Nog är ju viktigt:

The role of modal particles *nog* and *ju* in responsibility attribution in L1 and L2 speakers

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Abstract

The present study investigates whether advanced adult L2 speakers comprehend the subtle linguistic cues that modal particles entail and seek to find if modal particles affect them in their responsibility attribution. Two groups of advanced L2 speakers of Swedish were tested; one group of L1 German speakers and one group of L1 English speakers. In an experiment that investigated responsibility attribution, participants read short stories that were manipulated with the modal particles *nog* and *ju*, to see if the use of these modal particles affected how they attributed responsibility to a character in the short story. The L2 learners were tested to see if L1 background affects the L2 acquisition of modal particles. A control group of native Swedish speakers were also tested. As an exploratory and complementary measure, reading times were recorded for the critical sentences modified with *ju* and *nog*. The results show a main effect of group and a main effect of condition, but no interaction between the two. However, upon closer inspections of the numerical values in the groups, possible trends and curious directions are seen. The results yielded no significant differences between groups and conditions, and are presented as possible trends, and discussed. Contrary to the hypotheses, these trends are indicative of the English speakers being affected by the modal particles in the way that natives were expected to, while Germans showed a pattern that was different from native speakers. The results show no significant differences for the different conditions in the native control group. The results show no support for L1 transfer facilitation in the acquisition of modal particles.

Keywords

Modal particles, linguistic cues, responsibility attribution, self-paced reading, L1 transfer, L2 acquisition, ju, nog
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1. Introduction

The aim of the present study is to investigate whether second language learners are able to acquire the meaning of subtle linguistic cues in a second language. Subtle linguistic cues are small variations that shift the meaning of a sentence slightly, and all languages employ an array of different strategies to do so, e.g., intonational patterns, hedgers and discourse markers. This study looks particularly at how modal particles affect meaning, and if second language learners are sensitive to these effects. In Swedish, there is a class of words called modal particles, which are usually subsumed under the broader category of discourse particles. Modal particles are a closed word class consisting of small, uninflected words, such as ju, nog and väl, that in a subtle way alter the meaning of a sentence. Josephson (2005) does not define these words as modal particles, but instead describes them as “syntactically integrated discourse particles”\(^1\) (Josephson, 2005:7) and views them as part of the finest grained subtle linguistic cues in the spoken language. These words slightly modify a statement’s degree of certainty, topicality, or newsworthiness. They are considerably more frequent in the spoken language than in written production, polyfunctional and render different meanings depending on context (Josephson, 2005).\(^2\) Throughout this thesis, studies on discourse particles are also discussed, because modal particles are a kind of discourse particle and they are often studied together (see Aijmer & Altenberg, 2016).

Modal particles are not present in every language, but they are very frequent in oral input of the languages in which they exist (Waltereit, 2001), and therefore also very frequent in L2 input. Modal particles serve basic communicative

\(^1\) Author’s own translation.

\(^2\) Sometimes the terms discourse particles and modal particles are used interchangeably, but the term modal particles is well established in studies on primarily Germanic languages that do have this feature (Fedriani & Sansò, 2017).
needs, so languages that do not have them instead have other means of conveying similar meanings (Waltereit, 2001; Kresić, Batinić Angster, & Diewald, 2017).

Since modal particles serve these basic communicative needs, cross-linguistic differences between languages can be distinct and varied. Some contrastive studies examine how discourse particles and modal particles are translated between languages, both in comparisons where both languages have modal particles or discourse particles, such as French and Dutch (Mortier & Degand, 2009), and between languages where one of the languages has modal particles, and the other(s) do not, such as English and Swedish, (Aijmer, 1996; 2016; Aijmer & Altenberg, 2016), or German versus Italian, Spanish and Portuguese (Waltereit, 2001), or German compared to English and Croatian (Kresić et al., 2017).

Through studying modal particles, this study also investigates the role of L1 transfer, and looks at the acquisition of Swedish modal particles by speakers with two different L1s. One group is German L2 speakers of Swedish and one group is English L2 speakers of Swedish. German is a language that also has modal particles, and English is a language that does not. Both groups investigated in this study are highly advanced L2 speakers who live in Sweden.

In the experiment of this study, participants read short stories of everyday events, in which something went wrong. The last sentences of the stories are manipulated with modal particles, so one participant either reads the last sentence of a short story with ju, nog or no modal particle (ø). After having read the short story, participants are asked to attribute responsibility for the outcome of the event to one of the characters in the short story. This study investigates whether sentences manipulated with different modal particles affect the responsibility attribution of the participants. It is hypothesized that native speakers of Swedish will be affected by the modal particles, and that the German participants will have a more native-like pattern than the English participants, due to the similarities between German and Swedish modal particles. As a secondary exploratory measure, reading times of the sentences with modal particles are also analyzed, since slower reading times are believed to mirror higher processing costs (Marsden, Thompson, & Plonsky, 2018), and seeing slower reading times in the words
following the modal particles could indicate that modal particles are harder to process than other words.

The following section outlines previous research, section 3 gives an overview of the cross-linguistic differences of the phenomenon and languages that are being investigated, section 4 presents the present study, section 5 describes the methodology, section 6 provides the results and in section 7, findings will be discussed, future directions proposed, and conclusions drawn.

2. Previous research

2.1 Subtle linguistic cues that modify meaning

Semantic representations of a language involve knowledge of how words and concepts are mapped onto each other, i.e., how many and which particular concepts are tied to a specific word, and what the connections between words are, such as collocations, word association, synonymy, and antonymy (Jarvis & Pavlenko, 2008). Certain word-to-meaning mappings seem harder to understand, both for L1 speakers and bilinguals. Alferink and Gullberg (2014) studied the use of placement verbs in bilinguals who were native in two languages where placement verbs differ. Some languages have different placement verbs depending on the direction and placement of objects, such as the three Swedish verbs ställa, sätta, and lägga, which all translate to ‘put’ in English. Alferink and Gullberg (2014) showed that bilinguals who have two L1s that differ in the system of placement verbs, use placement verbs differently than monolinguals, and show that even native speakers have different systems for certain features, if they are influenced by other competing systems. This suggests that even for a bilingual who is native in two languages, certain complicated features in the different languages influence each other and affect the way the speaker uses the two languages.

Viberg (2008) describes how emotion and emotionality are strongly intertwined with other meanings and semantic representations of words, partly due to which words they frequently collocate with in a language. This gives verbs slightly
different meanings in different languages, even if they are considered translational equivalents. Indirect descriptivity of verbs, which is related to the circumstances in which a verb is often found, typically entails a gradable speaker-evaluation that is guided by norms that are set by the environment or the speaker themselves. An example of this is the English verb *stare*, which is often linked to negative values. The direct descriptivity of *stare* is to ‘look hard’ which belongs to the core of the verb, whereas the fact that it is often connected to someone doing so in an unintelligent or stalker-like fashion, is connected to the indirect descriptivity of the verb. The German translational equivalent *starren* carries no such negatives values (Viberg, 2008). This means that even though a verb is readily translatable to another language, the translation of that word can have different connotations and negative or positive values and therefore the use of it can be slightly different in different languages. The findings of Viberg (2008) show the difficulties of acquiring even “traditional” words, such as common verbs that seem to have translational equivalents.

Discourse particles, the focus of the present thesis, are specifically polyfunctional and hard to understand because they can render several different interpretations. Van Bergen, van Gijn, Hogeweg, and Lestrade (2011) give a semantic overview of the various uses the Dutch discourse marker *eigenlijk* (‘actually’) has, and concludes that it is a multifunctional marker that can be used at different levels of communication, but that is has the same semantic core in all uses. They conclude that upon hearing *eigenlijk*, the listener has to search for a presupposition that the speaker of *eigenlijk* has in mind when using the word. The article cites a statement from the Prime Minister in the Netherlands, who used the discourse particle in such a way that it stirred up a lot of attention. The statement was uttered after Saddam Hussein had been sentenced to death in Iraq.

_De doodstraf is iets waarvan Nederland heeft gezegd: ‘Dat hoort eigenlijk niet’_

*The death penalty is something about which the Netherlands have decided: this is EIGENLIJK wrong*’

(Van Bergen et al., 2011:3877)

Since the statement could render so many different interpretations, some of the hearers of the statement got upset because they interpreted it in a way that
rendered the meaning offensive, mainly because it was not clear what the Prime Minister thought about the death penalty. In the nicest interpretations the Prime Minister simply meant to say that he agreed that Saddam Hussein should be punished in the most severe way, without supporting that the death penalty is a good thing. In the harshest interpretations of this statement, the Prime Minister was accused of being in favor of the death penalty. This is indicative of how difficult discourse particles are even for native speakers; the discourse particles add nuance to the language and reveals attitudes of the speaker, but increases the complexity for the hearer, since they get more information to interpret.

Van Bergen and Bosker (2018) investigated the Dutch interpersonal discourse particles *inderdaad* ‘indeed’ and *eigenlijk* ‘actually’ to see how language comprehenders use these in online discourse understanding. They found that *inderdaad* worked as a linguistic confirmation which helped the listener to disregard alternative discourse continuations, thus facilitating likely dialogue completions, relative to when *inderdaad* was replaced with an adverb. *Eigenlijk*, on the other hand, was only coded as a contrast with the referential expectation by the listeners half of the times. In all encounters with *eigenlijk*, it resulted in delayed completions relative to encountering an adverb. The authors took this to support how notoriously polyfunctional discourse particles are, and their study contributes to the evidence that common ground and perspective-taking has effects on incremental language processing, which in turn means that the interpretation of discourse particles involves trying to figure out what the speaker of an utterance involving discourse particles mean by using them (van Bergen & Bosker, 2018).

The findings of the studies above show some of the difficulties involved in producing, processing and understanding discourse particles. The next section specifically focuses on the case of L2 speakers.

### 2.2 Second language acquisition of subtle linguistic cues

Several studies have investigated the second language acquisition of modal verbs, which can modify meaning in a similar way to modal particles. Of special interest to
this thesis is the study Filipović (2016) did on how L2 speakers understood the modal verbs *may* and *might*. The design of her study has greatly influenced the design of the present study. The participants of the Filipović (2016) study read witness statements that were manipulated with either *may* or *might*. Afterwards, they were asked to indicate on a Likert scale from 0 to 7 the certainty and reliability of the witness, as well as how large the possibility was that the events occurred exactly as they were described in the statements. The L2 speakers gave more credibility to witnesses that had statements with *may* than with *might*, and also judged it more plausible that the event occurred in that exact way when *may* was used than when *might* was used - which did not show in the native speakers’ results. Filipović suggested that her results could be explained by L2 acquisition and that formal instruction of the difference between the two verbs affected the L2 speakers’ in a non-native way. She suggested that the L2 speakers might have latched on to the subtle difference between *may* and *might* that is taught in formal instruction of English (where *might* can be used as a somewhat more tentative alternative to *may*), and as a result gave the difference more salience than it actually has in native language production.

Contrary to the modal verbs *may* and *might*, the modal particles that are investigated in this thesis are not given much emphasis in formal instruction. According to faculty staff that teaches Swedish as a foreign language, the modal particles *ju* and *nog* are part of formal instruction already at intermediate levels, but the instruction of these is only partly centered on their meaning, and mainly focused on where they appear in the Swedish word order. Students of Swedish learn the meaning of the modal particles but are not encouraged to use them in writing, as they are more common in oral production (A. Karlsson, personal communication, April, 2019). However, both Josephson (2005) and Aijmer (2016) show that *ju* and *nog* are common in the written language as well. In this thesis, no assumptions are made about how formal instruction have influenced the L2 learners’ perception of the modal particles, but it is assumed that the L2 learners have a rich input of modal particles, due to their high frequency in everyday language use.

A somewhat broader term that discourse particles and modal particles fall under is the term pragmatic markers. Fant (2018) gives a comprehensive overview of
different cross-linguistic studies that have investigated the use of pragmatic markers by highly advanced L2 speakers, and conclude that these studies show that advanced L2 speakers do use the same pragmatic markers as native speakers do, but rarely to the same extent. The studies report both over-use and under-use in comparison to native speakers, despite full immersion in the L2 environment and advanced proficiency. This overview is suggestive of how hard pragmatic markers are to acquire, and suggest that the use of pragmatic markers differs even in highly advanced L2 speakers, something that could be due to competing systems and cross-linguistic influence.

Bartning and Forsberg Lundell (2018) investigated advanced learners’ L2 production in morphosyntax, formulaic sequences, information structure, fluency, and lexical sophistication. They found that even highly advanced L2 speakers with a long residency in the L2 community differed from the native speakers, which again indicates that there are several fine-grained aspects of languages that are hard to acquire, even after long residency and full immersion. These two studies give yet another indication of the difficulties involved in acquiring, using and producing the fine-grained subtleties of an L2, under which modal particles are also subsumed.

Research on L2 sentence processing shows that adult L2 learners and native speakers have characteristic differences in grammatical processing. Several studies have shown that proficiency significantly affects processing (Lim & Christianson, 2013). Papadopoulou and Clahsen (2003) and Felser, Roberts, Gross, and Marinis (2003) showed that L2 learners have difficulties integrating syntactic information while native speakers use both syntactic and lexical information when performing an online comprehension task. On the basis of results in these studies, the exploratory measure of self-paced reading in the present study aims to investigate if there is a difference in how modal particles are processed online, compared to other lexical items.

Hopp (2013) investigated whether advanced second language learners could use syntactic determiner-noun gender agreement predictively although their L1 lacked this linguistic feature, and showed that a group of advanced late L2 learners were in fact able to do so, but the variability was great and all L2 learners did not use the
syntactic cues predictively when processing. His findings are interesting in this case because they show that very advanced learners can process language in a native-like manner online, which is a question that the online measure of reading times in this study seek to shed more light on.

There are very few studies that investigate the L2 acquisition of modal particles. One of the few studies that have investigated the acquisition of modal particles and L1 transfer, is Hogeweg, de Hoop, Ramachers, van der Slik, and Wottrich (2016). The results from their study show that although L2 learners who shared the feature of modal particles with the target language had an overall better understanding of modal particles and discourse particles than the L2 learners with other L1 backgrounds, the results did not show that L1 transfer facilitated the understanding of modal particles. The literature that exist on the acquisition of modal particles show that they are notoriously hard to acquire (Hogeweg et al., 2016).

Romero Trillo (2002) found that Spanish speaking children who were learning English overused listen as a discourse marker when look would have been more appropriate. This was probably because the Spanish discourse marker oye, which means ‘listen’, is much more common in Spanish. There is not much research on how the system of discourse markers is affected in the first and second language once a second language is learned. There is no consensus on how discourse particles are acquired in second language acquisition, although it is suggested they are acquired in a separate system from that of grammar and lexicon (Fox Tree, 2010). Second language acquisition of discourse markers can be similar to first language acquisition, where the use of them is narrow in the beginning and increases with age. Second language learners acquire discourse markers incrementally as proficiency and acculturation increases. But second language learners already have a set of discourse markers in their first language (Fox Tree, 2010), and in this study, it is hypothesized that this can interfere with the acquisition of modal particles. Fung and Carter (2007) studied the acquisition of discourse markers and found that second language learners used discourse markers that relate to the talk exchange (e.g., and, but, if) more frequently than they used discourse markers that refer to attitudes of mutual knowledge. Both nog and ju are modal particles
that refer to attitude and mutual knowledge, which is one of the reasons why it is interesting to investigate how they affect the language users.

The studies reviewed above show that there is no consensus on how modal discourse particles are acquired, and that proficiency and L1 are different factors that play a role in the acquisition. The next section focuses on the specific traits of modal particles.

2.3 Modal particles

It is interesting to study modal particles because they are polyfunctional, hard to distinguish from discourse particles and not unanimously defined. They are also cross-linguistically distinct; some languages are rich in modal particles, while other lack them completely. Therefore, they serve as an advantageous starting point for a comparison between languages that do have them and languages that do not. They are also considered to be difficult to acquire (Hogeweg et al., 2016) and are difficult to translate (Aijmer, 1996; 2016).

Modal particles are a closed word class with certain formal and functional features that are said to make them different from both modal verbs (such as may and might) and discourse particles (such as eigenlijk and inderdaad). Morphologically, they are monosyllabic units that cannot be inflected, and they have a segmental status and can therefore be isolated as segments in an utterance. They are integrated in a sentence and have a fixed position after the finite verb in the middle of the sentence. Prosodically, they are generally unstressed. Stylistically, they are more frequent in spoken language than in writing (Aijmer, 2016). The functional features of modal particles, claimed to be the most essential ones by Kresić et al. (2017), are that they express meaning related to the attitude of the speaker and the hearer.

Fox Tree (2010) view discourse markers as a class of signals that speakers use to manage conversations, by referring to either attitudes of the speaker, or to address mutual knowledge of the speaker and hearer of the conversation. They provide information about how the content of a message should be interpreted, and are used to make sure that the speaker and the listener are on the same page. They can be more or
less common in the first and second language use, and discourse markers that seem translatable nevertheless have cross-linguistic differences (van Bergen & Bosker, 2018).

2.4 L1 transfer

Transfer from the first language (henceforth L1 transfer) is generally speaking the influence the first language has on all different aspects of learning and speaking foreign languages. There is no true consensus regarding the nature of L1 influence within the field of second language acquisition, but Jarvis (2000) gives a useful definition; L1 transfer is any instance of learner data where some feature of the learner’s interlanguage performance is affected by their L1 background, and where this is shown to be statistically significant (Jarvis, 2000).

One of few studies that have investigated the L2 acquisition of modal particles is Hogeweg et al. (2016). They investigated L1 transfer through looking at Dutch learners of German, and compared these to learners with other L1 backgrounds. They specifically looked at the acquisition of the German particle _doch_, which has a cognate in Dutch. Their experiment consisted of an online cloze test in German. A cloze test is a text in which words have been removed, and participants are tasked to fill the gaps with the appropriate word. In this cloze test, the participants had to choose between four different particles; _doch_, _ja_, _wohl_ and _schon_. The other three particles were chosen as distractors due to their partly overlapping meaning with _doch_, making the test sufficiently hard. As _doch_ is a word with several different functions, the experiment was designed to elicit five functions of the particle, among which one was the modal particle. They found that Dutch learners had a greater understanding of the word _doch_ than the participants with other L1 backgrounds, which supports that L1 transfer facilitates the acquisition of discourse particles. However, they did not find that the cognate particle _toch_ in Dutch helped the acquisition of German even when the function was similar in Dutch, and the Dutch learners performed worst on the functions were _doch_ was a modal particle and when _doch_ was used as a correction, even though the Dutch cognate _toch_ also can be used for these functions (Hogeweg et al., 2016).
These findings are interesting in that they support that the L1 will facilitate the L2 acquisition of discourse particles if there is a similar set of discourse particles in the L1, but they contradict that cognates help and still show that the acquisition of modal particles in particular is difficult. This study compared non-Dutch learners of German to Dutch learners of German, and the results show that even though the Dutch learners performed worst on the functions modal particles and correction out of the five functions that were tested, they still outperformed the non-Dutch learners on these functions. The group of non-Dutch learners was too heterogeneous in their L1 backgrounds for the authors to be able to draw conclusions about whether their L1 background facilitated or inhibited the acquisition of particles. The present study investigates German and English L2 speakers, and thus aim at shedding light on whether L1 transfer can facilitate the acquisition of modal particles by specifically studying two L2 groups where one has the feature, and the other does not.

Van Bergen and Flecken (2017) investigated how L2 speakers with different L1 backgrounds processed placement verbs. They looked at whether similarities between the L1 and the L2 facilitated predictive sentence processing, and found that the L2 participants who shared similar traits of placement verbs in the L1 and the L2 indeed processed in a similar manner to the native speakers, while the L2 participants who did not share the linguistic feature, did not.

The scarce literature on the L2 acquisition of discourse particles has consistently shown that modal particles are especially hard to acquire for second language learners, and many authors claim that the difficulties lie in their polyfunctionality, their non-transparent nature and their non-obligatoriness (Hogeweg et al., 2016).
3. Cross-linguistic comparison

3.1 How nog and ju modify meaning

The modal particles ju and nog express different speaker positions; adding ju to a sentence entails that the content of the sentence is already a known fact, and nog gives some kind of probability, but also conveys a certain degree of uncertainty.

Aijmer (2016) shows that nog has different core meanings depending on which position it occurs in within a sentence. In the medial position nog can mean both probability and almost certainty. When nog implies certainty it can imply some kind of self-assurance, and when used with mental verbs, it modifies the verb. It can also be used to down tone an opinion or an utterance. Furthermore, it can be deontically used to refer to what ought to be done. When nog is found in initial position of the sentence it entails either emphasis, contradictory assumptions, or, can prepare the hearer for an objection in the form of a but-clause. In the stimuli of this study, nog is always in medial position and used to imply probability. Consider how the following sentence is affected by the modal particles nog and ju:

1a
Mötet slutar nog klockan 10.
Meeting-the end-PRES NOG o’clock 10.
‘This meeting probably ends at 10 o’clock.’

1b
Mötet slutar ju klockan 10
Meeting-the end-PRES JU o’clock 10.
‘This meeting ends at 10 o’clock, as we all know.’
Adding *nog* to a sentence softens the statement, and makes it less certain. In contrast, adding *ju* to a sentence, ascertains that the information given in the sentence is shared knowledge that both the hearer and the speaker are already aware of. These two particles are used in the present study to modify sentences within short stories that narrate everyday events, where it is believed that *ju* will make the participants attribute more responsibility, and *nog* is believed to soften the statement, making the participants attribute less responsibility.

### 3.2 English and German equivalents of Swedish modal particles

Kresić et al. (2017) propose a spectrum where languages can be categorized according to their modal particle (MP) status, which can be divided into four categories; MP languages such as German, languages that have many MPs and equivalent constructions, languages with some MPs (or discourse markers) and many other linguistics strategies that are employed to convey the pragmatic function that modal particles have, and lastly, languages without MPs, such as English (Kresić et al., 2017). Swedish falls under the same category as German, which is called an MP language. Kresić et al. (2017) establish that English speakers have to employ a number of other linguistic strategies to convey the same meaning as modal particles do. These include adverbs, interjections, tag-questions, interrogative expressions, discourse markers and specific constructions.

Aijmer and Altenberg (2016) claim that findings pertaining to the comparison of German pragmatic particles and English parenthetical expressions (Fillmore, 1984) seemingly hold for Swedish particles as well. This observation is that German particles to some degree correspond to parenthetical formulaic expressions in English, and that if these parenthetical expressions were used in English to the same degree as particles are used in German, it would produce a very mannered speech in English. Aijmer and Altenberg (2016) go on to observe that English and German have different constraints, where German (and Swedish) almost require the use of pragmatic
particles to situate individual utterances in their proper discourse context. But translating to the same or a similar pattern with parenthetical formulaic expressions in English would produce a non-native like language use. Given that Swedish use pragmatic particles so much, the L2 learners of Swedish have a rich oral input of these words.

_Ju_ is the most common Swedish modal particle. When studying the English-Swedish Parallel Corpus, Aijmer and Altenberg (2016) found that _ju_ was omitted from translations in 65 % of the cases. The second most common translation, which was used in 12 % of the cases, was translating _ju_ to ‘of course’. Another strategy used to translate _ju_ was to change the grammar to a subordinate clause or to use a specific lexical form. Apart from omission and _of course_, Aijmer and Altenberg (2016) list 19 other translations for _ju_ including _after all, you know, because, tag-questions and since-clauses_. In the stimuli of the present study, _ju_ conveys ‘as we all know’. Aijmer (2016) conducted a contrastive analysis on _nog_, and compared English and Swedish through looking at cross-linguistic correspondences in the English-Swedish Parallel Corpus. Given the many different meanings _nog_ can have, it is no wonder that Aijmer (2016) found 40 different translation correspondences for it in her analysis. The most common translation strategy used was omitting the modal particle. This happened in 42.3 % of all cases analyzed. The second most frequent translation was the word ‘_probably_’ (Aijmer, 2016), which is essentially closest to the meaning conveyed in the stimuli of the experiment conducted for the present study.

There are to the best of the author’s knowledge, no studies that cross-linguistically compare meanings of the Swedish modal particles _ju_ and _nog_ with equivalents in German, and given the polysemic nature of modal particles, such a comparison could prove difficult. The German modal particle _ja_ can convey the same meaning as the Swedish modal particle _ju_, i.e., ‘you know’ or ‘as we both know’ (see Kresić & Gulan, 2019). The Swedish modal particle _nog_ is a more complicated matter. The first translation when looking it up in the Swedish-German dictionary is for the adverb _nog_, which means ‘enough’, and is translated to the German adverb _genug_. _Genug_ and _nog_ are also cognates. This is only the meaning of the adverb _nog_ though; when there are examples of the modal particle _nog_ in the dictionary, it is translated to
the German modal particles *schon* (‘already’), *wohl* (‘well’) and *zwar* (‘though’, ‘indeed’) (Lindestam, 2008).

4. The present study

4.1 General goals

The present study combines an offline and an online measure to investigate how modal particles affect L1 and L2 speakers of Swedish. The offline measure investigates how modal particles affect responsibility attribution. The online measure is the self-paced reading measure, which taps into the online processing of modal particles. The aim is to see whether modal particles do in fact affect the responsibility attribution of native speakers, and if it affects advanced L2 speakers in the same way. Furthermore, it looks at whether L1 transfer facilitates the acquisition of modal particles. The aim of the online measure is to see whether the processing of modal particles is slower, which would indicate that they are harder to process than other words.

4.2 Experimental approach

The study uses an offline judgement of responsibility attribution in an experiment where the participants read short stories about everyday events. After having read the stories, they are asked to indicate on a Likert scale from 1 to 7 how much responsibility a character in the short story had for the occurred event. The following pictures show the schematics of each target item.

Picture 1 shows the first frame of the item, where the short story is presented. The self-paced read sentence always started with a fixation point, and when they clicked on space bar the first word was presented. After having read that sentence, the participant pressed space bar. The word then disappeared, and the next word of the sentence immediately appeared in the same position (picture 2). After having read the last word, the question about responsibility attribution appeared (picture 3).
Picture 1. For each item, the participant is first presented with the short story.

Picture 2. The last sentence of the short story is read word by word, here depicted frame by frame.

Picture 3. In the last frame of the item, participants are asked to attribute responsibility to one of the characters in the story.  

3 A full translation and analysis of the target item presented in pictures 1-3 is given in section 5.3.1.
The last sentence in each of the short stories is manipulated with the modal particles nog or ju, or with no modal particle, and the ratings from participants are statistically analyzed. The analysis of the responsibility ratings gives an offline measure of how modal particles affect meaning. Furthermore, the last sentence of each short story is read in a self-paced manner, where the participant presses a key once they read one word. When the key is pressed, the word disappears, and the next word appears. The reading times of the sentences containing modal particles are investigated. Reaction times on self-paced reading tasks mirror processing costs, and are indicative of speakers’ sensitivity to and knowledge of a language (Marsden et al., 2018). The rationale behind the self-paced reading part is to have an online measure to complement the offline measure of the responsibility ratings. The analysis of the reading times is mostly exploratory, and motivated by the fact that van Bergen & Bosker (2018) found that Dutch speakers slowed down in their completions upon encountering eigenlijk, relative to when they instead encountered an adverb. An additional reason for the self-paced reading part is to obscure the modal particles nog and ju. By incorporating the modal particles in a sentence that the participant reads word-by-word, the experiment effectively hinders the participants from spending a long time contemplating the modal particle.

### 4.3 Research questions and hypotheses

#### 4.3.1 Research questions

1. Is the responsibility attribution of native Swedish speakers affected by the modal particles nog and ju, as compared to having no such particles?

2. Are L2 speakers equally sensitive to these linguistic manipulations?

3. Does the L1 affect the responsibility ratings?
4.3.2 Hypotheses

The present study investigates whether L1 background plays a role in how L2 learners of Swedish attribute responsibility when reading short stories where the last sentence is linguistically manipulated using the modal particle *nog* and *ju*. Based on the meaning of these modal particles, it is hypothesized that the Swedish control group will give lower responsibility ratings when the target sentence is manipulated with *nog*, and higher responsibility ratings when the target sentence is manipulated with *ju*. For the third baseline condition, no modal particles were used, it is hypothesized that ratings in this condition will lie in between the ones with *nog* and the ones with *ju*.

Regarding the online reading measure obtained from the self-paced read sentences, it is hypothesized that the sentences modified with modal particles will render longer reading times for the words following the modal particle, as this will cause higher processing costs for the native participants, and thus slow down their reading.

Two L2 groups are tested, one L1 German group and one L1 English group. It is hypothesized that the German group will show a more native-like pattern than the L1 English group, since Germans also have modal particles in their L1. That is, positive L1 transfer effects are expected.

5. Method

5.1 Participants

Participants were recruited from around Stockholm. The recruitment process involved spreading information by word of mouth, posting in different Facebook groups for expats, posting advertisements in different student forums through Mondo, the online Stockholm University platform for students and teachers, and enlisting the help of faculty staff teaching classes of advanced Swedish at the university.
All participants took a proficiency test consisting of a Swedish cloze test, where the maximum score was 84. The lowest score obtained by a native was 68, which is why this score is considered native-like in the present study.

The control group of Swedish native speakers (n = 12) ranged in age from 27 to 62 (M = 37, SD = 10.5). All but one had a university degree, either a bachelor or a master’s degree. All but one reported knowledge of more languages than Swedish and English. Other languages reported were Spanish, German, French, Slovak, Dutch and Catalan. All of them reported using Swedish and English on a daily basis, and two of them also reported using Spanish on a daily basis. On the proficiency test, they scored between 68 and 83 (M = 75, SD = 4.9).

The German L1 group (n = 12) had an age range of 23 to 64 (M = 40.8, SD = 12.7). Their length of residence (LoR) ranged from 1 year to 38 years, (M = 14.3, SD = 12.2). Age of acquisition (AoA) ranged from 21 to 32 (M = 24, SD = 4.1). The Germans scored high on the proficiency test, with a range of 41 to 82, (M = 69.2, SD = 12.5). All but one had had formal instruction in Swedish. They were all multilinguals. All of them spoke English as well and all but two participants reported speaking more than English, Swedish and German. The other languages reported were French, English, Spanish, Latin, Portuguese, Italian, and Russian. Only one of them reported using more than Swedish, German and English on a daily basis. All of them reported a daily use of Swedish, and all but one of them reported using Swedish at work or in school with all or most of their colleagues/class mates. All but two participants had a degree, where the lowest degree was a bachelor and the highest a PhD. Two of the participants were enrolled in master programs.

The English L1 group (n = 12) had an age range of 24 to 66 (M = 43.8, SD = 13.4). Their length of residence ranged from 4 to 25 years (M = 15, SD = 11.3). Age of acquisition ranged from 21 to 42 (M = 26.8, SD = 6.6). They all scored high on the proficiency test, ranging from 47 to 66 (M = 61.5, SD = 6.5). All but two had finished their degree, where the lowest degree was a bachelor and the highest degree a PhD. Two were students, one enrolled in a master’s program and one enrolled in a bachelor’s program. All but one had had formal instruction in Swedish, and all but two participants
reported using Swedish with all or most of their colleagues/class mates. All but one of them reported using Swedish on a daily basis. All but one were multilinguals, and reported knowing at least one more language besides English and Swedish. These languages were French, German, Spanish, Latin, Dutch, Mandarin and Hindi. Table 1 gives an overview of the L2 learners’ language background and proficiency scores.

Table 1. L2 participants.

<table>
<thead>
<tr>
<th>L2 participants</th>
<th>Age M(SD)</th>
<th>LoR (years) M(SD)</th>
<th>AoA(years) M(SD)</th>
<th>Proficiency M(SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>German</td>
<td>40.8(12.7)</td>
<td>14.3(12.2)</td>
<td>24(4.1)</td>
<td>69.2(12.5)</td>
</tr>
<tr>
<td>English</td>
<td>43.8(13.4)</td>
<td>15(11.3)</td>
<td>26.8(6.6)</td>
<td>61.5(6.5)</td>
</tr>
</tbody>
</table>

5.2 Procedure

The entire study consisted of three parts: 1) the responsibility attribution task, which was a computerized task designed and conducted in the experiment presentation software PsychoPy (Peirce et al., 2019); 2) a Swedish cloze test, filled out with paper and pen; and 3) a language background questionnaire, also filled out with paper and pen. The three parts were always distributed to participants in that exact order. The experiment was conducted in the month of April 2019, at Stockholm University and other venues around Stockholm, such as libraries, cafés or participants’ homes or work places. The entire study took little over an hour to conduct, and as a token of appreciation participants were offered a Swedish fika after participating.

The responsibility attribution task consisted of 72 short stories, which the participants read on the screen. The last sentence of each story was presented one word at the time in the middle of the screen, and once a word was read, participants pressed the space bar to continue to the next word. Before starting the actual task, participants
completed two practice items. All short stories consisted of approximately 4 sentences and were about everyday life events, where something went wrong. A complete list of the stimuli is given in appendix A. After having read the short story and the self-paced sentence, participants were either presented with a question about the short story (target items) or with a true/false statement about it (filler items). The question in target items was always how much responsibility one of the characters had for the occurred event in the story, and participants were asked to indicate the amount of responsibility on a Likert scale, where 1 stood for ‘little responsibility’ and 7 stood for ‘a lot of responsibility’. In filler items, the participants were presented with a statement, and were asked to indicate whether that statement was true or not, pressing the key J for ja (‘yes’) or the key N for nej (‘no’).

The Swedish cloze test was a one page long Swedish text about Toronto, where every seventh word was removed, with a total of 42 empty gaps that participants had to fill out correctly. To give the test a more fine-grained scale, 2 points were given to words that were semantically suiting and correctly inflected, and 1 point was given if the word was semantically correct but inflected incorrectly, thus rendering a maximum score of 84.

The language background questionnaire inquired about general demographics such as age, gender, educational level and more specific information pertaining to their language background, such as length of residence (LoR), age of acquisition (AoA), instruction in Swedish, knowledge of other languages, and daily use of Swedish.

5.3 Materials

The stimuli of the experiment consisted of two practice items and 72 short stories, where 36 were target items and 36 were filler items. The target items had three different conditions: nog, ju and none and the filler items had two conditions; true or false. Six participant lists were created in order to counterbalance the items across target item conditions and filler item conditions, so each participant gave ratings to 12 target items in the nog condition, 12 target items in the ju condition, and 12 target items in the none condition.
condition, as well as responses to 18 filler items in the \textit{false} condition and responses to 18 filler items in the \textit{true} conditions. The participants were assigned lists using pseudorandomization, and each list was randomized in the experiment.

5.3.1 Target items

The last sentence of the target items was read in a self-pace manner, and this is where the linguistic manipulations were made. Each of these sentences were manipulated with either the modal particle \textit{nog}, the modal particle \textit{ju} or no modal particle (\textit{\(\emptyset\)}). Previous to the target sentence, facts of the event are stated using only analogous connectives, such as \textit{when} and \textit{and}, to make sure that the reader could only infer the causal chain, but there are no causal connectives that clearly establish how the events are connected to each other. The target items were proofread by a PhD student at the institution, and were also read by a highly proficient L2 speaker and Swedish test developer to identify words that could be problematic for L2 speakers of Swedish. Such words were replaced by simpler, more frequent ones. An example of a target item is given below:

\begin{quote}
\textit{Oskar var ute och gick med Peters hund i parken och mötte då Maja, som också var ute och gick med sin hund. När Oskar såg Maja vinkade han till henne och Peters hund sprang iväg. (Oskar släppte nog/ju/\(\emptyset\) hundkopplet som han höll i.)}
\end{quote}

\begin{quote}
\textit{Hur stort ansvar har Oskar för att Peters hund är borta?}
\end{quote}

‘Oskar went on a walk with Peter’s dog in the park and met Maja, who was also out walking her dog. When Oskar saw Maja he waved at her and Peter’s dog ran away. (Oskar let go nog/ju/\(\emptyset\) of the dog leash he was holding.)

How much responsibility does Oskar have for the fact that Peter’s dog is missing?’
The last sentence of the short story is in parenthesis in the example to indicate where the self-paced reading started. This sentence renders different interpretations with nog, ju, and φ:

2a.
Oskar släppte nog hundkopplet som han höll i
Oskar let-go-PAST NOG dog leash-THE that he hold-PAST in
‘Oskar probably let go of the dog leash he was holding’

2b.
Oskar släppte ju hundkopplet som han höll i
Oskar let-go-PAST JU dog leash-THE that he hold-PAST in
‘As we all know, Oskar let go of the dog leash he was holding’

2c.
Oskar släppte hundkopplet som han höll i
Oskar let-go-PAST dog leash-THE that he hold-PAST in
‘Oskar let go of the dog leash he was holding’

5.3.2 Filler items

36 filler items were included in the experiment. They contained either analogous connectives such as och ‘and’ and när ‘when’, but also causal connectives such as eftersom ‘because’ and för att ‘because’, genom att ‘through’, and sometimes relative pronouns. The last sentence of the filler item was also read in a self-paced reading manner. After the self-paced read sentence, a statement appeared. The participants were asked to indicate whether the statement was true or false by pressing either the key J for ja ‘yes’ or the key N for mej ‘no’. Fillers were added to avoid repetition effects and to
minimize task effects (Keating & Jegerski, 2015). They also served the purpose of keeping the participant fully alert on what they were reading, since the statements asked for small details such as location, object or subject of the short story. An example of a filler item is given below:

*Kalle och Fredrik satt och gjorde läxor vid köksbordet igår. När Fredrik skulle sträcka sig efter sitt glas med mjölk puttade han till Kalles glas med mjölk, som välte och mjölen rann ut över alla läxorna. (Fredrik förstörde läxorna genom att välta ut mjölk över dem.)*

*Det var vid köksbordet de gjorde läxorna/Det var i vardagsrummet de gjorde läxorna.*

\[ J = \text{ja} \quad N = \text{nej} \]

‘Kalle and Fredrik sat by the kitchen table doing homework yesterday. When Fredrik reached for his glass of milk he nudged Kalle’s glass of milk, which tipped over and the milk spilled out on all the homework. (Fredrik destroyed the homework through spilling the milk all over them.)

It was by the kitchen table they did their homework/It was in the living room they did their homework’

\[ J = \text{yes} \quad N = \text{no} \]

Again, parenthesis is added to show the reader where the self-paced reading started.

### 5.4 Data processing and analysis

Data analysis was carried out in R (R Core Team, 2012) Excel (version 16.25) and SPSS (version 25.0.). The comprehension checks were carried out through creating pivot tables in Excel. The proficiency check was carried out through conducting a one-way ANOVA in R, followed by post hoc Tukey HSD checks. A one-tailed t-test was then carried out to see if the English group differed significantly from the German group. The ratings were analyzed in SPSS through conducting a 3 by 3 mixed ANOVA,
with three levels in the within-subject factor, condition (ju, nog, none), and three levels in the between-subject factor, group (English, German, Swedish). Two-sampled t-tests were carried out after the 3 by 3 mixed ANOVA, since it had shown that there was a main effect of group and a main effect of condition, although no interaction between the two. The means and standard deviations of the reading times were computed in R and the figures showing these were created in Excel.

6. Results

Before reporting the actual results, the outcome of two variables that could influence the results are reported; attention paid during the task and proficiency. The actual report of results starts in section 6.2.

6.1 Comprehension and proficiency checks

6.1.1 Comprehension check

The filler items served to distract the participants from the target items, but also worked as comprehension checks, since they were true/false statements of the filler item stories. Table 2 gives an overview of all three groups. There were 36 filler items, and each item only had the answer yes or no. So each correctly answered item is coded as one point. The table shows the accuracy rates of the filler items, the range, mean and standard deviations in percentages.
Table 2. Comprehension check through accurate responses to filler items. Table of range, mean and standard deviations across groups in percentages.

<table>
<thead>
<tr>
<th>Accurate responses to filler items in percentages</th>
<th>Range (%)</th>
<th>M(SD) %</th>
</tr>
</thead>
<tbody>
<tr>
<td>German group</td>
<td>80-100</td>
<td>92(6)</td>
</tr>
<tr>
<td>English group</td>
<td>86-100</td>
<td>94(6)</td>
</tr>
<tr>
<td>Swedish group</td>
<td>75-100</td>
<td>91(7)</td>
</tr>
</tbody>
</table>

As this experiment design is new it was unsure before the data collection started how difficult or easy the filler items would be. Based on the fairly high numbers displayed in table 2, none of the participants were removed from the data analysis.

6.1.2 Proficiency check

All participants, including the native speakers, took the Swedish cloze test. The maximum score for the test was 84. A one-way ANOVA was carried out to see if the groups differed. There was a significant main effect of group, $F(2,33) = 7.426$, $p = .02$.

Post hoc comparisons using Tukey HSD indicated that the mean proficiency score for the English group ($M = 61.5$, $SD = 6.5$) was significantly different from the natives ($M = 75$, $SD = 4.9$), $p = .001$. However, the German group ($M = 69.2$, $SD = 12.5$) did not significantly differ from either the natives or the English group, where the difference between the English and German group had a p-value of $p = .089$, and the difference between the German and the Swedish group had a p-value of $p = .24$.

As the lowest score among the natives was 68, this was treated nativelike, and a one-tailed t-test with a 95% confidence interval was carried out to see if the English group differed significantly in proficiency when setting the threshold for a
native-like score at a mean of 68. The result of this test show that the English group differs significantly even when only comparing to the lowest score of the natives; 
\[ t(11) = -3.447, p = .0027. \]

These results show that the German group was not different from the Swedish group in terms of proficiency, but the difference between the Germans and the English was not significant either. This means that the English group, even though significantly different from the natives, did not differ significantly from the Germans in proficiency, which is why the differences between the two L2 groups are not considered to be caused by proficiency.

### 6.2 Responsibility attribution

#### 6.2.1 Descriptive statistics

When looking at the group ratings of all conditions, the English group gave lower ratings (M = 4.47, SD = 1.89) than the German group (M = 4.86, SD = 1.96) and the Swedish group (M = 4.92, SD = 1.77). When looking at all participants’ ratings of conditions, the condition *nog* received lower ratings (M = 4.54, SD = 1.84) than *ju* (M = 4.82, SD = 1.89) and *none* (M = 4.89, SD = 1.92). When looking at the different groups and conditions, all groups gave responsibility ratings that ranged from 1 to 7, but the group means centered on a range from 4.22 to 5.12 on the Likert scale of 1 to 7.

The German group assigned similar responsibility ratings for the *ju* condition (M = 4.72, SD = 1.97), and the *nog* condition (M = 4.75, SD = 1.98), with a slight numerical difference in the opposite direction than the one predicted. They assigned the highest responsibility rating to the condition without modal particles (M = 5.12, SD = 1.92). The English group assigned more responsibility in the *ju* condition (M = 4.7, SD = 1.86) than in the *nog* condition (M = 4.22, SD = 1.83). They responsibility ratings of the English group for the condition without a modal particle was in between the two other conditions (M = 4.49, SD = 1.98). The Swedish group assigned less responsibility to participants in the condition *nog* (M = 4.65, SD = 1.66) than in the condition *ju* (M = 5.05, SD = 1.83). The mean ratings for the condition without a modal
particle was \( (M = 5.06, SD = 1.79) \). Figure 1 gives an overview of mean ratings per group and condition, as well as the standard error computed on by-subjects means.

Figure 1. Mean responsibility ratings per group and condition and standard errors computed on by-subject means.

The error bars show the standard errors computed on by-subject means. There is not a lot of variability across groups and condition, and it is only in the English group we see that standard errors between the *nog* and the *ju* condition do not overlap. Each group was further analyzed to look at variability by creating boxplots. Figures 2 to 4 show each groups’ subject averages of ratings in boxplots.
Figure 2. The German group: Boxplot of mean rating per condition.

The by-subject means in each condition in the German group show that there are only three outliers. If removed, the nog condition would have gotten a slightly higher mean rating, and so would the none condition.

Figure 3. The English group: Boxplot of mean rating per condition.
The by-subject means for each condition in the English group show little variability; only one outlier in the *none* condition, if removed, this would have slightly elevated the mean of the *none* condition.

![Figure 4. The Swedish group: Boxplot of mean rating per condition.](image)

The by-subject means in each condition of the Swedish group show little variability; only two outliers on each end of the *none* condition. If removed, the mean rating of the *none* condition would not change.

None of the outliers were removed from further analysis, as they would not change the direction in which the mean rating goes compared to the two other conditions in the group.

### 6.2.2 Inferential statistics

A 3 (GROUP: German, Swedish, English) by 3(CONDITION: ju, none, nog) mixed ANOVA run in SPSS revealed a main effect of CONDITION, $F(2,70) = 4.89, p = .008, \eta^2 = .024$, as well as a main effect of GROUP $F(1,35) = 4.8, p = .00, \eta^2 = .3$
However, the interaction between GROUP and CONDITION was not significant, $F(2, 70) = 1.01, p = .45$, $\eta^2 = .082$.

The main effect of CONDITION was due to the fact that there was a difference between $ju$ ($M = 4.82, SD = 1.9$) and $nog$ ($M = 4.54, SD = 1.8$), $t(431) = -2.38, p = .018$, as well as between $none$ ($M = 4.89, SD = 1.9$) and $nog$ ($M = 4.54, SD = 1.8$), $t(431) = -2.92, p = .004$, but no difference between $none$ and $ju$, $t(431) < 1$. This means that all participants assigned lower responsibility ratings in the $nog$ condition than in the $ju$ and $none$ condition.

The main effect of GROUP was due to the fact that there was a difference between the English group ($M = 4.47, SD = 1.89$) and the German group ($M = 4.86, SD = 1.96$), $t(431) = 3.19, p = .002$, as well as a difference between the English group and the Swedish group ($M = 4.92, SD = 1.77$), $t(431) = 3.89, p < .001$, but no difference between the Swedish group and the German group, $t(431) < 1$. This means that the English group assigned lower responsibility ratings for all conditions, compared to the Swedish group and the German group.

### 6.3 Reading times

All sentences were not equally long but ranged from 7 to 10 words. The reading times of the two words preceding the modal particles are plotted, as well as the four words following the modal particle. The former provide a baseline where no differences depending on the modal particle condition is expected. The latter are the regions of interest, in which it is expected that differences in reading times will be seen as a function of processing costs for the modal particles. For each target sentence, the modal particle appeared immediately after the first finite verb. In the following table where reading times are plotted, the place where the modal particles appear is named critical point. All words that had an equal number of observations are shown in the tables and in the graphs, which means that the last words of sentences with 8-10 words are not shown, since the means and standard deviations of them would be computed on less observations and not comparable to the number that are shown. It would have been preferred to compute by-subject means as well as by-item means to get a better
understanding of this data, but it was not possible within the scope of this thesis. The results will therefore be discussed cautiously and keeping in mind that no inferential statistics were conducted. The conclusions drawn on these tables and graphs are therefore considered highly speculative.

Due to an unexpected break in the experiment by one of the Swedish participants, the self-paced reading of one target item in the condition *ju* was removed, affecting 0.7% of the data of reading times for the condition *ju* in the Swedish group. The German group and the English group show quite similar reading times, and the German groups show an incremental slow-down in reading times on the first and second word following the critical word, followed by faster reading times on the third word after the critical word. The English group shows this pattern for *ju*, but not for *nog*, where there is only a slow-down in the first word after the critical point. The NS shows a pattern of faster reading times across all words, and a slight incremental slow-down for all three words after the critical word *ju*, and an incremental slow-down in the first and second word after the critical word *nog*. The mean reading times for the condition *ju* in all groups show that both L2 groups are very similar in their reading times, and that the variability across words in the sentences is small, although the standard deviations for all words are big. The natives read consistently faster than the L2 speakers, and their reading times across all words in the sentences are even more similar.

The following table shows the means and standard deviations of all participants, divided into group and condition, and the figures visualize the means and standard deviations of the reading times, plotted per group.
Table 3. Mean reading times in milliseconds of *ju*, *nog* and the control condition, and the two words preceding the critical point as well as the three words that follow the critical point.

<table>
<thead>
<tr>
<th>Mean reading times (ms)</th>
<th>word-2</th>
<th>word-1</th>
<th>critical point</th>
<th>word+1</th>
<th>word+2</th>
<th>word+3</th>
<th>word+4</th>
</tr>
</thead>
<tbody>
<tr>
<td>All groups and all conditions</td>
<td>M(SD)</td>
<td>M(SD)</td>
<td>M(SD)</td>
<td>M(SD)</td>
<td>M(SD)</td>
<td>M(SD)</td>
<td>M(SD)</td>
</tr>
<tr>
<td>German group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JU</td>
<td>599(385)</td>
<td>550(282)</td>
<td>513(197)</td>
<td>507(234)</td>
<td>564(555)</td>
<td>518(229)</td>
<td>559(387)</td>
</tr>
<tr>
<td>NONE</td>
<td>593(283)</td>
<td>541(259)</td>
<td>X</td>
<td>562(322)</td>
<td>552(256)</td>
<td>522(256)</td>
<td>525(238)</td>
</tr>
<tr>
<td>NOG</td>
<td>557(207)</td>
<td>542(296)</td>
<td>487(192)</td>
<td>485(177)</td>
<td>508(208)</td>
<td>487(195)</td>
<td>504(157)</td>
</tr>
<tr>
<td>English group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JU</td>
<td>581(319)</td>
<td>510(191)</td>
<td>513(182)</td>
<td>530(278)</td>
<td>593(475)</td>
<td>531(222)</td>
<td>570(528)</td>
</tr>
<tr>
<td>NONE</td>
<td>565(264)</td>
<td>559(369)</td>
<td>X</td>
<td>538(253)</td>
<td>534(422)</td>
<td>519(267)</td>
<td>511(194)</td>
</tr>
<tr>
<td>NOG</td>
<td>716(1775)</td>
<td>559(374)</td>
<td>509(197)</td>
<td>569(417)</td>
<td>536(200)</td>
<td>517(255)</td>
<td>573(384)</td>
</tr>
<tr>
<td>Swedish group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JU</td>
<td>489(202)</td>
<td>402(217)</td>
<td>384(153)</td>
<td>400(192)</td>
<td>406(169)</td>
<td>412(158)</td>
<td>440(233)</td>
</tr>
<tr>
<td>NONE</td>
<td>467(168)</td>
<td>395(251)</td>
<td>X</td>
<td>371(141)</td>
<td>404(200)</td>
<td>401(162)</td>
<td>412(195)</td>
</tr>
<tr>
<td>NOG</td>
<td>454(176)</td>
<td>372(141)</td>
<td>355(139)</td>
<td>369(152)</td>
<td>416(327)</td>
<td>403(156)</td>
<td>425(175)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sample sentence</th>
<th>Oskar</th>
<th>släppte</th>
<th>nog/ju/ø</th>
<th>hundkopplet</th>
<th>som</th>
<th>han</th>
<th>höll</th>
</tr>
</thead>
</table>

Figure 5-7 plot reading times in all conditions per group. The discontinued line of the none condition is due to the fact that these sentences did not have a replacement word where the modal particles were in the other sentences. The consequences of this is addressed in the section 7.2.
Figure 5. Mean reading times for all conditions – the German group

Figure 6. Mean reading times for all conditions – the English group
Figure 5: The reading times of the baseline sentence without a modal particle is slower in the German group than both the sentences with *ju* and *nog*. The sentences with *nog* have very similar reading times in all words following the modal particle. The sentences with *ju* renders a slow-down in the second word after the critical word, and there are almost no differences in reading times after the word *nog*.

Figure 6: The English group displayed a slow-down in reaction time directly following the critical word condition *nog*. For the condition *ju*, there was an incremental increase in reading times in the first and second word following the critical word, and after that, a decrease. There is some variation in the reading times with the modal particles, and the reading times for the none condition is almost a straight line.

Figure 7: The Swedish speakers displayed a very similar pattern of reading times across all conditions. In both the sentences with *nog* and *ju*, there were incremental increases in reaction times on the first and second word after the critical word. This pattern showed for the baseline condition as well. From looking at table 3, it seems that there was no difference in reading times after the modal particles within groups, as the standard deviations of the means show that they overlap. Overall, the only clearly distinguishable pattern is that the natives are over all faster in their reading times, in all three conditions. It is however interesting to look at the directions the figures show; the English group showed variability in how the *nog* and *ju* condition was
read as compared to the *none* condition, and they read sentences with *nog* and *ju* somewhat slower than they read sentences in the none condition. The German group had slower reading times in the none condition than in the *nog* and *ju* condition.

There are some interesting trends in the reading times. The fact that the Swedes show very similar pattern for all conditions seem to suggest that for natives, there are no processing costs upon encountering a modal particle as compared to other content words, such as *hundkopplet*. The Germans processed sentences with modal particles faster than without for some peculiar reason, and the English group process sentences without modal particles slightly faster than sentences with modal particles.

To summarize, there does not seem to be any effects of modal particle use on the reading times.

### 7. Discussion

#### 7.1 General discussion

This study set out to investigate if the use of modal particles would affect responsibility attribution in native speakers, and if L2 speakers were also affected by the use of modal particles. It furthermore investigated if L1 plays an important role in the responsibility attribution. The 3 by 3 ANOVA revealed that there was a main effect for CONDITION, which means that the design worked in a way; it makes a difference whether people read stories with *nog* or *ju*. However, when comparing the conditions through using two-sampled t-tests, the *none* condition grouped with *ju*. Why is there no difference between *none* and *ju* but between these two and *nog*? It seems like *ju* does not affect the sentences compared to when there is no modal particle at all. The participants gave lower ratings to the sentences with *nog* than to the sentences with *ju* and *none*, and it was hypothesized that *nog* would render lower ratings than both *ju* and *nog*. There was also a main effect of group, where the English group gave overall lower ratings than the Swedish and the German groups. It is not clear why there was main effect of group; for some reason, the English group gave overall lower ratings. As to why this is the case, no
assumptions or speculations are made. There was no interaction between condition and group was found, so the results of main effects do not answer my research questions, but an interaction would.

The main effects show that the participants treat the modal particles differently. That no interaction was found could be due to the small sample size. Descriptive analyses show some numeric differences within groups that could be indicative of trends. The results when looking separately at each group only allow for highly hypothetical explanations and open up for more questions and ideas on how to further investigate the effect modal particles have.

To understand why the conditions did not render significant differences in the Swedish group, a revisit to sentences 1a, 1b, 2a, and 2b will serve as a basis of explanation.

1a

*Mötet slutar nog klockan 10.*

‘The meeting probably ends at 10 o’clock’

1b

*Mötet slutar ju klockan 10.*

‘As we all know, the meeting ends at 10 o’clock’

2a

*Oskar släppte nog hundkopplet som han höll i*

‘Oskar probably let go of the dog leash he was holding’

2b

*Oskar släppte ju hundkopplet som han höll i*

‘As we all know, Oskar let go of the dog leash he was holding’

Native speakers of Swedish will probably agree that there is a distinct difference between the meaning of sentence 1a and 1b, and that this difference has a big impact on
exactly when the meeting will end. However, in 2a and 2b, it is possible that these words did not modify the meaning of the entire short story enough for the participants to change their minds about how much responsibility one of the characters in the story had. The information given in the short story before encountering sentence 2a or 2b could have been too salient and enough for the participants to already form an opinion that was not strongly affected by the use of nog, ju or φ in the sentence that followed. Even though the difference between nog and ju was not significant in the Swedish group, the numeric values of the graph in figure 1 shows that the direction the means go in are in line with the hypothesis: nog had a lower mean (M = 4.65, SD = 1.66) than ju (M = 5.05, SD = 1.83). The reason why it is not significant within the Swedish group is probably because the stimuli consisted of sentences where the effect of the modal particles were too small to be detectable, and it could also be due to the small sample size.

Some trends that were not statistically significant are still interesting to discuss, however speculative the discussion will be. The Germans gave almost identical responsibility ratings to the conditions nog (M = 4.75, SD = 1.98) and ju (M = 4.72, SD = 1.97), and higher ratings for the condition without modal particles (M = 5.12, SD = 1.92). If data were collected from more participants in each group these trends might become significant differences. If the trends would turn out to be significant differences in a larger data set, this would open up for more answers than questions. These trends are suggestive that Germans treat sentences with these two modal particles the same, even though ju should render more certainty and nog should render less. The Germans gave higher responsibility to sentences without modal particles, which might indicate that they consider modal particles to soften the sentences, regardless of the fact that Germans also have a modal particle that is very similar to ju. One explanation for the similarities in ratings for nog and ju could be that the Germans do not have a clear understanding of the modal particle nog. While ju is a cognate of the German modal particle ja, and these two can have the same meaning, nog is a cognate of the German adverb genug, meaning ‘enough’. Nog is also an adverb in Swedish and can mean ‘enough’, although when placed after the finite verb in the middle of the sentence as it
was is the stimuli of the present study, it is the modal particle which more closely corresponds to the meaning of probably.

It would be interesting to do a contrastive corpus-based study comparing the uses of *nog* in Swedish and in German translations, to see if *nog* renders as many different translations into German as it does into English (see Aijmer, 2016). If the results from a larger group of Germans showed the same pattern of no distinction between *nog* and *ju* this might suggestive of the fact that L1 transfer does not help the acquisition of modal particles, and it might be more likely that the Germans simply apply their lexical knowledge to these words, and therefore are tricked by the false friend *nog/genug*.

It was hypothesized that the English would have a less nativelike pattern than the Germans, on account of them not having the feature modal particles in their L1. When comparing the numeric values of which direction the ratings went in, the English group instead show a similarity to the natives, in that both groups assign more responsibility in the *ju* condition than in the *nog* condition. Interestingly, this similarity is the opposite of what was hypothesized.

Before discussing the results of the reading times, it is important to mention that it is a bit problematic to compare the *none* condition to the *ju* and *nog* condition, since the *none* condition was by design a word shorter in all sentences. This makes it a bit hard to simply consider it a ‘baseline condition’, since sentence length can be a confounding factor. Keeping that in mind, the discussion that follows on reading times is highly speculative.

The exploratory measure of reading times did not shed any light on the matter of Germans giving the same responsibility ratings to the *nog* and *ju* condition. From the results of them, it seems like the German group does not slow down after encountering a modal particle, which indicates that there are not higher processing costs in processing modal particles. The natives seem to process sentences with and without modal particles in very similar manners, indicating that they not do find it more difficult to process modal particles. This is peculiar as the results from van Bergen and Bosker
(2018) showed that native speakers of Dutch displayed processing costs when encountering the discourse particle *eigenlijk*.

When looking at the reading times it looks like the English read sentences in the conditions with *nog* and *ju* slightly slower than in sentences without modal particles. This could be indicative of them processing the modal particles slower, which the natives did not. It is plausible that the English group attributed less responsibility to the condition *nog* because the most common translation for *nog*, after simply omitting is, is *probably* in English (see Aijmer, 2016). The results also seem to indicate that the English group have knowledge of how *ju* modifies a sentence in comparison to *nog*, as they gave higher responsibility ratings to the *ju* condition than the *nog* condition.

Since the proficiency differed compared to the natives between the German group and the English group, it is difficult to determine whether the L1 or the proficiency was the reason for the difference in ratings of the groups. However, since the difference between the German group and the English group alone was not significant in terms of proficiency, it is speculated that the differences in ratings is not due to proficiency, and it seems like the L1 do play a role on how modal particles affect meaning. Exactly what role it plays, remains uncertain.

### 7.2 Limitations and future directions

The study was conducted on 36 participants, twelve in each of the language groups. Due to time constraints it was not possible to collect data from more participants. This was a large disadvantage, as the data collected was too small to yield significant results. If data were collected from more participants, the results might have yielded significant differences. In the following, additional limitations of the design and alterations to studies are suggested.

As the modifications with *nog* and *ju* did not render very different responsibility ratings within groups, a future study investigating the responsibility ratings could benefit from shorter background stories and questions that relates directly to the sentence modified with *ju*, *nog* or φ, or from a design that only looks at sentences that are modified, so that the background information does not interfere with the
interpretation of the sentences. The background stories also had many referents, which might have made them unnecessarily complicated. In a future design, the number of referents could be downsized to two or three referents per story.

The design of the study could also have been more streamlined; the *none* condition was added to provide some kind of baseline for the reading times of the conditions with modal particles, but it turned out to be difficult to draw any conclusions based on reading times. And even if the results of the reading times would have rendered slower reading times for the conditions with modal particles, it would still have been difficult to use the reading times of the sentences without modal particles as a baseline, since they were one word shorter than the other, and therefore comparing across words is confounded by word placement in the sentence and sentence length. A preferred design would have been to have another word than the modal particle in the *none* condition, such as a highly frequent adverb that was semantically felicitous in all target sentences. During the design stage of this thesis, no such suiting adverb was found, since the verbs preceding the critical words were different, and finding a semantically felicitous adverb for all different verbs was not possible.

Another reason for removing the *none* condition is that in a design with only ratings for the *nog* and *ju* condition, more data points could have been gathered for each of the conditions, perhaps leading to results with significant differences.

### 7.3 Conclusions

Is the responsibility attribution of native Swedish speakers affected by linguistic manipulations using modal particles *nog* and *ju*? The results of this study do not show significant results that support that this is the case, although numerically, the Swedes did attribute more responsibility in the *ju* condition than they did in the *nog* condition, as was hypothesized.

Are L2 speakers equally sensitive to these linguistic manipulations or does the L1 affect the responsibility ratings? The results yielded no significant differences that support that the Germans, who were hypothesized to behave more nativelike, were equally sensitive to the linguistic manipulations of *ju* and *nog*. On the contrary, and
quite surprising, numerical values show that the German group assigned equally much responsibility in the *ju* and *nog* condition, and more responsibility in the *none* condition. The English group showed numerical trends that were in the same directions as the Swedes; both groups assigned more responsibility to the *ju* condition than to the *nog* condition. So the L1 seems to play a role, but it is not clear exactly what role it plays, and the results of this study does not support that merely having the feature of modal particles in the L1 would facilitate the acquisition thereof. The reading times that were measured did not make the matter clearer, but rather confused it more. The Germans read the sentences with modal particles faster than the ones without, and showed a different pattern from the natives in the ratings, even if it was not significant. The English group had slightly slower reading times in conditions with *nog* and *ju* than without modal particles. The Swedish group read all sentences in all conditions in a similar manner, so in a nativelike reading pattern, there was no difference in the reading times.

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References


Appendix A: Stimuli


Hur stort ansvar har Kalle för att varorna flög ut över hela golvet?

2. Oskar var ute och gick med Peters hund i parken och mötte då Maja, som också var ute och gick med sin hund. När Oskar såg Maja vinkade han till henne och Peters hund sprang iväg. Oskar släppte nog/ju/ø hundkopplet som han höll i.

Hur stort ansvar har Oskar för att Peters hund är borta?


Hur stort ansvar har David för att Hanna föll?


Hur stort ansvar har Petter för att tidningen gick sönder?


Hur stort ansvar har Göran för att Erika började gäspa?


Hur stort ansvar har Axel för att Jocke ramlade överbord?


Hur stort ansvar har Jocke för att böckerna for ut över hela golvet?

Hur stort ansvar har Axel för att Petra och Fanny blev tagna på bar gärning?


Hur stort ansvar har Anna för att stolarna välte?


Hur stort ansvar har Gabriella för att Gustavs fot blev jätteblöt?

11. Axel, Olof och Louise var ute och åkte långfärdsskridsor på isen häromveckan. Louise är mycket bättre på att åka än Axel och Olof. Hon åkte förbi i hög fart Olof och han ramlade och gled flera meter över isen. Louise puttade nog/ju/ø till Olof när hon åkte förbi.

Hur stort ansvar har Louise för att Olof ramlade?


Hur stort ansvar har Kattis för att Veronica ramlade?


Hur stort ansvar har Per för att Anna spillde ut sitt glas med coca-cola?


Hur stort ansvar har Jonas för att Martin backade in i bilen?
15. Anna och Matilda spelade tv-spel. Matilda gestikulerade häftigt med spelkonsolen när hon spelade, och Anna tappade sin spelkonsol och förlorade spelet. Matilda stötte nog/ju/ø till Anna när de spelade.

Hur stort ansvar har Matilda för att Anna tappade sin spelkonsol?


Hur stort ansvar har Petter för att Felix inte kunde äta maten?


Hur stort ansvar har Mats för att Andreas korv hamnade i elden?


Hur stort ansvar har André för att Linnéas ryggsäck föll ner?

19. Alfred och Bengt åkte tunnelbana och bytte tåg i Slussen. I rulltrappan på vägen ner på perrongen ramlade Bengt som stod framför Alfred i rulltrappan, och alla grejer Bengt hade i ryggsäcken flög ut över perrongen. Alfred stötte nog/ju/ø till Bengt när de stod i rulltrappan.

Hur stort ansvar har Alfred för att Bengts grejer flög ut över perrongen?


Hur stort ansvar har Anton för att tallriken gick sönder?


Hur stort ansvar har Petra för att bilen slutade fungera?


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Hur stort ansvar har Holger för att de försov sig?


Hur stort ansvar har Tim för att de missade sitt flyg hem?


Hur stort ansvar har Anton för att pannkakorna blev oätliga?


Hur stort ansvar har Jonathan för att Anna tappade glaset?


Hur stort ansvar har Thomas för att de båda ramlade?


Hur stort ansvar har Stefan för att statyn ramlade och gick sönder?


Hur stort ansvar har Simon för att de båda ramlade?


Hur stort ansvar har Anton för att Fredrik tappade kastrullen?

Hur stort ansvar har Helena för att alla tre ramlade i vattnet?


Hur stort ansvar har Åsa för att svampen vältes ut?


Hur stort ansvar har Petra för att plastmuggarna välte?


Hur stort ansvar har Jennifer för att popcornen vältes ut?


Hur stort ansvar har Cecilia för att Therese ramlade?


Hur stort ansvar har Kalle för att Nadine blev jätteblöt?


Hur stort ansvar har Anja för att Kajisas väska blev stulen?