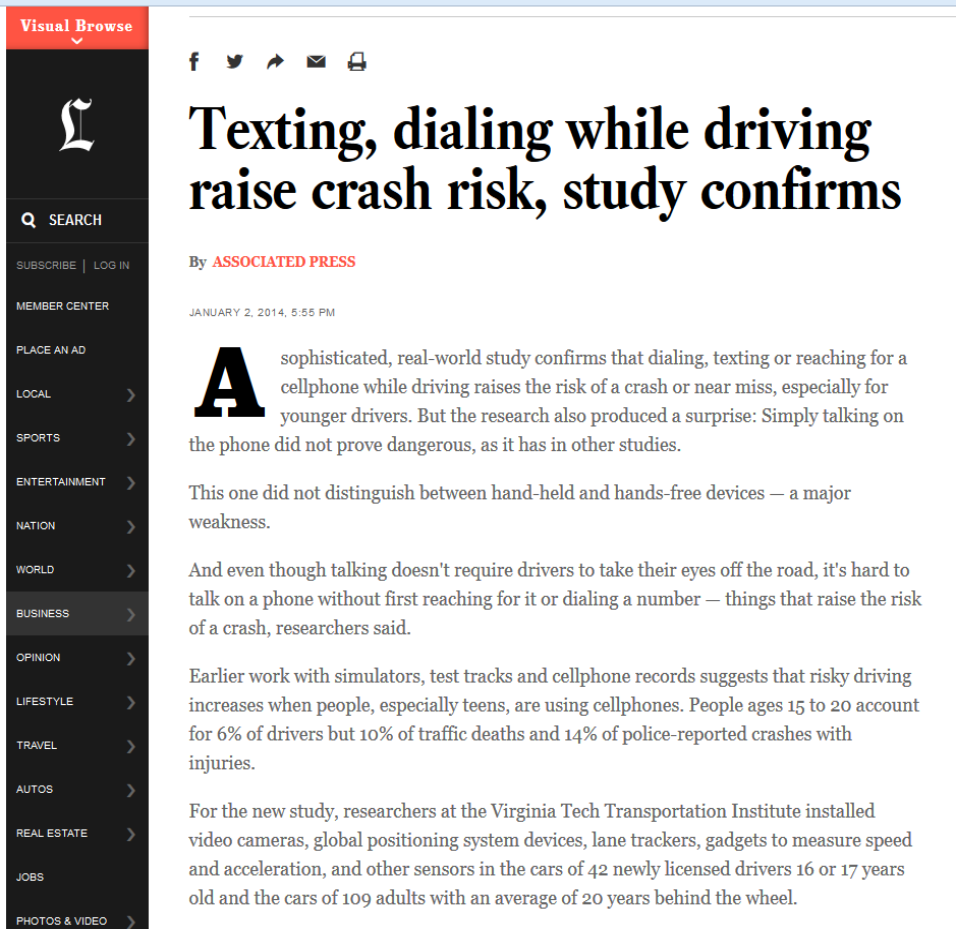
Questions on using the mobile phone while driving

1. Why, in your opinion, do people text while driving when they know that it could cause an accident?

2. Would you accept that somebody texted/used their mobile phone while driving if you were in the same car?

3. Would you text while driving (when you get your driver license)? Why/why not?

Appendix G



Texting, dialing while driving raise crash risk, study confirms

By ASSOCIATED PRESS

JANUARY 2, 2014, 5:55 PM

A sophisticated, real-world study confirms that dialing, texting or reaching for a cellphone while driving raises the risk of a crash or near miss, especially for younger drivers. But the research also produced a surprise: Simply talking on the phone did not prove dangerous, as it has in other studies.

This one did not distinguish between hand-held and hands-free devices — a major weakness.

And even though talking doesn't require drivers to take their eyes off the road, it's hard to talk on a phone without first reaching for it or dialing a number — things that raise the risk of a crash, researchers said.

Earlier work with simulators, test tracks and cellphone records suggests that risky driving increases when people, especially teens, are using cellphones. People ages 15 to 20 account for 6% of drivers but 10% of traffic deaths and 14% of police-reported crashes with injuries.

For the new study, researchers at the Virginia Tech Transportation Institute installed video cameras, global positioning system devices, lane trackers, gadgets to measure speed and acceleration, and other sensors in the cars of 42 newly licensed drivers 16 or 17 years old and the cars of 109 adults with an average of 20 years behind the wheel.

The risk of a crash or near miss among young drivers increased more than sevenfold if they were dialing or reaching for a cellphone and fourfold if they were sending or receiving a text message. The risk also rose if they were reaching for something other than a phone, looking at a roadside object or eating.

Among older drivers, only dialing a cellphone increased the chances of a crash or near miss. However, that study began before texting became so common, so researchers don't know whether it is as dangerous for them as it is for teens.

The National Institutes of Health and the National Highway Traffic Safety Administration paid for the research. Results were published Thursday in the New England Journal of Medicine.

David Strayer, a University of Utah scientist who has done research on this topic, said the finding that merely talking on a phone while driving was not dangerous was "completely at odds with what we found."

The study methods and tools may have underestimated risks because video cameras capture wandering eyes but can't measure cognitive distraction, he said.

"You don't swerve so much when you're talking on a cellphone; you just might run through a red light," and sensors would not necessarily pick up anything amiss unless a crash occurred, Strayer said.

As for texting, "we all agree that things like taking your eyes off the road are dangerous," he said.

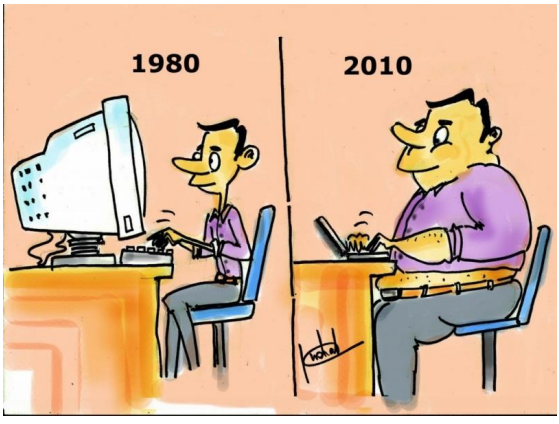
At least 12 states ban the use of hand-held cellphones while driving, and 41 ban text messaging. Any cellphone use behind the wheel is banned by 37 states for novice or teen drivers, says the National Conference of State Legislatures, citing information from the Governors Highway Safety Administration.

Appendix H

Tänka-högt: synliggöra tänkandet

I det här momentet ska du lösa en uppgift och samtidigt ”tänka högt” för dig själv, dvs. säga rakt ut hur du tänker om eller motiverar det du gör. Dina uttryckta tankar spelas in och kan användas för kvalitativ analys. Många små barn gör detta när de leker för sig själv och då kallas det för ”private speech” (Vygotsky). Låt oss testa en gång:

Exempel: Titta på bilden nedan och säg rakt ut vad du tänker på när du analyserar den. Försök att vara så detaljerad och utförlig det går. Börja med att säga ”Jag tänker att ...”:



Du ska nu göra exakt samma sak samtidigt som du gör översättningsprovet mellan svenska och engelska: säg rakt ut hur du tänker om/motiverar dina översättningar. Det är ingen tidspress. Om du inte har något särskilt att säga är det bara att gå vidare till nästa uppgift. Lycka till!

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Appendix I

Think-aloud protocol form-focused group *FF04*, 150206

Item	*Participant's think-aloud*
1.	I'm thinking that... we have worked with at least some of these words, so I'm thinking "suspend", because I've heard it many times and in that way I know it. "Driver's license", I know that one from before, then I know "driver", "license" I've heard a lot of times before
2.	"Spionen använde en speciell manick": "The spy used a special 'machine'"? What can you have?
3.	Ok, "Han brukar ta hand om tvätten": "He usually takes care", since it is "ta hand om", ta hand om tvätten", and yes.
2.	"Device", "use a special "'trinket'". No. "Gadget"? "Invention"? No.
4.	"Har du tagit emot (fått) mitt sms?": "Have you…" "Har du tagit emot…" – "received"? "Received". "Re…" 's' 'c'… "Received". RESEVED, "my text message", since I have heard it so many times before too.
2.	"special trinket/gadget"…" "used a special…" "Han använde en speciell…" Ok, let's work on the next one.
5.	"Det lärde honom en läxa: kom i tid": "It …" "lära" är "learn" so than it is "taught … him … a lesson". Yes, I think so. Yes.
2.	"Trinket, gadget…" Ah!
6.	Ok, it is … since "published" belongs with "results" so it is "published election results", because I've learnt that.
7.	"Har du ansökt om ett körkort?": "Have you applied" since we have worked with that one. "Ansökt"? "for/on"? "Ett"? "a"? "driver's license", since "license" belongs together with "applied".
8.	"Vi gjorde ett språktest imorse": "We …" "språktest" is "språktest" is "language test", "language test"? No!? Yeah "language test"! "We took … a … language test", since it is "took a test".
9.	"Bilen svängde runt gathörnet": "The car … took"? Since it is … the car that basically "tog en … runt gathörnet", because "gathörnet är", wait… "around the corner". "Took a turn … around the corner".
10.	"Sam sträckte sig efter mobiltelefonen": Since you say "reach" after "reach for objects" then it becomes "reached for… for mobile phone"? "The mobile phone".
2.	Ah! "The spy used a special … " I had it! "Device"?
11.	"The hitch-hiker…" Since it is "sign" it becomes "made" because they work as a collocation.
12.	"I slowly … the number" it must be, then it becomes "dial".
13.	"The politician …" "står åtalad"? "Stand trial"? No. "Accused"!? "Accused". Then I guess it is, since "accused" goes together with "stands" then it becomes "stands accused".
14.	"Att sitta ökar risken för sjukdomar": "Sitting …" Now it should be "increases the risk" What? What can it be if it is not " increased"? "Decrease"? No! "Increase…"

	Start by writing “the risk” and see if I can get “the risk”, “increase the risk”, “higher the risk”. No
15.	“They … his driver’s license”, “driver’s license”, will write that first and then we take.. “driver’s license”, “they … revoked”! “Revoked” works with “driver’s license” because I’ve heard it so many times.
16.	“Planning saves time”, since “time” belongs with “save”, “save time”!
17.	“Larma polisen! skrek mannen”: “Alarm the police”, since it is “alarm the police”, they belong together, it is an object that can be alarmed or, or be told
18.	“Underskatta inte riskerna sa mannen”: “Don’t underestimate … the risk”, since “risk” and “underestimate” work together you can say.
19.	“Everything took a …” “Allt tog en oväntad … vändning”: “Everything took a … unexpected turn” since it is “turn” that you conjugate after or whatever you say, then it becomes “took” since “took a turn” hold together.
20.	“She passed the test”, since “pass” and “test” is a collocation, or what it is called
21.	“Att röka ökar risken för lungcancer”: “Smoking increases …” “increases” since “increase” and “risk” work together.
22.	“The postman never … delivered the letter” since “letter” and “deliver” are connected.
23.	“Dad … took a course”, “course” since “course” and “took” are connected in some way.
24.	“Spelaren ådrog sig en skada när han föll”: “The player … suffered … a injury” since “suffer” and “injury” are connected.
25.	“Han fyllde i blanketten med blyertspennan”: “He ….” ‘c’ “He completed”! “The blanket” since “completed” and “blanket” are connected
26.	“Galilei var den första att mäta hastighet”: “Galilei was the first one to measure … speed” since “measure” and “speed” is a collocation and they are connected
27.	“De överskred hastighetsbegränsningen”: “They …” “öka”? “increase”? No, no. “the speed limit”, let’s see if it is connected to that. “Speed limit”. “They exceeded”! “Exceeded the speed limit”! Since there is a collocation between “exceeded” and “speed limit”.
28.	“På Umeå universitet bedriver man forskning”: “At Umeå University they …” “drive”? No, “Deck”? No. “Research”. “Do research”! “Do research” it is, since “do” and “research” are connected in some way. Since we have practiced on collocations I know it.
29.	“She … faces”? “a …” “hard”? No. “Difficult”! “Trial… trial” since “faces” and “trial” are connected then you can say them together, or… Yes, it is easier to write the first word and then check, see if you know which, which verb that is connected with the noun, which collocations it has.
30.	“Polisen har förbjudit användningen av tårgas”: “The police have … banned … banned … the use of teargas” because “banned” and “use” are connected
31.	“Vi försökte så gott vi kunde”: “We tried our best… our best”.
32.	“Jag ansökte om övningskörningstillstånd”: “I applied for a driver’s license” and then I thought first: “What is ‘övningskörningstillstånd’”? and then I thought, based on that I’m thinking “What verb should go with this one”? then I write “I applied” since it is per-… imperfect “for a … driver’s licence”

33.	“Domaren begick en lagöverträdelse”: “The judge … did a “ “övertramp”? “Over- …”? No. “Domaren begick en lagöverträdels…” “Exceeded”? No. “Broke a law”? No. Skip this one and take the next one.
34.	“Anna skickade ett sms från tåget”: “Anna sent a message”.
35.	“Tom åkte en tur i sin nya bil”: “Tom … a ride” with “ride” is “took a ride in his new car”. Then you can put “a ride” first if you don’t know the rest and then you add the verb after, then you can see what it is connected with.
33.	“Conceeded”? No. “Created”? No.
14.	Let’s see if we know this one… “övertramp…”? “r…” “ret… your license”? No. “Increases…” “Reach”? No. “r…rally”? No. No. “Rushes”? No. “R…” No. “The risk” What? So… “the risk”.
33.	“Begick en lagöverträdelse”: “Broke a law”, “broke a law”? No!. “Begick…” Now the problem is that I don’t know “lagöverträdelse” and then I can’t figure out what the verb is since I don’t have any collocation, in that way. “Lagöverträdelse…” “Law … passing”? No. “Ceivement”? No. No, I’m done I think!

Appendix J MF 23

Stimulated recall: "Hur tänkte du?"

Det här momentet kallas *stimulated recall* på engelska. Det innebär att ni kommer att få se något ni själva nyligen har gjort och sen ska ni försöka komma ihåg hur ni tänkte när ni gjorde det och skriva ner det, gärna så utförligt och detaljerat som möjligt. Vanligtvis används videoinspelningar, men i det här fallet ska ni få se era egna testsvar från tidigare idag.

Jag har just rättat det översättningstest ni gjorde i morse och jämfört det med det testet ni gjorde för en månad sedan för att se vilka ordkombinationer ni har lärt er genom studien. Dessa har jag kopierat upp till var och en (alla har olika) och klistrat in dem i rutan nedan. Jag skulle vilja be er att göra följande:

1. Titta på vad ni skrev i morse, dvs. de uppkopierade översättningarna i rutan nedan
2. Tänk tillbaka på hur ni tänkte när ni skrev dem
3. Försök att i skrift förklara era tankar/motivera hur ni tänkte: var så utförlig det går! Efteråt kommer jag att vilja intervjua två av er: Finns det några frivilliga?
4. Det finns inga rätta svar, alla era spontana tankar är lika värdefulla för mig! Skriv så mycket ni vill, det finns lösblad att fortsätta skriva på: kom ihåg att skriva vilket nummer det handlar om!

Dina (_____) översättningar till engelska:

1. Att röka ökar risken för lungcancer. Smoking increases the risk of lung cancer.

Kommentarer om den:

Jag kollade på den första bokstaven som redan stod i den blanka meningen och försökte lista ut det genom att gå igenom mitt ordförråd Sen fick jag fram ett svar,

2. Politikern står åtalad för mened. The politician stands trial for perjury.

Kommentarer om den:

Jag tänkte bara på vilka ord som skulle passad i sammanhanget

3. Att sitta ökar risken för sjukdomar. Sitting raise the risk of diseases.

Kommentarer om den:

Jag läste bara meningen och letade att jag visste vilka som skulle vara där

Appendix K

Stimulated recall: ”Hur tänkte du?”

Det här momentet kallas *stimulated recall* på engelska. Det innebär att ni kommer att få se något ni själva nyligen har gjort och sen ska ni försöka komma ihåg hur ni tänkte när ni gjorde det och skriva ner det, gärna så utförligt och detaljerat som möjligt. Vanligtvis används videoinspelningar, men i det här fallet ska ni få se era egna testsvar från tidigare idag.

Jag har just rättat det översättningstest ni gjorde i morse och jämfört det med det testet ni gjorde för en månad sedan för att se vilka ordkombinationer ni har lärt er genom studien. Dessa har jag kopierat upp till var och en (alla har olika) och klistrat in dem i rutan nedan. Jag skulle vilja be er att göra följande:

1. Titta på vad ni skrev i morse, dvs. de uppkopierade översättningarna i rutan nedan
2. Tänk tillbaka på hur ni tänkte när ni skrev dem
3. Försök att i skrift förklara era tankar/motivera hur ni tänkte: var så utförlig det går! Efteråt kommer jag att vilja intervjua två av er: Finns det några frivilliga?
4. Det finns inga rätta svar, alla era spontana tankar är lika värdefulla för mig! Skriv så mycket ni vill, det finns lösblad att fortsätta skriva på: kom ihåg att skriva vilket nummer det handlar om!

Dina (_____) översättningar till engelska:

1.

Kommentarer om den:

_____

_____

_____

2.

Kommentarer om den:

_____

_____

_____

3.

Kommentarer om den:

_____

_____

_____

Appendix L

Stimulated recall follow-up interview with *FF10*
February 13, 2015

Interviewer (PS): You wrote like this: 'De drog in hans körkort i två år': 'They revoked his licence' or 'driver license' – 'for two years'. 'I remember the word 'revoke' because someone in the class or Malin mentioned it and I had never heard it before so I thought about how it could be spelled. Then I saw it in the compendium we read so I like reacted to it'. You reacted to it, that it was a new word, or that that it was…?
Interviewee (FF10): Yes, the thing is, it was, I think it was like this that you were supposed to fill in.., yes, there were words missing…
PS: Yes.
FF10: that you were supposed to fill in.
PS: Ok.
FF10: And then it was on that one then.
PS: Ok.
FF10: Then there was someone who said like 'revoke', and then she repeated like this 'revoke' and I had never heard it before, I think.
PS: Ok.
FF10: Then I thought like this: 'revoke'? And then… I saw it in the text then.
PS: Hm.
FF10:
PS:
FF10: Later, then I knew it was that, so it got stuck sort of because I repeated it.
PS: Ok, so that someone *says* something could be a help, that you repeat it?
FF10: Yes, I often think so, because then you think about the person who said it.
PS: Ok. That's new, that was a new thing, I never thought of that.
FF10: Ok, so you haven't?
PS: Ehh… That the repetition in itself, that… that you can connect it to a person, because you wrote 'Malin'
FF10: The thing is you think about it when someone said it, at least I do so, think about…
PS: Ok. Euhm. It is a rather technical word that is not used so much otherwise except for, except for authorities that pull back things sort of, in other words revoke.
FF10: Yes, exactly.
PS: It is rather difficult word like, 'revoke a license'. Ok… Ehh: 'De överskred hastighetsbegränsningen' – 'They exceeded the speed limit'. You didn't know that the first time, but now you learned it this time. 'I knew the word 'exceed' from before'.
FF10: Yes, exactly.
PS: Yes.
FF10: The thing is I knew it, but I haven't thought about that it is used, or I don't know.
PS: 'But we worked with it on a paper, you were supposed to write different verb collocations, among which was exceed so I learned it better and then it stuck'. Is there a connection between 'exceed' and 'speed limit', then? In other words there is a…?
FF10: Yes, it was… On that paper we wrote 'exceed'.
PS: Yes?
FF10: 'the speed limit'.
PS: Ok.

FF10: I knew it, yes exactly.
PS: Can you 'exceed'?
FF10: The thing is, I had heard 'exceed'
PS: Ok. Can you exceed other things, like?
FF10: Yes, it was 'exceed expectations'.
PS: Yes, right, these boxes, these boxes, yes.
FF10: Yes, then there was something more… I don't remember what it was.
PS: Ok. Can I ask you another que-, a hypothetical question?
FF10: Hmm.
PS: If we, you had not worked with collocations, the thing is now we have had a certain way of working that I have sort of stage…
FF10: Yes, exactly.
PS: staged.
FF10: Connected, yes.
PS: Yes, you connect words with each other like that, that they…
FF10: I think that is really good because then you learn how to use them.
PS: Yes… If you are allowed to speculate…
FF10: Mm.
PS: If we had done the same thing but not talked about collocations, but instead you had *only* so to say read the texts and discussed them… Do you think that you would have learned it? Would you have been able to write 'They exceeded the speed limit'? If you only had…
FF10: But we had read?
PS: If you only had worked with it in a more traditional way? That you read, discuss and such things or…. Were you very much helped by the fact that we highlighted these words and then said it is called 'exceed the limit' and so on, or 'exceeded'?
FF10: Yes, I think so, or yes, I…
PS: Yes, maybe it is difficult to, but … what is your spontaneous feeling, like?
FF10: But I think so, because…
PS: Yes.
FF10: Yes, I think it is good because then … you learn how words, yes, are connected.
PS: Hm.
FF10: Because sometimes you can like say the wrong collocation if you put it like that.
PS: Hm, hm.
FF10: Like as it was with 'heavy rain', you don't say 'strong rain', or what it was.
PS: Right, you say 'strong wind' and 'heavy rain' but not the other way around, exactly.
FF10: Yes.
PS: Ok. I forgot to say that too, you may say exactly what you want, noth-, I don't have any correct answers.
FF10: No.
PS: It, so what you say now may be your thoughts as you want it, you don't need to feel that you… like say what I want to hear, or like, but…
FF10: Ok.
PS: You are allowed to be critical, and you may be negative, anything is interesting, like.
FF10: Yes.
PS: As long as it is from your…
FF10: I understand.

PS: from your heart.
PS: Ehh. 'Polisen drog in körkortet i en månad' – 'The police suspended the driver licence for a month,' 'I remember the word 'suspended' because in the context of learning the word 'revoke' I learned that 'suspend' was only for a shorter period' – exactly! – 'and 'revoke' for a longer, when we read a text.' 'when we read a text', yes?
FF10: Yes, exactly, I don't remember if it was that you … that … that you took it back earlier or if it was that you … kept it shorter, but I know that it was for a shorter period anyways.
PS: Yes. So it was, ok, it was, if you hadn't learned 'revoke', which is 'pull in' for a longer time, then you wouldn't have learned 'suspend'?
FF10: I don't know, I can still like, like when I see a word I can remember it, sort of like that.
PS: Yes. You have a good memory, like, or?
FF10: Eeh, yes, pretty, or I can pretty much like photographic memory, if you put like that.
PS: Ok, ok.
FF10: But… yes, it was a lot involved in that too… that I knew that it was two words.
PS: Mm. Did you already know the word?
FF10: 'Suspend'?
PS: Yes, 'suspend'. It actually means 'hold/hang' or 'hang up'
FF10: Yes, I know. It's the same thing, what's it called, what's it called, related to school…
PS: Yes.
FF10: You get 'suspended'.
PS: Yes, right, when you get 'suspended'.
FF10: Yes.
PS: Right. But it has no, yes, ok, it, it is like sus-…
FF10: There are many words you know then you can't recall them, even if you like hear them or such.
PS: Ok.
FF10: Maybe you don't use it that often.
PS: Mhmhm?
FF10: I know that it, yes.
PS: Ok, let's move on. Ehh. 'Vi försökte så gott vi kunde': 'We tried our best'. Many of you wrote something along the lines of 'We tried the best we could', or maybe it doesn't sound entirely wrong, but…
FF10: Mm.
PS: The collocation is 'try your best', like. 'This one I just knew from before, I can't recall that I have learned it in connection with the project'. So you, you…
FF10: Maybe it was in the text?
PS: It was, it is a collocation 'try your best', but why didn't you write literally 'We tried the best we could' or 'We tried as good as we could'? when that …. was what many wrote at the first test, like? But here you wrote 'We tried our best'.
FF10: Yes, but it was just…., the thing is I know that's how you say it, that's it.
PS: It like sounded better, or?
FF10: Yes, and I have used it before.
PS: Yes.
FF10: Or I knew it from before.
PS: Yes, but you didn't write it at the first test.
FF10: I didn't?

PS: No. All these were those that you had learned.
FF10: It is the case that when you learn it sort of brings memory to life.
PS: Ok.
FF10: Hihihi.
PS: Ok. Ok, here… "Polisen har förbjudit användningen av tårgas' – 'The police have banned the use of teargas'. For this one you changed your mind, first you wrote something else, you wrote 'betray'…
FF10: 'Betrayed', yes.
PS: Yes, yes.
FF10: I know that it's not correct, but I just wrote something because at first I couldn't think of it, but then it like, right it, it is 'banned'.
PS: But how did you recall it?
FF10: How do you mean?
PS: How were you able to just, how could you …
FF10: 'Banned'?
PS: 'Banned', like, you changed it to 'banned'.
FF10: I … recalled it, hehe. No, but I like wrote 'betrayed' you know, and then I knew.
PS: Yes.
FF10: And it means like 'let down', or something like that.
PS: Yes, yes.
FF10: Yes, ehh, so then … I just recalled it, like.
PS: Mm. 'Knew it from before, but I think that I've heard it in a text that we worked with too'.
FF10: Yes, exactly.
PS: Ok.
FF10: I knew it from before.
PS: 'Ban the use of'. 'Have you applied for a driver's licence?' – 'Have you applied for a driver licence?' 'I learned that you say 'apply for driver licence' because one in my class repeated it, so I remembered what he said'.
FF10: Mm.
PS: Mm.
FF10: Yes, exactly, because there was somebody who said something else and then he said that like that, that you can't say it like that, that you say 'apply'.
PS: Ok.
FF10: Then I thought of it, that you say it like that, so it stuck.

PS: Ok. This is called stimulated recall, it means that you get to something again that you have done and then you get to think back to when you did it.
FF10: Mm.
PS: Do you think it was, was it a good you to access what you were thinking? Or is there anything negative about it? This [holding up paper in air]?
FF10: About…?
PS: About this [holding up paper in air]?
FF10: About that? Just?
PS: Yes, yes.
FF10: Eh… Nooo, hehe. Eh… No, I think it is good.

PS: Was it hard to remember-, it was still three, it maybe was … three hours after you did the test so to say, that you did this.
FF10: Yes.
PS: Was it, was it too long? If you had, should you have done it straight away, maybe, or, or?
FF10: Well, do you mean that you are supposed to learn from this?
PS: No, instead I want to test if this method works, this data collection method, that you sort of, you show something that someone else did, it's usually the case that you play a film clip when somebody is standing and talking and then … you show the film to the person who talked and then: 'What did you think here? When you walked up to the board and did that' and so on.
FF10: Yes, right, we've had it in Swedish class.
PS: So it's, and that's this meth… But do you think that it was … Did it help you to rememb- to think back? When you saw your own, it was cut out with your own answers like this. Did it help you to go back to what you were thinking, like?
FF10: Yeeees…., hehe.
PS: Maybe that's a difficult question?
FF10: I don't know.
PS: No.
FF10: I haven't thought about otherwise, or well…
PS: What I'm interested in a bit is, because I really want to know… how to like access your thoughts.
FF10: Aha! Yes.
PS: That's what's difficult, like. What your thoughts were, how you, simply how you learned! Like..
FF10: Ok, yes.
PS: Yes.
FF10: Well, I think it's a good**….**
PS: Yes.
FF10: Well, a good way.
PS: Mm.
FF10: Because then you, it's like good to repeat, to think, well that you think back.
PS: Mm.
FF10: You know yourself a bit.
PS:

Appendix M

Meaning-focused treatment participants completed forms translated into English for each *alias*:	**Form-focused treatment participants** completed forms translated into English for each *alias*:
MF09: 1. *ökar risken – raises the risk* I watch a lot of series and from them I usually know different words and phrases. I don't know exactly which series I got it from but I know that I've heard something similar. 2. *försökte så gott vi kunde – tried our best* This was an easy phrase and the words just popped up in my head without me really needing to think about it. 3. *överskred hastighetsbegränsningen – exided the speed limit* I was able to translate this phrase because of the work we had done with driver's licenses which we had done earlier when we learned those words. 4. *tagit emot (fått) mitt sms – received my text?* For this one I didn't think that much but it came more naturally, that it was like evident that it should be that. 5. *underskatta riskerna – underestimate the risks* I knew I had got the word underestimate from a series. It is a quite common word which I've heard many times. *MF10:* 1. *drog in körkortet – suspended the driver license* The first time I wrote the sentence I think that I had two words that were supposed to fit into the first line, in other words an alternative to "suspended". I wrote the first word, which I don't remember at the first test and the other word (suspended) at the second test. 2. *drog in hans körkort – revoked his license* From what I remember I translated this sentence pretty much word for word at the first test, in other words "pulled in" or something similar. At the second test I believe I understood the question better. 3. *svängde runt gathörnet – turn around the street corner*	*FF02*: 1. *åkte en tur – took a ride* I thought "take a ride". It sounded natural and reasonable to write that. 2. *försökte så gott vi kunde – tried our best* It felt right to write like that. I didn't have any particular secret motive 3. *överskred hastighetsbegränsningen – exceeded the speed limit* As I've said, feels natural for me to write these words. I also thought back to the time we read about drivers licence in the US. 4. *gjorde språktestet – took the language test* Since we had learned this, it sticks and sounds obvious. Since we had learned this the phrase sticks and sounds "obvious". 5. *ansökt om ett körkort – aplied for a drivers licence* I thought back to the lesson we read about driver's license and then I remembered the phrase. As I've already said, it just felt right. *FF10:* 1. *drog in körkortet – suspended the driver license* I remembered the word suspended since when I learned the word revoke I learned that suspend was only for a shorter period and revoke for a longer one, when we read a text 2. *ansökt om ett körkort – applied for driver license* I learned that one says apply for driver license because one in my class repeated it, so I remember what he said 3. *drog in hans körkort – revoked his license* I remembered the word revoke because someone in our class our [our teacher] mentioned it and I had never heard it before so I thought about how it might be spelled. Then I saw it in the booklet we were reading from and sort of reacted to it 4. *överskred hastighetsbegränsningen – exceeded the speed limit*

Appendix N

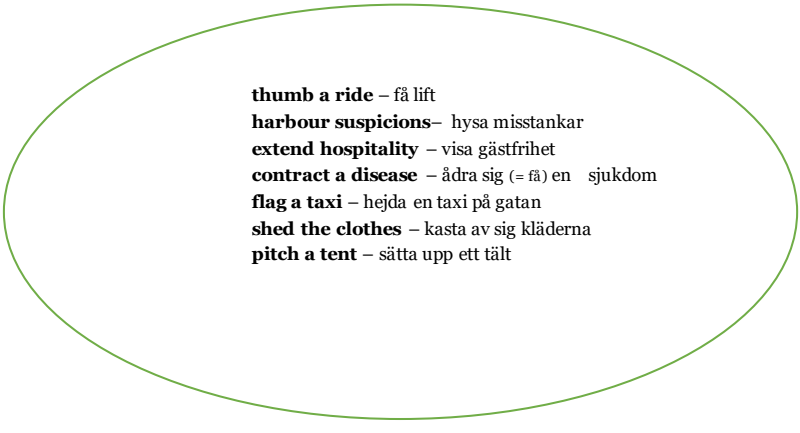
1. The third-world correspondent

The text below is from a report by correspondent Michael Joseph in Rwanda, Africa about his first week in a small village 25 miles south of the capital Kigali:

"I awoke this morning to a dusty village after pitching a tent last night in total darkness under a massive tree. Although it was freezing cold in the morning the temperature was so high by 9 am that I was forced to shed my clothes as my leather jacket and jeans were far too thick and replace them with more light-weight material. I knew that by traveling to Rwanda I would be running the risk of contracting a disease. After all, malaria is an on-going epidemic here. At noon I started feeling dizzy and sick so I decided to go to the hospital. The village is very remote with no chance of flagging a taxi but thankfully I was able to thumb a ride with a friendly local who further extended his hospitality by offering me to have dinner at his home. This was a nice contrast to the faint tension in the air I've experienced from the local villagers who probably see me as an outsider and therefore harbour suspicions."

Use the expressions in the circle to complete the story

"I awoke this morning to a dusty village after _____ last night in total darkness under a massive tree. Although it was freezing cold in the morning the temperature was so high by 9 am that I was forced to _____ as my leather jacket and jeans were far too thick and replace them with more light-weight material. I knew that by traveling to Rwanda I would be running the risk of _____. After all, malaria is an on-going epidemic here. At noon I started feeling dizzy and sick so I decided to go to the hospital. The village is very remote with no chance of _____ but thankfully I was able to _____ with a friendly local who further _____ by offering me to have dinner at his home. This was a nice contrast to the faint tension in the air I've experienced from the local villagers who probably see me as an outsider and therefore _____."



thumb a ride – få lift
harbour suspicions– hysa misstankar
extend hospitality – visa gästfrihet
contract a disease – ådra sig (= få) en sjukdom
flag a taxi – hejda en taxi på gatan
shed the clothes – kasta av sig kläderna
pitch a tent – sätta upp ett tält

Appendix O

Pair work: suggest a title for each text

1. _____

Picking up strangers and driving them somewhere occurs in two ways: unpaid or paid. Hitch-hikers are a common sight outside petrol stations along highways in many countries. Equipped with a cardboard sign stating their destination, they put on a friendly face and entertain the hope of thumbing a ride to reduce the cost of travel and maybe have a conversation on the way. In big cities such free-riders are rare. City people instead turn to the street and flag a taxi if they are lost or to avoid being late for a meeting. Taxi-drivers need to find their way around but also to have social skills, which include striking a balance between interacting with customers and being too obtrusive. After all, some customers may want a moment of quiet and not hear the taxi-driver vent his anger about some political issue.

hitch-hiker: liftare
thumb a ride: få lift
obtrusive: påträngande
cardboard: kartong
flag a taxi: hejda en taxi på gatan
vent the anger: ge utlopp för ilskan
entertain a hope: nära (= ge näring åt) ett hopp (hoppas på)
strike a balance: finna en medelväg/balans

2. _____

In the past tourists stayed at a hotel of some kind. If nothing was available or if it was too expensive, the last resort was to pitch a tent at a camp site. However, with the arrival of Airbnb in 2008 everything changed. Tourists can nowadays reap the benefits of this simple and smooth online service and choose from more than 1.5 million private apartments and houses all over the world. Rates are generally lower than at regular hotels and the landlord or landlady often extends his or her hospitality by offering advice on local activities or restaurants. This personal contact is something to which many Airbnb users attach importance and is one of the reasons this business idea has scored success. The hotel industry is obviously the biggest loser.

pitch a tent: sätta upp ett tält
landlord, -lady: hyresvärd, -inna
score success: vinna framgång
reap a benefit: få en fördel
extend hospitality: visa gästfrithet
rate: pris
attach importance to: lägga vikt vid

3. _____

Many people like eating at a restaurant. For some, it is an important part of being on holiday. For others, it is the place to go to celebrate the birthday of someone near and dear. Some restaurants have catchy names so as to rivet the attention of potential customers. In many countries, smoking is not permitted inside restaurants and those who have not yet kicked the habit usually have to go outdoors. With large groups of friends, footing the bill can be a tedious process of going through the bill. One way of approaching this problem is to “go Dutch” by dividing the total sum of the bill by the number of people in the group. In this way friends do not need to jog each other’s memory about what they had, but instead let a simple maths equation solve the problem.

catchy: fyndig, klatschig
kick the habit: bli av med beroendet
approach a problem: ta itu med ett problem
rivet attention: fånga uppmärksamhet
foot the bill: betala räkningen
jog the memory: friska upp minnet
permitted: tillåtet
tedious: tröttsam, omständlig

Appendix P

Two dictogloss texts

Airbnb

Tourists used to stay at a hotel. If nothing was available the last resort was to pitch a tent at a camp site. With the arrival of Airbnb in 2008 everything changed. Tourists can now reap the benefits of this simple online service and choose from more than 1.5 million private apartments and houses all over the world. Prices are lower than at regular hotels and the landlord often extends his hospitality by offering advice on local restaurants. Many Airbnb users attach importance to this personal contact. It is one of the reasons this business idea has scored success. The hotel industry is the biggest loser and many hotels have needed to slash costs to avoid bankruptcy.

Eating out

Many people like eating at a restaurant. Some restaurants have catchy names so as to rivet the attention of potential customers. However, having a silly name may carry the risk of scaring them away. In most countries, smoking is not permitted inside restaurants and those who have not kicked the habit usually have to go outdoors. With large groups of friends, footing the bill can be a time-consuming process. One way of approaching this problem is to "go Dutch" by dividing the total sum of the bill by the number of people. In this way friends do not need to jog each other's memory about what they had, but instead let a maths equation solve the problem.

1. **pitch a tent**	– sätta upp ett tält
2. **reap benefits**	– få fördelar
3. **extend hospitality**	– visa gästfrihet
4. **attach importance**	– lägga vikt
5. **score success**	– vinna framgång
6. **slash costs**	– skära ned (kraftigt) på kostnader

1. rivet the attention	– fånga uppmärksamheten
2. carry a risk	– innebära en risk
3. kick the habit	– bli av med beroendet
4. foot the bill	– betala räkningen
5. approach a problem	– ta itu med ett problem
6. jog the memory	– friska upp minnet