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**Beating about the bush:
written production and comprehension of L2 idioms**

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Abstract

An idiom is a conventionalised expression in form and meaning and its meaning cannot be determined from the meaning of its parts which may provide difficulties for second language learners. A study on the online process of producing idioms in writing and how second language learners manage the production and comprehension of idioms may provide a useful and comprehensive investigation of the production, comprehension and acquisition of language. The study in this paper investigated how Swedish (L1) second language learners of English (L2) produce and comprehend written idioms in the L2. It also explored whether production and comprehension of idioms which are lexically and semantically different in Swedish and English result in more difficulties for the learners compared to idioms which are lexically and semantically identical or similar. The difficulties are measured as time to onset and production accuracy. The study also investigated if the time to onset and production accuracy were affected by the idiom usage frequency. The participants in the study were 12 Swedish university students with mixed proficiency in English who completed a translation and a comprehension test. The tests were implemented in ScriptLog, a keystroke logging software for research on the writing process. The results indicated an individual variation across participants and idioms, but strong tendencies were noted. Participants with a high proficiency in the L2 seem to manage the production of L2 idioms somewhat better than participants with a lower proficiency, but still with difficulties. Even idioms which are lexically and semantically identical or similar in the L1 and L2 result in problems during production. The results in terms of time to onset and production accuracy were affected by the idiom usage frequency.

Keywords: figurative meaning, formulaic language, idiom, idioms, keystroke logging, L1, L2, L2 acquisition, L2 learning, language transfer, literal meaning, phraseology, production accuracy, second language acquisition, second language learning, translation, time to onset

Preface and acknowledgements

Second language learning/acquisition and translation are areas which I find very interesting, particularly since I work as an editor, reviewer and translator of chemical and medical documents. In my work I have seen the difficulties of translation at first hand. Specific terminology and complex phrases like idioms should be localised, adjusted to the specific language, and not translated directly. Therefore, idioms are interesting to study as linguistic elements which require a more extensive knowledge of language and culture to be produced correctly.

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1. Introduction

1.1 General

Second language (L2) learning is a complex process. There are many different theories on how we learn, process and produce languages. Language must be analysed on different levels: phonology, morphology, syntax, lexicon, semantics, pragmatics and discourse. L2 learning involves some level of influence from a language or languages which the learner already knows, e.g. their mother-tongue (L1) (Mitchell and Myles, 1998; Jarvis and Pavlenko, 2008). The purpose of the experimental study described in this paper is to investigate how Swedish students manage translation of idioms in English.

The concept of the language transfer theory is based on an idea that previous learning affects subsequent learning, and the effect can provide both a possibility and an obstacle (Yu and Odlin, 2015). This can be noticed by e.g. learners' foreign accent where the pronunciation in a second language is influenced by the phonology of their first language, and the erroneous use of so-called "false-friends" which are words in two languages that look and/or sound the same but have different meaning. The influence may also be bidirectional which means that the use of L2 also affects the use of L1 (Brown and Gullberg, 2008). The extent of this transfer is debated. Before the 1960s, language transfer was seen as a main variable in L2 learning, but results from empirical studies in the 1960s–1970s involving e.g. contrastive analysis showed the importance of other variables and language transfer was somewhat downplayed. Transfer research started to emphasise questions on the causes of language transfer, and development of theoretical explanations instead of merely identifying and quantifying the transfer effects (Yu and Odlin, 2015). Researchers seem to agree on a substantial influence of the L1 on the L2. Some aspects of language seem to be more likely to be transferred than others, e.g. elements which are semantically transparent and/or similar between the languages (Irujo, 1986). Therefore, language transfer can provide an important aspect in this study on production of idioms from L1 to L2. This study is guided by research questions regarding how Swedish learners of English as L2 manage translation of Swedish idioms into English when the idioms are lexically and semantically different in the two languages compared to when the idioms are lexically and semantically similar. The strategies learners use when they have to produce idioms in a L2 and the characteristics of those idioms which are the easiest to learn would be helpful in understanding L2 learning.

Learning a language entails a progression which involves, among other things, the automatization of low-level processes such as articulation and spelling. Furthermore, the progression may be regarded as a theoretical general stepwise development towards fluency. As a word of caution, this progression is more dynamic in practice and characterised by a high degree of variability (Mitchell and Myles, 1998). An example of this progression in grammar would be a development from an accurate use of inflectional morphemes and construction of simple phrases to the ability to combine phrases to clauses with correct word order and then in turn different clauses to sentences. A parallel example in lexicon would be a development from use and comprehension of single lexemes to use and comprehension of complex idiomatic expressions.

An idiom is a conventionalised complex expression whose meaning cannot be determined from the meaning of its parts. The whole idiom is a kind of semantic unit which has a figurative, or sometimes literal, meaning. This construction makes idioms useful to explore processes involved in L2 learning and translation. In a translation situation when a person uses two languages and often is more fluent in one of the languages, there is a constant process of being able to toggle between the two. A fast and correct translation depends on both the underlying bilingual competence and the actual performance of the toggle process. The time it takes to process the reading of a text in L1 and the production of a translation of that text in L2 is likely to affect the ability to toggle between L1 and L2. If a person is able to produce a correct and fast translation of a L1 idiom to a corresponding L2 idiom, it would suggest that the person has an extensive ability to toggle between these languages with ease and to handle semantic differences between languages (Irujo, 1986). Such an ability is not only made possible by theoretical language knowledge in itself, but also a frequent practice, use of and exposure to the L2 in general.

A study of the ability of L2 learners to toggle between L1 and L2 during translation of L2 idioms could prove useful. It could also be interesting to see whether the learners would use the knowledge of their L1 to help them comprehend and produce idioms in a L2. Furthermore, a study on the online process of producing idioms in writing would, together with analyses of linguistic information encoding, provide a more useful and comprehensive investigation of the production, comprehension and acquisition of language. Language teaching may also benefit from empirical evidence of learners' strategies.

1.2 Outline

The research questions which guide this study are outlined in section 1.3 in this paper. Key concepts and previous research in second language learning, keystroke logging and idioms are described in chapter 2. The methods of the study are presented in chapter 3 which is followed by the presentation of the results in chapter 4. Discussion of the results, the method of the study and a conclusion are presented in chapters 5 and 6. The appendices consist of forms for participants (informed consent form, form for the elicitation instrument and feedback form) and a list of selected idioms for the study.

1.3 Aim and research questions

The aim of this thesis paper is to investigate how students with Swedish as their L1 manage translation of idioms in English (L2). An experimental method was used where the participants got a translation test to translate Swedish idioms to the corresponding English idioms. The test was performed with keystroke logging. It was used to measure the time to onset and the accuracy of the translations. Searches of the idioms in an online corpus was used to get information on the use of the idioms to further see if and how the time to onset and accuracy are affected by the idiom usage frequency.

The allocation of cognitive resources when you speak or write depends on e.g. your degree of language proficiency. If you have a higher degree of proficiency, your language fluency and accessibility will probably be more rapid and automatic. Accessibility of knowledge and planning during translation can be operationalised as time to onset which is the time it takes to start translating, and production accuracy which is the quality of the translation. Idioms are complex expressions which can be more or less lexically and semantically different between languages. Therefore, idioms may be useful to explore language learning.

How do Swedish learners of English as L2 manage translation of Swedish idioms into English regarding time to onset when the idioms are lexically and semantically different in the two languages compared to when the idioms are lexically and semantically similar?

How do Swedish learners of English as L2 manage translation of Swedish idioms into English regarding production accuracy when the idioms are lexically and semantically different in the two languages compared to when the idioms are lexically and semantically similar?

Sub-question: How will the time to onset and production accuracy be affected by idiom usage frequency?

2. Theoretical background

2.1 Introduction

This chapter will first provide some explanation of the idiom concept and other concepts which are used in the paper and then continue with the theoretical background for the study. The theoretical background is divided into three sections regarding research on L2 learning, idioms in L2 learning, and the writing process and keystroke logging. The chapter ends with a section which describes the present study in the light of previous research.

2.2 Idiom and related concepts

Idiom

There are many different terms in the literature to describe fixed expressions. Idioms belong to the same group of conventional figurative units as metaphors and proverbs. The difference between metaphors, proverbs and idioms is difficult to establish. Idiom is sometimes used as an umbrella term for all fixed expressions. The literal meaning of proverbs is usually clearer than for idioms. Proverbs give advice about how you should live and behave which idioms generally do not, e.g. “silence is golden” compared to “beat about the bush”. The difference between metaphors and idioms is that it is possible to understand metaphors even if you have never heard them before, e.g. “a broken heart”, and metaphors are often used to compare two unrelated subjects (Pirainen, 2012). In this paper I will use the term “idiom” to describe a conventionalised expression in form and meaning. Its meaning cannot be determined from the meaning of its parts, e.g. the idiomatic meaning of “spill the beans” cannot be derived from “spill” or “beans”. Native English speakers know that the meaning is to reveal something unintentional. Idioms are characterised by three features: 1) reproducibility – idioms are conventionalised and reproduced in the same form and meaning, 2) idiomaticity – idioms are semantically irregular since they can be interpreted on two levels, literal meaning and figurative meaning, and 3) polylexicality – idioms are usually studied together with other elements of *phraseology* (ibid.).

Figurative meaning

Meaning which is “indirect”, an implicit meaning that is not to be interpreted literally, but instead uses a symbol, a similarity or a relation. It is also called idiomatic meaning (Pirainen, 2012). It is the underlying meaning of an idiom, e.g. the idiom “many irons in the fire” (*många järn i elden*) does not really mean that there are many things made of iron placed in the fire, but

instead that a person is busy with many things. Some studies have suggested that L2 beginners process the figurative meaning and the *literal meaning* separately during translation and comprehension of idioms (Beck and Weber, 2016; Cieślicka, 2006).

Literal meaning

Meaning which is “direct”, an explicit and original meaning word by word (Pirainen, 2012). An idiomatic phrase can also have a literal meaning, e.g. “take with a pinch of salt” (*ta med en nypa salt*) can really mean that you should take a pinch of salt if indicated in a recipe. The figurative meaning would be to not completely believe something that you are told. The literal meaning in an idiom is thought to be easier to access (Beck and Weber, 2016; Cieślicka, 2006).

Formulaic language

A relatively new term for multiple word expressions which are fixed in form without *literal meaning*. Idioms and proverbs are parts of formulaic language. Formulaic language has an important function in communication, language production, and language learning (Carrol, G. et al., 2016).

Phraseology

Phraseology is the study of multi-word expressions, phrasemes. Phrasemes are combinations of two or more words with a more or less conventionalised meaning in which the parts of the expression take on a meaning more specific than or otherwise not predictable from the sum of their meanings when used independently. Some researchers subsume *formulaic language* under phraseology (Pirainen, 2012).

2.3 Other related concepts

Contrastive analysis

Contrastive analysis is the analysis of at least two languages to identify the similarities and differences between them. A comparison can reveal that: 1) two items in L1 combine to one in L2 and the reverse, 2) an item in L1 is absent in L2 and the reverse, 3) there is no similarity between the L1 item and the L2 item and 4) there is no difference between the L1 item and the L2 item. Contrastive analysis was used particularly in the 1960’s and 1970’s to analyse why some features in a language are more difficult to learn than other features (Mitchell and Myles, 1998). *Language transfer* and contrastive analysis are linked since a comparison of languages may show how an item from a language can be transferred to the other language. One version

of this hypothesis indicates that similar patterns would be easy to learn because they could be readily transferred. Different patterns would cause interference and be difficult to learn. Several studies in the 1970's criticised the hypothesis and showed that contrastive analysis could not explain all language difficulties. In fact, another version suggested that when the difference between languages is slight, more difficulty occurs, i.e. similarities may create confusion (Irujo, 1986; Jarvis and Pavlenko, 2008).

Language transfer

This concept is also called cross-linguistic influence in the literature since language transfer has been too associated historically with behaviourism and the new term was proposed as being theory-neutral (Jarvis and Pavlenko, 2008). This concept is a part of L2 learning research. The patterns of the native language influence the learning of patterns in L2. When the patterns are identical and the learner uses the L1 patterns to produce L2 patterns, it is called positive transfer. When the patterns are different and the learner uses the L1 patterns to produce L2 patterns, it is called negative transfer. The negative transfer results in a transfer error, an interference. The interference is assumed to be more evident if the L1 and L2 are related, i.e. the languages are similar (Irujo, 1986; Gass and Selinker, 1992). In short, the effect of language transfer can provide both a possibility and an obstacle. The research in this field has changed since before the 1960s when language transfer was seen as a main variable in L2 learning, through empirical studies in the 1960s–1970s which showed the importance of other variables, and to present day when language transfer is regarded as one of many dependent variables worth investigating more (Yu and Odlin, 2015).

Keystroke logging

Writing is a dynamic activity and keystroke logging is a method to study the online patterning of writing by recording the keys struck on a keyboard in order to monitor a person's actions in real-time during writing, e.g. pauses during writing, the final written product, the time it takes before a person starts to write and the total writing time. There are many programs developed for this task, e.g. ScriptLog (Strömqvist et al., 2004).

2.4 L2 learning

The learners' performance in L2 is influenced by a language they already know. This phenomenon is called language transfer, see section 2.3. If the structures in L1 and L2 are similar, the learning will take place easily. If the structures in L1 and L2 are different, the learning will be difficult. The work of comparing pairs of languages in order to find the

different, and hence the difficult, areas was named contrastive analysis, see section 2.3. Transfer and contrastive analysis are linked in the literature because a comparison of two languages can help to show how a pattern from one language can be transferred to the other (Mitchell and Myles, 1998). Susan Gass and Larry Selinker (1992) provide an overview of the continued research on language transfer and discusses language bidirectionality as well as the role of prior multi-language knowledge. Bilingual studies through contrastive analysis provide a source of hypotheses concerning language transfer which can be tested empirically. Selinker asked questions regarding how language transfer occurs and what the language transfer entails. One of his first studies in the field was to investigate English speech of native speakers of Hebrew and compare it to native speakers of English. He discovered transfer effects from Hebrew on the English produced. Some aspects of language seem to be more likely to be transferred, namely elements which are semantically transparent. The learner's perception of the nature of the L2, the distance between the L1 and L2 and the structural organisation of the learner's L1 are some interacting factors involved in language transfer. The learner's notion of the perceived distance between the L1 and L2 changes constantly as the learner acquire more of the L2.

An updated review of language transfer by Scott Jarvis and Aneta Pavlenko (2008) indicates that the research on language transfer was first concentrated on identification and quantification of possible transfer effects, and language transfer was seen as an independent variable (phase 1). There was a paradigm shift when the research got more focused on investigation of causes, selectivity, directionality and constraints on language transfer, and language transfer got to be seen as a dependent variable (phase 2). Phase 3 involves more theory-driven empirical research on mental constructs and processes to get theoretical models. Finally, phase 4 involves more mapping of the brain in relation to how language is acquired, stored and processed. Present research on language transfer involves phases 2–4 with different research “tracks”.

One of these research tracks is regarding understanding of a learner's ability to process the input of target language, create mental representations of e.g. form-meaning mappings in the input, relate the representations to his/her prior language knowledge, integrate and store the new representations in that system of knowledge, and access that knowledge later and encode it back into language. Håkan Ringbom (2007) follows that research track and refers to processes as comprehension, learning and production, and discusses how the types and degrees of similarity between the learner's L1 and L2 have substantial effects on each of these processes. He reviews studies which explore how Finnish speakers learn and use English compared to Swedish speakers. The studies show that Swedish speakers, whose L1 is closely related to English,

comprehend a great deal more of the L2 in the early stages of acquisition than do Finnish speakers, whose L1 is unrelated to English. Swedish speakers also tend to learn English at substantially faster rates than Finnish speakers do. They also tend to produce far fewer errors. Due to the similarities between Swedish and English, Swedish speakers are able to retain more of the L2 input in memory compared to Finnish speakers.

Another track originating from language transfer theory is directionality. Amanda Brown and Marianne Gullberg (2008) examined bidirectionality of language transfer by examining speech and gesture patterns in monolingual speakers of Japanese, monolingual speakers of English and native Japanese speakers with intermediate knowledge of English as L2. The relationship between the L1 and the L2 in the mind of a learner has traditionally been viewed from a unidirectional perspective in the field of L2 acquisition. Thus many features of the L2 find their origin in the L1. The authors argue the possibility of bidirectional influence between L1 and L2. They state that the focus on L1 influence ignores the fact that linguistic systems within an individual learner might interact which earlier has been suggested for bilingual or very advanced L2 speakers only. Thus, they argue that bidirectional interaction between languages in the multilingual mind can occur even with intermediate L2 proficiency.

Liming Yu and Terence Odlin (2015) provides new perspectives on language transfer. Three goals of current research on language transfer is to know how language transfer takes place in the mind, how the languages a person knows interact, and to discover new methodological tools. Five factors are seen as key in understanding transferability: 1) linguistic and psycholinguistic factors, 2) cognitive and development factors, 3) language experience and knowledge factors, 4) learning environment factors and 5) language use factors.

2.5 Writing process and keystroke logging

Communication strategies are tactics which are used by non-fluent learners during L2 use in order to overcome specific communication problems. The study of communication strategies is fairly new. This research has mainly been focused on communication strategies in speech, but communication is also done in writing.

John Hayes and Linda Flower (1980) analysed writers who comment on and identify their writing processes in writing protocols. These analyses work as basis for their model on the writing process. The writing process consistent of three parts with sub-parts: planning, translating and reviewing. The function of the planning part is to take information from the task environment and the long-term memory, and set goals and establish a writing plan. The function

of the translating part uses the earlier established writing plan to produce language which corresponds to the writer's memory. The function of the reviewing part is to improve the production of the text.

Deborah McCutchen et al. (1994) continue with more empirical studies on the model presented above with elementary and middle-school students, particularly regarding processes of sentence generation and lexical retrieval, and processing constraints imposed by working memory limitations. The planning, translating, and reviewing processes are constrained by working memory limitations. The working memory requirements of translating even non-verbal ideas into language can be lessened if some subcomponents of translating are relatively fluent. Fluent operation of processes such as sentence generation and lexical retrieval usually occurs with little working memory involvement which enables the writer to concentrate attention to more effortful aspects of language generation and higher level processes, e.g. formulating and monitoring meaning. If these translating processes are not fluent in a writer of less skill, then the writing process and the written production may be affected negatively. Fluent translating processes may help to reduce working memory load during writing.

Slobin (1996) proposed that not only the way you pack information into a linguistic form varies between different languages but that your "thinking for speaking" is actually different. Extending this line of thought to the contrastive study of speaking and writing, and the earlier research on constraints on the working memory, Strömquist et al. (2004) proposed that "thinking for writing" is different from "thinking for speaking" in a number of ways. Strömquist et al. make use of keystroke logging to study the online patterning of writing. They present a use of the ScriptLog software to analyse written production and compare that to spoken production. Pictures were shown in ScriptLog and the monolingual participants were asked to write what the pictures showed. Writing on a computer or by hand is associated with more effort and is more time-consuming than speaking. The allocation of cognitive resources when you speak or write depends on e.g. your degree of proficiency. If lower-level actions are automatized, it is much easier to allocate resources for higher-level actions. The acquisition of written language is influenced by the acquisition of spoken language and vice versa. The flow of discourse, the production rate, depends on the discourse type and the information processes. The aspects of "thinking for speaking" proposed by Slobin and "thinking for writing" proposed by Strömquist et al. are analysed. Furthermore, Strömquist et al. suggest that the analysis of the online patterning of writing might provide important clues to aspects of "thinking for writing".

Writing in an L2 can be even more demanding since several of the language abilities in the L1 may be less developed. Linguistic knowledge of the L2 may be limited and the fluency/accessibility may be less rapid and automatic. Extensive knowledge can on the other hand result in fluent or automatic accessing of lower-level linguistic knowledge, and take up less of the writers' attention and therefore leave sufficient cognitive capacity for other attention-demanding higher-level processes of writing. This is more researched in the empirical study by Rob Schoonen et al. (2003) who find that it is not enough to have linguistic knowledge accessible while writing, the knowledge needs to be applied efficiently and fluently which may result in an enhanced writing process and a higher quality of written text. In L2 writing the writers differ in their L2 knowledge, but due to differences in exposure to the L2 they must also differ in their fluency, e.g. accessibility to knowledge. Differences in fluency in L2 is also expected to be different compared to in the L1 due to differences in learning aptitude, L2 exposure and L2 instruction. It is not only the writing fluency which will be hindered by the burden on the working memory for low-level processes, but also the quality of the text.

Similarly, Raymond Bertram et al. (2015) analysed the online patterning of writing single words by using the tool ScriptLog to assess what processes are completed before writing and what processes take place during the writing process. The participants who were native speakers of Finnish were showed pictures of compound words in Finnish and they had to write what they saw. The authors state that compound words are retrieved as whole units before writing is initiated since it was found that writing onset times are determined by whole word frequency rather than constituent frequencies. They also found that the linguistic planning is not completely ready before writing begins, instead additional planning takes place during writing in the boundaries between e.g. syllables. The link between this research and the processing of idioms: the question if the idiom unit should be regarded as a single lexeme or a phrase will be briefly discussed in section 6.1.

2.6 Idioms in L2 learning

The study on idioms and phraseology is not new. As early as in the beginning of the 1900's Charles Bally classified fixed expressions. He investigated and noted cross-linguistic similarities between European languages which were more striking than the differences. Contrastive analysis and comparison studies have continued on a large scale since then to explore the existence of universal idioms, but mainly in European languages and mainly proverbs instead of idioms. Those studies have been criticised for ignoring non-European languages since it is impossible to speak of universality when studying a small number of

languages and when systematic data collection from different cultures is missing (Piirainen, 2012). Classification and comparison of idioms have been more rare and basically done in only a few European languages until Elisabeth Piirainen (2012) wrote her work which is an idiom lexicon and covers a considerable number of languages. Other specific research on idioms, e.g. how they are processed, learnt and taught, does not seem to have existed prior to the 1980's.

Suzanne Irujo (1986) analysed if L2 learners use knowledge of their L1 to produce idioms in the L2, i.e. if any language transfer occurs, and she uses an offline study including a written task with multiple choice questions for recognition, an open-ended definition-writing task for comprehension, a discourse-completion task for recall, and a translation task for production. The participants were Venezuelan advanced learners of English. She used English idioms which were either identical in form and meaning to their Spanish equivalents, similar to their Spanish equivalents or different from the Spanish equivalents. She argues that identical idioms are easiest to produce, similar idioms are just as easy but shows interference from the L1, Spanish, and different idioms are most difficult to produce but show less interference than similar idioms. She also states that learners use different strategies to produce idioms they do not know. The strategies were substitution of words with similar meanings, providing an incomplete idiom, using an English idiom different from the expected one, using a figurative expression which is not a known idiom or using a routine phrase which is not idiomatic. The idioms that were comprehended and produced most correctly were those which were frequently used and which had simple vocabulary and structure.

Several other studies have been conducted to examine the relationship and influence between L1 and L2 idioms. Peter Howarth (1998) discusses the role of phraseology in L2 proficiency. In this study he presents data from studies on native speaker language use and studies of native and non-native academic writing in English. He also presents some learner strategies in relation to phraseology, namely avoidance, experimentation (risk-taking) and transfer. He states that there remains a lack of detailed description of learners' phraseological performance, even if there has been an increasing amount of research regarding the role of phraseology in L2 acquisition, for understanding the development of phraseological competence.

Anna Cieślicka (2006) studied whether literal meanings of idiom constituents take processing priority over the figurative interpretations during online processing of idioms by using two tests, a passive task of attending to spoken sentences presented continuously one after another and an active task when a visual target appears on a computer screen and the participants perform an

active lexical decision task. The tests were administered to a group of Polish advanced learners of English. She argues that literal meanings of idiom constituents take processing priority over the figurative interpretations during online processing of idioms. This suggestion forms the literal salience model of the comprehension of L2 idioms. In short, the literal salience model suggests that comprehension of L2 idioms entails a computation of the literal meanings of idiom constituents, regardless if the idioms are figurative in context. Idiom comprehension at early stages of L2 learning may consist of three steps: 1) a L2 idiom is translated literally into L1, 2) the learner accesses the literal meaning of the idiom and attempts to make sense of it and 3) the figurative meaning is accessed. In more advanced stages of L2 learning the L2 learner may process figurative expressions in the same manner as a native speaker without having to access their literal meanings first.

Brent Wolter and Henrik Gyllstad (2011) investigated the influence of L1 intralexical knowledge on the formation of L2 intralexical fixed expressions. They used two tests, a primed lexical decision task and a test of receptive collocational knowledge, which were administered to a group of Swedish non-native speakers of English and with native speakers of English serving as controls. The task was to identify whether or not the target string represents a real word in the specified language. The tests assessed fixed expressions with translation equivalents in Swedish and English, fixed expressions that were acceptable in English but not in Swedish and unrelated items for baseline data. The results showed that the L1 may have considerable influence on the development of knowledge of fixed expressions in the L2. Fixed expressions with translation equivalents in Swedish and English were easier to acquire than fixed expressions that were acceptable in English but not in Swedish. The authors state that learners sometimes reject acceptable fixed expressions in the L2 even when they have an equivalent form in the L1 and therefore learners need confirmation when their knowledge of fixed expressions in the L1 is fully transferable.

Gareth Carrol et al. (2016) state that knowledge in formulaic language, expressions which are fixed in form, presents a challenge even for learners with high language proficiency. English native speakers and Swedish learners of English were tested on a set of English idioms, translated Swedish idioms, and idioms which exist in both languages. Eye-tracking was used to measure the number and duration of fixations during natural reading. The purpose was to see if the Swedish highly proficient group in English showed any evidence of a formulaic processing advantage for English idioms and how knowledge in the L1 was utilised during online processing. The authors claim that L1 knowledge seems to be automatically used from the

earliest stages of processing and that exposure and advanced proficiency can lead to L1-like formulaic processing in the L2. An assumption is that the frequency of input or degree of exposure is a key to how patterns will be registered. Language-specific experience will be a strong predictor of how word combinations are processed in the L1 and L2. It is possible for L2 speakers to process L2 idioms quickly, in the same way as native speakers, but the exposure and level of proficiency necessary for this to happen is high, even for the advanced learners in the study. The formulaic processing advantage was modest and was not really evident.

The role of the L1 for translating L2 idioms is also analysed by Sara Donnell Beck and Andrea Weber (2016) who examine L2 (English) and L1 (German) listeners' access to figurative idiomatic meaning and literal constituent meaning. Some of the English idioms had word-for-word translation equivalents in German, while others had matching idiomatic concepts in German but could not be translated word-for-word. The existence of word-for-word translation equivalents in German neither facilitated nor hindered meaning activation for German L2 listeners. Translatability also appears to make a difference in comprehension and production of L2 idioms. Cross-linguistic effects on translations of idioms are found, at least on a lexical level. L2 listeners respond faster to literal meaning. Cieślicka's (2006) study did not include an L1 group for comparison, but this study showed that L2 processing generally mirrors L1 processing. Proficient L2 users seem to directly map L2 words to conceptual meaning when there is a direct overlapping of L1 and L2 words and L2 idiom entries occur on a conceptual level after L2 users encounter them over time. Thus, L2 idiom processing follows the same routes as L1 idiom processing for these users. For less proficient users the literal meaning is first accessed and then the figurative meaning. Over time, learners are able to manage direct mapping. Notably, L2 users may be slower or have more difficulty processing some figurative language as they become more proficient, but that is likely due to general L1 and L2 differences rather than a distinct manner of processing.

2.7 The present study

The present study described in this paper continues on two research tracks which emanate from the language transfer theory. One of the tracks involves understanding of a learner's ability to process and create mental representations during language learning. The degree of similarity between the learner's L1 and L2 affects the language learning processes. Another track is regarding language directionality and language interaction in the multilingual mind. The used parameters in this study, time to onset and production accuracy, are measured through keyboard logging. That method makes it possible to examine both the writing process and the translation

quality during translation. The complex and conventionalised nature of idioms makes them interesting to examine in connection to language learning and interaction. Earlier studies on idioms mainly concern the literal and figurative meaning of idioms and how they are processed during learning and translation. Furthermore, contrastive analyses and the language transfer theory are applied to some of the earlier studies. This study focuses on the semantic and linguistic differences and similarities of idioms between a L1 and L2, and how they are handled during translation. The focus is also on whether the translation output is affected by the idiom usage frequency and not only by the translator's language proficiency.

3. Method

3.1 Procedure

Figure 1 below summarises the study design.

Preparation of the elicitation instrument (through e-mail, a form with 55 idioms, 21 participants with Swedish as their mother-tongue, 19 participants with English as their mother-tongue)



Elicitation instrument (25 idioms)



Study (at the Centre for Languages and Literature with the elicitation instrument, a registration instrument and 12 students with Swedish as their mother-tongue and various proficiencies in English as a L2)



Translation test

(in ScriptLog, 25 tasks, analysis of time to onset and production accuracy)



Comprehension test

(control test in ScriptLog, 21 tasks)



The participants' feedback and background information form



Searches in online corpus (to get data on idiom usage frequency)



Interpretation of data and statistics (to answer the research questions)

Figure 1. Study design

A translation test and a comprehension test with idioms were used to examine how second language learners of English produce and comprehend idioms in the L2. The construction of the tests were inspired by Irujo (1986) since she used a clear and easy layout for the tests. The tests were administered with a keyboard logging software, ScriptLog, to be able to observe the production in real-time. The software measures the time to onset which is the time between

stimulus onset and response onset, i.e. time between seeing the task and starting to produce an answer. It also registers the production accuracy, i.e. the quality of the production, which would have been difficult if I had used handwriting on paper. I decided to construct the translation test as a unidirectional (L1 > L2) bilingual test. I could have used translation tests in both directions, L1 > L2 and L2 > L1, but that would have resulted in a more extensive study. The comprehension test was constructed as a control in English only to investigate the comprehension of the idioms in the translation test without any influence of the L1. Twenty-one idioms were used in the comprehension test since I wanted an odd number and still an adequate number of idioms to analyse. The same idioms were included in the translation test. Four extra idioms were also added to the translation test to make it harder for the participants to exactly know what idioms were included in the study. I finally decided to include the four extra idioms in the study after the tests were completed by the participants. I found that it would probably not be any point in only having four extra idioms. At the time I also thought it would be interesting to use the results for those idioms as well. That is the reason why I denote the four idioms as “extra” in this paper up to chapter 4. Similarly, it is the reason why the translation test consists of 25 test items and the comprehension test consists of 21 test items.

The translation and comprehension tests were the elicitation instrument in ScriptLog. In order to choose the idioms which should be used in the tests with a more objective approach, the preparation of the elicitation instrument was completed prior to the study. This selection process was also inspired by Irujo (1986) since it seemed to be an appropriate way of choosing the idioms without any subjective bias on my part. Two forms were constructed: one form with 55 common idioms in Swedish and another form with the corresponding 55 idioms in English. I included 55 idioms in the forms since I wanted to provide an extensive “pool” of idioms from which to choose the idioms for the study. The Swedish form was sent by email to native Swedish speakers and the English form was sent to native English speakers. The idioms which were considered as most common by a majority of the participants were selected to be included in the tests. The tests were constructed in ScriptLog, and 12 Swedish university students completed them. After the tests, the participants got a feedback form with background questions, e.g. how long the participants had studied English, and if and how many times they had visited English-speaking countries. Data from ScriptLog were analysed and searches of idioms in an English newspaper corpus was used to provide an estimation of the idiom usage frequency of the involved idioms. Statistics was used to investigate if the production of idioms was affected by idiom usage frequency.

3.2 Preparation of the elicitation instrument

3.2.1 Introduction

The purpose of the preparation of the elicitation instrument was to take a more objective approach to choose the idioms for the study and the preparation was inspired by Irujo (1986). Two forms were constructed: one form with 55 idioms in Swedish and another form with their counterparts in English (see the English form in appendix B). The idioms were taken from an idiom lexicon (Pirainen, 2012). The criteria for selecting them from the idiom lexicon were that they should exist in both Swedish and English, and they should not be too general in form. The idioms should also have various degrees of linguistic and semantical similarity, i.e. sometimes a literal translation would suffice to translate from L1 to L2 and sometimes not. The Swedish form was sent and received back by email to native Swedish speakers and the English form was similarly sent to native English speakers. The participants were instructed to indicate if they recognized each idiom by marking the box under either Y (yes) or N (no) and also estimate how common or uncommon they believed each idiom was by marking one of the boxes 1–5 where 1 corresponded to a very uncommon idiom and 5 corresponded to a very common idiom (Irujo, 1986). The answers from the forms are summarised in sections 3.3.3 and 3.3.4 below. Section 3.3.5 describes the process for selecting the idioms for the study from the forms.

3.2.2 Participants

Potential participants among friends, business contacts and fellow students for the preparation of the elicitation instrument were contacted on an *ad hoc* basis during two weeks in September–October 2017. The final group of participants was self-selected in the sense that they were willing to complete the form. Forty participants between the age of 23 and 75 years completed the form in their mother tongue. Twenty-one native Swedish speakers from Sweden participated in addition to 19 native English speakers, of which 1 was from India, 12 were from Great Britain and 6 were from the US.

3.2.3 The Swedish form

The idioms which were chosen by the participants as most common, most uncommon and the corresponding number of participants in percent who selected the idiom in question are shown in table 1. The table below also shows the idioms which the participants had never heard of which were selected as “N” on the form.

Table 1. The 5 most common idioms, the 5 most uncommon idioms and 5 idioms which the participants had never heard of together with the corresponding number of participants in percent who selected the idiom in question

Common (score of 5)	Uncommon (score of 1)	Never heard of (N)
hålla tummarna (71%)	som ler och långhalm (52%)	gripa tillfället i flykten (10%)
ta med en nypa salt (43%)	sätta sitt ljus under skäppan (86%) ¹	sätta sitt ljus under skäppan (48%) ¹
ta någon på bar gärning (57%)	ge upp andan (38%)	storm i ett vattenglas (10%)
slå två flugor i en smäll (43%)	bära sitt kors (48%)	bära sitt kors (10%)
pricken över i (48%)	med hull och hår (29%)	ge upp andan (10%)

¹ The results are not mutually exclusive.

The idioms chosen as most uncommon on the Swedish form are mainly idioms associated with religion, e.g. *sätta sitt ljus under skäppan* (“hide one’s light under a bushel”) (86%), but this was not as evident on the English form (79%). I would guess the reason is that there is a higher degree of secularisation in Sweden and thus idioms associated with religion are considered less common than the equivalent idioms in English.

It seems as if the participants for the Swedish form selected idioms as most uncommon but nevertheless had heard of them to a greater extent compared to the English participants. It is often said that the English language consists of many idioms. However, this result may suggest that the Swedish language is more up-to-date with the use of idioms and that the use of idioms is more vivid in everyday society compared to the English language.

3.2.4 The English form

The idioms which were chosen by the participants as most common, most uncommon and the corresponding number of participants in percent who selected the idiom in question are shown in table 2. The table below also shows the idioms which the participants had never heard of which were selected “N” on the form.

Table 2. The 5 most common idioms, the 5 most uncommon idioms and 5 idioms which the participants had never heard of together with the corresponding number of participants in percent who selected the idiom in question

Common (score of 5)	Uncommon (score of 1)	Never heard of (N)
over my dead body (74%)	pour oil on troubled waters (68%)	pour oil on troubled waters (68%)
keep fingers crossed (95%)	in for a penny, in for a pound (47%) ¹	in for a penny, in for a pound (47%) ¹
knock on wood (63%)	hide one's light under a bushel (79%)	hide one's light under a bushel (79%)
kill two birds with one stone (63%)	take time by the forelock/hair (100%)	take time by the forelock/hair (100%)
speak of the devil (63%)	give up the ghost (47%)	give up the ghost (47%)

¹ All of the participants from the US selected this as one of the most uncommon idioms. One reason is probably that the currency in the US is neither penny nor pound, so it is not natural to use this idiom.

The use of idioms in the English-speaking world seems to greatly depend on if you speak American or British English. As an example: participants from the US seemed to prefer “cherry on top” or “cherry on the cake” instead of “icing on the cake” (*grädde på moset*), while participants in the UK seemed to prefer “skeleton in the cupboard” instead of “skeleton in the closet”.

The results from the English form seem to be more polarised than from the Swedish form. All participants for the English form selected “take time by the forelock/hair” (*gripa tillfället i flykten*) as the most uncommon idiom. At the same time, all participants from the US selected “in for a penny, in for a pound” (*har man sagt A, får man säga B*) as one of the most uncommon idioms which I assume is due to the lack of the currency in the US.

3.2.5 Selection of idioms for the study

The idioms which were considered common in average and were graded as 3–5 (moderately common to very common) on the Swedish and English forms were chosen for the study. In some cases the most common idioms on the Swedish form did not exactly match the most common idioms on the English form, and this was solved in the following ways. Firstly, if an idiom was graded as 3 on the English form but 5 on the Swedish form, it was included since it was graded 3–5 on both forms. Secondly, if an idiom was graded as 2 on the Swedish form but 5 on the English form, it was excluded since it was not graded 3–5 on both forms. Idioms with a too general form were excluded from the study. An example of a too general form is the idiom

“on cloud nine” (*i sjunde himlen*) which was chosen as fairly common, but was excluded from the study since there is a possibility for an alternative and less common idiom, “in seventh heaven”, with the same meaning. A total of 25 idioms with counterparts in Swedish and English were selected to be included in the translation and comprehension tests. Four extra idioms which were among the ones considered moderately common to very common were chosen as well for the translation test to make it harder for the participants to exactly know what idioms were included in the actual test.

3.3 Study

3.3.1 Introduction

The idioms which were selected for the study were used to construct the translation and comprehension tests in the key logging software ScriptLog to measure the time to onset and production accuracy for the study participants. The data from ScriptLog were then used to see how second language learners of English produce and comprehend idioms in the L2. The translation test consisted of 25 test tasks and each test task involved one of the 25 idioms chosen for the translation test. The test tasks were shown on a computer screen one after the other. The comprehension test was constructed as a control test in English only to investigate the comprehension of the idioms in the translation test without any influence of the L1. It consisted of 21 test tasks and each test task involved one of the 21 idioms chosen for the comprehension test. The translation and comprehension tests were included in the same set with a total of 46 test tasks where the translation test continued seamlessly to the comprehension test without any boundary between the tests. The reason for that was that the participants should not get any pre-warning about the end of one test and the beginning of the next, and the test tasks should be presented without any interruption or interference. The section 3.4.2 indicates the participants in the study and how they were recruited. The information on the registration instrument, the keyboard logging software ScriptLog, is detailed in section 3.4.3. The construction of the translation and comprehension test is described in detail in sections 3.4.4 and 3.4.5. The participants got a background information and feedback form (see appendix D) to complete in writing after the tests. The feedback part consisted of a miniature list of all study tasks and the participants also got an answer key. They were encouraged to provide some general feedback on the tests and, more specifically, indicate what tasks were difficult (if any), what tasks were easy (if any), reasons why and how the participants thought to be able to solve the difficulties. They also got questions on how long they had studied English, if and how many times they had visited English-speaking countries, and their use of English-speaking media as movies and

books. Data from ScriptLog were analysed and searches in an English newspaper corpus was used to provide an estimation of the usage frequency in written form of the involved idioms. Statistics was used to examine if there was any correlation between the study's production results and idiom usage frequency.

3.3.2 Participants

Posters with information on the study were posted on several locations in Lund, e.g. the University Library and at the Centre for Languages and Literature, to recruit potential participants for the actual study. Information on the study was also given to students participating in lectures for basic courses in English, Swedish and General Linguistics. Swedish students at university were chosen as a test group in order to avoid handling language proficiency tests since Swedish students are required to have passed courses in English to be able to apply for university studies (general competence). That means that there is an established minimum level of formal proficiency. The final group of participants was randomly self-selected since the participants contacted me and were willing to participate in the two tests of the study and also provide background information and feedback. A total of 12 participants who were students at Lund University with Swedish as their mother-tongue were recruited from the end of October to the end of November 2017. They completed the two tests on a computer and the feedback and background information form in writing during about one hour in total in a computer room at the Centre for Languages and Literature. The standard number of years learning English in Sweden if a person begins studying at university directly after upper secondary school (Swedish: *gymnasiet*) is 10 years if he/she began in the third grade. The background information revealed that five of the participants had studied English for more than 10 years and seven had studied for about 10 years. It also revealed that six of the participants seemed to have a higher L2 exposure than the other six participants which means several or many travels to English-speaking countries and/or continuous use of English-speaking media every week and/or frequent communication in English every week.

3.3.3 Registration instrument

The question if a participant can produce the correct idiom is fairly simple to conclude by just looking at the translation in writing, but it is not just the accuracy of the tests that may be interesting to know. It is also useful to get information on the accessibility of knowledge and planning during production operationalised as the production time and the time to onset (time between seeing the task and starting to produce an answer). With reference to Bertram et al. (2015), a fast onset time would suggest that the linguistic planning for producing idioms is

easily accessible, i.e. a possible sign of a more profound language and idiom knowledge in addition to production accuracy. A person who is confident in the production and comprehension of an idiom will probably also write the correct idiom quickly and smoothly with very few typing errors and pauses. A method to see the translation/production in real-time and measure the time to onset and the total production time is to use keyboard logging.

Keyboard logging tools register and log a writer's typing patterns, e.g. the typed text (a play back of the writing process in real-time), the time it takes to type it, when the writer makes pauses and how long the pauses are. There are several tools on the market, but I needed an easily accessible tool which could be used by students. A version of the tool named ScriptLog is used by researchers at the Centre for Languages and Literature for research on the process of writing. That tool is also available for students and it is easy to learn. I also had access to support and a software programmer who could help me to adjust the tool for my needs. ScriptLog also measures the total number of keystrokes and words within a test set, so if I had separated the two tests into two test sets instead of one I would get such data for each test. I decided that it was more important to get one test set only with a continuous appearance and smooth transition than to get access to more data with ScriptLog. The obtained data would suffice to answer my research questions. ScriptLog consists of recording, play-back, design and analysis modules. It has two windows, an elicitation window and an editor window. The stimuli for a study is shown in the elicitation window and the written production, the typing, is done in the editor window (Strömquist et al., 2004; Bertram et al., 2015) (see figure 2 below). A pause criterion needs to be defined in ScriptLog which means defining a threshold for the pause length. The references (ibid.) indicate two seconds so I used that pause criterion.

Time to onset: The time that elapses between the appearance of the text for the task on the screen and the first pressing of a key as a participant starts writing his/her response option. It is a parameter which indicates how long it takes for a participant to pre-process and prepare the response, i.e. what to write. Bertram et al. (2015), asking their participants to write down the name of an object that appeared on the screen, found very short response times (often only a few hundred milliseconds) and concluded that the lexical items were accessed with ease from memory. Strömquist et al. (2004), asking their subjects to write a story in relation to a wordless picture story, found their adult participants to pause on average more than a hundred seconds before starting to write. In my study the participants had to read the Swedish text, understand the idiom in the text, translate the text to English and find the equivalent English idiom. What would be a long or short time to onset is much an empirical question. Inspecting the data, a

short time to onset tends to be in the range of two to five seconds. Longer times to onset tend to be above ten seconds.

Production accuracy: This is the parameter which indicates if the translation is correct or incorrect. A high production accuracy means that a correct or close to correct idiom is produced with either a short time to onset or a longer time to onset. That suggests that the idiom in question is known to the participant and easily accessible from memory. Both American and British English versions of the same idiom, e.g. “cherry on the cake” or “icing on the cake”, were evaluated as correct. Production accuracy evaluated as “incorrect” means either that the translation does not include the intended idiom, but instead a literal or figurative translation/synonym, or include a slang term or an invented idiom without the intended meaning. That means that the correct idiom is not known to or remembered by the participant and he/she solves the difficulty by producing alternative translations. Production accuracy evaluated as “correct” means that the translation indicates the intended idiom in either the American or the British version. The results of the production accuracy parameter were assessed by calculating the percentages for incorrect and correct responses for each idiom across every participant.

3.3.4 Translation test

Twenty-five test items were constructed for each of the selected idioms in PowerPoint with black text in the font Calibri, size 14 pt, on white background. The first line was a sentence in Swedish in normal text which included the idiom of interest in bold text. The second line was the translated sentence in English with the corresponding idiom omitted and just indicated by “_____”, see appendix D. The 25 PowerPoint files were saved as JPEG files for import and construction of a test set in ScriptLog. The participants were instructed to read the task text and translate the idiom in bold text into the correct corresponding English idiom in the editor window. They were also instructed that some of the idioms could not be translated literally and if they did not know the corresponding idiom in English they should try to solve it by translating it into something close in meaning or something equivalent. They did not have any access to dictionaries and other resources. By clicking on the “Next” arrow, they proceeded to the next task, see figure 2 below.

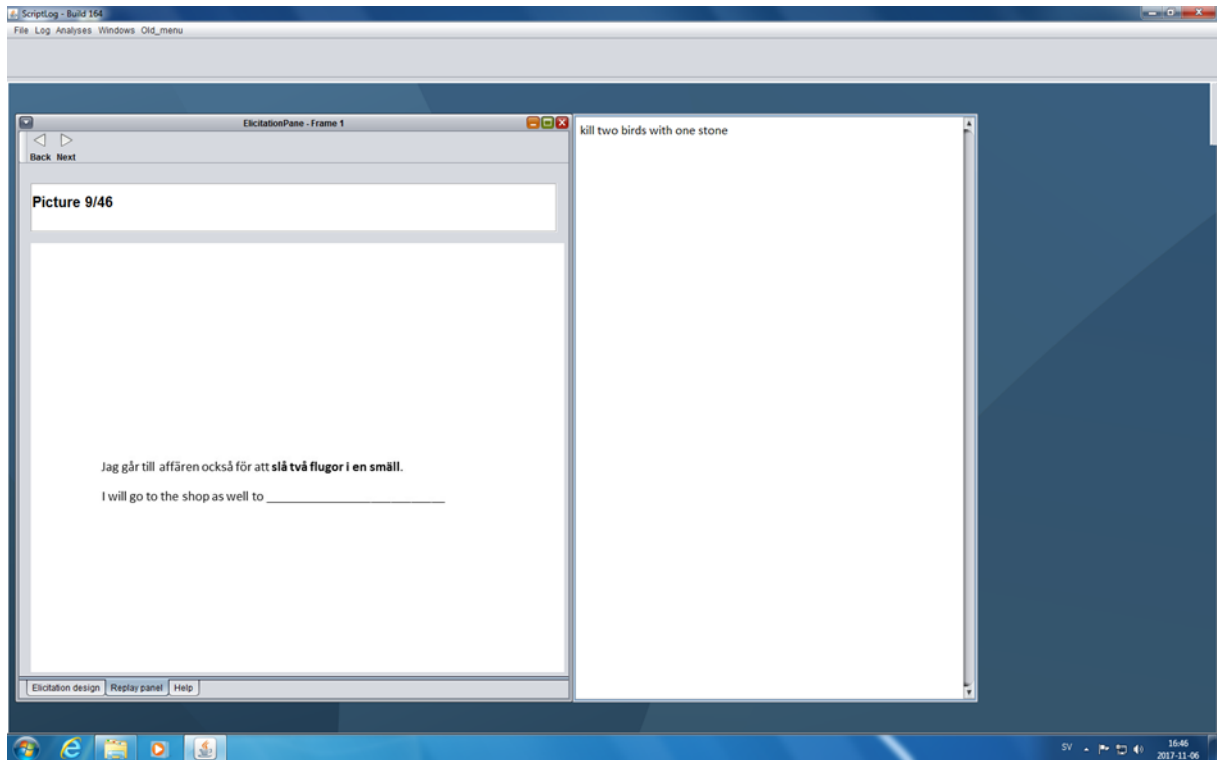


Figure 2. Example of the study’s translation test viewed in ScriptLog

3.3.5 Comprehension test

The comprehension test served as a control test to verify that the participants knew the general meaning of the idioms in the translation test. Twenty-one (21 idioms) test items were constructed for each of the selected idioms in PowerPoint with black text in the font Calibri, size 14 pt, on white background. The first line was a sentence in English in bold text which included an idiom in context. The task was to guess the general meaning of the sentence. There were four different options to choose from. One of the options referred to the correct meaning, one was definitely wrong, one was a literal interpretation of the sentence and the last one was a figurative interpretation of the sentence. The order of the option types was scrambled. The letters a, b, c and d were just noted for data processing and were not indicated in the test. The reason being that the purpose of the test was to copy the whole text of the correct option in the editor window (see appendix D), and not only the corresponding letter a, b, c and d. The 21 PowerPoint files were saved as JPEG files for import in ScriptLog. The participants were instructed to read the text, choose the correct meaning among the four options and write the text for the chosen option in the editor window. They were also instructed that several options could be correct in some way, but the aim was to choose the option closest to the general meaning of the idiom in the task. By clicking on the “Next” arrow, they proceeded through the whole test set until the end, see figure 3 below.

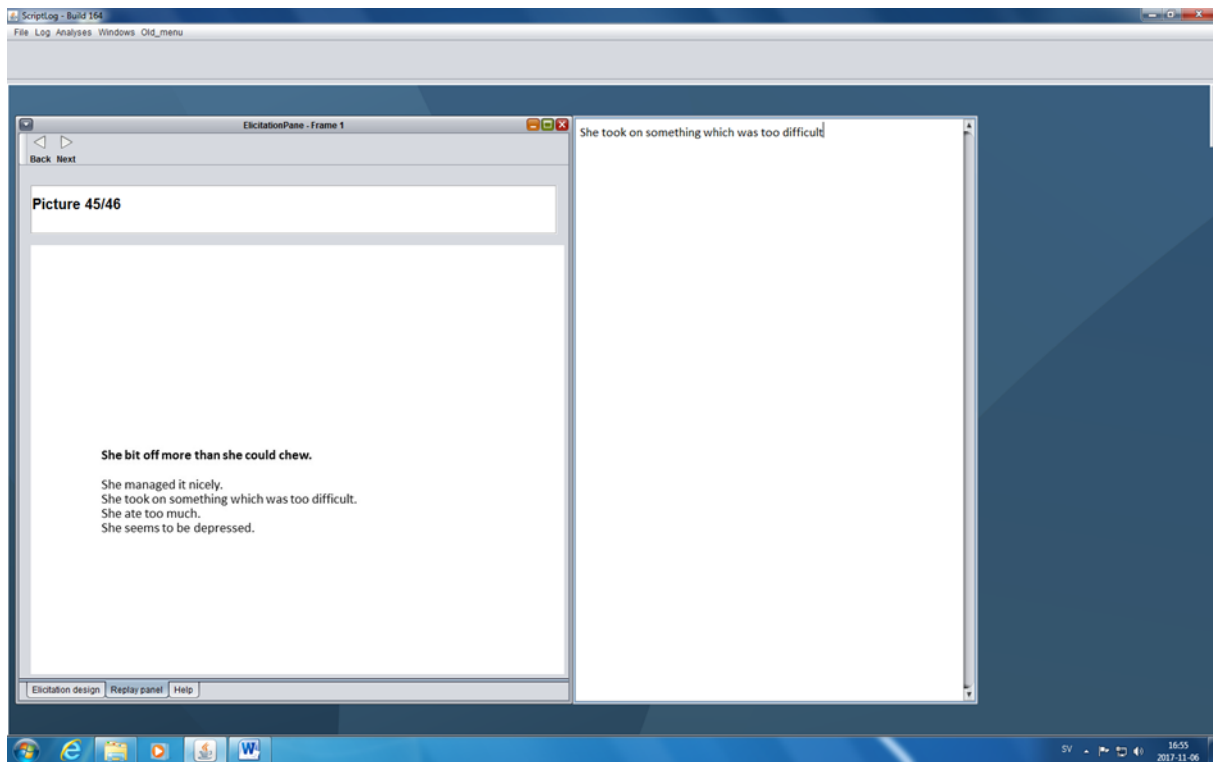


Figure 3. Example of the study's comprehension test viewed in ScriptLog

3.3.6 Feedback and background information form

The language proficiency and the ability to toggle between two languages in a translation situation do not depend only on how long you have studied a specific language, but also how much you use the language in everyday life and gets exposed to the language in your environment (Carrol et al., 2016). Feedback from the participants was also necessary to know how they solved difficulties during the tests and observe if there was any deviation between the participants' notions of their capability of producing correct English idioms and the actual result. A background information and feedback form (see appendix D) was constructed in order to get such information from the participants.

The background questions were selected to include all various aspects of L2 exposure, e.g. how long the participants have studied English, if and how many times they have visited English-speaking countries, and habits regarding reading English books and watching English movies. The feedback part consisted of a miniature list of all study tasks and the participants also got an answer key. They were encouraged to provide some general feedback on the tests and, more specifically, indicate what tasks were difficult (if any), what tasks were easy (if any), reasons why and how the participants thought to be able to solve the difficulties.

3.4 Idiom usage frequency

An online newspaper corpus in English was used to get data on the usage frequency of the idioms included in the study in written form. Since I have never used corpus searches previously, I got some recommendations on sites to investigate. I selected the online web-based corpus iWeb: The Intelligent Web-based Corpus (Davies, 2017) since it contains around 14 billion words and it involves English websites from the US, the UK, Ireland, Australia, New Zealand and Canada. It was possible to search by strings and phrases which is optimal when studying idioms. It was easy to browse through the search results as well, e.g. when I had to disregard matches involving food recipes together with the idiom “take with a pinch of salt” (*ta med en nypa salt*). I searched in the corpus for every idiom included in the study to get an estimation of usage frequency. Both American and British English versions of the same idiom were searched in the corpus.

3.5 Statistical analysis

I got help with statistics from a researcher at the Centre for Languages and Literature to investigate whether there is any correlation between idiom usage frequency, time to onset and production accuracy for every idiom in the study. The statistical software which was used is called “R” (R Core Team, 2017) and is free to download. Three lists were set up and used together in the statistical analysis. Firstly, a list with the times to onset for every idiom and every participant. Secondly, a list with the idioms in descending order with the idiom with highest production accuracy at the top. Thirdly, another list with the usage frequency for each idiom taken from the online corpus.

4. Results

4.1 Introduction

Data for time to onset and production accuracy were obtained from the ScriptLog tool. The results of the translation test in terms of time to onset and production accuracy are indicated in tables in section 4.2. The result of the comprehension test is found in section 4.3. The table in section 4.4 lists the idioms in the study and the results from the searches in the online corpus. Section 4.5 indicates the results from the statistical analysis of possible correlation between the data of the translation test and the idiom usage frequency.

4.2 Study – translation test

4.2.1 Time to onset

There were four idioms which were added to the translation test to make it harder for the participants to know exactly which idioms were included in the study. After the test had been completed by the participants, I decided to include the four extra idioms in the study. That means there were 25 idioms which were investigated in the translation test. A total of 294 time to onset values were obtained from the test logs in ScriptLog for each participant and each idiom. Three participants skipped or missed the test task for three idioms during the translation test. There was a considerable wide distribution of the times to onset. The shortest time was around 2.5 seconds for the idiom “over my dead body” (*över min döda kropp*) and the longest time was around 100 seconds for the idiom “smell a rat” (*ana ugglor i mossen*). I decided to calculate mean times to onset for every idiom for easier viewing, in spite of the wide distribution. Additionally, “smell a rat” (*ana ugglor i mossen*) had the longest mean time to onset of all idioms in the study. The idiom “knock on wood” (*ta i trä*) had the shortest mean time to onset. Standard deviations for each idiom were also calculated to illustrate the degree of variation of the times to onset. The mean times to onset for each idiom in the study in ascending order and the corresponding standard deviations are indicated in table 3 below. Generally, the standard deviations show that the dispersion of the times to onset increases with longer mean time to onset.

Table 3. Mean times to onset and standard deviations for each idiom

Idiom	Mean time to onset (seconds)	Standard deviation
knock on wood	3.51	1.23
all ears	3.74	2.69
over my dead body	4.20	2.50
speak of the devil	6.93	7.72
swallow the bitter pill	8.15	3.80
raining cats and dogs	8.54	6.28
skeleton in the closet	8.73	8.57
catch somebody red-handed	9.96	7.66
sell like hotcakes	10.29	10.62
keep fingers crossed	10.94	11.68
kill two birds with one stone	11.26	7.85
spill the beans	11.84*	10.29
cost an arm and a leg	12.09	9.10

wolf in sheep's clothing	12.23	9.40
beat about the bush	12.34	16.59
when in Rome, do as the Romans do	12.66	11.40
add insult to injury	14.49	13.26
take with a pinch of salt	16.00	19.20
icing on the cake	16.56	20.02
like two peas in a pod	17.44	9.20
bite off more than one can chew	17.49	20.82
be all thumbs	18.49	26.53
a storm in a teacup	18.67*	25.42
many irons in the fire	20.06*	25.00
smell a rat	34.11	29.33

* The test tasks for these idioms were skipped or missed by three participants.

For about 6 of the 12 participants the longest times to onset were mainly associated with idioms which are linguistically and semantically different in the L1 compared to the L2. The very different idiom “raining cats and dogs” (*stå som spön i backen*) was produced faster than the other very different idioms like “smell a rat” (*ana ugglor i mossen*) and “spill the beans” (*prata bredvid mun*). The idioms “many irons in the fire” (*många järn i elden*) and “a storm in a teacup” (*storm i ett vattenglas*), which are linguistically and semantically close to identical in the L1 compared to the L2, rendered longer times to onset than the other identical or similar idioms.

4.2.2. Production accuracy

Information on production accuracy was obtained from the test logs and the elicitation views in real-time in ScriptLog for each participant. The percentage of correct responses was calculated for each idiom across participants. The overall production accuracy in terms of percentage of correct translations for every idiom is shown in descending order in table 4 below. When the percentages for production accuracy were tied, the idiom with shorter pauses and fewer changes during production, i.e. shorter total production time, was ranked higher in the table. The percentages were rounded up where applicable.

Table 4. Production accuracy for each idiom

Idiom	Production accuracy Correct (%)
over my dead body	100
all ears	100
keep your fingers crossed	100
raining cats and dogs	83
kill two birds with one stone	83
a skeleton in the closet	83
speak of the devil	75
knock on wood	75
take with a pinch of salt	58
catch somebody red-handed	50
beat about the bush	50
icing on the cake	42
like two peas in a pod	33
when in Rome, do as the Romans do	33
a storm in a teacup*	25
many irons in the fire*	25
swallow the bitter pill	17
be all thumbs	17
a wolf in sheep's clothing	17
sell like hotcakes	17
cost an arm and a leg	8
smell a rat	0
bite off more than one can chew	0
add insult to injury	0
spill the beans*	0

* The test tasks for these idioms were skipped or missed by three participants.

The participants solved translation difficulties in most cases by an element of risk-taking, writing a literal equivalent and thus avoiding the use of idioms, e.g. translating the idiom “smell a rat” (*ana ugglor i mossen*) to the literal phrase “suspecting owls in the grass”. Another example of much less common strategies to solve translation difficulties was using other self-invented expressions as “consumed as boiling water” for the idiom “sell like hotcakes” (*gå åt som smör i solsken*). An example of a possible language transfer could be seen, e.g. the translation of the Swedish idiom *ta någon på bar gärning* (“catch somebody red-handed”) was many times translated to “catch somebody bare-handed”.

The four idioms which did not result in any correct translation are idioms which are linguistically and semantically different in the L1 compared to the L2. They are also placed in the lower part of the time to onset table (see section 4.2.1), i.e. longer mean times to onset. The three idioms at the top of the table without any incorrect translation are linguistically and semantically close to identical or similar. Those idioms are placed in the upper part of the time to onset table, i.e. shorter mean times to onset. The idiom “beat about the bush” (*gå som katten kring het gröt*), which is linguistically and semantically different, is placed in the middle of both the time to onset and the production accuracy tables.

4.3 Study – comprehension test

The comprehension test served as a control test to verify that the meaning of the idioms was known to the participants. It was a select-and-copy test where the participants had to choose the correct meaning of each idiom among four different options. Two participants skipped or missed one test item each. Data obtained from the test logs and the elicitation views in real-time in ScriptLog showed that the times to onset were much shorter for this test compared to the translation test. The reason why is probably because the participants just had to choose and write one of four given responses. They did not have to produce any text from scratch.

The idioms which rendered most problems with comprehension were the idioms “be all thumbs” (*ha tummen mitt i handen*), 4 out of 12 participants selected a wrong response option, and “many irons in the fire” (*många järn i elden*), 7 out of 12 participants made a wrong selection. Only 3 participants got all correct results, i.e. correct selection of response options. The common patterns for the participants with completely correct selection of response options were that they had long onset times in general. Additionally, they produced correct translations of less than half of the idioms in the translation test. In short, those participants experienced some problems during production from scratch, but experienced no problems during a select-and-copy task.

4.4 Idiom usage frequency

The usage frequency for each idiom in the study was taken from an online corpus and is shown in table 5 below.

Table 5. Usage frequency according to an online corpus for each idiom

Idiom	Usage frequency (number of websites in the iWeb corpus)
icing on the cake	9,793
all ears	4,106
knock on wood	3,564
spill the beans	2,121
kill two birds with one stone	2,061
catch somebody red-handed	1,840
cost an arm and a leg	1,665
add insult to injury	1,578
bite off more than one can chew	937
smell a rat	557
raining cats and dogs	510
over my dead body	509
sell like hotcakes	421
a storm in a teacup	410
wolf in sheep's clothing	406
be all thumbs	378
speak of the devil	322
like two peas in a pod	230
many irons in the fire	203
beat about the bush	197
skeleton in the closet	180
keep fingers crossed	113
take with a pinch of salt	70
when in Rome, do as the Romans do	59
swallow the bitter pill	49

The table above (table 5) corresponds better to the table with mean time to onset (table 3) compared to the table with production accuracy (table 4). The top five and the bottom five idioms in table 5 corresponds rather well, with a few exceptions, to the top five and the bottom five idioms in the table 3. The most common idioms in table 5 belong to the group of the idioms in table 4 which resulted in more correct than incorrect translations with a few exceptions. The same correspondance does not apply for the most rare idioms in table 5. The distribution of the most rare idioms was not confined to the group of idioms in table 4 which resulted in more

incorrect than correct translations. In short, the results in the idiom usage frequency and the production accuracy tables correspond rather well regarding the most common idioms, but not regarding the most rare idioms.

4.5 Statistical analysis

The three lists indicated in section 3.6 were run in the free statistics software “R” (R Core Team, 2017). The distribution of the times to onset was wide across all idioms and participants. The standard deviations are shown in table 3. A distribution chart showed that the most extreme time to onset values were longer than 30 seconds. The times to onset were log-transformed to compress the extreme values, i.e. outliers. The first part of this analysis investigated the correlation between time to onset and idiom usage frequency. It showed that there was a negative effect of usage frequency on time to onset, i.e. shorter times to onset for higher usage frequencies. The second part was regarding the correlation between production accuracy and idiom usage frequency. The result indicated similar negative effect as for the first part. However, neither of the results were statistical significant.

A reanalysis was done where the time to onset outliers longer than 30 seconds were excluded from the data set. There were about 23 time to onset outliers out of a total of 294 values. This time the result showed that the idiom usage frequency effect on time to onset was closer to statistical significant (p value = 0.0539).

5. Discussion

5.1 Result discussion

The special status of idioms between lexicon and grammar entails difficulties during processing and production. There seems to be several factors involved when translating written idioms from an L1 to an L2. One of the factors is language knowledge in terms of formal education and explicit training. A profound knowledge of the L2 makes it easier to translate more complex phrases. The working memory has limitations. If lower-level actions as lexical retrieval are automatised and fluent, allocation of more demanding higher-level processes as meaning monitoring is possible (McCutchen et al., 1994; Strömquist et al., 2004). This can be true in general, but the results of my study indicate that language knowledge does not seem to be the only factor for successful translation of L2 idioms. The participants in my study had various formal educational background of English as L2. There were two groups: one with 10 years of L2 studies and another with more than 10 years of L2 studies. The participant with the highest production accuracy and short times to onset belonged to the group with 10 years of L2 studies.

Similarly, the participant with the lowest production accuracy and longer times to onset belonged to the same group. It seems that idiom production and handling are difficult measures of language knowledge and proficiency level.

Cultural knowledge and degree of exposure to the L2 are also possible factors for successful translation of L2 idioms. Exposure to the L2 affects the fluency for producing written text and the quality of the text (Schoonen et al., 2003). Some research has also shown that exposure to the L2 and the general L2 knowledge have a type of synergistic effect on the production of L2 idioms (Carrol et al., 2016). The synergistic effect is probably more dynamic than can be seen in both the study by Carrol et al. and my study. Half of the participants in my study seemed to have a higher L2 exposure than the others. The participant with the highest production accuracy and short times to onset belonged to the half which had a higher L2 exposure. At the same time, the participant with the lowest production accuracy and longer times to onset had a lower L2 exposure. It seems as if the L2 exposure factor had more influence on the times to onset and the production accuracy compared to the number of years of L2 studies factor. The degree of cultural exposure and the usage frequency of idioms appear to influence the production of idioms. That means that the production is improved if an idiom is common and you often encounter it in a cultural context. Subsequently, if you are exposed for English idioms on a regular basis, you will probably produce them better and more automatic than otherwise.

Another aspect which affects the translation of idioms is the transfer between languages. Earlier research has found that there are transfer effects (Irujo, 1986; Brown and Gullberg, 2008; Carrol et al., 2016; Beck and Weber, 2016) during translation. Knowledge in one language will in some way influence the knowledge in another language. An example of transfer effects from my study would be that the idioms which rendered problems in both the comprehension and the translation test were “many irons in the fire” (*många järn i elden*) and “be all thumbs” (*ha tummen mitt i handen*). These idioms can be translated more or less literally between Swedish and English and still be correct. In contrary, some participants noted in the feedback that they expected these idioms to be more difficult and different than they are. Another transfer effect could be the translation of the Swedish idiom *ta någon på bar gärning* (“catch somebody red-handed”) which resulted in the translation “catch somebody bare-handed” several times.

Wolter and Gyllstad (2011) stated that learners sometimes reject the acceptable expressions in the L2, even when they have an equivalent form in the L1. The learners need confirmation when the knowledge of the expressions in the L1 is transferable to the L2. That would suggest that

when I informed the participants that some idioms could not correctly be translated to literal equivalents, the participants rejected acceptable translations and made the task more difficult than it was. The reputation of idioms of being difficult to produce correctly may make learners overthink and undergeneralise. The general similarities between Swedish and English are not sufficient to result in improved comprehension, learning and production of idioms (Ringbom, 2007).

The Swedish and English idioms in this study differ semantically and linguistically to various degrees. Some examples of the various degrees are that the idiom “over my dead body” (*över min döda kropp*) is in the category where a literal transfer between Swedish and English is possible to achieve translation accuracy. The idiom “kill two birds with one stone” (*slå två flugor i en smäll*) belongs to the category where the L1 and the L2 versions differ in several ways, but are similar in other aspects. Finally, the idiom “beat about the bush” (*gå som katten kring het gröt*) is in the category where the L1 and L2 versions are completely different. There are no similarities in form, number of words or single word constituents. It is not possible to deduce the translation just by looking at the L1 or L2 idiom. This brings us back to the research questions which guide this study.

How do Swedish learners of English as L2 manage translation of Swedish idioms into English regarding time to onset when the idioms are lexically and semantically different in the two languages compared to when the idioms are lexically and semantically similar? The times to onset and the corresponding standard deviations are shown in table 3. The effect of idioms’ similarity or difference on the time to onset is not conclusive. Nevertheless, tendencies that lexically and semantically different idioms result in longer times to onset, and vice versa, can be seen. A short time to onset does not necessarily mean that the result is accurate. It could also mean that the participant does not know the idiom and uses another strategy to complete the task. There is also a possible element of guessing. The study was done in writing which means that the results on idiom production and the translation process would probably be different in speech. However, the acquisition of written language is influenced by the acquisition of spoken language and vice versa. That would suggest that either modality can work as a measure of language proficiency (Strömqvist et al. 2004). The distribution of the times to onset was wide across all participants for an individual idiom. That is indicated by a high standard deviation value. The idioms with the highest standard deviations were mainly idioms which also had the longest mean times to onset.

How do Swedish learners of English as L2 manage translation of Swedish idioms into English regarding production accuracy when the idioms are lexically and semantically different in the two languages compared to when the idioms are lexically and semantically similar? The production accuracy is shown in table 4. The effect of idioms' similarity or difference on the production accuracy is not conclusive. There is some tendency that the lexically and semantically different idioms result in a lower production accuracy and the opposite. This does not completely support Irujo's (1986) study, but she studied idioms in English and Spanish, two languages which are more different than Swedish and English. Additionally, I think that the English influence is greater in Sweden and Swedish compared to Spain and Spanish. That suggests that the L2 exposure factor can have a considerable importance for being able to handle translation and comprehension of L2 idioms, just as proposed by Carrol et al. (2016). The writing process and the written production may be affected negatively if there is a lack of fluency. Fluent handling of sentence generation and lexical retrieval is important to concentrate on more complex memory processes (McCutchen et al., 1994; Schoonen et al., 2003).

Lack of phraseological competence resulted in a written production with elements of risk-taking, writing a literal equivalent and thus avoiding the use of idioms. For example, different variations of "suspecting owls in the grass" (smell a rat), "has thumbs in the middle of the hand" (be all thumbs) and "walking like a cat around hot porridge/a pot" (beat about the bush). Other much less common strategies to solve production difficulties were using ordinary synonyms or slang as "squeal" for "spill the beans" (*prata bredvid mun*), and using other self-invented or equivalent idioms as "consumed as boiling water" for "sell like hotcakes" (*gå åt som smör i solsken*). These findings follow the findings of Howarth (1998).

The common strategy of using the literal equivalent of idioms when the correct idiom cannot be accessed could be explained by the results from several studies. It seems as if learners divide an idiom into its literal and figurative part. The literal meanings of idiom constituents appear to be accessed first and then the figurative meanings. Direct mapping to the idiom is managed with time (Cieślicka, 2006; Beck and Weber, 2016). Cieślicka's (2006) study included speech and visual stimuli, not text-based stimuli as in my study, but the same result seems to apply. In my study the L2 was English which is a language which belongs to the same language subgroup as the L1, Swedish. One might wonder if Cieślicka's model would apply to languages with much less similarity than the languages in her study, Polish and English. Beck and Weber (2016) also used similar languages, German and English.

How will the time to onset and production accuracy be affected by idiom usage frequency? Neither of the tested parameters, time to onset and production accuracy, gave conclusive results. Then the idiom usage frequency for all idioms in the study was investigated in a corpus and added to the statistical analysis. The first statistical analysis run showed there was a negative effect of idiom usage frequency on time to onset, i.e. shorter times to onset for more common idioms. The second run for correlation between production accuracy and idiom usage frequency indicated a similar negative effect as for the first part, i.e. higher production accuracy for more common idioms. Neither of these results were statistical significant. A third run indicated that the correlation between idiom usage frequency and time to onset was closer to statistical significant after omission of outliers. The outcome of the statistical analysis proposes that the wide distribution of times to onset in my study, the outliers and the number of participants are factors to consider regarding significant results. Idiom learning and production are complex processes, and studies thereof would benefit from a higher number of participants and more extensive studies.

5.2 Method discussion

As mentioned earlier I used the method described in one of the references (Irujo, 1986) as a basis for my method for preparation of the elicitation instrument since I think it is a good and simple method to objectively select the idioms for the study. I also used some of her tests as a basis for the tests in my study. The differences between my method and hers are that I used fewer idioms in my study since my study was smaller with fewer tests, the L1 in her study was Spanish and the L1 in my study was Swedish and she used handwriting for her tests where I used a keystroke logging software. Irujo's major aim was to investigate unidirectional language transfer and she does not mention the possibility of bidirectional language transfer (Brown and Gullberg, 2008). I think it is important to note that in a real translation situation when you toggle between two languages, you are constantly using your competence in both languages at the same time. The L2, particularly if the L2 is English with its position as "lingua franca", influences the production in L1 just as much as the L1 influences the production in L2. Thus it seems a bit static to only investigate the unidirectional influence in a multilingual mind.

The selected idioms in the elicitation instrument were included in a complete test set of a total of 46 test items with a smooth and seamless transition between the translation test and the comprehension test. The reason why is that the appearance of the stimuli in the test set should be the same for each test item. However, a long test set may make the participants more tired and unattentive towards the end, but I did not see any signs of that during the test sessions. An

alternative solution in a future study would be to let the order of the test items be randomly generated, i.e. each participant receives the test items in a different order. I wanted two tests which involved both production and comprehension since I thought that would get a more complete picture of the capability to easily toggle between languages. I decided to construct the translation test as a unidirectional (L1 > L2) bilingual test. I could have used translation tests in both directions, L1 > L2 and L2 > L1, but that would result in a more extensive study. It is a suggestion for further research, see section 6.1. The comprehension test was constructed in English only to investigate the comprehension without any influence of the L1 and the comprehension test could be regarded as a type of control test for the translation test.

I needed a registration instrument since I wanted to measure other parameters besides production accuracy. There are several keystroke logging software on the market, but I needed an easily accessible registration instrument which could be used by students in a computer room at the Centre for Languages and Literature. Other requirements were a user-friendly interface, a possibility of an easy construction of the elicitation instrument and available references of the use of the instrument. A version of the tool named ScriptLog is used by researchers at the Centre for Languages and Literature, so I selected that tool since it is also available for students and it is easy to learn. I also had access to support and a software programmer who could help me to adjust the tool for my needs. ScriptLog also measures the total number of keystrokes and words within a test set, so if I had separated the two tests into two test sets instead of one I would get such data for each test. I decided that it was more important to get one test set only with a continuous appearance and smooth transition than to get access to more data with ScriptLog. The obtained data would suffice to answer my research questions.

With reference to Bertram et al. (2015), a fast onset time and production rate would suggest that the linguistic planning for producing idioms is easily accessible, i.e. a possible sign of a more profound language and idiom knowledge in addition to production accuracy. The study in the article (ibid.) used visual stimuli as pictures of compound words and my study used text-based stimuli which seem much more rare in the literature. The authors claim that compound words are retrieved as whole units before production is initiated since it was found that writing onset times are determined by whole word frequency rather than constituent frequencies. They also found that the linguistic planning is not completely ready before writing begins, instead additional planning takes place during writing. Strömquist et al. (2004) propose that the thinking process during written production is different from the thinking process during spoken production, e.g. it is more time-consuming writing on a computer than speaking. That would

indicate that if I had constructed a spoken translation test, I would maybe get different results regarding the temporal parameter. I suppose that the use of idioms varies, but is nonetheless more common in spoken compared to written language. Maybe the participants in my study would have produced the L2 idioms more effortlessly, according to their actual proficiency, in a spoken test environment than in the written test environment. At the same time, some persons may feel more comfortable during writing compared to speaking in the L2. However, it would probably have been more time-consuming to measure and analyse the results with recording and transcription into written data.

The background and feedback part of the study, see appendix D, was a way to get information on additional aspects of language proficiency. The feedback from the participants provides information on learners' strategies to solve production difficulties. In other words, that information could provide a background to the participants' phraseological competence and performance in English. This study could be a small step of adding a more detailed description on learners' phraseological performance for understanding the development of competence as Howarth (1998) calls for.

6. Conclusion

The use of ScriptLog made it possible to study the production of idioms operationalised as time to onset and production accuracy from Swedish, L1, to English, L2. Searches in an online corpus gave information on idiom usage frequency. The data for the study was then processed in a statistical analysis. The capability to translate and comprehend idioms for L2 learners varies a lot. The relationship between what learners know and what they produce seems to be much more dynamic than expected. The production of idioms seems to be a challenge and a complex process, even for learners with high language proficiency. Furthermore, this makes idiom production an equivocal marker of how advanced you are as an L2 learner. Other important factors for being able to handle idioms are idiom usage frequency and cultural exposure to the L2. This study could not provide any conclusive answers to the questions how time to onset and production accuracy are affected by the similarity or difference of idioms between L1 and L2. The results showed tendencies that similar idioms in L1 and L2 correlates with a short time to onset and high production accuracy and vice versa. Additionally, the study showed that time to onset and production accuracy are influenced in some way by the idiom usage frequency. After omission of outliers, the correlation between time to onset and idiom usage frequency

was closer to statistical significant. Difficulties during production were solved by mainly using literal equivalents of idioms and some possible language transfer could be seen.

6.1 Suggestions of further research

The data from ScriptLog I used for this study seems like only a scratch on the surface of what is possible to analyse. An analysis of the individual idiom constituents could maybe be a step to investigate if idioms should generally be regarded as single lexemes or phrases. The study on compound words (Bertram et al., 2015) could possibly be used as a basis for such a study. I already have some thoughts on that. Some participants in the preparation of the elicitation instrument step commented on the possibility of only using a shortened version of an idiom and still get the whole meaning and reference of the idiom across to the recipient. For example, if you say “when in Rome”, the whole idiom and the corresponding meaning is presupposed in most cases which could suggest that a complete idiom is often regarded as a single lexeme. The whole idiom, a whole phrase, is not needed to convey the meaning.

Another example of a deeper analysis of idiom production and comprehension is to use eye-tracking in combination with or without ScriptLog and investigate how native and non-native speakers process idioms regarding figurative and literal meaning. The use of idioms could also be investigated by using more corpus-based analysis of spoken and/or written language. The corpus I used for my study was just one of many which could be used for the purpose.

It would also be interesting to study the possibility of bidirectional influence between L1 and L2 (Brown and Gullberg, 2008) during production of idioms. None of the references regarding idioms which I used investigated bidirectional influence, but it would be interesting to know the extent of bidirectional influence in my study.

I did not have different groups of L2 learners in my study, only participants with mixed proficiency, but a study with different proficiency groups would give additional useful data on the production of idioms. The feedback after the tests indicated several deviations between the participants’ perceived capability of producing L2 idioms and the actual result, so it would be interesting to know the reason for that. The question would be why learners assume they are able to produce L2 idioms like any other lexical item, but sometimes beat about the bush when it comes to actually producing them.

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Appendix A: Informed consent form

Jag samtycker härmed till att delta i en studie om produktion och förståelse av idiomatiska uttryck som utförs inom lingvistik på Språk- och litteraturcentrum, Lunds universitet.

Genom att underteckna detta dokument samtycker jag till att översätta och ange betydelsen av vissa idiomatiska uttryck. Jag samtycker även till att besvara några bakgrundsfrågor.

- Jag har fått tillräcklig information om studien och testerna.
- Jag har informerats om att mitt deltagande är helt frivilligt och att jag kan avbryta studien när som helst utan att ange något skäl.
- Jag har informerats om att informationen som jag ger under studien och resultaten är konfidentiella.
- Jag har informerats om att resultaten kommer att presenteras offentligt och publiceras men min identitet kommer inte att röjas på något sätt.
- Jag vet att jag har möjlighet att ställa frågor om studien om jag vill.
- Jag har informerats om att detta samtyckesformulär kommer att undertecknas i två exemplar och att jag kommer att få ett av dem.

Ort och datum _____

Underskrift _____

Namn (textat) _____

Appendix B: Preparation of elicitation instrument

A number of expressions are listed below (1–55). For each one of them, please a) indicate if you recognize the expression and/or have heard it before by marking the box under **either** Y (yes) **or** N (no) with an X in the table below. Please also b) estimate in what degree the expression is used in general in speech or in writing, i.e. how common or uncommon you believe it is, by marking **one** of the boxes 1–5 in the table below where **1** corresponds to a **very uncommon expression** and **5** corresponds to a **very common expression**.

(Very uncommon Very common)

Expressions	Y	N	1	2	3	4	5
1. take with a pinch of salt							
2. pour oil on troubled waters							
3. give somebody the cold shoulder							
4. on cloud nine							
5. chin up							
6. have a skeleton in the closet							
7. a storm in a teacup/teapot							
8. beat about the bush							
9. smell a rat							
10. catch somebody red-handed							
11. spill the beans							
12. many irons in the fire							
13. neither fish nor fowl							
14. in for a penny, in for a pound							
15. over my dead body							
16. keep fingers crossed							
17. bite off more than one can chew							
18. kick the bucket							
19. like two peas in a pod							
20. knock on wood							
21. be all ears							
22. be all thumbs							
23. cost an arm and a leg							
24. fit as a fiddle							
25. the cherry on the cake							
26. sell like hotcakes							
27. close but no cigar							
28. with hook, line and sinker							
29. kill two birds with one stone							
30. save one's bacon							
31. raining cats and dogs							
32. cool as cucumber							
33. as thick as thieves							
34. speak of the devil							
35. add insult to injury							
36. swallow the bitter pill							

Expressions	Y	N	1	2	3	4	5
37. when in Rome, do as the Romans do							
38. under the weather							
39. be in the doghouse							
40. burn one's bridges							
41. by the sweat of one's brow							
42. be the apple of somebody's eye							
43. hide one's light under a bushel							
44. cast pearls before swine							
45. bear one's cross							
46. the Alpha and Omega							
47. as if the earth had swallowed somebody/something up							
48. a wolf in sheep's clothing							
49. lead somebody by the nose							
50. prick one's ears							
51. be all skin and bones							
52. take time by the forelock/hair							
53. separate the wheat from the chaff							
54. the icing on the cake							
55. give up the ghost							

Please indicate your age: years

THANK YOU FOR YOUR CONTRIBUTION!

Appendix C: Selected idioms

Included in the study

English	Swedish
over my dead body	över min döda kropp
take with a pinch of salt	ta med en nypa salt
be all thumbs	ha tummen mitt i handen
a wolf in sheep's clothing	en ulv i fårakläder
many irons in the fire	många järn i elden
have a skeleton in the closet	ha ett skelett i garderoben
a storm in a teacup	storm i ett vattenglas
keep fingers crossed	hålla tummarna
kill two birds with one stone	slå två flugor i en smäll
the icing on the cake	grädde på moset
swallow the bitter pill	bita i det sura äpplet
speak of the devil	tala om trollen
like two peas in a pod	lika som bär
catch somebody red-handed	ta någon på bar gärning
raining cats and dogs	stå som spön i backen
bite off more than one can chew	ta sig vatten över huvudet
add insult to injury	strö salt i såren
when in Rome, do as the Romans do	ta seden dit man kommer
beat about the bush	gå som katten kring het gröt
smell a rat	ana ugglor i mossen
spill the beans	prata bredvid mun

Extras

English	Swedish
cost an arm and a leg	kosta skjortan
knock on wood	ta i trä
be all ears	vara idel öra
sell like hotcakes	gå åt som smör i solsken

Appendix D: Background questions and feedback

Bakgrundsfrågor

Dina initialer:

Din ålder: år

1. Hur många år och/eller hur många månader ungefär har du studerat engelska (inklusive hela grundskolan)?

år

månader

2. Har du varit i ett land där engelska är ett officiellt språk (t.ex. Storbritannien, Irland, Australien eller USA) under en längre tid än en månad per gång?

Ja

Nej

Om ja, hur många gånger och hur länge varje gång? _____

3. Har du varit i ett land där engelska är ett officiellt språk (t.ex. Storbritannien, Irland, Australien eller USA) under högst en månad per gång?

Ja

Nej

Om ja, hur många gånger och hur länge varje gång? _____

4. Läser du regelbundet (i genomsnitt varje månad) böcker (utöver ev. kurslitteratur) och/eller tidningar på engelska?

Ja

Nej

5. Tittar du regelbundet (i genomsnitt varje månad) på engelskspråkiga serier eller filmer?

Ja

Nej

Om ja, tittar du på minst hälften av dessa i genomsnitt utan undertexter?

Ja

Nej

6. Kommunikerar du på engelska på fritiden, utanför universitetsmiljön (t.ex. på sociala medier, med kompisar eller med släktingar)?

Ja

Nej

Om ja, hur ofta? _____

Skulle du vilja ha en kopia av resultaten av studien?

Om ja, ange din e-postadress: _____

Uppföljning

Nedan följer en översikt av de tester som du precis genomfört.

Skriv gärna några allmänna kommentarer eller tankar om testerna i denna ruta (fortsätt på baksidan om du inte får plats här). Om du vill kan du efter eller i utrymmet bredvid en uppgift nedan ange t.ex. vilken uppgift/vilka uppgifter som du tyckte var lättast och/eller svårast, hur du tänkte när du utförde testet eller andra uppfattningar som du har om uttrycken.

Översättningstest

Han tyckte att hennes svar var konstigt och **anade ugglor i mossen**.

He thought her answer was strange and _____

Helen överdriver alltid. Man får **ta vad hon säger med en nypa salt**.

Helen always exaggerates. One must _____

Jag vill inte gå ut. Det står **som spön i backen**.

I do not want to go out. It is _____

Vad ville du säga? Jag är **idell öra**.

What did you want to say? I am _____

Du får **hålla tummarna** att jag klarar provet.

You must _____ for me passing the test.

Du måste göra det. Nej, **över min döda kropp**.

You must do it. No, _____

Hon **tog sig** verkligen **vatten över huvudet** när hon sa att hon skulle göra det.

She really _____ when she said she would do it.

Fred säger att han inte kan laga diskmaskinen. Han **har tummen mitt i handen**.

Fred says he can not mend the dishwasher. He _____

Jag går till affären också för att **slå två flugor i en smäll**.

I will go to the shop as well to _____

Hon är verkligen **en ulv i fårakläder**.

She is really _____

Polisen **tog honom på bar gärning**.

The police _____

Vi beställde ett dyrt vin **som grädde på moset**.

We ordered an expensive wine _____

Händelsen var som **att strö salt i såren**.

The event was like _____

Politikern har nog **ett skelett i garderoben**.

The politician probably has _____

Jag måste göra det. Jag får helt enkelt **bita i det sura äpplet**.

I must do it. I have to simply _____

Man måste ta seden dit man kommer när man flyttar utomlands.

_____ when moving abroad.

Det kostar skjortan att köpa en lägenhet i centrala Stockholm.

_____ to buy an apartment in the centre of Stockholm.

Jag måste skynda mig, biljetterna **går åt som smör i solsken**.

I must be quick, the tickets _____

Säg som det är, **gå inte som katten kring het gröt**.

Tell me as it is, _____

Han är aktiv och har **många järn i elden**.

He is active and has _____

Bröderna är **lika som bär**.

The brothers are _____

Kom igen, berätta. Nej, jag vill inte **prata bredvid mun**.

Come on, tell me. No, I do not want to _____

Det kommer inte att hända. **Ta i trä.**

It will not happen. _____

Han är inte särskilt trevlig. Oj, **tala om trollen.**

He is not very nice. Oh, _____

Den senaste skandalen är som **en storm i ett vattenglas.**

The latest scandal is like _____

Förståelsetest

This will happen over my dead body.

a. This will happen when I'm dead. b. This will not happen. c. This will definitely happen. d. I will do everything I can to prevent it from happening.

He smelled a rat.

a. He was unsure. b. He was scared. c. He thought something was untidy. d. He suspected something was not right.

I will kill two birds with one stone.

a. I will do something extra difficult. b. I will really make an effort. c. I will solve a couple of problems with one solution. d. I will hunt birds.

She spilt the beans.

a. She is clumsy. b. She can not keep a secret. c. She needs to tidy up. d. She takes on more than she can manage.

You caught him red-handed.

a. You met him by chance. b. You discovered something strange about him. c. You saw him stealing. d. You caught him in the act.

He said: "Take what I say with a pinch of salt."

a. He was cooking. b. He indicated some unreliability in his statement. c. He was telling someone about a recipe. d. He was in doubt.

I will keep my fingers crossed.

a. I will hope for a good outcome. b. I will keep a secret. c. I will keep something concealed. d. I am learning the right dance moves.

Do not beat about the bush!

a. Do not go around the bush. b. Be careful not to damage the plants. c. Keep the environment clean. d. Get to the point.

He is all thumbs, is he not?

a. He is very clumsy. b. He is very skilled. c. He lacks some fingers on his hand. d. He does not like to work with his hands.

She is really a wolf in sheep's clothing.

a. She is not who she seems to be. b. She is not a nice person. c. She is angry. d. She is a person who likes to dress up.

Their trip was like icing on the cake.

- a. The trip was great. b. The trip was a mistake. c. The trip made it all even better. d. The trip involved food tasting.

It is raining cats and dogs.

- a. The place is swarmed with different pets. b. Some persons are fighting. c. The heavy rain made the drain overflow. d. It is raining heavily.

He made her swallow the bitter pill.

- a. He served her something that tasted bad. b. He forced her to do something. c. He made her accept something unpleasant. d. He gave her some medicine.

You have many irons in the fire.

- a. You have many available possibilities. b. You seem to be stressed out. c. You have too much to do. d. You seem confused.

When in Rome, do as the Romans do.

- a. You should try some pasta when you are in Italy. b. You should respect the ways of the local culture. c. You should do what everybody else does. d. You should go to church on Sundays.

”Speak of the devil, and he is sure to appear”, she said.

- a. She wanted to talk about the evil in the world. b. She discovered someone’s unexpected arrival. c. She was frightened. d. She was disappointed.

It is true, I have a skeleton in the closet.

- a. I have something to hide. b. I have a mess in my home. c. I am embarrassed. d. I am homosexual.

His reaction is like a storm in a teacup.

- a. The reaction is annoying. b. The reaction is violent. c. The reaction is pathetic. d. The reaction is exaggerated.

They are like two peas in a pod.

- a. They are look alike. b. They are green with envy. c. They are relatives. d. They are close friends.

She bit off more than she could chew.

- a. She managed it nicely. b. She took on something which was too difficult. c. She ate too much. d. She seems to be depressed.

You add insult to injury.

- a. You make it better than it was. b. You are really careless. c. You make it all worse. d. You do two stressful things at the same time.

Tack så mycket för ditt deltagande! 😊