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# **Bilingualism and Event Conceptualisation Patterns: Conceptual Transfer in Swedish-English Bilinguals**

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**ENGK03 English Linguistics, Autumn 2023**

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**This is a slightly edited version of the BA thesis examined on January 12, 2024**

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## **Abstract**

In this paper, the event conceptualisation patterns of Swedish-English bilinguals are examined. Swedish and English differ from each other with regard to the existence of grammatical aspect, which previous work has shown to affect how speakers conceptualise motion events. In bilingual speakers, we expect to see cognitive transfer from either, or both, languages. In the present study, a within-subject design was employed, as speakers performed a verbal description task once in their native language, Swedish, and once in their second language, English. Endpoint encoding was taken as an indication of underlying patterns of conceptualisation, and endpoint frequencies were compared with monolingual performances in both languages (from Athanasopoulos and Bylund (2013)). When the task was performed in English, no indication of forward transfer (L1 to L2) was found. In Swedish, however, the signs of reverse transfer (L2 to L1) were significant, though somewhat differing between subjects. Daily L2 exposure and use was found to be a prominent indicator, while no significant correlation was found between conceptual transfer and L2 proficiency or age of L2 onset. The results thus provide further evidence of conceptual transfer in bilinguals, particularly in the reverse direction, as well as highlight the role of L2 exposure in language acquisition.

**Keywords:** Linguistic relativity, Conceptual transfer, Grammatical aspect, Endpoint encoding, Event conceptualisation

## 1. Introduction

Language is the means through which humans structure their thoughts and present them to others; it is the means through which we structure the world and present it to ourselves. Language is shaped by humans and their reality, yet language also shapes us in return. When one acquires a language, the process does not only involve the acquisition of grammatical structures and lexical forms. As Slobin (1991, p. 7) puts it, one also acquires “a particular framework for schematizing experience”. Speakers of different languages not only describe the world using different lexical items and grammar; they also think about, or conceptualise, the world according to different internal systems. This assumption, known as the linguistic relativity hypothesis, has motivated a large body of work concerned with the influence that language has on thought.

The linguistic relativity hypothesis, put forth by Whorf in 1940, suggests that the typological principles of a language cause speakers to focus their attention on specific aspects of the world around them (Slobin, 1991). Speakers of languages with different typologies thus have different internal patterns of conceptualisation. Slobin’s (1991) “thinking-for-speaking” hypothesis proposes that language production necessitates “a special form of thought”, which must be framed within the linguistic constraints of the language being used (p. 12). It thus follows that language production is largely shaped by language-specific typological principles, as language-dependent patterns of conceptualisation are employed when evaluating and structuring information for communicative purposes (Slobin, 1991).

Throughout the years, various studies have examined the extent to which language influences thought. The question has been approached from numerous viewpoints, pertaining to different aspects of language; lexical domains such as colour and shape, as well as more abstract concepts like the expression of time, have been considered (Athanasopoulos, 2015). An area of interest that has gained much attention within the field of linguistic relativity, however, is grammar (Athanasopoulos, 2015). Several of the existing studies concerned with the Whorfian effects of grammar have focused specifically on event conceptualisation and planning, an area where certain grammatical differences between languages have been found to result in different conceptualisation patterns among speakers (von Steutterheim & Nüse, 2003). Following the “thinking-for-speaking” hypothesis, verbal descriptions of events are formed based on underlying patterns of conceptualisation, which in turn are shaped by grammatical principles. In other words, the language-specific principles that cause speakers to focus on

different aspects of a motion scene may be realised as grammatical categories in a language, such as, for example, grammatical aspect (Flecken et al., 2013).

Considering this, one may ask what the Whorfian effects of knowing more than one language are. Do speakers of multiple languages conceptualise events differently depending on the language of use, or will internalised systems of thinking remain consistent? Research on the topic has found that under certain conditions, patterns of conceptualisation may, in fact, transfer from one known language to another (see, for example, Athanasopoulos & Kasai, 2008; Athanasopoulos & Bylund, 2013; Athanasopoulos et al., 2015; Brown & Gullberg, 2011; Bylund, 2009; Bylund & Jarvis, 2011). Conceptualisation patterns from one acquired language affecting information organisation in another is typically referred to as conceptual transfer. Most research on conceptual transfer has focused on forward transfer, where L1 patterns of organisation influence conceptualisation in the L2 (Flecken et al., 2013). There does, however, also exist some work where transfer from the L2 to the L1 (reverse transfer) has been identified (Athanasopoulos & Kasai, 2008; Athanasopoulos & Bylund, 2013; Athanasopoulos et al., 2015; Brown & Gullberg, 2011; Bylund, 2009).

Seeing as both L1 to L2 and L2 to L1 transfer have been observed, there is reason to assume the possibility of both forward and reverse transfer to occur simultaneously. Whether this would result in a convergence between the two systems, or a new pattern of conceptualisation unique to bilinguals is uncertain, but as suggested by Brown and Gullberg (2011), Athanasopoulos (2007), and others, the latter is not improbable. Brown and Gullberg (2011) found indications of bidirectional transfer in bilinguals when examining event conceptualisation relating to path of motion, lending support to this theory. Rather than comparing one group performing in their L1 with another performing in their L2, they choose to employ a within-subject design, allowing for bidirectional transfer to be observed. However, no study has yet simultaneously looked at both forward and reverse transfer of endpoint encoding patterns in languages that differ with regards to grammatical aspect, an area which has previously been shown susceptible to conceptual transfer in both directions. This study aims to fill this gap by examining bilingual conceptualisation patterns and endpoint encoding using a within-subject design.

In the next part of this paper, I will begin by briefly defining and outlining the process of conceptualising motion events, as well as relate its relationship with grammatical aspect. Then, bilingualism and conceptual transfer will be discussed alongside some topic-relevant research in the field. Lastly, the aims and research questions of the present study will be presented.

## 2. Background

### 2.1 Event Conceptualisation and Grammatical Aspect

Simply put, an event consists of motion through time and space (Athanasopoulos & Bylund, 2013). For example, a person running up a hill or a car driving through a tunnel would be characterised as a motion event. In language, a change in time and space can be conveyed through various means: lexical, grammatical, or other. Lexical features may include adverbials of motion or time, while some languages have features such as grammatical aspect. Aspect thus refers to the internal temporal distribution of a phrase (Athanasopoulos & Bylund, 2013). In English, aspect can be conveyed through grammatical markers. A commonly used one is the progressive *-ing* form, which conveys ongoingness, both across time and space. In other languages like Swedish, for example, no such marker exists. This typological difference has been shown to cause a difference in how speakers think about motion events (Athanasopoulos & Bylund, 2013; Bylund & Jarvis, 2011).

Several cognitive processes are involved when speakers conceptualise events. These include Segmentation and Selection of information on what may be characterised as the level of macro-planning, and Structuring and Linearisation, which occur on the level of micro-planning (von Stutterheim & Nüse, 2003). People may structure events according to different principles on any of these levels. As pointed out by Jarvis (2015), the languages people speak do not necessarily limit their ability to conceptualise events, but are likely to direct the speaker towards a certain way of structuring the event on each level. For example, speakers of aspect languages such as English are inclined to foreground the ongoingness of an event (choosing a so-called immediate perspective), while speakers of non-aspect languages like Swedish tend to focus on the greater picture (holistic perspective) (von Stutterheim & Nüse, 2003).

Whether a speaker chooses an immediate or holistic perspective can be observed by comparing their verbal descriptions of motion events. Specifically, a number of studies on grammatical aspect and event conceptualisation have found that speakers of languages without grammatical aspect often mention a higher frequency of endpoints when describing motion scenes compared to speakers of aspect languages (Athanasopoulos et al., 2015; Bylund, 2009; Bylund et al., 2013; von Stutterheim & Nüse, 2003; von Stutterheim et al., 2012). The grammar does not force speakers to mention or not mention endpoints, but their attention is nevertheless guided towards a certain perspective. For example, a scene which an English speaker may describe as *a woman is walking*, a Swedish speaker might instead describe as *en kvinna går mot ett hus* ('a woman walks towards a house'). Notice the use of the present progressive aspect in

the first example and the present simple in the second, as well as the inclusion of an endpoint, *a house*. With reference to the “thinking-for-speaking” hypothesis, a cross-linguistic difference in verbal descriptions can be taken as evidence for a cross-linguistic difference on the level of conceptualisation. Endpoint encoding can thus be tied to internal systems at play when conceptualising motion events.

Von Stutterheim and Nüse (2003) examined the conceptualisation patterns of speakers of English, German, and Algerian Arabic through verbal description tasks and found differences in their cognitive structuring of information. Both English and Arabic are aspect languages, while German is not. English and Arabic speakers behaved alike, while German speakers appeared to conceptualise motion events according to different principles. Thus, von Stutterheim and Nüse (2003) link perspective taking and information organisation to language-related principles, lending support to the “thinking-for-speaking” hypothesis.

Aligning with what previous research on language and cognition has found, Athanasopoulos and Bylund (2013) provide further evidence that speakers of typologically different languages exhibit different patterns of conceptualisation. Again, a connection was made between grammatical aspect and endpoint encoding. Athanasopoulos and Bylund (2013) had Swedish and English speakers observe and verbally describe events, as well as perform a scene-matching memory task. They found that Swedish speakers mentioned endpoints with a higher frequency than English speakers (61.7 % of scenes, compared to 42.8 %). In the upcoming discussion, these numbers will be used as a reference point for monolingual performance. Similarly, Bylund et al. (2013) compared speakers of English with speakers of Afrikaans, a non-aspect language, and found a significant difference in their endpoint encoding patterns, showing thus that the relationship between endpoint encoding and the existence of grammatical aspect holds, even when culturally different languages are compared. A significant body of studies examining various languages has thus provided evidence towards the connection between grammatical aspect, endpoint encoding and event conceptualisation.

## **2.2 Bilingualism**

With regard to conceptualisation patterns, people who speak multiple languages make a unique case. The present paper focuses on bilingual speakers; thus, before we continue our discussion of conceptual transfer, we need to briefly touch on the concept of bilingualism. Some define bilingualism as a function of age of L2 onset, others as a function of proficiency. Some see bilingualism as something that can only be acquired during early childhood, others as a set of features that may change and evolve over time (for further discussion, see Hummel, 2014). This

paper will assume that bilinguals are people who know two (or more) languages, but will not make any further claims about what that knowledge might entail in terms of proficiency, metalinguistic awareness, frequency of use, or other. No two bilingual experiences are the same, and thus we cannot represent them all. Yet, this study aims to pinpoint patterns that are unique to the bilingual mind, even if the realisation of such patterns may look somewhat different for each person.

For the purpose of this study, non-balanced (also non-fluent, as in Wei, 2000), as opposed to balanced, bilinguals will be examined. Non-balanced bilinguals are generally defined as a group of people who can speak two languages, but not with equal fluency, in which case they would be considered balanced bilinguals (Wei, 2000). The effects of bilingualism should be observed even within a group of non-balanced bilinguals, however, as previous studies have shown signs of conceptual transfer even at lower levels of proficiencies (see, for example, Brown & Gullberg, 2011). Balanced bilingualism is thus not a requirement for participants in this study; rather, non-balanced bilinguals are preferred. In truth, most bilinguals are non-balanced, with the line between non-balanced and balanced being far from clearly drawn. One may even argue that all bilinguals are non-balanced to a certain extent, whether it be only in a certain aspect of communication that they are stronger in one of their two languages. Thus, it is of more interest to us to examine a variety of bilingual speakers, rather than a minor, and largely un-definable, subgroup of so-called balanced bilinguals.

### **2.3 Conceptual Transfer**

As previously mentioned, much of the existing work on conceptual transfer in bilingual speakers has concerned itself with forward transfer. In the following section, however, I will discuss some topic-relevant studies on transfer in the reverse direction.

Building on the assumption that speakers of different languages also show cognitive differences, Athanasopoulos (2007) set out to examine the influence a bilingual speaker's two languages may have on categorisation preferences. Specifically, Athanasopoulos looked at L2 proficiency, length of immersion, and language of instruction as independent variables. No significant influence on the bilinguals' conceptualisation patterns was found from length of immersion or language of instruction, but L2 proficiency showed a significant correlation with the participants' responses. In other words, L2 proficiency seems, to a certain degree, to be able to predict whether a change in cognitive patterns will occur or not, and to what extent. Japanese-English bilinguals were tested against English and Japanese monolinguals, tasked to choose which out of two alternatives was the 'same' as previously



shown entity. The entities were either countable nouns or mass nouns, resulting thus in two different testing conditions. Options would be of similar material or of similar shape as the standard to determine which of the two (material or shape) the participants found the most prevalent. During the count condition, for example, English monolinguals chose an entity of similar shape in 90% of cases, while Japanese monolinguals did so in only 57%. Bilinguals typically fell somewhere in the middle, displaying a pattern that differs from monolingual speakers of either language; thus, a pattern of conceptualisation unique to bilingual speakers.

Athanasopoulos et al. (2015) not only wished to find out whether L2 influence would cause cognitive restructuring, but focused specifically on the conditions under which such restructuring may occur. Thus, they investigated the effect of L2 proficiency and L2 exposure on conceptualisation in a group of English learners of L2 German, comparing the learners with English and German monolinguals. A non-verbal similarity judgement task was employed, during which participants had to decide whether a clip depicting motion towards an endpoint was more similar to a clip in which the endpoint was reached or a clip without a clearly visible endpoint. German monolinguals chose the endpoint alternate more often than the English monolinguals, with the learner group falling between the two, showing signs of cognitive restructuring. Both L2 proficiency and L2 exposure were found to correlate with cognitive transfer. However, the relationship between endpoint preference and L2 exposure did not appear to be linear, with short-exposure learners showing a slight shift toward L2 monolingual patterns, medium-exposure learners a return to L1 monolingual patterns, and long-exposure learners a strong shift towards L2 monolingual patterns. Athanasopoulos et al. (2015) refer to a developmental stage of language acquisition, during which a general change in behaviour becomes specific, as cause for the U-shaped pattern. In other words, a shift back to L1 patterns occurs as an acquired concept moves from general to specific knowledge, a process during which L2 influence on patterns of conceptualisation appears to weaken.

Athanasopoulos and Kasai (2008) examined the object categorisation preferences of English monolinguals, Japanese monolinguals, and Japanese-English bilinguals, measuring their preferences for shape versus colour. While English monolinguals preferred shape over colour and Japanese monolinguals the reverse, the shift from L1 to L2 patterns occurred only at the later stages of L2 proficiency, with intermediate bilinguals categorising like monolingual speakers of their L1. However, the advanced bilinguals appeared to have shifted fully to L2 patterns, indicating thus that the relationship between proficiency and conceptualisation preferences, rather than linear, takes the form of a cognitive shift, occurring at the later stages of language acquisition, perhaps caused by the acquisition of certain linguistic features.

Brown and Gullberg (2011) investigated the expression of Path in bilingual Japanese-English speakers. While native Japanese speakers typically express Path through verbs, English speakers use adverbials. The bilinguals who participated in Brown and Gullberg's (2011) study used fewer adverbs of path than monolingual English speakers, but more than Japanese monolingual speakers, suggesting influence from both the L1 and the L2. The results from the study suggest bidirectional cross-linguistic transfer, resulting in a convergence between L1 and L2 systems, thus indicating a possible "multilingual construal of motion", which differs from that of monolingual speakers (Brown & Gullberg, 2011, p. 90). An important thing to take away from this study is that even with relatively low proficiency in the L2, reverse transfer was observed, suggesting thus that the shift from monolingual to bilingual cognition happens early in the acquisition process. Brown and Gullberg's (2011) results imply that some degree of transfer should be observable across all participants in the present study, regardless of proficiency level. In contrast, Athanasopoulos and Kasai (2008) observed a cognitive change only in high-proficiency speakers. Considering this, as well as the results from Athanasopoulos (2007) and Athanasopoulos et al. (2015), L2 proficiency might be able to predict cognitive transfer, but the extent of its influence appears uncertain.

In Bylund and Jarvis (2011), endpoint frequency was again used as a measurement of conceptual transfer, through which the event conceptualisation patterns of Spanish-Swedish bilinguals could be compared with those of monolingual speakers. Spanish, like English, is an aspect language and native Spanish speakers have previously been shown to take an immediate perspective when conceptualising motion events. The bilingual speakers described events in their L1 and were found to mention a higher degree of endpoints than the Spanish monolinguals, indicating reverse transfer from the L2. Bylund (2009) investigated the extent to which transfer is affected by age of L2 onset (AOA). Similarly, he focused specifically on endpoint encoding and event conceptualisation in Spanish-Swedish bilinguals living in their L2 environment. Bylund (2009) found that the Spanish-Swedish bilinguals did not conceptualise events like monolingual Spanish speakers; rather, they showed differing amounts of L2 influence. Investigating the effect of AOA, Bylund (2009) found that in the participants with an AOA above the age of 12, conceptual transfer was significantly less prevalent than in participants with a lower AOA. One can thus conclude that a below-12 age of onset is a prerequisite for any significant non-monolingual patterns of conceptualisation to emerge, particularly with regard to reverse transfer. With the purpose of targeting bilingual conceptualisation patterns, participants for the present study have thus been selected with age

of L2 onset in mind; all participants who took part in the study had begun acquiring English before the age of 12.

## 2.4 The Present Study

The present study examines the conceptualisation patterns of Swedish-English bilinguals, describing motion events in both Swedish and English. Swedish is a non-aspect language, and native Swedish speakers are thus expected to conceptualise motion events with a focus on endpoints (Bylund, 2009; Stutterheim & Nüse, 2003). Although grammatical aspect does not exist in Swedish, there are other means through which speakers may choose to convey ongoingness, such as use of the phrase *att hålla på* ‘to keep on’ together with a main verb, as in *att hålla på att skriva* ‘to keep on with writing’. Similarly, verbs like *att sitta* ‘to sit’, *att stå* ‘to stand’ and *att ligga* ‘to lie’ may be used, depending on context (Bylund, 2009). For example, *att sitta och läsa* ‘to sit and read’ or *att ligga och sova* ‘to lie and sleep’. Crucially, however, these are generally non-obligatory.

Athanasopoulos and Bylund (2013) found significant differences between English and Swedish monolinguals’ conceptualisation of events, measured as the number of endpoints mentioned while verbally describing motion scenes. Further, as previously related, the endpoint frequencies of bilingual speakers have continuously been shown to fall somewhere between monolingual speakers of their two languages. This study aims to investigate the nature and extent of bidirectional transfer relating to event conceptualisation and endpoint encoding in Swedish-English bilingual speakers. Previously run studies have relied on comparison between two groups of bilingual speakers, with participants performing either in the L1 or in the L2. A between-group design leaves the inevitable possibility of outside interference causing performance differences between the two groups. Crucially, thus, a within-subject design will be employed in the present study to target conceptualisation patterns influenced by both the L1 and the L2, as this has not been previously done with a focus specifically on aspect and endpoint encoding. The study will examine speakers performing in two of their acquired languages, Swedish and English. One may thus expect to see forward transfer when describing events in English, observable as an increase in endpoint encoding frequency compared to that of a monolingual English speaker, as well as reverse transfer when describing events in Swedish, which would be observable as a decrease in endpoint encoding frequency compared to that of a monolingual Swedish speaker. The main question of this study is thus whether, and to what extent, we will be able to observe bidirectional transfer in a group of Swedish-English bilinguals.

Further, the effect of variables such as age of onset, L2 proficiency and L2 exposure will be examined.

### **3. Methodology**

#### **3.1 Participants**

Eight native speakers of Swedish participated in the present study. They were of the ages 19 to 21 (mean = 19.8 years) and all were university students currently studying in Sweden. The sample is thus fairly homogenous, both across age and socioeconomic and educational background, which decreases the risk of non-linguistic variables causing performance differences between subjects. Such interference is further avoided by employing a within-subject design where, instead of comparing one group of bilingual speakers with another, the same group of subjects perform the task in both languages. The large majority of the participants were not raised as Swedish-English bilinguals from birth; rather, they started learning English in school, typically around the age of eight. Two select participants reported age of L2 onsets as early as two years old, the possible implications of which will be discussed below. As previously discussed, a group of non-balanced bilinguals is the best representation of a larger bilingual population, even if generalisations across people from a wider range of ages and classes might be prevented by the limited sample size.

Despite similar educational backgrounds, the participants did nevertheless report rather differing amounts of English exposure, as well as somewhat different, yet likely not significantly so, levels of perceived proficiency (mean L2 proficiency = 79.2 %, as rated on 10-point scales in the categories of speaking, understanding spoken language, and reading). The difference in language contact was most prominently observable as a difference in exposure to English media, music, and literature, which is to be expected from a group of people with a range of interests, hobbies, and lifestyles. All participants can thus be said to have a shared foundation and a generally high proficiency in English, but may be more or less comfortable with the language due to differing amounts of language exposure outside of the academic space. Whether or not, and to what extent, differing language exposure and perceived proficiency play a role in bidirectional language transfer will be examined further in this study.

### 3.2 Materials

The elicitation task consisted of twelve 6 s long video clips used to prompt verbal descriptions of motion events. The clips depicted movement towards a goal or possible endpoint, which was not reached by the moving entity in the video. Along with the goal-oriented scenes, six additional clips were used as filler items, showing action occurring in one spot, rather than movement along a path. The clips were presented to the participants in one of five pre-determined orders. Between each video an 8 s long blank screen played, ending with an image of a star and a beep to indicate that the next video would start. The same clips have been used in several previous studies on conceptual transfer and endpoint encoding, such as Bylund (2009), Bylund and Jarvis (2011) and Athanasopoulos and Bylund (2013). The study was run through PowerPoint, the use of which required the reformatting of certain files. Visually, however, no changes were made to the original materials.

In Bylund et al. (2013), endpoint encoding is categorised as a reference to “an entity’s arrival or intention to arrive at a goal” (p. 939). For the purpose of this study, endpoint has been further defined as a goal in the form of an item or a place, following a directional preposition such as *towards* or *to* in English, or *mot* or *till* in Swedish. As such, *a woman is walking to her car* contains the endpoint *her car*, while *a man is running towards the camera* contains the endpoint *the camera*. An utterance like *a car is driving away from a house* or *an animal is walking to the left* have not been considered as descriptions containing endpoints, as neither phrase explicitly references a goal of motion. All participant responses were audio recorded using Audacity® version 3.4.1 (2023) and analysed according to this framework.

### 3.3 Procedure

The participants performed the elicitation task twice, once in Swedish and once in English. Brown and Gullberg (2011) had participants perform the task once, then wait for a minimum of three days before performing it again in another language, which was said to prevent the two languages from both being active during the elicitation task. Due to the time and logistical constraints of the present study, however, having the participants come in twice to perform the task has unfortunately not been possible. Instead, a short news report in each language has been relied upon to prime the subjects, shown to them before both task (BBC News, 2023 and Nyhetsmorgon, 2023). Thus, the switch from one language to another was facilitated, preventing both languages from being active during the task.

Before the experiment, the participants were told that a number of motion-depicting videos would be presented to them, which they could begin describing verbally as

soon as they heard a beep, using as few or as many words as they wished. They were told to focus on the motion depicted in the scene, rather than describe things such as colours and clothes. The language of instruction was set to match the language of the current task, meaning that the language of instruction changed midway from Swedish to English, or the reverse. The participants could ask clarifying questions or opt out of the experiment at any point during the proceedings. The experiments were performed individually and lasted for approximately 20 minutes per person. Background information was collected through a modified version of the classic LEAP-Questionnaire (see Appendix A), which all participants took within a week after they had completed the experiment. No incentives were given, and participants were recruited through personal connections.

As participants perform the task twice, one could assume that performance during task two might be affected by having done the task before. Participants may remember certain scenes, or their own descriptions of them, whether consciously or not. In an effort to minimise the effect of such influence, half of the participants were tested in Swedish before English and the other half in English before Swedish. Further, by examining the results from task one and task two separately, evidence that the participants were, in fact, not largely impacted by this weakness in the experimental design can be gathered. When performing the task for the first time, the average endpoint frequency in English was 44.2 %, while the average endpoint frequency in Swedish was 37.5 %. Comparing this with the overall performance across both tasks (see section 4.1 below), the difference is minimal (endpoint frequency in English = 46.9 % and endpoint frequency in Swedish = 44.8 %). Participants are showing clear signs of reverse transfer in task one, with even lower endpoint frequencies in their native language than when both tasks are considered in the analysis. When doing the task for the first time, participants are not primed by having done the task before; thus, signs of conceptual transfer cannot be attributed to the effects of experimental design, whether it be the first or the second time that the task is performed.

## **4. Results and Discussion**

### **4.1 General Trends and Patterns**

Regardless of which language was used during the description, the number of endpoints mentioned by Swedish-English bilinguals differed from the endpoint frequencies of monolingual Swedish speakers. The participants in the present study mentioned an average of

5.63 endpoints in English (range = 4 – 7) and 5.38 endpoints in Swedish (range = 1 – 8). In other words, the participants mentioned the endpoints of 46.9 % and 44.8 % of clips respectively. The internal distribution of both groups can be found in Figure 2. Although the number is somewhat lower in Swedish, performance does not differ greatly between the two languages. As seen in Figure 1, compared with the endpoint frequencies of monolingual speakers (in Athanasopoulos and Bylund (2013)), the bilinguals in this study behave almost like English monolinguals, if mentioning slightly more endpoints on average. When describing events in Swedish, the bilinguals mentioned significantly fewer endpoints than the Swedish monolinguals did. The sample thus show clear signs of reverse conceptual transfer.

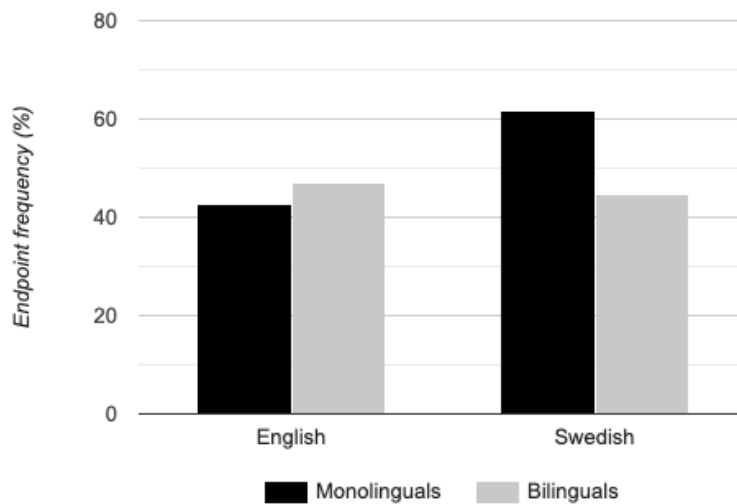


Figure 1: Mean endpoint frequencies (%) in English and Swedish across three groups: Swedish-English bilinguals (performing in both English and Swedish), English monolinguals, and Swedish monolinguals (monolingual data taken as presented in Athanasopoulos and Bylund (2013)).

As illustrated in Figure 2, there is, however, a clear difference in internal variability between the groups; in Swedish, the variability is considerably higher than in English (SD in English = 1.1 endpoints, SD in Swedish = 2.4 endpoints). In English, it thus seems as if all participants experienced a similar degree of conceptual transfer. In fact, it looks like none of the participants experienced any significant transfer from the L1, as conceptualisation patterns appear much like those of a monolingual English speaker (Figure I). Rather, the bilinguals in this study appear to have completely internalised native-like conceptualisation patterns in their L2, both speaking and thinking according to English principles. The evident difference in L1

performance, on the other hand, may be attributed to various degrees of reverse transfer. Some speakers performed according to L2 patterns even in their L1, while others did not.

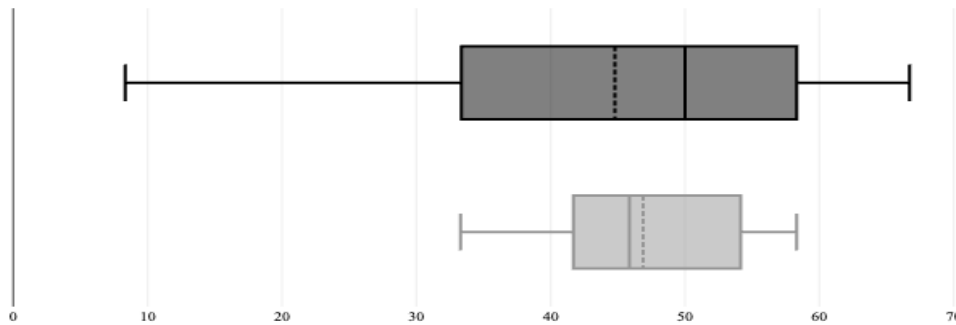


Figure 2: Endpoint frequencies (%) of Swedish-English bilinguals describing events in Swedish (dark grey) and in English (light grey). The dotted lines mark median, the solid lines mean, and the whiskers show the range of each sample. The boxes indicate the edges of the upper and lower quartiles.

The complete internalisation of L2 concepts, as well as the substantial degree of reverse transfer, might be explained by the generally high L2 proficiency within the subject group; as previously stated, all participants can be considered advanced L2 users (mean proficiency = 79.2 %). Athanopoulos and Kasai (2008) found a similar trend among their participants, where the high-proficiency speakers performed like monolingual speakers of their L2, differing significantly from monolinguals of their L1, while intermediate L2 speakers showed the reverse trend, performing much like monolinguals of their L1. The participants of the current study thus seem to be at a proficiency level high enough for a complete switch to L2 patterns to occur. The varying degrees of conceptual transfer during performance in Swedish, however, may be attributed to a number of different reasons. In fact, the main question for us to consider is no longer whether reverse transfer will be observable within a group of high-proficiency bilinguals, but rather why and to what extent different linguistic variables may impact the possibility of transfer.



## 4.2 Age of Acquisition, Proficiency and Language Exposure

Previously, variables such as AOA, L2 proficiency and L2 exposure have been found to predict the extent to which cognitive transfer might be experienced by a bilingual speaker (see, for example, Athanasopoulos, 2007; Athanasopoulos, 2015; Athanasopoulos & Kasai, 2015; Bylund, 2009). In the present study, these three variables will therefore be considered. We will begin by looking at the effect of age of L2 onset/acquisition (AOA), following which the effect of L2 proficiency will be examined. Lastly, the effect of daily L2 exposure and use will be discussed.

Bylund (2009) showed that a lower AOA generally produces more L2-like patterns of conceptualisation, suggesting that the probability of L2 conceptual transfer significantly decreases as AOA increases. In this study, however, no apparent correlation between endpoint frequency and AOA was found. If we divide the participants into two groups of four based on their AOA, the lower half (mean AOA = 4.3 years) on average mentioned the endpoints of 48.6 % of clips in English and 45.8 % of clips in Swedish. The upper half (mean AOA = 8.3 years) on average mentioned the endpoints of 45.1 % of clips in English and 43.8 % of clips in Swedish. As shown in Figure 3, the endpoint frequencies of the two bilingual groups do not differ significantly in either language, if slightly higher in the low-AOA group. With reference to Bylund (2009), the low-AOA bilinguals are, however, expected to perform more like L2 speakers and thus have a lower average endpoint frequency than the high-AOA group. As the present study shows the reverse, the slight difference between the groups is unlikely to be a sign of AOA effects. Rather, it seems as if no significant effects of AOA can be observed within this group of bilingual speakers.

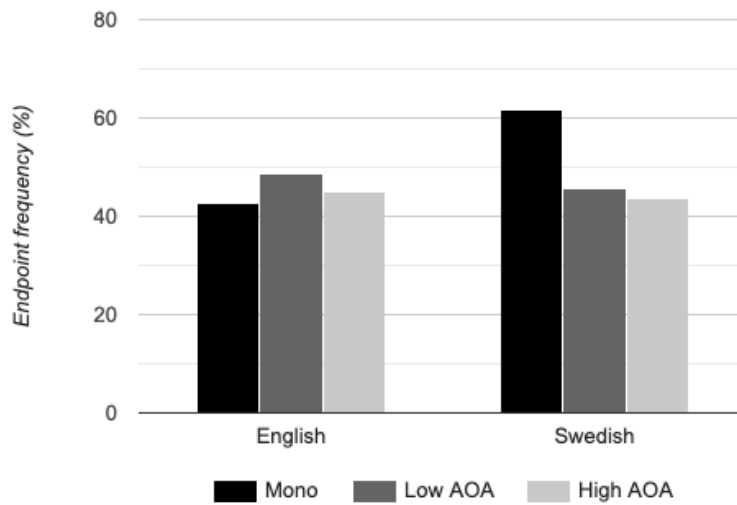


Figure 3: Mean endpoint frequencies (%) in English and Swedish across four groups: low-AOA bilinguals, high-AOA bilinguals, English monolinguals, and Swedish monolinguals (monolingual data taken as presented in Athanasopoulos and Bylund (2013)).

Both Athanasopoulos (2007) and Athanasopoulos et al. (2015) found a linear relationship between L2 proficiency and conceptual restructuring, where low-proficiency speakers were less likely to experience a shift towards L2 patterns of conceptualisation. Considering the effect of language proficiency in the present study, we divide the participants in half based on their combined average self-reported L2 proficiency scores in the categories of speaking, understanding spoken language, and reading. The low-proficiency bilinguals (mean proficiency = 71.7 %) had an average endpoint frequency of 47.9 % in English and 37.5 % in Swedish, while the high-proficiency bilinguals (mean proficiency = 86.7 %) had an average endpoint frequency of 45.8 % in English and 52.1 % in Swedish, see Figure 4. As illustrated, the performance in English does not differ significantly between the two bilingual groups, nor do the bilinguals differ significantly from the monolingual English speakers. In Swedish, however, the results are quite unexpected, with high-proficiency bilinguals seemingly experiencing a substantially lower degree of reverse transfer compared to the low-proficiency group. Considering previous studies' findings on the relationship between proficiency and motion event cogitation, this, however, would be an unlikely pattern to emerge. Rather, high-proficiency bilinguals are expected to have shifted further towards L2 patterns compared to low-proficiency speakers. This, along with the minimal proficiency differences between the participants and the uncertainty of self-reported proficiency values leads us to conclude that the

present study may not be able to successfully account for the effect of language proficiency. Instead, further research may be called for, where a wider range of proficiencies, as well as a larger group of people are examined.

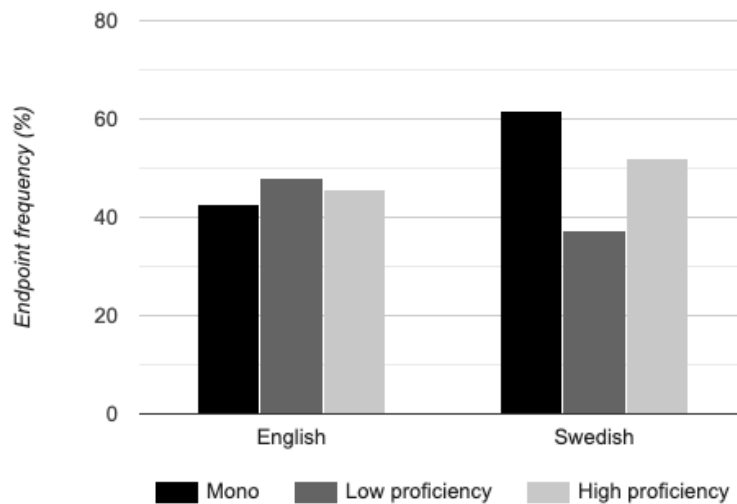


Figure 4: Mean endpoint frequencies (%) in English and Swedish across four groups: low-proficiency bilinguals, high-proficiency bilinguals, English monolinguals, and Swedish monolinguals (monolingual data taken as presented in Athanasopoulos and Bylund (2013)).

The participants' reported daily L2 exposure and language use, however, showed significant signs of correlation with endpoint frequency. If we once again divide the subjects into two groups of four, this time based on their L2 exposure, the lower half (mean L2 exposure = 15 % of daily language use) on average mentioned the endpoints of 50.0 % of clips in both Swedish and English. The upper half, however (mean L2 exposure = 34 % of daily language use), mentioned the endpoints of an average of 39.6 % of clips in Swedish and 43.8 % of clips in English. With reference to the monolingual frequencies put forth in Athanasopoulos and Bylund (2013), 61.7 % for Swedish speakers and 42.8 % for English speakers, we see that the high-exposure participants behaved much like English monolinguals in English but mentioned significantly fewer endpoints than Swedish monolinguals in Swedish, consistent with their behaviour regardless of language. The low-exposure participants, on the contrary, fell somewhere between the monolinguals, they too consistent across the two languages (Figure 5).

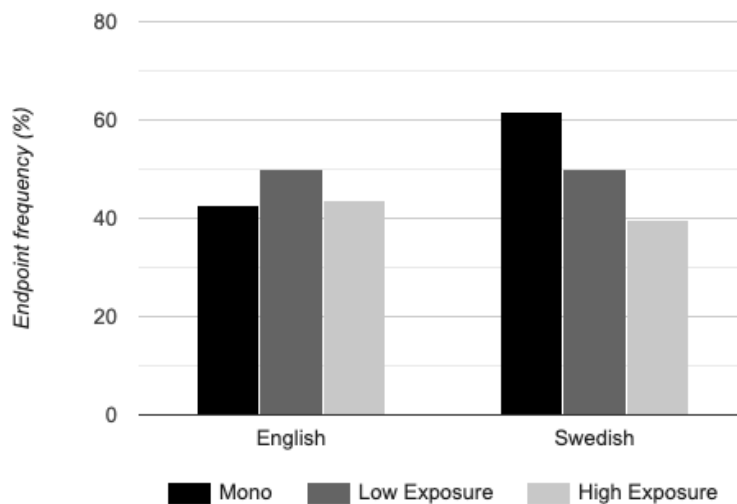


Figure 5: Mean endpoint frequencies (%) in English and Swedish across four groups: low-exposure bilinguals, high-exposure bilinguals, English monolinguals, and Swedish monolinguals (monolingual data taken as presented in Athanasopoulos and Bylund (2013)).

When describing events in their L2, the low-exposure bilinguals show minimal signs of forward transfer, as their average number of endpoints is higher than the monolingual English speakers'. Similarly, the low-exposure bilinguals show signs of reverse transfer when performing in their L1, with an average number of endpoints that is lower than monolingual Swedish speakers. That is to say, the low-exposure bilinguals seem to be experiencing bidirectional transfer, causing them to conceptualise events differently than monolingual speakers of either language. Like Brown and Gullberg (2011) found in their study, this group of bilinguals conceptualise according to uniquely bilingual patterns, which do not resemble the patterns of monolingual speakers. The low-exposure bilinguals thus behave as bilingual speakers have been found to do in several different areas of language study, namely by integrating patterns from both of their languages (Athanasopoulos, 2015).

In the high-exposure group, however, speakers seem to have shifted almost entirely to employing the conceptualisation patterns expected of a monolingual English speaker, even in their native language. This suggests a high degree of conceptual transfer in the reverse direction, and no visible transfer from the L1. As previously discussed, Athanasopoulos and Kasai (2008) also found a complete shift to L2 patterns, but with L2 proficiency as the significant variable. The results of the present study indicate that daily exposure and use may similarly predict cognitive restructuring in bilingual speakers.

To further explore the relationship between L2 exposure and endpoint frequency, we divide and count the averages for three groups: low-exposure bilinguals, medium-exposure bilinguals, and high-exposure bilinguals, the mean L2 exposure for each group now being 11.7 %, 27.5 % and 35 % of daily language use. In English, the average endpoint frequencies from low to high exposure were 50 %, 50 % and 41.7 %, thus indicating some forward transfer in the low and medium exposure groups. In Swedish, however, an interesting pattern emerges, as the medium-exposure bilinguals mentioned a significantly higher number of endpoints compared to the low- and high-exposure bilinguals; from low- to high exposure, the mean endpoint frequencies were 47.2 %, 60.4 % and 31.9 %, as illustrated in Figure 6.

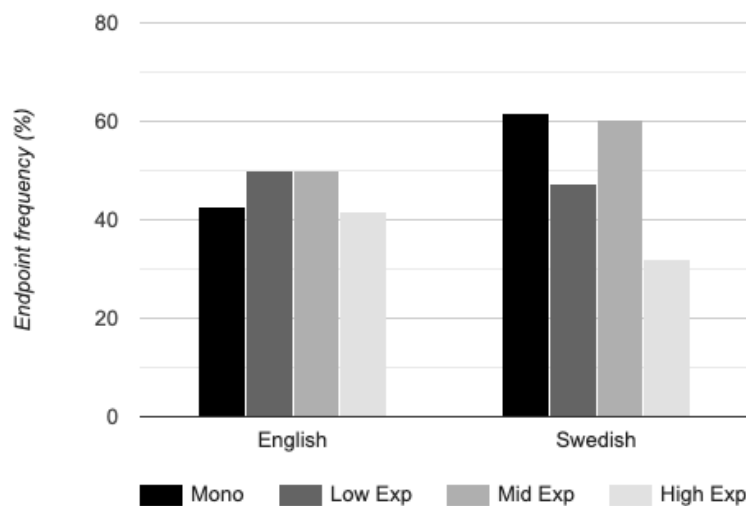


Figure 6: Mean endpoint frequencies (%) in English and Swedish across five groups: low-exposure bilinguals, medium-exposure bilinguals, high-exposure bilinguals, English monolinguals, and Swedish monolinguals (monolingual data taken as presented in Athanasopoulos and Bylund (2013)).

The pattern during performance in Swedish is not too dissimilar to the one found in L2 learners of German in Athanasopoulos et al. (2015); low-exposure learners show in-between behaviour, characteristic of bilinguals, medium-exposure learners shift back to L1 monolingual patterns, and high-exposure learners show the clearest signs of conceptual reconstruction, more like monolingual L2 speakers than any other group. However, it is interesting that this pattern only emerges during L1 performance. As previously mentioned, the key factor may again be the generally high L2 proficiency across the participants in the present study, resulting in most participants having fully adopted L2 patterns of conceptualisation, making it difficult to observe

great between-participant differences in the L2. Instead, it appears L2 exposure most prominently affects the degree to which reverse transfer occurs when describing motion scenes in the L1.

In the present study, neither AOA nor L2 proficiency can thus be said to have had a great effect on the subjects' performances. It may be that the participant group is too homogenous for any significant trends to emerge; thus, future investigations might wish to consider a wider spectrum of AOAs and proficiency levels. Daily L2 exposure and use, however, was found to significantly correlate with the degree of cognitive transfer experienced when describing motion events in the L1. L2 exposure thus appears to be a prominent variable for predicting performance in the L1.

## **5. Conclusion**

In this study, clear evidence has been provided for reverse transfer in a group of high-proficiency Swedish-English bilinguals. Regardless of which language was used during the task, the participants' performances were more like that of a monolingual English speaker describing events in English than a monolingual speaker of Swedish doing so in Swedish. Some of the participants showed little to no signs of forward transfer, indicating a total shift to L2 patterns of conceptualisation. This might be explained by the generally high proficiency within the group, as Athanasopoulos and Kasai (2008) found a similar tendency to adopt L2 patterns in high-proficiency bilingual speakers. The shift to L2 patterns may even be taken as a sign that the participants are to be considered high-proficiency bilinguals, regardless of the somewhat varying self-reported proficiency levels. L2 proficiency can thus likely not be taken as a significant predictor of conceptual transfer within this particular subject group. The results from the present study showed the unexpected trend of high-proficiency participants experiencing less cognitive transfer than low(er)-proficiency participants, which might further be taken as an indication of the unreliability of L2 proficiency as a predictor of cognitive transfer in advanced L2 users.

No significant differences were found between participants who reported a lower AOA and participants with a higher AOA. All participants had AOAs lower than 12 (with little within-group variation), which Bylund (2009) found to be the age below which AOA tends to have a greater effect on the possibility of cognitive transfer. In the present study, however, the within-group variation may have been too small for any trends to emerge.

Rather than L2 proficiency or AOA, the best indication of reverse transfer was shown to be daily L2 exposure and use. Within the participant group, the degree of reverse transfer during performance in the L1 varied greatly between subjects. While the high-exposure participants behaved like monolingual English speakers, the low-exposure participants did not seem to experience reverse transfer to the same extent. Further analysis revealed a non-linear relationship between language exposure and cognitive reconstruction, with medium-exposure bilinguals being less inclined to adopt L2 patterns of conceptualisation. A similar u-shaped construction was found in Athanasopoulos et al. (2015), which might have more general implications for the effect of language exposure on the process of language acquisition. Admittedly, with only eight participants, trends are difficult to generalise across a greater population, and future studies may thus wish to increase the subject size.

By employing a within-subject design, bidirectional transfer was assumed to be detectable within a group of bilingual speakers. Rather than the expected bidirectional transfer, we have in the present study most notably been able to observe signs of reverse transfer. The participants who had the lowest reported daily exposure in English did, however, show signs of minimal L1 transfer, which further suggests that language exposure is a prominent indicator of conceptual transfer. Results from this study thus show limited indications of bidirectional transfer, but significant evidence for conceptual transfer in the reverse direction as an effect of daily L2 exposure and use.

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# Appendix

## Appendix A: Modified LEAP-Q

### Northwestern Bilingualism & Psycholinguistics Research Laboratory

Marian, Blumenfeld, & Kaushanskaya (2007). The Language Experience and Proficiency Questionnaire (LEAP-Q): Assessing language profiles in bilinguals and multilinguals. *Journal of Speech Language and Hearing Research*, 50 (4), 940-967.  
Adapted to pencil-and-paper version by Marilyn Logan

### Language Experience and Proficiency Questionnaire (LEAP-Q)

Last name		First name		Today's Date	
Age		Date of Birth		Male <input type="checkbox"/>	Female <input type="checkbox"/>

(1) Please list all the languages you know **in order of dominance**:

1	2	3	4	5
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(2) Please list all the languages you know **in order of acquisition** (your native language first):

1	2	3	4	5
---	---	---	---	---

(3) Please list what percentage of the time you are *currently* and *on average* exposed to each language. (*Your percentages should add up to 100%*):

List language here:					
List percentage here:					

(4) When choosing to read a text available in all your languages, in what percentage of cases would you choose to read it in each of your languages? Assume that the original was written in another language, which is unknown to you. (*Your percentages should add up to 100%*):

List language here:					
List percentage here:					

(5) When choosing a language to speak with a person who is equally fluent in all your languages, what percentage of time would you choose to speak each language? Please report percent of total time. (*Your percentages should add up to 100%*):

List language here:					
List percentage here:					

(6) How many years of formal education do you have?:

Please check your highest education level (or the approximate equivalent):

- Primary Education (Grundskola)   
  Some University Level Education   
  Master's Degree  
 Upper Secondary Education (Gymnasieskola)   
  Bachelor's Degree   
  Ph.D./M.D./J.D.  
 Other:

(7) Have you ever had a vision problem , hearing impairment , language disability , or learning disability ? (Check all applicable).

If yes, please explain (including any corrections):

For each of your languages, please fill in the following pages.

**Language:**

This is my (native  second  third  fourth  fifth ) language.

(1) Age when you...

<i>began acquiring this language:</i>	<i>became fluent in this language:</i>	<i>began reading in this language:</i>	<i>became fluent reading in this language:</i>

(2) Please list the number of years and months you spent in each language environment:

	Years	Months
A country where this language is spoken		
A family where this language is spoken		
A school and/or working environment where this language is spoken		

(3) Please circle your *level of proficiency* in speaking, understanding, and reading in this language:

**Speaking**

0	1	2	3	4	5	6	7	8	9	10
None	Very low	Low	Fair	Slightly less than adequate	Adequate	Slightly more than adequate	Good	Very good	Excellent	Perfect

**Understanding spoken language**

0	1	2	3	4	5	6	7	8	9	10
None	Very low	Low	Fair	Slightly less than adequate	Adequate	Slightly more than adequate	Good	Very good	Excellent	Perfect

**Reading**

0	1	2	3	4	5	6	7	8	9	10
None	Very low	Low	Fair	Slightly less than adequate	Adequate	Slightly more than adequate	Good	Very good	Excellent	Perfect

(4) Please circle how much the following factors contributed to you learning this language:

**Interacting with friends**

0	1	2	3	4	5	6	7	8	9	10
Not a contributor	Minimal contributor				Moderate contributor					Most important contributor

**Interacting with family**

0	1	2	3	4	5	6	7	8	9	10
Not a contributor	Minimal contributor				Moderate contributor					Most important contributor

**Reading**

0	1	2	3	4	5	6	7	8	9	10
Not a contributor	Minimal contributor				Moderate contributor					Most important contributor

**Language tapes/self-instruction**

0	1	2	3	4	5	6	7	8	9	10
Not a contributor	Minimal contributor				Moderate contributor					Most important contributor

**Watching TV**

0	1	2	3	4	5	6	7	8	9	10
Not a contributor	Minimal contributor				Moderate contributor					Most important contributor

**Listening to the radio**

0	1	2	3	4	5	6	7	8	9	10
Not a contributor	Minimal contributor				Moderate contributor					Most important contributor

(5) Please circle to what extent you are currently exposed to this language in the following contexts:

**Interacting with friends**

0	1	2	3	4	5	6	7	8	9	10
Never	Almost Never				Half of the time					Always

**Interacting with family**

0	1	2	3	4	5	6	7	8	9	10
Never	Almost Never				Half of the time					Always

**Watching TV**

0	1	2	3	4	5	6	7	8	9	10
Never	Almost Never				Half of the time					Always

**Listening to radio/music**

0	1	2	3	4	5	6	7	8	9	10
Never	Almost Never				Half of the time					Always

**Reading**

0	1	2	3	4	5	6	7	8	9	10
Never	Almost Never				Half of the time					Always

**Language-lab/self-instruction**

0	1	2	3	4	5	6	7	8	9	10
Never	Almost Never				Half of the time					Always

(6) In your perception, how much of a foreign accent do you have in this language?

0	1	2	3	4	5	6	7	8	9	10
None	Almost none	Very light	Light	Some	Moderate	Considerable	Heavy	Very heavy	Extremely heavy	Pervasive

(7) Please circle how frequently others identify you as a non-native speaker based on your accent in this language:

0	1	2	3	4	5	6	7	8	9	10
Never	Almost Never				Half of the time					Always