

The effect of age on language attrition: Evidence from bilingual returnees*

CRISTINA FLORES
University of Minho, Portugal

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The present study investigates the syntactic competence of bilingual Portuguese–German returnees who have lost regular contact with their L2 (German). The main criterion which distinguishes the participants is the age of input loss. This allows their division into two main groups: speakers who lost German input during early childhood (between ages seven and ten) and speakers who were eleven or older when they moved away from the German environment. Focusing on verb placement in main and embedded clauses, the available data show strong evidence of the existence of a stabilization phase following the acquisition period. The speakers who lost L2 input earlier than age eleven show significantly more syntactic deficits than the other speakers. However, the observed attrition effects seem to be the result of insufficient L2 activation, rather than the expression of undergoing competence loss.

Keywords: language attrition, age effects, word order, returnees

Introduction

Studies focused on language attrition have grown substantially during the last three decades. The increased interest in the language loss phenomenon has been accompanied by an extensive diversification of this research field, attracting psycholinguistic, neurolinguistic and sociolinguistic approaches. Köpke (2004, p. 4) summarizes three main research questions raised by these different perspectives: “WHY does attrition occur? HOW does attrition occur? WHAT kind of structure is affected by attrition?” Focusing on the linguistic competence of bilingual returnees, the present study attempts to contribute to these three research questions.

Concerning the first question, among the variety of factors suggested as influences on the emergence of language attrition, AGE appears to be one of the most important variables. The studies that deal with language attrition in childhood, both L1 and L2 (for example, Kaufman, 2001; Kuhberg, 1992; Seliger, 1989; Tomiyama, 2000), are consensual with regards to the fact that the attrition process is very severe in pre-puberty. Kuhberg (1992) reports that the German proficiency of a Turkish child returnee became so deteriorated after fifteen months lacking L2 input that the author could

not continue his study. An almost complete replacement of one language system by another is also described in studies dealing with adopted children (Pallier et al., 2003; Ventureyra & Pallier, 2004). Pallier et al. (2003) report the case of Korean subjects, adopted in childhood by French couples, who are not able even to recognize their first language.

The rate of attrition described in the cited work contrasts clearly with the data presented in studies investigating adults, which suggest that there might be an age limit after which attrition effects become marginal. However, it is still not clear at what age the emergence of attrition becomes less probable. As Hakuta and d’Andrea (1992) suggest, we simply know that the age between childhood and adolescence appears to be a critical phase: “There is mounting evidence of ongoing interaction between the two languages in younger bilinguals [...] but by adolescence, it is assumed that this process would have stabilized” (pp. 73–74). After having reviewed a large number of studies exploring attrition differences in pre- and post-pubescent speakers, Bylund (2009) suggests that there is a change in attrition susceptibility at around age twelve.

However, it remains unclear why the phase between childhood and adolescence is so decisive for the development of language competence, a question which leads us to the second of the initial three questions posed by Köpke: HOW does attrition occur?, i.e., which psycholinguistic and neurological mechanisms underlie attrition? The answer to this question is generally sought in the domain of language acquisition, based on the assumption that acquisition and attrition are intrinsically

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Address for correspondence:

Departamento de Estudos Germanísticos e Eslovos, Instituto de Letras e Ciências Humanas, Universidade do Minho, Campus de Gualtar, 4710-057 Braga, Portugal
cflores@ilch.uminho.pt

linked. The differences between children and adults, observed in the domain of language attrition, have a clear parallel in the domain of language acquisition. It is generally agreed that with increasing age it becomes more difficult to learn a second language. Consequently, it seems that with increasing age, it is also more difficult to forget a native language. The proponents of the Critical Period Hypothesis relate the different age effects in language acquisition to maturational constraints by assuming that the child's greater ability for language learning is due to brain maturation. In the course of further development, the human brain allegedly progressively loses the plasticity of the neural circuits that are responsible for language learning (Pallier et al., 2003). As a result, a part of the cognitive capacities which subserve language acquisition becomes inaccessible and the unavailable cognitive abilities are compensated for by other language learning processes (Meisel, 2007, p. 36).

It seems that the acquisition process is complemented by some kind of "stabilization phase". Köpcke and Schmid (2004, p. 20) suggest that "it takes a certain number of years for the L1 to be completely established in the human mind/brain, and [...] before this moment, the L1 can be easily replaced by another language". From a generative linguistic perspective this would mean that children acquire the principles of Universal Grammar and set the parameter values based on input from the language being acquired. However, parameters remain vulnerable during a certain period of time. After their complete stabilization, language attrition would become a marginal process. This assumption would imply that especially those linguistic features which are parameter-dependent become more stable with time, while other domains and interfaces maintain some vulnerability across the lifespan – a supposition that brings us to the third question.

One important finding in language attrition research is the selectivity of the language loss process. Certain areas of linguistic knowledge appear to be more vulnerable than others (Seliger, 1989). A significant number of studies dealing with adult bilingualism describe primarily lexical retrieval difficulties, semantic transfer, morphological overgeneralizations and allomorphic reduction. In contrast, syntax seems to be the most impervious area. Many studies which investigate syntactic features like word order (e.g., Håkansson, 1995) report a very low degree of attrition at this level. Recent research within the minimalist framework has drawn attention to phenomena set at the interface between syntax and other cognitive systems, such as lexical–semantics or discourse–pragmatics (Montrul, 2004; Tsimpli, Sorace, Heycock & Filiaci, 2004), showing that these areas "are more vulnerable to attrition than purely syntactic aspects" (Sorace, 2004, p. 143).

Finally, an important distinction raised by the questions under examination must be studied: Do speakers who

show attrition effects lose their linguistic competence or are those effects the result of access and control difficulties? This question is based on the presupposition that attrition may involve processing problems, rather than the irretrievable loss of competence. The mechanisms underlying bilingual language processing are theorized in psycholinguistic frameworks such as Paradis' ACTIVATION THRESHOLD HYPOTHESIS (Paradis, 2004) and Green's INHIBITORY CONTROL MODEL (Green, 1986). These models describe the interaction between the two languages in the bilingual speaker's mind, proposing a close relationship between activation/inhibition of a language, context and frequency of language use, and their degree of availability. Paradis (2004) explains the activation process in terms of a neurological threshold that lowers or rises according to the amount of exposure to the language. The more an item is activated, the lower its activation threshold. Conversely, if an item is not stimulated due to disuse, it becomes more difficult to activate over time. Thus, according to Paradis, "attrition is the result of long-term lack of stimulation" (p. 28), i.e., it affects processing abilities rather than the linguistic knowledge itself.

The study

The present study¹ was carried out in the north of Portugal and investigates language attrition in Portuguese returnees who had grown up in a German-speaking country (Germany or Switzerland) as second generation migrants. The study focuses on individuals who grew up in a dominant linguistic setting (German) which was not that of their home language (Portuguese), but who experienced an (almost complete) break with the L2 environment when they moved to their parents' country of origin.²

Hence, in the current study ATTRITION is defined as the faulty application of the L2 grammar (Gürel, 2004) due to the change of the linguistic environment (from dominant L2 to dominant L1) and a drastic reduction of the L2 input.

The main difference between the participants is the age at which they changed their dominant linguistic environment. On the one hand, this difference allows us to

¹ The study reported in the present paper is part of a larger research project, carried out at Minho University, funded by the Portuguese Foundation for Science and Technology (FCT), which focuses on the bilingualism of second generation returnees.

² We have to distinguish between this group of second generation returnees and the second generation speakers who have been investigated in recent research focused on so-called "heritage speakers". Heritage Languages refer to the home language of second generation migrants that may have been first in the order of acquisition and may have not been completely acquired. The participants of the present study have acquired their L2 in a native-like way, but have later on left the L2 language environment.

clarify the influence of the age factor on the emergence of attrition phenomena, addressing the question of whether there is a critical age in language attrition. On the other hand, it makes it possible to test the presupposition of a stabilization phase in language acquisition by analyzing if an early input break-up leads to unstable language competence. Focused on the syntactic domain, the study analyses the speaker's performance with regard to verb placement in German.

Within Principles and Parameters Theory, verb position is a linguistic property that is acquired by parameter setting (Clahsen & Muysken, 1986). It has also been claimed that, once fixed, parameters cannot be unset (e.g., Clahsen, 1990). According to this view, if the acquisition process occurs in early childhood, bilingual children fix the verb order parameters to the values of the target languages and the acquired knowledge is supposed to remain stable. Consequently, it can be predicted that bilingual speakers who lose contact with one of their languages would not lose their competence regarding verb placement. However, if the parameters need to stabilize after their acquisition, an early input loss might result in syntactic instability.

German word order: V2/OV

One central property of German syntax is the V2 effect. In root sentences the finite verb moves to the second position (C°) and is preceded by one maximal projection, which can be the subject (1a) or any other constituent XP (1b). If this first position is occupied by a non-subject constituent, the subject remains below the verb position. The verb cannot rise to the Complementizer Phrase (CP) when the second position is already occupied, for example by a complementizer. This is the case in subordinate clauses, in which the finite verb remains in final sentence position (1c), following the classical assumption that in German the Verbal Phrase (VP) and the Inflectional Phrase (IP) are head-final, which allows its classification as OV language. The OV structure is also visible in root clauses with complex verb forms, in which the finite verb moves to verb second, but the non-finite form remains in sentence final position (1a). Examples (from the database; see section 'Data collection'):

- (1) a. Ich **bin** in Portugal **geboren**.
I **am** in Portugal **born**
"I was born in Portugal."
b. Jetzt **bin** ich in der vierten Klasse in Porto.
now **am** I in the fourth grade in Porto
"Now I attend the fourth grade in Porto."
c. [...] weil er kein Haus **hat**.
because he no house **has**
"[...] because he has no house."

Portuguese word order

Being an SVO language, Portuguese does not exhibit verb-final, nor the V2 effect. In root sentences, the verb moves to the Tense Phrase (TP) and not to the CP-domain as in German. Furthermore, Portuguese allows left-adjunction to CP and IP. As a result, the sequence XPSV, which is ungrammatical in German, is grammatical in Portuguese.

Portuguese and German also differ significantly in subordinate clauses. In the former, the verb raises to TP also in embedded contexts, so that verb final is not a syntactic possibility. In complex verb constructions both forms, the finite and the non-finite verb, move out of the VP, resulting in SvVO sequences, which are ungrammatical in German.

Participants

A group of twenty second-generation emigrants, aged from seven to thirty-six years old (mean age 18.15), raised bilingually in Germany or Switzerland, participated in this study.³ All of them were born in the host country or moved there before the age of three. Three participants are still living in Germany, while the other seventeen "returned" to Portugal at a certain point in their lives. The most important criterion which distinguishes the participants is the age of return, ranging from age seven to fourteen (mean age of return 10.44). This variable allows the constitution of two main groups: CHILD RETURNEES, i.e., participants who came to Portugal up to the age of eleven (Group 1), and TEENAGE RETURNEES, who returned at/after the age of eleven (Group 2). Both groups are constituted by eight participants; the mean return age of the first group is 8.37 and of the second group 12.5. Additionally, a third group of four speakers functions as a control group. Three of these four participants (aged from six to eight) remain in Germany, while the fourth child, a ten-year-old boy, has been living in Portugal for only five months.

With respect to the type of bilingualism of the participants, they share an identical process of bilingual acquisition which can be classified as early successive bilingualism. The majority were primarily exposed to Portuguese, the home language. In only one case did the mother speak German to her daughter from birth. The first intensive contact with German started in kindergarten or with nannies, at about the age of three. By that time the German input increased and it became the dominant language, while the L1 was restricted to home and communication with adult emigrants.

The speakers' classification as early successive bilinguals takes us to the well-discussed question of

³ The participants have been given pseudonyms to protect their anonymity.

whether early successive children acquire their second language as an L1 or as an L2. This discussion is important for the present study, which requires determination of the participants' state of knowledge at the time of return. As Sorace (2004, p. 143) points out: "in order to determine the effects of attrition, it is essential to ascertain what speakers knew when the attrition process began, since by definition attrition can only affect what was within the speaker's knowledge." Therefore, clarification of whether speakers had acquired German syntax before they lost regular German input is essential in order to ensure that the observed syntactic instability can be interpreted as a consequence of lack of exposure rather than as a circumstance that had persisted since the onset of acquisition.

Within the research field of bilingualism, a large body of studies concentrates on investigating simultaneous bilingual acquisition. In this context, many authors agree that "2L1 represents an instance of multiple L1 acquisition, i.e. children are able to differentiate the two languages structurally and functionally from early on, they proceed through the same developmental sequences and they ultimately attain the same kind of grammatical knowledge as the respective monolinguals" (Meisel, 2007, p. 34). In contrast, it seems to be generally accepted that second language acquisition differs significantly from L1 acquisition, most researchers explaining this difference with some variant of the Critical Period Hypothesis. However, there is no consensus about the age limit between first and second language acquisition, nor about which linguistic features are vulnerable to biological maturation. The different age limits proposed in the literature range from three to fifteen years (for an overview see Hyltenstam & Abrahamsson, 2003), although more recent research has pointed to the age span between three and four years as being the critical phase (Meisel, 2007).

Meisel (2007) points out that not all grammatical areas develop in the same way. The syntactic domain appears to be less of a problem for successive bilingual children than morphology. In this regard, the early successive bilinguals studied by Rothweiler (2006) or Thoma and Tracy (2006) do not show difficulties in the acquisition of word order. Rothweiler's (2006) Turkish children, for example, acquired V2 and Vfinal in a quite similar way to L1 speakers, so she concludes that "early successive acquisition equals L1 acquisition, at least in connection with the relevant aspects in the acquisition of sentence structure" (p. 110). The speakers of the present study resemble Rothweiler's participants with regard to variables like the onset of exposure to German (at about the age of three). So, based on the results of the cited studies, the speakers are assumed to have acquired German syntax in a (near) native-like way and could be labelled as highly proficient speakers until the moment of return. In order to underscore this presupposition,

four children with identical acquisition backgrounds but who are still German-dominant (control group) are included.

Regarding the amount of contact these speakers maintain with their L2, in all cases the frequency of use decreased substantially after moving to Portugal. All informants said that they stopped speaking German in their daily life. Some lost German input completely, while others had irregular contact, for example through TV and the Internet. Although there is some variation among the speakers with regard to "amount of input", if we follow de Bot et al. (1991), who divide the frequency of use into "frequent" and "infrequent", we can classify all speakers of Groups 1 and 2 as INFREQUENT L2 users.

The length of stay in Portugal ranges from 2;01 to 23;00 years. Many authors believe that this is an important factor in language attrition and establish minimal baselines after which L1 attrition effects can occur. The most frequent proposal is the ten-year stay in the new linguistic environment. (Gürel, 2004, p. 60). However, this baseline is commonly assumed concerning adults. Among children, attrition effects emerge much earlier, as shown for example by Kaufman and Aronoff's (1991) and Tomiyama's (2000) attrition studies. Tomiyama (2000) investigated a Japanese boy who returned to Japan at the age of eight, after having lived in the United States for seven years. The author reports substantial changes in the syntactic and morphological competence of the child's L2 (English) twenty months after leaving the US. According to Kaufman and Aronoff (1991), the onset of attrition is set by the twelfth to the fifteenth month. In view of that, for Group 2 (the teenage returnees) a minimal length of stay of six years was defined, while for Group 1 (the child returnees) we assumed a minimal two-year period of lack of input, after which L2 attrition can potentially emerge. Consequently, Rui, the child who came to Portugal five months before the first recording session, is included in the control group. In his case the emergence of attrition is (still) not expected.

With regard to the age at recording, the participants of Group 2 are between eighteen and thirty-six years old. In the group of the younger returnees six participants are between seventeen and twenty-four years old. The two girls with the shortest length of stay are as young as eleven at the time of recording. Although the age of these two participants is significantly lower than the mean age of the other speakers, their inclusion in this study is essential, since it allows us to compare the emergence of attrition in two types of young returnees: in younger participants, who have lived in Portugal for two or three years, and in older participants who returned at similar ages but who have lived in Portugal for a longer period. A summary of the participants' ages when they moved to Portugal and the age at recording, as well as the length of stay in Portugal, is reported in Table 1.

Table 1. *Participants.*

	Participants	Age at return	Age at recording	Length of stay in Portugal
Group 1: <i>child returnees</i>	Eunice	7	17	9;09
	Helena	7	24	17;08
	Tiago	7	19	12;00
	Rita	8	11	2;11
	Iolanda	9	11	2;01
	Sofia	9	20	11;08
	Irene	10	18	7;00
	Sílvia	10	21	11;03
Group 2: <i>teenage returnees</i>	Carina	11	18	7;08
	Inês	12	34	22;00
	Alice	12	19	7;02
	Paula	12	21	9;09
	Júlia	13	36	23;00
	Bruna	13	20	6;07
	Anita	13	22	8;06
	Carlos	14	22	8;00
Control group	Rui	9	10	0;05
	Zé	–	6	<i>still in Germany</i>
	Celeste	–	7	<i>still in Germany</i>
	Ricardo	–	8	<i>still in Germany</i>

Data collection

The data are drawn from a database collected in the context of a larger research project on Portuguese–German bilingualism, which included recordings of sixty bilingual returnees. The main elicitation instruments were oral production tasks. The participants were recorded in two to three recording sessions. The interviewers were themselves bilingual speakers with a remigration background, which made it possible to perform the interviews as conversations between people who share similar experiences of emigration, bilingual acquisition and return. Thus, in order to elicit speech data which are as spontaneous as possible, in the first session the participants were asked to talk about themselves and about aspects such as language choice, identity and attitudes towards bilingualism. In the second session, the participants had to comment on pictures and compare their experiences in Portugal and in the host country with regard to themes such as education, poverty and pollution. Finally, in order to complement this more spontaneous oral production data with more controlled and homogeneous data, two story re-telling tasks were applied. The aim of these tasks was primarily to stimulate the use of fronted adverbs (like *dann* “then” or *später* “later”), requiring XPVS structures. In this paper, the German data of twenty participants will be presented and discussed.

Results

Taking the recording sessions together, the individual database of Group 1 has a mean length of approximately 150 sentences (range from 49 to 196 sentences). The participants who form Group 2 and who are more fluent in German produce an average of 235 sentences (range from 190 to 348 sentences). The average of sentences produced by the four children of the control group is about 210 (185 to 251 sentences).

At the beginning of the recordings the participants were asked to talk only in German, but they could switch to Portuguese when they had difficulties in finding the appropriate German word. The speakers followed this request most of the time. Switching occurred by introducing a Portuguese word in a German matrix language. For example:

- (2) Dann sie will finden ein **noivo**. (Irene)
 then she wants find a fiancé
 “Then she wants to find a fiancé.”

So, in addition to whole sentences produced in German, the calculation also includes this type of mixed sentence, in which at least verb and subject are produced in German. On the contrary, all V2 sentences with null subjects are excluded. Ungrammatical null subjects are very frequent

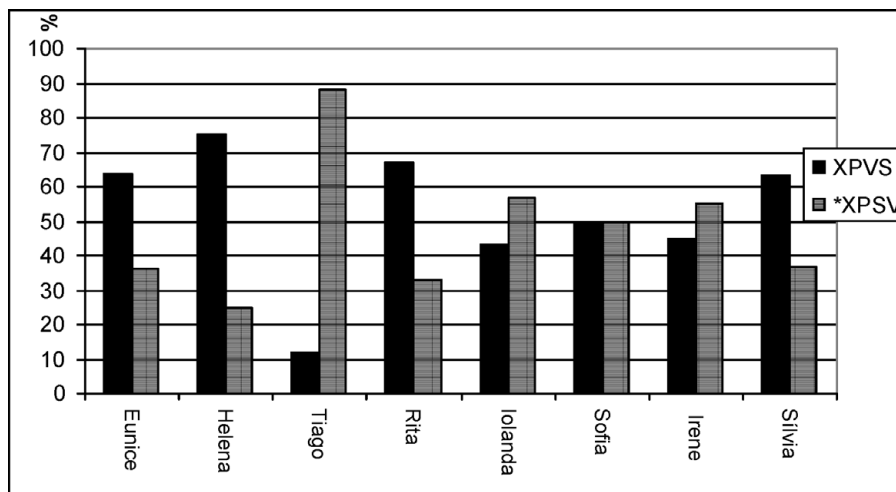


Figure 1. Group 1 (child returnees): XPVS – *XPSV production (in %).

in the L2 of these speakers, but the omission of the subject in root sentences makes it impossible to decide whether the verb is in grammatical second position or in ungrammatical third position.

V2

For the analysis of the correct/incorrect production of verb second, all sentences that do not start with the subject were counted. If V2 is correctly produced, the subject remains in the third position, after verb second (henceforward XPVS). On the contrary, the movement of the subject to a position to the left of the verb leads to ungrammatical V3 sentences (henceforward *XPSV). Figure 1 presents the results of Group 1.

It should be mentioned that the majority of the child returnees were accepted as participants in the study despite stating that they were unable to speak German because they had not used their L2 since their return. The cases of Eunice and Helena are particularly remarkable. Both girls returned at a very early age (seven) and stopped speaking their – until then dominant – L2 right after leaving the emigration country. Eunice had lived in Portugal for almost ten years and Helena for more than seventeen. Neither of them had contact with German in their academic or professional lives. Both were convinced that they were not able to communicate in German any longer but, much to their surprise, in the course of the initial interview the switch to German happened quickly and it was possible to record them in their L2.

Consequently, the first interesting aspect the data show is the fact that the majority of the participants insisted they would not be able to speak German any more, but once they began using their L2 they automatically constructed VS sequences. Indeed, all participants were able to produce XPVS sentences (3).

- (3) In Portugal will ich Deutsch lerne. (Helena)
 In Portugal want I German learn.
 “In Portugal I wanted to learn German.”

However, as Figure 1 indicates, these speakers also produce ungrammatical *XPSV sentences, with two elements to the left of the verb. The most frequent element in first position is an Adverbial Phrase (AdvP), as in example (4a), but deviant V3 structures also occur with a topicalized object, resulting in *OSV sequences (4b), or with embedded sentences in the prefield position.

- (4) a. *Jetzt sie heiraten. (Rita)
 now they marry
 “Now they marry.”
 b. *das ich sagte a paar Mal (Silvia)
 that I said sometimes
 “I said it sometimes.”

The data show a high degree of variation among the participants with regard to V2 (Deviations range from 25% to 88%). Three speakers, Iolanda, Tiago and Irene, produce more deviant structures than correct XPVS sentences; Sofia produces the same number of correct and incorrect structures, while Helena, Eunice, Rita and Silvia produce V2 more often correctly than incorrectly.⁴ Table 2 shows the raw counts of the study.

⁴ Eunice, Sofia, Silvia (Group 1) and Carina, Alice, Paula (Group 2) grew up in the German part of Switzerland, while the other participants have lived in Germany. The possibility that Swiss German might be a further variable which influences the results can be excluded. The results show no differences between the Swiss and the German participants with regard to the grammatical properties under investigation.

Table 2. Raw counts – grammatical XPVS, Vfinal and SvXPV structures.

	Participants	XPVS / Total of VS-contexts	Vfinal / Total of embedded clauses	SvXPV / Total of complex verbs
Group 1: <i>child returnees</i>	Eunice	7/11	4/9	10/14
	Helena	9/12	0/4	3/9
	Tiago	3/26	6/6	5/5
	Rita	39/58	3/13	13/24
	Iolanda	20/47	28/30	41/43
	Sofia	14/28	9/19	10/10
	Irene	23/51	2/9	2/4
	Sílvia	31/49	34/37	35/35
Group 2: <i>teenage returnees</i>	Carina	41/44	35/35	36/36
	Inês	67/71	40/42	40/41
	Alice	52/53	27/28	25/25
	Paula	63/64	31/31	74/74
	Júlia	37/37	16/17	43/43
	Bruna	40/40	24/24	18/18
	Anita	27/27	17/17	12/12
	Carlos	87/89	59/59	73/73
Control group	Rui	42/42	20/20	26/26
	Zé	25/25	13/13	38/38
	Celeste	32/32	24/24	36/36
	Ricardo	40/40	35/35	46/46

Eunice and Helena were the two participants who had the most difficulties in activating their L2. They provided many one-word answers, especially at the beginning of the recordings. Consequently they produced fewer VS contexts. Nevertheless, both speakers produced more correct VS sequences than incorrect *XPSV structures.

Another case that is worthy of our attention is that of Iolanda, the girl with the lowest length of stay in Portugal (2;01). Actually, Iolanda is the only participant who was raised bilingually from birth. Her mother, a second-generation migrant, used German as the favoured language in communication with her two daughters while the family lived in Germany. Iolanda's parents reported that German was without doubt her dominant language before moving to Portugal. However, as the results in Figure 1 and Table 2 illustrate, the fact that this girl had been exposed to German since birth does not reflect any advantage in language retention. Almost two years after having broken contact with German, rising optionality is what characterizes her grammatical knowledge, at least concerning verb second. She produces more incorrect *XPSV sentences than grammatical V2 sequences.

Let us compare the results of Group 2, the participants who moved to Portugal during adolescence. Figure 2 shows the percentage of grammatical and deviant V2 sentences.

In Group 2 the percentage of deviant V2 structures is insignificant: three participants did not make any V2 errors, while in other cases the percentage of errors ranges between 1.6% and 6.8% (see also Table 2).

Figure 3 shows the comparison between the two groups with regard to V2 production. Since the data are not normally distributed, a Mann-Whitney test was applied. The results reveal that the two groups differ significantly in terms of correct V2 production: the teenagers' rates are significantly higher than those of the children ($U = -3.371, p = .001$).

Furthermore, the Mann-Whitney test shows that the results obtained by the teenage returnees do not differ significantly from those by the control group ($Z = -1.894, p = .058$). The children who remain in Germany or who moved to Portugal recently (the case of Rui) show full competence with regard to verb second. None of the four children made any V2 mistakes (see Table 2).

OV

The analysis of the OV parameter is based on two types of contexts: (1) subordinate clauses introduced by a complementizer (with exception of *weil*);⁵ and (2)

⁵ Native German speakers use both V2 and Vfinal in subordinate clauses introduced with *weil*. It is claimed to be a feature of spoken German, guided by discourse-pragmatic conditions.

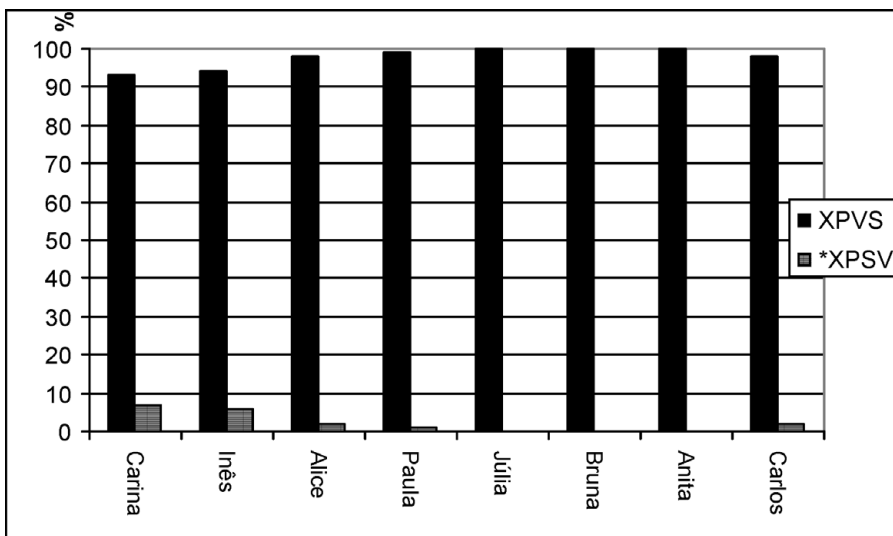


Figure 2. Group 2 (teenage returnees): XPVS – *XPSV production (in %).

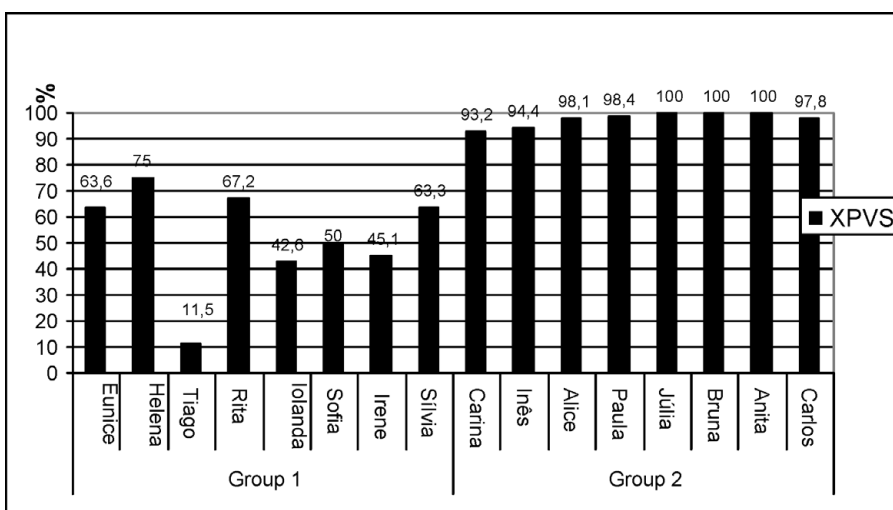


Figure 3. Groups 1 and 2: accurate V2 structures (in %).

complex verb forms. With respect to the first context, the speaker demonstrates solid knowledge of OV when he/she produces embedded clauses with verb-final placement. Variation with regard to OV is shown if the verb does not remain in verb-final position, but moves to a position after the subject (a higher projection). This deviant structure is marked as *Vnfinal. The same pattern can be observed concerning complex verb structures: according to the correct option, in main clauses, the finite verb moves to V2, while the non-finite verb stays within VP in sentence-final position (SvXPV). On the other hand, if the non-finite verb form moves together with the finite one to V2, OV is not correctly produced, leading to the deviant structure *SvVXP. The results of Group 1 for both OV contexts are given in Figure 4.

Regarding the verb-final position in embedded clauses, the results resemble the V2 analysis. With the exception

of Helena, all other child returnees demonstrate that they are aware of the verb-final position, since they produce subordinate clauses with correct verb-final placement. Examples from the database:

- (5) a. Ich hoffe, dass es positiv **ist**. (Eunice)
I hope that it positive is
“I hope that it is positive.”
- b. Als ich nicht in der Schweiz
if I not in Switzerland
geboren **hätte**, vielleicht ... (Sílvia)
born was
“If I wasn’t born in Switzerland, probably ...”

However, with the exception of Tiago, all other speakers of Group 1 also produce the ungrammatical word order with the verb following the subject, as in (6).

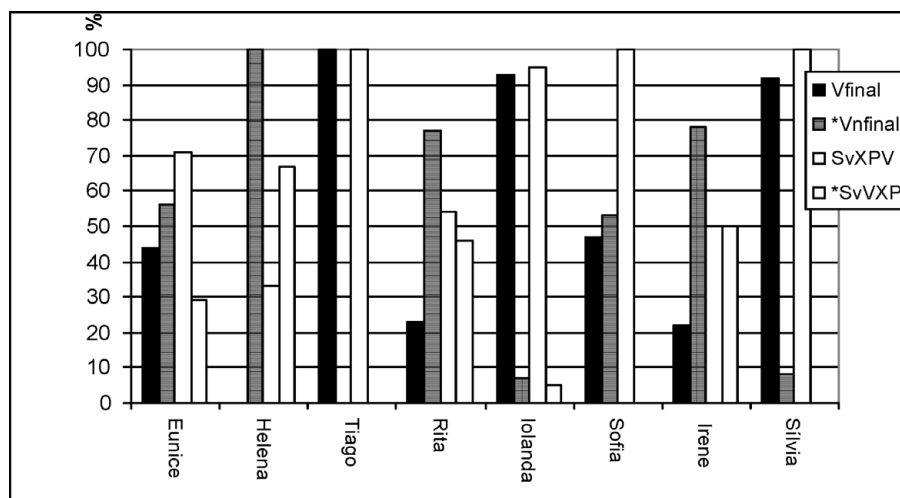


Figure 4. Group 1 (child returnees): Vfinal/*Vnfinal and SvXPV/* SvVXP production (in %).

- (6) a. (Ich glaube schon,) *dass portugiese Ärzte
that Portuguese doctors
sind gut. (Eunice)
are good
“(I think) that Portuguese doctors are good.”
- b. *... damit sie **kann** essen. (Rita)
so that she can eat
“... in order to be able to eat.”

Eunice's examples (5a, 6a) show that the correct/incorrect placement of the finite verb does not depend on the type of subordinate clause or the class of complementizer that introduces the sentence. The participant produces both grammatical and ungrammatical completive sentences introduced by *dass*. The same can be observed in the data of the other participants.

The performance of Group 1 is slightly better regarding the realization of complex verb forms (see Figure 4). In this domain, three speakers do not make verb position mistakes at all and one participant has 95.3% correct performance. In the other cases, the results resemble the previously discussed properties. The speakers produce both forms: grammatical SvXPV sentences (7) and ungrammatical *SvVXP sequences (8).

- (7) Ich **kann** nicht so gut **sprechen**. (Rita)
I can not very good speak
“I can't speak (it) very well.”
- (8) *Ich **wollte haben** Deutsch. (Helena)
I wanted have German
“I wanted to learn German.”

Once again, the performance of Group 2 contrasts with the results of Group 1. As Figure 5 demonstrates, the majority of the participants do not make verb-final mistakes at all and those speakers who make *Vnfinal

and *SvVXP mistakes present a low rate of deviations (about 5%).

The results of the control group (see Table 2) are very clear. None of the four interviewed children make verb placement mistakes concerning OV.

If we compare the performance of the three groups, we see significant differences between the rates of accurate Vfinal and SvXPV items: the rates in the two conditions are significantly lower for the child returnees than for the teenage returnees (Vfinal: $Z = -2.858, p = .004$; SvXPV: $Z = -2.233, p = .026$). No significant difference was found between the rates presented by the teenage returnees and the control group (Vfinal: $Z = -1.338, p = .181$; SvXPV: $Z = -.707, p = .480$).

The averages of deviations of the three groups (Figure 6) show a significant contrast between the control group and Group 2 on the one hand, and Group 1 on the other hand, regarding the three analyzed contexts. Concerning V2 and the verb-final position in subordinate clauses, the average of mistakes of Group 1 is about 50%. With respect to the complex verb forms, the verb is incorrectly placed in one-quarter of the contexts. In Group 2, the average of deviations is lower than 2%, while it is 0% in the control group.

Discussion

Overall, the data attest to significant differences between the participants who came to Portugal in early childhood and those who returned as adolescents, which seems to corroborate the influence of the age factor on language attrition. As predicted, the speakers who have lost contact with German during their teenage years do not show difficulties with regard to verb placement, even if the lack of input has lasted for a long time. Thus, the loss of input during this age span seems to have the same consequences

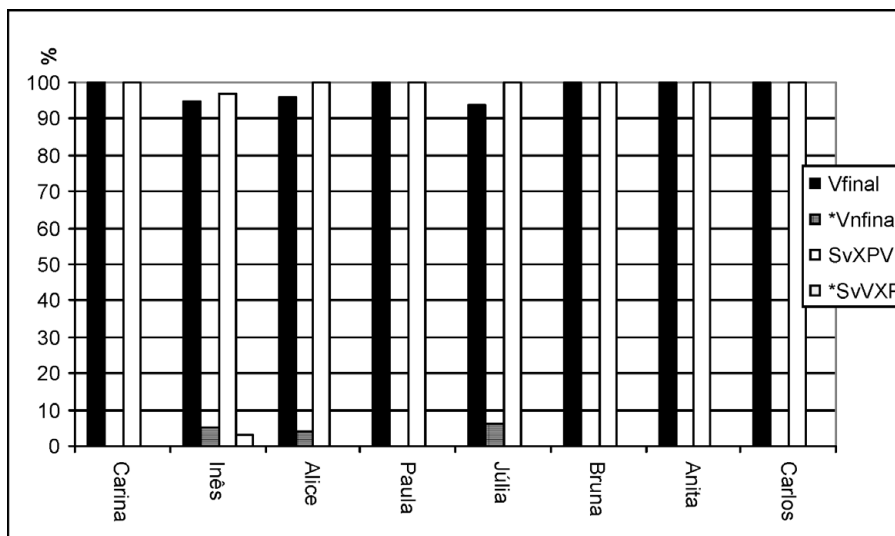


Figure 5. Group 2 (teenage returnees): Vfinal/*Vnfinal and SvXPV/* SvVXP production (in %).

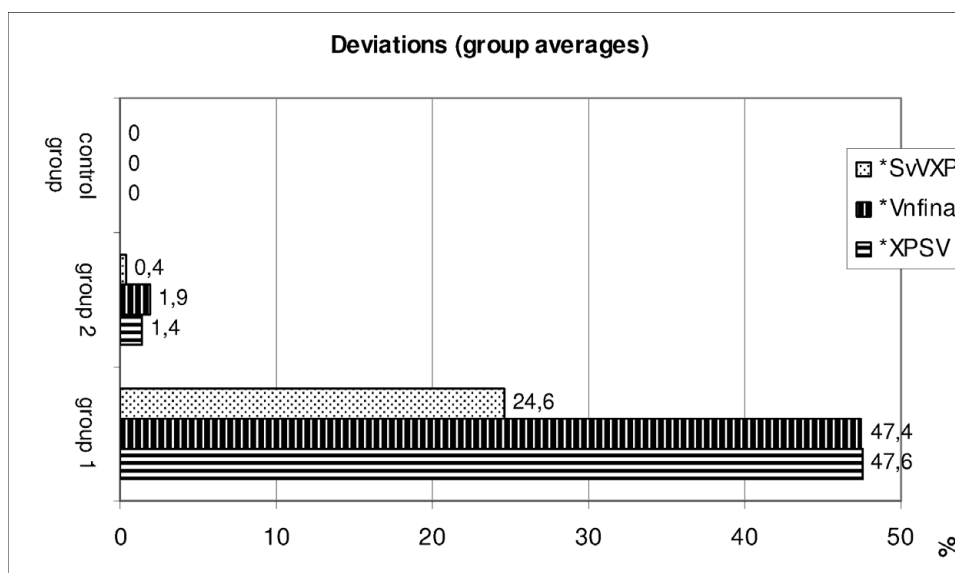


Figure 6. Average of deviations (*XPSV, *Vnfinal/*SvVXP) in the three groups.

as in adults: at least narrow syntax properties, like verb placement, are only marginally affected. On the contrary, the loss of regular input before the age of eleven seems to drastically influence the language proficiency of bilingual speakers. The cross-sectional comparison makes it clear that the period around the age of eleven represents a critical phase for language development. None of the participants who were older than eleven years when they left the dominant German environment show significant verb placement deviations. In contrast, all participants who were younger than eleven at the moment of return show a high degree of variation concerning verb placement. As such, the present study confirms the cut-off point of ten to twelve which has been

proposed in some attrition studies. Thus, there might be a close relationship between the onset of puberty and the stabilization of acquired parameters. Of course, human behavioural patterns diverge with respect to the onset of puberty. Consequently, instead of pointing out one specific age as a cut-off limit, it is more appropriate to suggest an age span of two to three years for such a critical phase. The control group supports the prediction that second generation children who acquire their L2 in an early successive context achieve native-like syntactic knowledge. All four children have 100% correct performance regarding verb placement. This fact demonstrates that, in the age span between six and ten years, early successive bilingual children had already

acquired verb placement, as shown in other L2 acquisition studies. The hypothesis of an incomplete acquisition of German can be excluded in the case of our participants.

However, the performance of the child returnees bears further examination. Although the percentage of verb placement mistakes is very high in this group of speakers, it would be wrong to state that they have lost their syntactic knowledge. Although to different degrees, all speakers were able to produce sentences with grammatical word order. Some participants feared they would not be able to say a single sentence in their L2. But when they started to produce German sentences, their grammatical knowledge was activated and they produced correct V2 and OV constructions. This fact proves that these speakers maintained their grammatical knowledge concerning verb placement. Nevertheless, they also produced ungrammatical sentences. This double-sided performance indicates that although the aforementioned parameters appear not to have been lost, the speakers demonstrate high instability with regard to their realization. Hence, it is imperative to look at this unstable knowledge, analyzing, for example, if there are systematic attrition patterns within the group of child returnees.

The results are very clear in relation to this issue: the participants show a high degree of variation concerning the realization of the verb placement constraints, so that it is not possible to define a regression process that affects all speakers in the same way. With regard to V2, some speakers, like Tiago or Iolanda, exhibit a high percentage of deviations (more than 50%), while others (e.g., Rita) produce significantly more correct V2 sentences than incorrect *V3 structures. However, if we look at the production of Vfinal in subordinate clauses, the results are precisely the reverse. Tiago does not make any Vfinal mistakes and Iolanda presents a deviation rate of 6.7%, while Helena is not able to apply Vfinal in any embedded clause and Rita does it in 23.1% of the possible contexts. In sum, some speakers have a better performance with regard to V2, and others concerning OV. So it is not possible to state that in general terms the speakers have more difficulties with one grammatical aspect than with the other.

Similarly, the result relating to just the OV parameter confirms the non-existence of regularity in the observed attrition processes. Some speakers demonstrate many difficulties in realizing verb-final in subordinate clauses but have an almost perfect performance in complex verb constructions, where the non-finite verb remains in sentence-final position. This fact provides evidence for the assumption that the observed verb placement mistakes are not the result of systematic knowledge loss. Were it so, speakers who lost the OV parameter would be expected to make mistakes in both contexts.

Rejecting the hypothesis of systematic parameter loss, one possible explanation for the results presented

above can be found within the psycholinguistic frameworks regarding language activation and inhibition. The performance of the child returnees indicates that the speakers know these particular verb placement constraints, but they are seemingly unable to activate this knowledge continually. The activation difficulties can be explained as the result of long-term lack of stimulation, as proposed by Paradis (2004, p. 28). The psycholinguistic explanation of attrition as a process of insufficient activation of the required linguistic properties also accounts for the variability observed within the group of pre-pubescent returnees. As Paradis (2007) points out, the capacity to activate a disused language depends on a range of factors, such as motivation and affect, or the type and amount of input that the speaker continues to receive from the attrited language. Schmid's (2002) study, for example, shows how important the emotional side is. A speaker who emotionally rejects his/her L1 or L2 will not be motivated to activate it. On the other hand, Bylund, Abrahamsson and Hyltenstam (in press) highlight the effects of language aptitude in pre-pubescent attrition. They demonstrate that attriters with an above-average degree of aptitude tend to exhibit more native-like linguistic knowledge than speakers with a below-average degree of aptitude.

Factors such as language aptitude and motivation were not controlled in our study. In the interviews some returnees expressed sorrow about the loss of contact with German, while others were indifferent to this. Thus, without a doubt, the emotional investment varies from speaker to speaker. Since studies on language aptitude confirm that people vary in their (innate) talent to acquire and process language structures, this factor may influence the performance of our participants as well. There might also be some variation with regard to the amount and type of German input. We defined the amount of L2 input as infrequent; however the scale of infrequent input goes from COMPLETE ABSENCE to RARE INPUT. Some speakers continued to watch German TV after their return, whereas others said that they did not like German programmes. Some participants had cousins and friends in the emigration country who visited Portugal on holiday, which could also be a source of German input. We cannot exclude that these (apparently insignificant) differences influence the attested variability to some degree.

Hence, while the age of return seems to be a decisive factor leading to unstable linguistic competence, expressed in activation difficulties, the degree of activation is influenced by other extralinguistic factors. Further studies are required in order to explore the role of these variables in language attrition.

Another question that has to be discussed is the role of L1 transfer. Portuguese does not exhibit V2 and Vfinal, so the deviant German structures which the speakers produce would be grammatical in Portuguese. Thus one

possible explanation for the attested deviations is the hypothesis of cross-linguistic influence from the L1 into the L2. There is, indeed, convincing evidence from a large number of studies that transfer plays a central role in language attrition (e.g., Gürel, 2004; Montrul, 2004). The prediction of L1 interference is also consistent with the psycholinguistic hypothesis of activation mechanisms that control the access to the L1/L2. According to the Activation Threshold Hypothesis, more frequently used items in one language will influence their processing in the other (less used) one, leading to dynamic interference (Paradis, 2007, p. 125). Thus it is possible that, in contexts in which the speakers are not able to activate the German verb placement constraints, they rely on the rule system of their dominant language, Portuguese.

However, the tendency to replace V2 with SVO and OV with VO could also be explained as an instance of “unmarking of marked parameters”. Håkansson (1995), for example, has discussed the hypothesis that language attrition might involve the resetting of marked parameters to unmarked parametric values. Some authors claim that V2 is a marked feature compared to SVO (e.g., Platzack, 1996), so that the loss of markedness would lead to the replacement of V2 by SVO. Some support is given to this hypothesis by studies of German and Swedish children with SLI (Håkansson & Nettelblatt, 1993) who exhibit problems with verb second. Also psycholinguistic studies on language processing support the idea that some word order patterns are more marked than others. Clahsen, Weyerts, Penke, Münte and Heinze (2002), for instance, show that VO is easier to process than OV. The native speakers of German they analyzed have a preference for processing finite verbs in a position immediately after the subject and before the object, rather than at the end of the sentence.

Consequently, the emerging optionality that we observed in the speech of the child returnees could also be explained in terms of the neutralization of marked structures: V2 and OV seem to be more marked and more difficult to process than the alternative options.

Since it is not possible to unequivocally say which of the two explanations is the most appropriate one, it seems reasonable to admit that both processes might influence language attrition: the loss of marked word order, verb second and verb final, might be reinforced by the absence of these structures in the dominant language.

What appears to be intriguing is that long-term lack of German input also affects the speakers of Group 2. Some of them have been living in Portugal for more than twenty years, having had reduced contact with German, but none of them exhibit the degree of difficulties described in Group 1. This fact supports the prediction of a stabilization phase which follows the acquisition period and appears to end at about the age of eleven. During this phase, the acquired knowledge seems to settle in

the speaker’s mind. After its complete stabilization, verb order parameters, i.e., features of narrow syntax, appear to be no longer susceptible to input loss. On the contrary, knowledge not yet fully established seems to remain vulnerable to activation difficulties. As a result, a high level of variation is what characterizes the performance of the child returnees. They continuously switch between the correct use of V2 and OV and their ungrammatical counterparts.

A further argument in favour of a stabilization period during which the acquired knowledge has to stabilize in order to become impervious to attrition is the absence of a close relationship between the length of stay in Portugal and the degree of observed variation in Group 1. A longer length of stay does not necessarily accompany a higher degree of syntactic deviations. *Silvia*, for example, has lived in Portugal for more than eleven years but, with regards to OV, she performed better than *Rita*, who returned only three years earlier. *Helena* is the participant of Group 1 who has lived the longest in Portugal (seventeen years). She is also the speaker with most lexical retrieval difficulties. Nonetheless, concerning V2, she is able to produce correct sentences. On the other hand, *Iolanda*, the girl with the shortest length of stay, produces 57.4% of V2 deviations two years after leaving the dominant German environment. This indicates that ongoing changes in language development happen in the first years of input loss, i.e., during childhood, non-established language becomes vulnerable. However, we do not observe an increase of vulnerability in the course of further development. So, the attrition phenomena do not seem to be the result of a systematic regression process which starts after input loss and increases with time, but the consequence of changes that occurred during the critical stabilization period. If the knowledge is not completely established, the speaker will have difficulty in controlling it, irrespective of the length of time he has not used his L2.

Conclusion

This study has investigated the occurrence of syntactic attrition in the German of Portuguese–German bilinguals who have experienced discontinued contact with their L2 German. The reinforcement of the importance of the age factor in language loss situations can be seen as a further contribution to the current debate on the maturational constraints of language development. On the one hand, a large body of studies on L2 acquisition has attested to the influence of age on language acquisition, showing that there are optimal periods during which the different aspects of language are optimally acquired. On the other hand, investigation in the domain of child attrition underlines the vulnerability of the children’s

linguistic competence and their susceptibility to cross-linguistic influence.

Both research fields give ample converging evidence for age-related, maturation-constrained development of our language faculty. The compound picture which emerges shows that after passing through optimal periods for language acquisition, the capacity to learn new languages in a native-like way decreases. In parallel, this sensitivity also leads to a greater predisposition of language loss during the critical time span. If younger children are better L2 learners due to maturational constraints, it is assumed that they are also more likely to forget their L1 (Köpke, 2004, p. 9). The prediction which results from this picture is that acquired knowledge needs to stabilize over time in order to become less vulnerable to language attrition.

The present study supports this prediction by showing that grammatical knowledge is more likely to suffer from attrition if the speaker loses contact with a language before the age of eleven. Furthermore, it has shown that the vulnerability which results from unstable competence seems to affect the speaker's ability to control his knowledge rather than the representation of grammatical knowledge itself.

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