Ultimate attainment of event segmentation and temporal structuring patterns in speakers of L2 Swedish

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Abstract

This study investigates ultimate attainment of patterns of segmentation and temporal structuring of events in L2 speakers. The participant group consists of 35 L1 Spanish – L2 Swedish adult bilinguals living in Sweden, with ages of L2 acquisition ranging from 1 to 19 years. Fifteen native speakers of Swedish and 15 native speakers of Spanish were engaged as controls. The participants provided online-retellings of a film excerpt. The results showed that the L2 speakers resorted to an event segmentation strategy with an intermediate degree of event resolution, which fell in between the monolingual Spanish high degree of resolution and the monolingual Swedish low degree of resolution. Regarding temporal structuring patterns, the results showed that the L2 speakers converged with the Swedish-speaking controls, linking the events by means of anaphoric adverbials (i.e., "*x* then *y*"). There was no effect of age of L2 acquisition on the L2 speakers' degree of conformity with Swedish native speaker behaviour.

Keywords: Bilingualism, Event conceptualization, Second language acquisition, Swedish, Ultimate attainment.

Resumen

En este estudio se examina la adquisición de los patrones de segmentación y estructuración temporal de sucesos en hablantes de L2. El grupo de participantes comprende 35 adultos bilingües de español L1/sueco L2, con residencia en Suecia, cuya edad de inicio de la adquisición de L2 oscila entre 1 y 19 años. 15 hablantes nativos de sueco y 15 hablantes nativos de español participaron como grupos de control. Los resultados evidenciaron que la segmentación de sucesos llevada a cabo por los hablantes de L2 tenía una granularidad más alta que la de los hablantes de sueco nativos, pero más baja que la de los hablantes de español nativos. En lo que respecta a la estructuración temporal, los hablantes de L2 exhibían competencia nativa, enlazando los sucesos por medio de conectores temporales anafóricos en la misma medida que los hablantes suecos nativos. El grado de similitud con los patrones de los nativos no variaba en función de la edad de inicio de adquisición.

Palabras clave: Adquisición de segundas lenguas, Bilingüismo, Conceptualización de sucesos, Nivel de competencia final, Sueco.

1. Introduction

During the last decade, research on second language acquisition (SLA) has started directing attention to the acquisition of distinctions that go beyond the formal properties of language. These distinctions, which may be referred to as conceptualization patterns, relate to a given language's preferred patterns of selecting and organizing information about, for example, time and space. Crosslinguistic studies have shown that languages across the world differ considerably with regards to their organization of temporal and spatial information (e.g., Berman & Slobin, 1994; Bloom, Peterson, Nadel & Garrett, 1996; Boroditsky, 2001; Bowerman & Levinson, 2001; Levinson, 2003; Strömqvist & Verhoeven, 2004). The findings to date from the field of SLA suggest that the acquisition of target-like conceptualization patterns indeed pose difficulties for second language (L2) learners. In particular, studies on the attainment of conceptualization patterns of events show that even at advanced proficiency levels L2 speakers still fall short of nativelike mastery (Carroll & von Stutterheim, 2003; Schmiedtová, in press; Schmiedtová & Flecken, 2010; von Stutterheim, 2003). As most participants in these studies either started learning the target language in a formalistic setting and often at an adult age it is difficult to determine the reasons behind this non-convergent outcome among L2 learners. One possibility is that the mastery of nativelike event conceptualization patterns is a late feature that is only attained at the very last stages of the acquisition process. Another possibility is that the proficiency with these patterns is constrained by the age by which the learner starts. A third possibility is that by virtue of being bilingual speakers, L2 learners will by default exhibit conceptualization patterns different from those of monolingual speakers. The current study sets out to provide an answer to these questions. To achieve this goal, the study examines ultimate attainment of patterns of event segmentation and temporal structuring by near-native speakers of L2 Swedish with varying ages of acquisition.

The outline of the article is as follows: section 2 describes the conceptualization processes under study and gives a brief overview of previous research on event conceptualization in native speakers and L2 learners. At the end of this section, the aims and novelties of the current study are outlined; section 3 describes the research design of the present study; section 4 presents the findings of the participants' conceptualization patterns; and section 7 is dedicated to a discussion of these findings.

2. Background

2.1. Processes of event conceptualization

In the process of preparing content for speech, information units are transformed into a format that is expressible in a given language (Carroll, von Stutterheim & Nüse, 2004: 4). The present study will frame the different kinds of sub-processes involved in this transformation within Levelt's (1989) model of speech production, as well as the additional work done on this topic by Habel and Tappe (1999) and von Stutterheim and colleagues. According to Levelt, there are three levels of representation in the language production system: the conceptual level (the conceptualizer), the lemma level (the formulator), and the word level (the articulator). The function of the conceptualizer consists of transforming the encyclopaedic knowledge relevant to the speaker's communicative intention into a temporary conceptual structure (Carroll & von Stutterheim, 1993), with which linguistic knowledge can be accessed (i.e., the formulator level). In modelling the conceptualization of events, Habel and Tappe (1999) delineates four different planning processes: segmentation, selection, structuring and linearization (see also von Stutterheim and Nüse, 2003). The concern of the current study relates to the processes of segmentation and temporal structuring.

Segmentation is the process of extracting units from a knowledge base. In this process complex situations are broken down in accordance with their features of temporal boundedness (cf. Croft, 2007): complex static situations are divided into states or property predications whereas complex dynamic situations are broken down into smaller events or processes (von Stutterheim, 2003: 185). Let us suppose that a person is watching a scene where a man is washing a car, he or she could choose to segment the situation in the following way: *a man is washing a car.* He could, however, also give a more fine-grained resolution of the situation: *a man stands by a car, he waxes the hood, water drips from the car.* In this way, the situation is broken down into static ("stand") and dynamic ("wax" and "drip") entities. These differences in descriptive specificity are also termed granularity differences (e.g., Noyeau, de Lorenzo, Kihlstedt, Paprocka, Sanz Espinar & Schneider, 2005; von Stutterheim & Nüse, 2003).

Selection involves choosing the components of every individual situation that the speaker has segmented. Components are here understood as entities, times, spaces and properties. In selecting event components of a goal-oriented motion event, the speaker could mention an endpoint: *a woman is driving* ***to a village***. As can be seen, the processes of segmentation and selection relate to what the speaker chooses to

verbalize, that is, the *content* of the verbalization. Within Levelt's (1989) framework, these processes are labelled macroplanning, in the sense that they concern the content of verbalization, or the *speech-act-intentions* (p. 109). It has been suggested that macroplanning is not a language-specific process (Levelt, 1999).

Structuring is a multifaceted process that entails choosing a specific frame of reference with respect to the event components of time, space and person. In von Stutterheim and Nüse (2003), three conceptual components involved in the process of temporal structuring are outlined: *the event* represented by a predicate (dynamic in nature) and an argument. The event substance can be divided into an onset phase, an intermediate phase, and a closure phase (so-called phasal decomposition); *a timeline*, that is, an abstract sequence of temporal intervals; and, the observer/speaker, that is to say, *the conceptualizer* of the state-of-affairs (see Langacker, 2000). When temporally structuring an event, the conceptualizer selects an anchor point for the event substance and he/she also has to decide how events should be related to each other (von Stutterheim & Nüse, 2003: 865). According to Klein's (1994) framework, the time span for which an assertion is made is called *topic time* (TT), the time for which a situation holds *time of situation* (Tsit), and the speech time *time of utterance* (TU). In a temporally coherent narrative, the perspective of the event sequence is created by means of linking the TT to the Tsit and the TU. We will illustrate how these principles work by resorting to the scene of the man washing a car. At this point, the washing is complete and the man is ready to drive away. Let us suppose that a speaker has produced the following utterance:

(a) *the man is looking at the wheel*

(b) *he holds the keys*

(c) *and then he inserts them in the ignition*

In utterance (a), TT is included in Tsit and overlaps with TU. Moreover, in (a) the relation between TT and Tsit is further defined through a phasal decomposition of the event substance. That is to say, with the use of the progressive form TT is depicted as a phase of Tsit (see, Carroll & von Stutterheim, 2003; Klein, 1994). In utterance (b), TT is included in Tsit and overlaps with TU. The TT for (b) may also be said to be the same for (b), in the sense that while looking at the wheel, the man is also holding the keys. Utterance (c) is different from (a) and (b), as the TT interval is anchored to the preceding Tsit by means of the anaphoric adverbial *then*. As becomes evident from the example above, there are several ways to construe temporal perspectives. Usually, the temporal relations established between events are consistent throughout a narrative and converge in forming a specific macro-perspective (Carroll & von Stutterheim, 2003: 17).

In *linearization*, the final step of the planning process, the units selected for verbal representation have to be ordered in such a way that allows them to be transformed into the medium of language (Levelt, 1982; Carroll et al., 2003). The linearization process thus involves word ordering. The processes of structuring and linearization involve framing the content from the macroplanning process. Hence, structuring and linearization can be characterized as pertaining to microplanning (Levelt, 1989). According to Levelt (1999), microplanning may be considered a language-specific process.

2.2 Crosslinguistic differences in event segmentation and temporal structuring

Previous research on event conceptualization has documented that speakers of different languages differ in how they segment and temporally structure events. Using film retelling tasks, Author (2008, in press) and von Stutterheim and Nüse (2003) showed that whereas speakers of Spanish, English and Algerian Arabic segmented the flow of events in a fine-grained way, speakers of Swedish and German exhibited coarse-grained segmentations. These crosslinguistic differences in event granularity were manifested in preferences for either (bounded) macroevents or (unbounded) microevents. An example of this may be found in von Stutterheim and Nüse (2003): when describing a scene where the protagonist of the film accidentally finds himself on the top of a pile of stones, English and Arabic speakers mentioned events such as "he's scratching his head", "he's looking down", and "he's swinging from the rock". In other words, these speakers verbalized every little event of this situation. Characteristic for these fine-grained segmentations were also that they contained a large number of events lacking points of completion. Speakers of German and Swedish, on the other hand, when faced with the same task, did not produce similar "microevents" but were shown to be more prone to describing the situation simply as "he's trying to find a way to get down from there". These types of macroevents typically included points of completion.

Besides differences in event segmentation, these studies also found language-specific patterns of temporal structuring of events. These differences were manifested in different patterns of *topic time management* (Bylund**,** 2008; Carroll & von Stutterheim, 2003; von Stutterheim & Nüse, 2003). The speakers of German and Swedish were shown to resort to what can be characterized as an anaphoric linking strategy. In this strategy, the Topic Time of an event was established in relation to the preceding Time of Situation by means of an anaphoric temporal adverbial (the function of which is to specify time spans in relation to other spans normally given in context, see Klein, 1994). An example of this strategy could be "He walks

up to the hole, and then he sees the water. The anaphoric linking strategy may be characterized as "event A, then event B". Typical for this strategy is that the events are presented as occurring in an explicit sequence.

A different pattern was found among the speakers of English, Spanish, and Arabic. In contrast to the Swedish speakers, these speakers represented the event sequence using a TU-linked frame, according to which TT overlaps with TU and Tsit. In this strategy, the time of the utterance functions as a deictic "now" that corresponds to the question "what is happening now?" (see, von Stutterheim, 2003), for example: "he's getting closer, he's looking around, he sees the water". This pattern may be characterized as "(now) event x (now) event y". In contrast to the anaphoric linking strategy, in the deictic strategy the actual temporal sequence of the events is implicit and left to be inferred with the help of contextual cues (see Carroll & von Stutterheim, 2003.

The common denominator for the languages that exhibit fine-grained segmentation patterns and deictic temporal linking strategies is the grammatical category of aspect: in Spanish, English, and Arabic the verb is obligatory marked for aspect (progressive and/or imperfective). This is not the case of German and Swedish: in these languages aspectual distinctions are not grammaticized and may only be expressed optionally through lexical circumlocutions. The interpretation pursued by von Stutterheim and associates is that grammaticized aspect implies a greater sensitivity towards ongoingness and phasal structure, with the consequence that speakers of aspect languages are more prone to decomposing events in a fine-grained way and to linking events to a deictic now. Speakers of non-aspect languages, on the other, are not pointed by their grammars towards phasal event decompositions. Instead, in the absence of imperfective and/or progressive markers these speakers tend to construe events in a holistic fashion, according to which events are presented as having a point of completion, and the post time of an event (i.e., the time span subsequent to event completion) serves as a temporal reference point for the following event (for further discussion on the role of grammatisized aspect, the reader is referred to Bylund, 2008; Carroll, von Stutterheim & Nüse, 2003; Schmiedtová, in press).

The results reported in the studies reviewed above suggest that speakers of different languages differ not only in *how* they say things (e.g., when structuring events temporally), but also in their selection of *what* to say (e.g., when segmenting events). As pointed out by, for example, Schmiedtovà (in press), the finding that speakers of different languages choose to verbalize different aspects of reality (i.e. when segmenting events) may be at variance with Levelt's (1999) proposal that the macroplanning processes are not language-specific. An alternative view, informed by these findings, is that there is language specificity both at the level of macro- and

microplanning (see also Slobin, 1991).

2.3. Event conceptualization in L2 learners

In view of the different patterns of event conceptualization found across languages, several researchers have set out to investigate how L2 learners cope with acquiring the target language patterns of selecting and structuring event information. The empirical studies carried out on this topic indeed suggest that the patterns of event conceptualization in L2 learners are seldom target-like. Instead, L1 conceptualization patterns have been shown to spill over to the L2, even in highly proficient learners (Schmiedtová, in press; von Stutterheim, 2003; von Stutterheim & Carroll, 2006). An example of this is provided by von Stutterheim's study (2003) on event component selection in descriptions of goal-oriented motion events. The L2 learners examined in this study were adult advanced German learners of English and advanced English learners of German, all of whom had an excellent morphosyntactic command of the target language ("no formal errors", von Stutterheim, 2003: 202). Many of them were university students with English and German as their major, respectively, and they had spent at least one year in a context where their English/German language skills could be used in everyday oral communication. The results showed that the learners' encoding of endpoints (a type of event component) were either identical or close to those of monolingual speakers of their respective L1s and, consequently, fairly distant from the target language patterns. On the basis of these findings, it was concluded that even at high levels of L2 proficiency learners retain L1 event conceptualization patterns. Analyses of the learners' temporal structuring patterns – elicited through a film retelling task – revealed that even though they were approximating nativelike principles, they still exhibited certain deviations. For example, the German learners of English were shown to apply the deictic Time of Utterance-based frame only to a certain extent, but not fully (see also Carroll & von Stutterheim, 2003).

As it seems, overcoming the habitual conceptualization patterns of the native language poses a challenging task for the learner. There are certain general characteristics of event conceptualization patterns that might compromise their learnability: First, differences in conceptualization patterns are represented by differences in information structure that may be subtle and difficult to pinpoint. As von Stutterheim and Carroll (2006) point out, speakers may perceive differences in information structure between languages but often they cannot identify exactly what it is that make up these differences. Second, conceptualization patterns reflect preferences rather than absolute principles, meaning that there is no grammatical rule that, for example, prevent German speakers from segmenting microevents instead of macroevents, or English speakers from estlishing anaphoric viewing frames.

3. Aims of the present study

Whereas previous studies suggest that event conceptualization patterns are inherently difficult to master, little is known about under what circumstances these distinctions may or may not be learnt. In fact, in view of the research findings reported to date it is impossible to determine whether the low incidence of nativelike mastery among L2 learners is a result of participant selection, critical period effects, or bilingualism effects. That is to say, one possibility is that the learners examined in the studies to date were not at a sufficiently advanced stage in the L2 learning process as to have acquired target-like conceptualization patterns. In von Stutterheim (2003), however, the remark is made that the learners exhibited "no formal errors" in the target languages, which would suggest that they were at least advanced L2 speakers. Unfortunately, however, no information is provided about how the participants' L2 proficiency was assessed, and therefore the reader cannot judge the reliability of this observation.

The second possibility is that the acquisition of event conceptualization patterns is subject to critical period effects. Because the L2 learners studied to date can be characterized as late learners, that is, they were not immersed in the target language setting until after puberty, one cannot rule out the possibility that early L2 learners would attain nativelike event conceptualization patterns more easily than late learners.

The third possibility is that event conceptualization patterns in bilingual speakers are inherently different from those of monolingual speakers. Previous research has shown that in certain domains, bilingual speakers may resort to an integrated conceptualization pattern that is different from both the L1 and the L2 (Ameel et al., 2009; Pavlenko, 2005; Pavlenko & Malt, in press). In this view, deviations from native event conceptualization patterns should rather be ascribed to the L2 learners' bilingualism than to their age of acquisition onset.

The current study sets out to pinpoint the reasons underlying the low incidence of nativelike attainment of event conceptualization patterns. In order to do so, the study presents three methodological improvements: first, the study examines only L2 speakers who in a previous screening test have been identified as potentially nativelike (see, e.g., White & Genesee, 1996). The intention with such a stringent participant selection is to minimize the risk that possible deviations from the native speaker behaviour are due to a generally low L2 proficiency.

Second, the study will examine L2 speakers who have started learning the L2 either within or after the critical period for language acquisition. Including speakers

from a broad range of ages of acquisition is the only way to assess whether nativelike attainment of event conceptualization patterns is constrained by critical period effects.

The third important methodological feature of the current study is the inclusion of a group of monolingual speakers who have the L2 speakers' L1 as a dominant, native language. With data on event conceptualization patterns in the language that is the L2 speakers' mother tongue it is possible to determine whether any deviations among the L2 speakers correspond to L1 preferences, or whether they are different from both the L1 and L2 patterns, representing an integrated, bilingual event conceptualization pattern.

4. Method

4.1. Participants

Thirty-five speakers of L2 Swedish with Spanish as L1 participated in the study. A common denominator of these participants was that they were near-native speakers of Swedish. In a screening test, these participants had been judged to be native speakers of Swedish by at least 6 out of 10 native listener judges (for further details, see Hyltenstam & Abrahamsson, 2009). The participants had, in other words, reached a proficiency level in the L2 that allowed them to pass for native speakers in everyday oral communication.

The participants' age of L2 acquisition (AoA) ranged from 1 to 19 years (*mean* 8.3; *SD* 5.2) and their minimum length of residence in Sweden was 10 years (mean 23.8; SD 6.9). There were between 1 and 3 participants per age of acquisition. Following previous studies on the critical period hypothesis, age 12 was taken to represent the divide between pre- and postpubescent learners (e.g., Abrahamsson & Hyltenstam, 2008; Author et al., 2010; Flege et al., 1999; Lenneberg, 1967; Yeni-Komshian et al., 2000). There were 25 participants with AoA < 12, and 10 participants with AoA > 12. All participants were functional bilinguals and used their L1 Spanish on a regular basis. According to self-reports, this language was on average used in 27.4% (*SD* 13.3) of their daily communication. The majority of the participants (about 60 %) were of Chilean origin whereas the rest were born in other Latin American countries with no specific concentration. The vast majority of the participants were pursuing studies at university or had finished their academic degrees. The mean age at the time of testing was 32.2 (*SD* 7).

Apart from the bilingual participants, two control groups were engaged. The

primary control group consisted of 15 adult native speakers of L1 Swedish. In addition, a control group consisting of 15 adult native speakers of L1 Spanish was recruited. The controls were matched with the bilingual speakers with regard to educational level and chronological age. The distribution of country of origin of the Spanish-speaking controls was similar to that of the bilingual subjects: whereas one person was from Spain, approx. 70 % of them were Chileans and the rest came from other Latin American countries. The key criterion for participation in the control groups was having been born and raised in a monolingual Spanish- or Swedish-speaking setting. The controls had elementary foreign language knowledge in, e.g., English, German, and French. None of them had, however, lived in an environment for an appreciable length of time where such knowledge could be used for regular communicative purposes.

4.2. Procedure and materials

The participants were tested individually in a sound-treated room at Stockholm University. The test sessions were lead by a native speaker of the relevant language.

Data on segmentation and temporal structuring were obtained through an on-line retelling of a sequence of Charlie Chaplin's silent film *Modern Times*. The excerpt used for analysis was a sequence that starts at about 7 minutes into the movie and shows how an automatic feeding machine is tested on Chaplin (the sequence lasts for 4 minutes and 15 seconds). This particular excerpt was chosen because it contains a non-stop, dynamic flow of events (i.e., the machine is introduced to Chaplin, the machine feeds Chaplin several dishes, the machine breaks down, the inventors restart it, the machine breaks down once again, Chaplin is knocked out by the machine). As such, the excerpt is appropriate for studying how an event flow is segmented and temporally structured (see Bylund, 2008).

The participants were told that they would be watching an excerpt from a movie on the computer screen and that they were to provide a simultaneous retelling of the movie. The instructional question (also known as the *quaestio*, von Stutterheim & Klein, 2002) posed to the Swedish-speaking participants was *vad händer?* ('what happens?'). The corresponding Spanish *quaestio* was *¿qué pasa?* ('what happens?').

The participants' online retellings were audio-recorded and transcribed by a native speaker of the relevant language. Transcriptions were divided into propositional units and analysed with respect to segmentation and temporal perspectivation in the following way:

Segmentation. For the analysis of event segmentation, only those propositional units referring to events were taken into consideration (see von Stutterheim & Nüse, 2003, p. 857). Units referring to states, such as *he's very hungry* were not taken into account. Events that were presented as components of another event were also excluded from analysis, because they had lost their status as temporally bounded entities (Parsons, 1990, p. 6; von Stutterheim & Nüse, 2003, p. 857). An example of such would be *they're trying to find a way to repair the machine and get it going again*. In this utterance, *they're trying to find a way* would count as one event, whereas the integrated *and get it going again* would not..

Temporal structuring. Following previous investigations (e.g., Bylund, 2008; Carroll et al., 2003; von Stutterheim & Nüse, 2003), the present study examined patterns of temporal structuring by examining the frequency with which events were linked to each other by means of anaphoric temporal adverbials. As illustrated above, anaphoric temporal connectors are a recurrent characteristic of the temporal structuring pattern called anaphoric linking (typical for Swedish). In contrast, the deictic linking frame, typical of Spanish, is characterized by a low frequency of anaphoric connectors. Examples of central anaphoric temporal adverbials in Swedish are *då*, *sedan* (or "*sen*"), and *så* (see, e.g., Noyeau et al., 2005), all of which may be translated into the English *then*. As with most Swedish adverbials, *då*, *sen* and *så* are obligatorily followed by inversion, for example, *sedan åkte jag hem* [then went I home]. In the case of *så*, this is particularly important: if not followed by inversion, *så* has the function of a conclusive marker (Teleman et al., 1997). Examples of central Spanish anaphoric adverbials are *entonces*, *luego*, *después*, which, as in the case of the Swedish anaphorics, can all be translated to English as *then*.

As the aim of the study was to examine the frequency with which these means were used to link events to each other, the percentage of the events connected with the relevant devices was calculated by dividing the number of anaphoric device forms by the number of events encoded.

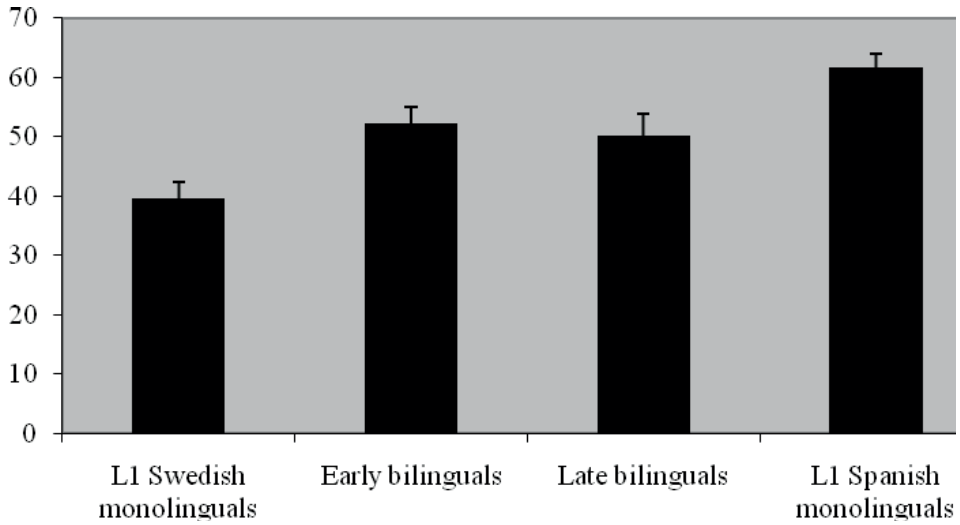
5. Results

5.1. Event segmentation

The results related to segmentation patterns showed that the number of verbalized events was significantly different between groups, F (3, 61) = 8.99, $p < .001$ (see Figure 1). Post hoc procedures (Tukey-HSD) were run to determine which groups differed significantly. The first comparison regarded the differences between the native speaker

groups of Swedish and Spanish. Consistent with previous research (von Stutterheim & Nüse, 2003), Spanish native speakers were shown to encode significantly more events than Swedish native speakers ($p < .01$). The second comparison involved the Swedish native speakers and the L2 speakers with postpubescent AoA (i.e. > 12 years). Not unexpectedly, these groups differed significantly ($p < .05$) in that the L2 speakers on average verbalized a greater number of events than the native speakers. The third comparison regarded the Swedish native speakers and the prepubescent L2 learners. Somewhat surprisingly, this L2 speaker group too differed significantly from the Swedish natives ($p < .01$), encoding a higher number of events. The following comparisons concerned the L2 speaker groups and the Spanish-speaking controls. Here, it was found that both the pre- and postpubescent L2 groups exhibited significantly lower means of encoded events than the Spanish-speaking controls ($p < .05$, and $p < .05$, respectively). The two L2 speaker groups did not differ significantly from each other ($p > .05$). These results are shown in Figure 1.

Figure 1. Events segmentation frequencies.



In order to examine whether the internal variation in the L2 speaker group could be accounted for by the independent variables length of residence in L2 environment, daily L1 use and age of L2 acquisition, Pearson correlations were carried out (a multiple regression analysis would not be recommendable given that the degrees of freedom per independent variable would only be slightly over 10, see e.g. Field, 2009). Using the Bonferroni correction, the alpha level for these correlations was set at .0167 (it should be noted that the independent variables were not significantly

correlated: AoA-LoR, r = -.20: AoA-L1 use, r = -.14; LoR-L1 use, r = .17) As can be seen in Table 2, none of these variables could however explain the internal variation among the L2 speakers.

Table 1. Pearson correlations between L2 event segmentation frequencies (ESFr) and the three independent variables length of residence in L2 setting (LoR), daily L1 use, and age of L2 acquisition (AoA) .

	LoR	*L1 use*	*AoA*	
ESFr	-.07	-.22	.11	

Due to individual variation, identifying precisely in what ways the L2 speakers' segmentation patterns differed from the native Swedish speakers' (or the Spanish-speaking monolinguals') proved to be a difficult task. Certain trends could nevertheless be discerned. In what follows, these trends will be illustrated with some excerpts from the monolinguals' and the L2 speakers' narratives. The episode described is the one where the feeding machine is tested for the first time on Chaplin (in the film, this first testing phase is followed by a number of machine breakdowns and short circuits).

Example 1. L1 Swedish
01 sen så börjar de dra i några spakar
'then they start pulling some levers'
02 och så blir den lille arbetaren matad av maskinen
'and then the little worker is being fed by the machine'
03 först får han soppa
'first he receives some soup'
04 sen blir han torkad runt munnen
'then his mouth is cleaned'
05 och så snurrar maskinen
'and then the machine rotates'
06 puttar in några små matbitar i hans mun
'puts some small pieces of food into his mouth'
07 sen blir han torkad runt munnen
'then his mouth is cleaned'

Example 2. L2 Swedish, prepubescent learner
01 och nu sätts den igång
'and now it is started'
02 och då åker det upp en tallrik

'and then a plate is elevated'
03 lutas ner i hans mun
'is tipped down into his mouth'
04 och sen kommer det upp en svamp
'and then a sponge comes up'
05 och den torkar av honom
'and it dries him'
06 och så rullar plattan
'and then the platform rotates'
07 och så matas en ny tallrik fram
'and then a new plate is forwarded'
08 den matas fram av en typ av gaffel
'it is served by a kind of fork'
09 och så blir han avtorkad igen
'and then he is dried again'
10 och så rullar det runt igen
'and then it rotates again'

Example 3. L2 Swedish, postpubescent learner
01 och så sätter de igång maskinen
'and then they start the machine'
02 maskinen hissar upp en tallrik
'the machine elevates a plate'
03 han får dricka ur
'he finishes it'
04 och så torkar maskinen hans mun
'and then the machine dries his mouth'
05 sen så rullar den här cirkelformade maskinen fram en annan rätt
'then this circle-shaped machine rolls up another plate'
06 och så skjuter den in lite andra munsbitar i Chaplins mun
'and then it pushes some other pieces of food into Chaplin's mouth'
07 äter upp
'eats up'
08 den går väldigt väl
'it runs very smoothly'
09 och så blir han torkad på nytt
'and then he is cleaned again'
10 och så rullar den igen
'and then it rotates again'
Example 4. L1 Spanish

01 se están alistando para hacer la prueba
'they are getting ready to do the test'
02 y arrancan la máquina de comida
'and they start the feeding machine'
03 el primero levanta un plato de sopa
'the first one elevates a bowl of soup'
04 y se la pasa automáticamente a Chaplin
'and gives it automatically to Chaplin'
05 y luego viene un pequeño filtro
'and then a small filter comes'
06 le limpia la cara
'it cleans his face'
07 pasa a girar el nuevo plato
'it goes on to rotate a new plate'
08 el plato sube
'the plate goes up'
09 y ahora le pasan un pequeño bocado de comida
'and now he is given a small piece of food'
10 y él lo está masticando sin usar las manos
'and he's chewing it without using his hands'
11 y la máquina le va pasando la comida
'and the machine gives him the food bit by bit'
12 cambian ahora
'now they change'
13 nuevamente le limpia la boca
'it cleans his mouth again'

When retelling this episode, the L2 speakers turned out to verbalize more events referring to details of the machine's feeding techniques (e.g., the mechanical arms rotating, elevating and shovelling food) than did the native speakers of Swedish. In the Swedish native speakers' retellings, these smaller events were simply covered by more coarse-grained events such as "the machine gives Chaplin the soup/food", which contained less information about the different phases of the act of feeding. The L2 speakers' retellings were, however, not as fine-grained as the Spanish-speaking monolinguals': this group seemed to make more references to actions carried out by other agents than the machine, such as the men in charge of the feeding machine supervising the testing

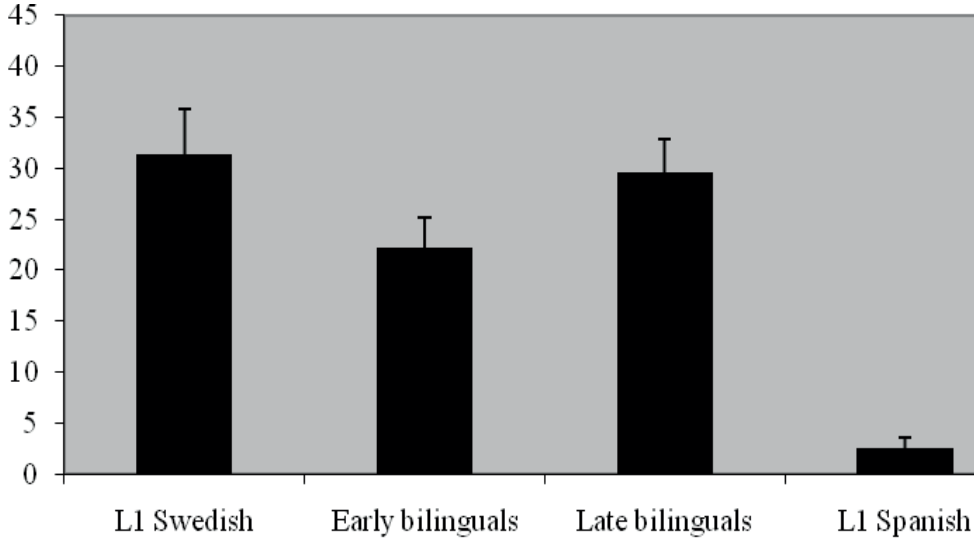
To summarize, these findings demonstrate that when confronted with the same visual input, both L2 speaker groups parsed the information stream into more fine-

grained units than the native Swedish speakers. The L2 speakers did not, however, exhibit an event segmentation pattern as fine-grained as that of the Spanish-speaking controls.

5.2. Temporal structuring

The L2 speakers' patterns of temporal structuring were compared with those of the native controls with respect to the use of anaphoric temporal adverbials. A Kruskal-Wallis test showed that there was a significant difference between the groups, $KW = 31.236$, $p < .001$. Post-hoc procedures (Dunn) revealed that the two L2 speakers group did not differ significantly from each other in the frequency with which they used anaphoric adverbials to link events ($p > .05$). These groups, however, turned out to be significantly different from the Spanish-speaking controls in this regard ($p > .001$ for both L2 groups). Instead, the L2 speakers' frequency of use of anaphoric linking devices turned out to be similar to that of native speakers of Swedish ($p > .05$ in both cases). In other words, the L2 speakers exhibited nativelike temporal structuring patterns. These results are laid out in Figure 2 (for examples of the groups' temporal structuring patterns, the reader is referred to Examples 1, 2, 3, and 4 in the preceding section, in which it can be seen that there is a considerable difference in the use of anaphoric connectors.)

Figure 2. Percentage of events linked with anaphoric connectors.



As in the case of event segmentation frequencies, there was a certain degree of variation in the use of anaphoric adverbials among the L2 speakers. Pearson correlations were run to see whether any of the background variables AoA, LoR in L2 setting, and daily L1 use could explain this variation. The alpha level was set at .0167. As shown in Table 2, none of these variables correlated with frequency of use of anaphoric temporal adverbials.

Table 2. Pearson correlations between anaphoric temporal adverbial frequencies (ATAFr) in the L2 and the three independent variables length of residence in L2 setting (LoR), daily L1 use, and age of L2 acquisition (AoA) .

	LoR	*L1 use*	*AoA*	
ATAFr	-.06	-.00	.25	

To summarize, these findings show that there were no differences in how the pre- and the postpubescent learners structured events temporally. Actually, both L2 speaker groups converged with native speaker behaviour, resorting to an anaphoric linking strategy according to which the Topic Time of the asserted event is established in relation to the preceding Time of Situation. AoA (or any of the other background variables) did not play a role for the attainment of temporal structuring preferences.

6. Discussion

The analyses of the L2 speakers' online retellings produced two major results. First, the conformity with Swedish native speaker preference was divided: on the one hand the L2 speakers exhibited nativelike temporal structuring patterns, and on the other, they segmented events in a more fine-grained way than the natives. The second major result is the lack of age effects on this behaviour. AoA was shown to predict neither the degree to which the event segmentation patterns converged with those of the native speakers, nor the internal variation in the L2 speaker group. In what follows, these findings will be discussed in more detail.

6.1. Selective attainment of event conceptualization patterns

As seen in the background section, the fundamental difference between event segmentation and temporal structuring is that the former relates to the process of macroplanning ("what to say"), whereas the latter concerns the process of microplanning ("how to say it", see Levelt, 1989, 1999). Following this framework,

the current results suggest that whereas the L2 speakers exhibited nativelike conceptualization patterns in the domain of microplanning, they did not so in the domain of macroplanning. The finding that bilingual speakers exhibit macroplanning outcomes that are different from monolingual speakers' has parallels in previous research on the acquisition of event conceptualization patterns. In a study on film retellings by Swedish-Finnish bilingual children (Viberg, 2001) it was shown that these speakers' degree of narrative granularity was different from that of the monolingual control groups. Also, Hohenstein et al. (2006) found that when describing motion events, L1 Spanish-L2 English bilinguals were more likely to encode information about both path and manner of motion than the monolingual controls of these languages. This kind of behaviour corresponds to what Pavlenko (1999; 2005) calls *conceptual convergence*, which is defined as the creation of an integrated conceptual pattern that is different from both the L1 and the L2 (or the other L1, for that sake). How come, then, that conceptual convergence is found at the macroplanning level? In extending Levelt's (1989) speech production model to the domain of bilingualism, de Bot (1992) assumes that in bilingual speakers microplanning processes are language-specific, whereas macroplanning processes are not. The reason why bilinguals should exhibit convergent patterns at the level of macroplanning is not discussed in detail by de Bot, but he mentions in passing that it would be a more economical solution. Although not inconceivable, this suggestion would need solid definitions of notions such as "processing load" before it can be further qualified. As empirical research on processes in the conceptualizer is currently scarce (cf. Croft, 2007), such definitions have not yet been formulated. Whether convergence is more likely to occur at macroplanning levels and why this might be the case consequently remains an open question.

6.2. Age effects and bilingualism effects

An important question in the current study was whether AoA constrains ultimate attainment of event segmentation and temporal structuring patterns. The results show that this is not the case. In the case of temporal structuring, L2 speakers of both age groups converged with native speakers of Swedish. Relating this finding to previous research, it suggests that the lack of nativelike proficiency with temporal structuring patterns documented by earlier studies is most probably due to the fact that the L2 speakers examined had not yet reached this stage. Consequently, this indicates that nativelike mastery of temporal structuring patterns is a late feature in L2 acquisition.

As for the L2 speakers' event segmentation patterns, it was found that these were more fine-grained than those of the Swedish native speakers, but more coarse-

grained than those of the monolingual native Spanish speakers. More importantly, the L2 speakers' event segmentation patterns were shown to be independent of AoA. This is an important finding as it demonstrates that the non-convergences found among the bilinguals in this regard cannot be ascribed to the fact that they had a later age of onset than the native speakers of Swedish. In light of the discussion above, a more appropriate explanation seems to be that the lack of conformity with native patterns is a result of the L2 speakers' bilingualisms.

These findings inform the study of critical period effects in L2 acquisition. Research on this topic has shown that the acquisition of nativelike proficiency in the domains of pronunciation and speech perception (e.g., Flege et al., 1999; Oyama, 1978), syntax and morphology (Abrahamsson & Hyltenstam, 2008; DeKeyser, 2000; Johnson & Newport, 1989), and lexis (Abrahamsson & Hyltenstam, 2009; Hyltenstam, 1992; Author et al., 2009) is subject to maturational effects. Whether the attainment of nativelike conceptual proficiency is constrained by age of acquisition is by and large an under-researched question. The few studies to date that have examined this issue seem to suggest, however, that this might be the case. In an investigation of object classification preferences in Japanese learners of English, Athanasopoulos and Kasai (2008) documented a weak albeit statistically significant correlation between age of first exposure to English and degree of conformity with English native classification patterns. A similar finding was reported by Boroditsky (2001) in her study on time conception by Chinese learners of English; here it was found that age of arrival in the L2 environment was a significant predictor for nativelike conceptualization patterns of time. Drawing a parallel between her study and Johnson and Newport's (1989), Boroditsky concluded that conceptual proficiency is equally affected by age as formal language proficiency. A problematic aspect of Boroditsky's study, nevertheless, is the fact that the results have not been replicated (see Chen, 2007).

Putting these previous findings together with the current results, it becomes clear that not all aspects of conceptual proficiency are equally affected by maturational constraints. Given the different cognitive domains and behaviours investigated so far, such selective age effects seem like a reasonable outcome: Whereas Boroditsky (2001) and Athanasopoulos and Kasai (2008) examined non-verbal behaviour in the domains of time and objects/substances, the current study has looked at temporal framing of discourse content and segmentation of event flows in speech production. Whereas neither structuring nor segmentation patterns seem to be subject to maturational constraints, the latter seems to be subject to what may be labelled bilingualism effects. This finding relates to an emerging debate in research on L2 ultimate attainment: Whereas lack of nativelike attainment in L2 acquisition typically has been interpreted as a result of delayed exposure, some scholars contend that the reason why L2 learners do not reach nativelike proficiency is not due to maturational

constraints, but rather because L2 learners are bilingual speakers (Birdsong, 2010; Flege et al., 2002; MacWhinney, 2005; Pallier et al., 2003; Yeni-Komshian et al., 2000). Even though the contenders of this line of reasoning differ in the extent to which they ascribe non-nativelikeness to bilingualism, they share the interpretation that L1 maintenance to different extents obstructs L2 nativelikess Although studies on international adoptees (that is, L2 speakers who are actually monolingual, see Author et al., 2009; Hene, 1993) and delayed first language acquisition (such as in some cases of speakers of sign languages, Mayberry, 1993; Mayberry & Lock, 2003) clearly show that bilingualism is not the central factor underlying the low incidence of nativelikess among L2 learners, there is a possibility that nativelike attainment of *certain* linguistic features or domains is more *likely* to be subject to bilingualism effects than others, in particular those that relate to conceptualization (Cook, 2003). Taken together with previous research findings (Hohenstein et al., 2006; Viberg, 2001), the current results suggest that event granularity constitutes one such domain in which nativelike attainment is subject to bilingualism effects.

7. Conclusions

The aim of this study was to investigate ultimate attainment of event conceptualization patterns in near-native speakers of L2 Swedish. In particular, the study set out to explain the low incidence of nativelike behaviour in this domain implementing a series of methodological novelties: First, only those L2 speakers who in an everyday oral communicative situation were perceived as nativelike by native listener judges were selected for participation. The aim of this procedure was to avoid studying L2 speakers who are apparently not nativelike just to arrive at the conclusion that they are not nativelike (Long, 1993). Second, the study included speakers with pre- and postpubescent AoA with the intention to see whether this variable could predict possibly different degrees of conformity with monolingual patterns. Third, in order to appropriately characterize possible deviations from Swedish native speakers as convergence, transfer etc., direct comparisons were made between the L2 speakers and monolingual native speakers of both Spanish and Swedish.

The results showed that the L2 speakers exhibited nativelike temporal structuring strategies, thus suggesting that the typically non-nativelike behaviour among L2 learners in this domain reported by earlier studies is due to the fact that those learners had not yet reached a sufficiently high level of L2 proficiency. As for event segmentation, it was shown that the L2 speakers produced more fine-grained patterns than the Swedish-speaking controls (but more coarse-grained than those of the Spanish-speaking controls). Interestingly, it turned out that the degree of conformity with Swedish-like event segmentation preferences was not related to

AoA.

Taken together with previous research, the findings of the present study add to a fairly complex picture of the variables at stake in the ultimate attainment of conceptual proficiency. Whereas nativelike proficiency may be acquired within certain cognitive domains and behaviours, others are constrained by acquisition onset and possibly even bilingualism. The extent to which the acquisition of conceptual proficiency is subject to acquisition onset and bilingualism effects, as well as the specific characteristics of those cognitive domains and behaviours that are susceptible to such effects, is obviously open to further research.

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