

# Age of onset, socio-affect and cross-linguistic influence: a long-term classroom study

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## Abstract

In this longitudinal study, undertaken in Switzerland between 2008 and 2015, we home in on the interaction of starting age for English with the role of knowledge of other languages (German and French) in an array of oral and written tasks. Using longitudinal data from the same student cohort (200 learners) over a period of five years has made it possible to examine in real time and in a thorough and detailed manner (1) the impact of onset variables on the amount of cross-linguistic influence over the course of secondary school as well as on the type of transfer material, (2) transfer effects in areas of language knowledge and acquisition where transfer has previously been claimed not to occur, or to be relatively rare (e.g. inflectional morpheme transfer from the native and the additional foreign language), and (3) the sources of cross-linguistic influences, such as socio-affective factors. The results highlight the effects of target language proficiency, metalinguistic awareness and contextual factors (e.g. class effects, teaching practices and class size).

**Keywords:** Age factor, crosslinguistic influence, lexical transfer, metalinguistic awareness, context variables

## Zusammenfassung

In dieser Langzeitstudie, die zwischen 2008 und 2015 in der Schweiz durchgeführt wurde, konzentrieren wir uns auf die Interaktion von Alter zu Lernbeginn der Fremdsprache Englisch und anderen Sprachkenntnissen (Deutsch und Französisch) in einer Reihe von mündlichen und schriftlichen Tests. Anhand von erhobenen Langzeitergebnissen mit einer Gruppe von 200 Lernenden in einem Zeitraum von fünf Jahren konnten einerseits die Auswirkungen eines frühen Lernbeginns auf die Quantität und Qualität von Spracheneinflüssen und Transfer (inklusive

Transferwirkungen in Bereichen von Sprachgebrauch und -erwerb, in denen bisher wenig bis gar kein Transfer dokumentiert wurde) und andererseits der Ursprung von Spracheinflüssen (z.B. sozio-emotionale Faktoren) detailliert beobachtet und analysiert werden. Die Resultate beleuchten die Einflussfunktion des Leistungsstandes in der Zielsprache, der metalinguistischen Bewusstheit und von kontextuellen Aspekten, wie z.B. Klassengröße und pädagogische Praxis).

**Stichworte:** Altersfaktor, Spracheinflüsse, lexikalischer Transfer, metalinguistische Bewusstheit, Kontext

## 1. Introduction

The aim of the present study is to home in on the interaction of age with the role of knowledge of other languages – a topic that has been sorely neglected in the literature despite large bodies of research on language transfer and on the age factor in language learning and multilingualism – in an array of oral and written tasks completed by the same student cohort of 200 Swiss learners of English as a foreign language (EFL) over a period of five years. The following areas of interest lie at the heart of this article: the short- and long-term effects of an early start on cross-linguistic influence; the roles of the L1 and the L2 in L3 acquisition; and the role of target language (TL) proficiency in the acquisition of lexico-semantics and morpho-syntax. In order to explore the causes of and constraints on transfer, particular emphasis will be placed on the discovery of transfer effects in areas of language knowledge and acquisition where transfer has previously been claimed not to occur, or to be relatively rare, such as transfer involving overt inflectional morphology. Furthermore, since there are many circumstances beyond biological age, age of onset (AO) and TL proficiency that have an impact on the learning process in general and cross-linguistic influences and associations in particular, we will also have a closer look at perceived and assumed proximity between source and target language and metalinguistic awareness, as well as the influence of the learning environment (e.g. class size and the influence of teaching practices). Three specific research questions will be addressed in this chapter:

Is cross-linguistic influence (i.e. transfer from (Swiss)German and the intervention of French as an additional FL) affected by AO throughout secondary school?

What other age-related factors predict the quantity and quality of transfer?

To what extent are learners with different AOs aware of crosslinguistic phenomena and able to exploit cross-linguistic associations in the learning process?

In answering these questions, we attempt to discover as much as possible about the domains of language use in which transfer can occur, under which conditions (early vs. late start, larger vs. smaller groups) it will occur, how it will manifest itself, and which other factors it interacts with and what their specific effects on transfer are. Exploring these factors is worthwhile, since such an investigation can add to our understanding of the learner's apprehension and development of the third language (L3) system and contribute to the discussion of the advantages or disadvantages of an early start. This has important implications for multilingual countries such as Switzerland, where learning three or more languages has become a reality for primary as well as secondary school students. In order to be able to present solutions and show new perspectives, it is vital to first identify the factors that do not work in young learners' favor and prevent them from profiting from their extended learning period, as well as to understand the mechanisms that provide late starters with the well-documented kick start, i.e. the significantly faster learning rate compared to early starters (see Muñoz & Singleton, 2011; Singleton & Ryan, 2004).

A few words are in order about the languages involved in this study (Swiss German, Standard German, French and English). In light of the close linguistic relatedness of Swiss German and High German with regard to the constructions under investigation in this paper it seems justified to regard Swiss German as a dialectal variety of German as the students' L1 rather than the first foreign language (L2) learnt at school. While German and English belong to the family of Germanic languages, French is a Romance language. Yet, the effects of similarities between French and English cannot be underestimated because of the similarities they present in the area of lexis: English is a Germanic language with a significant amount of lexis of Latin and French origin. Furthermore, German and English show essential typological differences as regards syntax and, to a certain extent, morphology (see Hopp, 2005; Pfenninger, 2011). There are also different degrees of orthographic consistency in German and English, English displaying a so-called deep orthography, which is characterized by a relatively high number of irregular and exceptional spellings that cannot be readily decoded via phoneme-grapheme translation. German does not have perfect one-to-one grapheme-phoneme correspondences either, but is much more on the shallow side of the continuum of orthographic consistency (Landerl, 1997).

## 2. Literature review

When tying cross-linguistic influence to age (a relatively rare undertaking), researchers have brought forward various hypotheses, some of which, in fact, have nothing to do with age or maturation per se. Traditionally, in naturalistic studies, there has been a general consensus that transfer is more pronounced in older learners

than younger learners (e.g. Ullman, 2005). Consider, for instance, Bialystok and Miller's (1999) claim for an asymmetry in L1 effects in circumstances in which the L2 has a morphosyntactic category not found in the L1: "Younger learners should readily construct the new L2 category, whereas older learners should have limited success at best" (130). They explain this in terms of "language learning mechanisms" that older learners do not have access to. It has also been suggested that older starters are more susceptible to (particularly lexical) transfer, since they have weaker lexical access ability and vocabulary knowledge than younger starters (see e.g. McDonald & Roussel, 2010). According to an alternative view, age of L2 acquisition predicts discrimination difficulty insofar as older learners tend to have had more L1 experience and thus more opportunity to develop refined and stabilized L1 representations that are neurally committed to L1 processing (Kuhl et al., 2003). Referring to Hernandez et al. (2005), White et al. (2013) suggest that these stabilized L1 representations then compete with the formation of L2-specific representations, making L2 learning more difficult, possibly leading to more phonological and morphosyntactic transfer. In one of the first studies to explicitly target the relationship between age and language transfer, Cenoz (2001) analysed how the transfer tendencies of 90 Basque-Spanish bilingual learners of English aged 7 to 14 (grade levels 2, 6, 9) changed as a function of their age. She attributed the older children's more extensive transfer of Spanish elements into English to their higher metalinguistic awareness of the typological relatedness between English and Spanish (as opposed to Basque).

However, not all linguistic structures and forms seem equally susceptible to age effects. On the basis of results obtained from grammaticality judgment tests, DeKeyser (2000) and McDonald (2000) found that some domains of morpho-syntax seem to be resistant to age effects, notably basic word order and yes/no questions. DeKeyser, Alf-Shabtay and Ravid (2010) suggest that if the L1 and the L2 are "relatively closely related" (432), the decline as a function of age in learners below the age of 18 is less marked than if the two languages are not related.

This leads us to the question as to what linguistic aspects are affected by transfer in general. A common suggestion is that lexis is especially susceptible to cross-linguistic influence (e.g. Arabski, 2006; Bouvy, 2000; Kellerman, 1984; Ringbom, 1987). Myriad studies (e.g. Celaya & Torras, 2001; Celaya & Ruiz de Zarobe, 2009; Dewaele, 1998; Manchón Ruiz, 2001) have propounded that lack of vocabulary in the L2, incomplete word knowledge, non-automatized and therefore not available lexical knowledge, or a cognitively too demanding communicative task are all situations that make the learner replace L2 words by L1 ones, be it either consciously or unconsciously. By contrast, not much available empirical evidence supports a role for transfer in English morphology acquisition. Particularly with respect to overt inflectional morphology, it is often suggested in the transfer literature that bound morphemes tend not to transfer

from one language to another. Eubank et al. (1997), for instance, claim that “overt inflectional morphology generally does not transfer from [L1] to L2” (p. 176). Jarvis (2015) finds their claim surprising given that prior research has shown that bound, overt inflectional morphology – even morphemes representing functional heads such as past tense and plural markers – do indeed transfer, and that such transfer is not at all rare when the source and the target language are closely related, as for example Czech and Russian are (see Selinker & Lakshamanan, 1992). More recent research has unambiguously confirmed this finding with other combinations of closely related languages, such as Spanish and Italian (see De Angelis & Selinker, 2001), Spanish, French, and Italian (see De Angelis, 2005), and Estonian and Finnish (see Kaivapalu & Martin, 2007). Some other convincing evidence of inflectional transfer can be found in Bouvy (2000), Hammarberg (2001) and Jarvis and Odlin (2000). However, inflectional transfer between languages that do not have similar inflectional systems has rarely been reported.

It is important to mention that the effect of age on cross-linguistic influence is often confounded with length of exposure to the TL and thus proficiency level. In most of the above-mentioned age studies, the early starting age group represents the high-competence group due to their higher TL exposure compared to control group(s). If length of exposure is controlled for, a common observation is that younger beginners – usually low-proficiency learners – produce more L1-influenced errors, whereas older, high-proficiency beginners tend to display more target-oriented language (e.g. Celaya & Navés, 2009; Celaya & Ruiz de Zarobe, 2008; Navés et al., 2005), although the opposite has also been found (e.g. Sanz, 2000). It is not, however, that the L1 ceases to play a role in EFL writing with increased cognitive maturity and linguistic expertise. Rather, the evidence suggests that at higher levels of proficiency and cognitive maturity, the L1 is less often used for compensatory purposes or to generate more text and instead begins to serve as a mediational tool for the purposes of enabling higher-quality planning, revising and monitoring processes.

What is also noteworthy in the discussion of proficiency as a potential factor influencing transfer is that both source language proficiency and TL proficiency seem to play a decisive role. For instance, some researchers (e.g. De Angelis & Selinker, 2001; Dewaele, 1998; Ringbom, 2001) caution that no L3 forms are borrowed from the L2 unless L2 proficiency is high, particularly if the L1 is perceived as being more similar to the L3 than the L2 is. The learners’ proficiency level in the TL has also been observed to have an influence on the amount of transfer in which they engage (e.g. Ringbom, 1987; Tremblay, 2006; Williams & Hammarberg, 1998), and the less proficient learners have generally been reported to transfer more elements from their background languages than the more proficient learners (e.g. Muñoz, 2007; Navés et al., 2005; Poulisse, 1990; Ringbom, 1987). Yet other scholars suggest that while low-

competence learners seem to draw more on the L1, this difference appears only when the more direct type of transfer is considered; i.e. low-competence learners mainly use L1 words without any modification to cover their lexical gaps (Agustín Llach, 2011). High-proficiency learners, by contrast, have been found to draw on the L1 more than low-competence learners in lexical inventions, that is, in the process which combines L1 and L2 knowledge (lexical creations and calques, see examples below).

It needs to be borne in mind, however, that the relationship between transfer – particularly lexical transfer – and TL proficiency is complex. While there is no doubt that proficiency has a strong effect on language transfer, recent accounts of transfer (see e.g. Jarvis, 2015) emphasize that transfer effects do not steadily decrease over time. In some areas, they may fluctuate and even increase with advancing TL proficiency (see also Agustín Llach, 2010; Odlin, 1989).

Finally, a few words are in order concerning typology as a factor influencing transfer. Several studies propose that typology is a crucial factor in the choice of transfer source, i.e., the more typologically proximate the source language is to the target language the more likely it is to be transferred (e.g. Bardel & Falk, 2007; Cenoz, 1997, 2001). One possible conclusion from this is that L1 (Swiss) German is more likely to be transferred into L3 English than L2 French. However, as was pointed out above, even though English is a Germanic language in terms of its basic lexis, it shares few similarities with other the Germanic languages at the morpho-syntactic level. This cautions us to be aware of the complexity of the discussion about the influence of typological similarity between the languages involved. Furthermore, German and English are in a superset/subset relationship as concerns morphology: since the English morphological system represents a subset of the German morphological system, little transfer is predicted according to the Subset Principle (Gass & Selinker, 2008: 178).

While typology has proven highly relevant in research on cross-linguistic influence, several authors (e.g. Kellerman, 1979; Singleton, 1987, 2003) argue that it is psychotypology, rather than typology as such, that determines the learner's willingness to transfer formal and semantic aspects of a language. Psychotypology is a learner's individual estimation of the distance between two languages. Jarvis and Pavlenko (2008) make a distinction between perceived and assumed similarity, suggesting that a perceived similarity "is a conscious or unconscious judgment that a form, structure, meaning, function or pattern that an L2 user has encountered in the input of the recipient language is similar to a corresponding feature in the source language" (179). An assumed similarity, on the other hand, "is a conscious or unconscious hypothesis that a form, structure, meaning, function or pattern that exists in the source language has a counterpart in the recipient language, regardless of whether the L2 user has yet

encountered anything like it in the recipient language and regardless of whether it actually does exist in the recipient language” (179, see also Ringbom, 2015).

### 3. This study

#### 3.1 *Participants*

The present study is part of a larger, longitudinal investigation conducted in Switzerland between 2008 and 2015 on the effects of age and age-related factors, during a period when there coexisted for some time students who were subject to one or other of two educational policies that were implemented before and after the Swiss Conference of Cantonal Ministers of Education issued a new set of guidelines for foreign language (FL) instruction throughout Switzerland (see EDK, 2004). 200 Swiss secondary school students (89 males and 111 females) took part in the longitudinal component of this project, all of whom had similar characteristics: they had the same biological age, the same L1 (Swiss/Standard German) and additional FL (French), the same SES, schools, classes and teachers, thereby allowing us to isolate the influence of starting age (and co-occurring amount of target language exposure) at the level of EFL competence attained at the beginning and at the end of secondary school in German-speaking Switzerland. The participants belonged to two AO groups: the early classroom learners (henceforth ECLs) were instructed according to the new model and learned Standard German from first grade onwards, English from 3rd grade onwards and French from 5th grade onwards, while the late classroom learners (LCLs) were instructed according to in old system without any English exposure at primary level, learning only Standard German from first grade and French from 5th grade onwards. This means that for the ECLs, English represented the first FL to be learned at school, while for the LCLs, it was the third FL. Given that they had the same biological age, both groups can be taken to have had attained broadly the same state of neurological and cognitive development and the same level of L1 proficiency. Thus, neither learner group can be said to have been characterized by cognitive advantages, which is imperative in a study where test-taking is the main measure.

The first test series was administered after six months of EFL in secondary school, that is, after 440 hours (ECLs) and 50 hours of instruction (LCLs) respectively. The second data collection took place five years (680 hours) later, briefly before they graduated. At no point were early starters mixed with late starters in the same class.



### ***3.2 Instruments and procedure***

The data came from two oral tasks (re-telling and spot-the-difference tasks), two written compositions (argumentative and narrative essays), a receptive vocabulary task, and a language experience essay. In the oral re-telling task, subjects were asked to tell the researcher what happened in a silent film they had previously watched without the researcher. The second oral task, the spot-the-difference task, paired two subjects who interacted with each other to find the differences in pictures that were different in predetermined ways.

In order to gather naturalistic written data, participants were asked to write an English argumentative essay on the pros and cons of (reality TV) talent shows, a topic that was deemed suitable for adolescents and was found to elicit different semantic and syntactic contexts (see Pfenninger, 2011, 2012, 2013). In addition, in the narrative essay, participants had to narrate what happened in the silent movie referred to above.

Vocabulary size was assessed through the Academic sections in Schmitt, Schmitt and Clapham's (2001) Versions A and B of Nation's Vocabulary Levels Test, which includes academic words from the Academic Word List (AWL; Coxhead, 2000), fitting in a broad range between the 2,000 level and the 10,000 level (Schmitt et al., 2001: 68).

Finally, all participants were asked to write a language experience essay at both data collection times (composed in the learners' L1), which was supposed to elicit (a) the participants' reflections on their experience of multiple FL learning at the beginning and at the end of secondary school; (b) the participants' affect in respect of foreign languages – English in particular; and (c) participants' beliefs about the age factor.

A biodata questionnaire was administered at both measurement times in order to collect biographical data and quantifiable information concerning their language learning experience (e.g., starting age, frequency of contact with L2 speakers, time spent abroad).

### ***3.3 Method***

For the analysis of cross-linguistic influence in the oral and written production tasks, we quantified the amount of lexical, inflectional morpheme and syntactic transfer from the L1 and FL per T-unit (TU), which is defined as one main clause and all of the dependent modifying clauses (Ellis & Barkhuizen, 2005). Syntactic transfer



included all systematic misorderings, as illustrated by the L1 transfer error in (1) (see also Ellis & Barkhuizen, 2005):

(1) *Singing can he definitely not!* (07\_ECL03\_M\_ARGw)

Inflectional morpheme transfer from L1 German is exemplified by (3)–(4), while (5)–(7) give examples of French transfer:

(2) *There are good, funny and bad talents: there are singer, dancer, people who dress animals, and lots of other things.* (07\_LL11\_F\_ARGw)

(3) *are there... um... two drawer in the uh... in the... um... ah Schrank* (07\_LL32\_M\_STDs)

(4) *Thoses people go in an other show to see what that jury says.* (07\_LL81\_F\_ARGw)

(5) *Because they are many differentes things.* (07\_LL15\_F\_ARGw)

(6) *I look this show on TV, and for me it's very funny to look at those funny and greats talents.* (07\_ELO2\_F\_ARGw)

(2) and (3) illustrate the discrepancy between German and English with respect to the agentive suffix *-er*, which is identical in orthography and phonology in the two languages but is not marked overtly for plurality in German. This language-specific form-meaning constraint causes difficulties when the *-er* ending is activated (see Pfenninger & Singleton, in prep.). The errors in (4)–(6) can be ascribed to French, where adjectives and determiners change to agree in gender and number with the nouns that they modify.

Lexical transfer errors were further classified adapting classifications of James (1998) and Ringbom (1987):

#### A. Borrowings

(7) “and he touch with the umbrella his... his um... bicycle and... then he draw very very schnell” [from German *schnell* ‘fast’] (07\_EL90\_M\_NARRs)

(8) *For some people, the show is the last chance in “ihrem” live, because they are very (arm) and live on the street.* [from German *ihrem* ‘their’] (07\_LL22\_M\_ARGw)

(9) *That I trouve very bad.* [from French *trouver* ‘find’] (07\_EL87\_F\_ARGw)

B. Lexical creations

- (10) *The frogs who are in the wather spicks up in the air and the women takes a net and fangs the frogs.* [from Swiss German *ufe spicke* ‘fly up’ and German *fangen* ‘catch’] (07\_EL33\_M\_NARRw)
- (11) “I don’t know I... um... some movies with... um more colors or... more music it was a little triste so...” [French *triste* ‘sad’ with an English pronunciation] (07\_EL91\_M\_NARRs)

C. Calques

- (12) *and the boy... becomes a present and that’s the bo-- that’s the dog* [from German *bekommen* ‘get’] (07\_ELb23\_M\_NARRs)
- (13) *This emission is stupid, not nessessary.* [from French *emission* ‘show’] (07\_LL33\_M\_ARGw)

D. Misspellings

- (14) *I must confess that I also was faszinated of casting shows when I was younger.* [from German *fasziniert* ‘fascinated’] (07\_EL87\_M\_ARGw)
- (15) *I find it is a career opportunity for one/two personnes perhaps.* [from French *personnes* ‘persons’] (07\_LL19\_F\_ARGw)

E. Interactional strategies

- (16) “... ich weiss nöd was das isch” [‘I don’t know what that is’, from Swiss German] (12\_LL61\_F\_STDs)

Borrowings are mere insertions of L1 words in the L2 syntax without any attempt at adaptation to L2 morpho-syntactic and/or phonological rules (Agustín Llach, 2011; Celaya & Torras, 2001). Lexical creations refer to lexemes that are morphologically, morpho-phonologically and/or orthographically adapted to the TL, i.e. they are always made up of source language content words and TL inflectional morphemes (see Dewaele, 1998; Harley & King, 1989); this process is sometimes referred to as foreignizing. Calques are literal translations of L1 words or expressions into L2 structures (Agustín Llach, 2010), including the deployment of cognates, which are “false friends”. According to Agustín Llach (2011) this has to do with transfer of semantic features from an L1 word to an L2 equivalent but with a different contextual distribution. Finally James (1998) points out that misspellings (or spelling errors) occur when the rules that determine how a given phoneme is to be represented in writing, are broken. Such faulty grapheme to phoneme conversion occurs when L2

users apply their L1 rules to the L2 or when they misapply the phonological rules of the L2 (James & Klein, 1994). In this study, we will focus on misspellings that are due to lexical transfer. Finally, interactional strategies refer to direct or indirect appeals to the interlocutor in order to get help to produce a specific term in English or to comment on their speech or the speech of others (see Cenoz, 2003).

As for the statistical analyses, we used multilevel modeling (a subgroup of linear mixed effects regression modeling), which is an attractive option for our data analysis, considering that the classes and schools that students come from represent another set of clusters in our data that we had to take into account in order to make accurate statistical inferences (see Cummings, 2012; Cummings & Finlayson, 2015; Pfenninger & Singleton, accepted). We used R (R Development Core Team 2014) and *lme4* (Bates, Maechler & Bolker, 2012) to perform multilevel analyses of the relationship between AO, crosslinguistic influence and TL achievement, using restricted maximum likelihood. Fixed effects included main effects of AO. We later added fixed effects for class size and the scores on the receptive and productive vocabulary tasks. Visual inspection of residual plots did not reveal any obvious deviations from homoscedasticity or normality. Random intercepts for subjects, classes and schools were included, as were random slopes for time varying by both students, classes and schools, using a maximal random effects structure. We used log-likelihood ratio tests to test whether the inclusion of an additional model parameter improved model fit in comparison to a less complex model without the parameter. Statistical significance was assessed by calculating *p*-values based on likelihood ratio tests. Given the lack of degrees of freedom with mixed models, we refrain from reporting *df*.

## 4. Results

In relation to research question #1 we first investigated the impact of starting age on the amount of transfer from (Swiss) German and French. Tables 1 and 2 include the descriptive statistics for our analysis of cross-linguistic influence.

**Table 1.** Instances of (Swiss) German use in the oral and written data (means and SDs)

	ORAL			
	<i>Time 1</i>		<i>Time 2</i>	
	ECL <sub>1</sub>	LCL <sub>1</sub>	ECL <sub>2</sub>	LCL <sub>2</sub>
Content words/TU	<b>0.73 (0.64)</b>	0.97 (0.72)	0.52 (0.52)	0.53 (0.48)
Function words/TU	0.02 (0.06)	0.03 (0.11)	0.02 (0.08)	0.01 (0.07)
Inflections/TU	0.02 (0.05)	0.02 (0.05)	0.01 (0.04)	0.02 (0.04)
Morpho-syntax/TU	2.12 (1.13)	2.23 (1.39)	0.80 (0.94)	0.83 (1.06)

	WRITTEN			
	<i>Time 1</i>		<i>Time 2</i>	
	ECL <sub>1</sub>	LCL <sub>1</sub>	ECL <sub>2</sub>	LCL <sub>2</sub>
Content words/TU	<b>0.64 (0.56)</b>	1.09 (0.72)	0.30 (0.27)	0.30 (0.31)
Function words/TU	<b>0.04 (0.11)</b>	0.10 (0.18)	0.03 (0.08)	0.05 (0.11)
Inflections/TU	0.01 (0.04)	0.02 (0.05)	0.01 (0.04)	0.02 (0.05)
Morpho-syntax/TU	1.12 (0.50)	1.00 (0.43)	0.17 (0.18)	0.19 (0.21)

Note: bold = significantly less transfer/more target-like performance

**Table 2.** Instances of French use in the oral and written data (means and SDs)

	ORAL			
	<i>Time 1</i>		<i>Time 2</i>	
	ECL <sub>1</sub>	LCL <sub>1</sub>	ECL <sub>2</sub>	LCL <sub>2</sub>
Content words/TU	0.01 (0.03)	0.004 (0.02)	0.00 (0.00)	0.00 (0.00)
Function words/TU	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Inflections/TU	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Morpho-syntax/TU	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)

	WRITTEN			
	<i>Time 1</i>		<i>Time 2</i>	
	ECL <sub>1</sub>	LCL <sub>1</sub>	ECL <sub>2</sub>	LCL <sub>2</sub>
Content words/TU	<b>0.17 (0.26)</b>	0.41 (0.47)	0.04 (0.09)	0.05 (0.09)
Function words/TU	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Inflections/TU	0.03 (0.09)	0.02 (0.05)	0.02 (0.05)	0.02 (0.05)
Morpho-syntax/TU	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)

Note: bold = significantly less transfer/more target-like performance

Tables 3 and 4 then show the longitudinal impact of AO during secondary school, i.e. the results of the monofactorial linear models with AO as the main predictor, which take into account that students and classes and schools may not only differ in overall average proficiency, but also in their sensitivity to the change in proficiency over time.

**Table 3.** Impact of AO on transfer from (Swiss) German

	Oral			Written		
	<i>Estimate</i>	<i>t</i>	<i>p</i>	<i>Estimate</i>	<i>t</i>	<i>p</i>
Content words	1.74 ± 0.42	1.74	.075	0.63 ± 0.53	1.20	.124
Function words	0.03 ± 0.04	0.74	.796	0.10 ± 0.04	2.58	.008*
Inflections	0.00 ± 0.00	-0.01	.282	0.01 ± 0.01	0.90	.151
Morpho-syntax	0.19 ± 0.15	1.25	.254	-0.01 ± 0.04	-0.16	.838

Note: bold = significantly less transfer/more target-like performance

**Table 4.** Impact of AO on transfer from French

	Oral			Written		
	<i>Estimate</i>	<i>t</i>	<i>p</i>	<i>Estimate</i>	<i>t</i>	<i>p</i>
Content words	0.00 ± 0.00	-0.45	.618	0.41 ± 0.36	1.15	.154
Function words	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Inflections	n.a.	n.a.	n.a.	-0.01 ± 0.01	-0.96	.325
Morpho-syntax	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Note: Bold = significantly less transfer/more target-like performance

Overall, AO had no effect on L1 and FL cross-linguistic influences, except for the transfer of L1 function words in the written production tasks, for which an earlier starting age was more advantageous in terms of reducing this phenomenon. As Tables 1 and 3 show, there were no significant differences in the amount of L1 syntactic transfer produced by the two AO groups at either measurement time (see also Table 5 in the Appendix). With respect to inflectional morpheme transfer, both AO groups particularly struggled with plural marking on nouns ending in *-er* in productive as well as receptive tasks (see examples (2) and (3) above). In the ECLs' oral production data at Time 1, 66.67% (20/30) of the unmarked plural forms ended in *-er*, compared to 84% (21/25) in the LCL data; in the essays, 50% (13/26) and 55% (16/29) of the omitted plural forms respectively were found after

-er nouns (see Pfenninger, 2011 for a more detailed analysis of the plural forms in these samples).

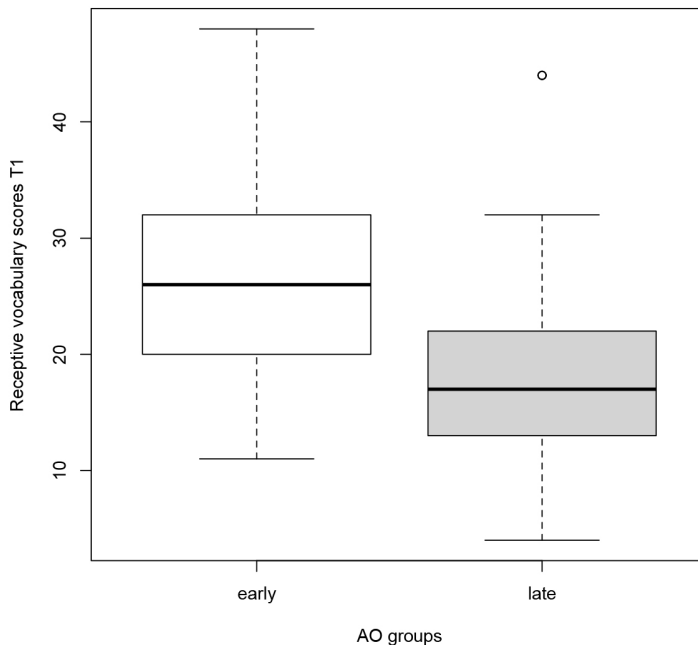
There were even more instances of inflectional morpheme transfer from the additional FL French than from German: it seems that the practice of changing adjectives and determiners to agree in gender and number with the nouns that they modify was occasionally also activated with English lemmas, the result being very complex forms that could share lexical, morphological and phonological characteristics from all the FLs known to the speaker (see examples 4–6 above). However, as was the case with German inflectional transfer, the amount of inflectional morpheme transfer from French did not vary significantly from one AO group to the other.

In contrast to the morpho-syntactic results, there were age-related differences in the area of lexico-semantics. The LCLs produced more L1-oriented and FL-oriented lexical errors at the beginning of secondary school than the ECLs, that is, they included more German content and function words in the oral and written data as well as more French content words in the essays. To probe further into this finding, different types of L1 and L2 influence were analyzed, which revealed that ECLs and the LCLs fell back on their background languages in different ways at the beginning of secondary school: the LCLs were found to use significantly more borrowings (from German: spoken:  $\beta=0.14\pm0.05$ ,  $t=2.57^*$ ; written:  $\beta=0.19\pm0.09$ ,  $t=0.19^*$ ; from French: written:  $\beta=0.11\pm0.04$ ,  $t=2.78^{**}$ ), more misspellings (from German:  $\beta=0.14\pm0.05$ ,  $t=2.57^*$ ; from French:  $\beta=0.11\pm0.04$ ,  $t=2.72^*$ ) and more interactional strategies (from German:  $\beta=0.20\pm0.10$ ,  $t=2.10^*$ ) than the ECLs to overcome a lexical gap, while the ECLs used more lexical inventions (from German: spoken:  $\beta=-0.01\pm0.01$ ,  $t=-2.05^{**}$ ; written:  $\beta=-0.05\pm0.02$ ,  $t=-1.98^*$ ; from French: written:  $\beta=-0.02\pm0.01$ ,  $t=-3.13^{**}$ ) and calques (from German: spoken:  $\beta=-0.07\pm0.02$ ,  $t=-3.34^{**}$ ; written:  $\beta=-0.07\pm0.03$ ,  $t=-2.40^{**}$ ; from French: written:  $\beta=-0.06\pm0.03$ ,  $t=-2.08^{**}$ ). Interestingly, as Table 4 above shows, neither AO group drew on the additional FL for function words; conjunctions, pronouns, auxiliaries and prepositions were exclusively transferred from the L1, as illustrated by example (8) above. Furthermore, only 15 instances of French content words were found in the oral data. The results revealed no more significant differences at the end of mandatory instructional time, i.e. at the second data collection time (see Tables 5 and 6 in the Appendix; see also Pfenninger, 2014a, 2014b).

In line with research question #2, we then tested whether the amount of transfer produced by the learners was influenced by the same predictors that have been proposed in the literature (see review above) and whether these predictors had the same kind of effects on the two AO groups. On including the scores of the participants on the vocabulary tests administered in the model, we found that lexical transfer was influenced by the TL proficiency level of the learners: the scores on the receptive

vocabulary task and the measures of written lexical richness (Guiraud Index) turned out to be a strong predictor of L1 lexical transfer.<sup>1</sup> Similarly, the measures of written lexical richness (Guiraud Index) were clearly correlated with the amount of written L1 and FL transfer, and oral lexical richness was a strong predictor of spoken L1 and FL transfer.<sup>2</sup> On all these measures, the ECLs had significantly higher scores, as Figures 1–3 show (see also Pfenninger, 2014b):

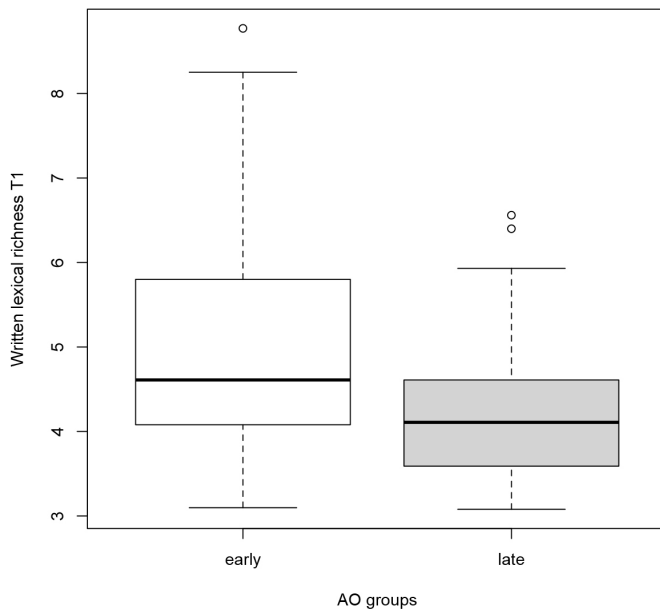
**Figure 1.** Receptive vocabulary by AO group at Time 1



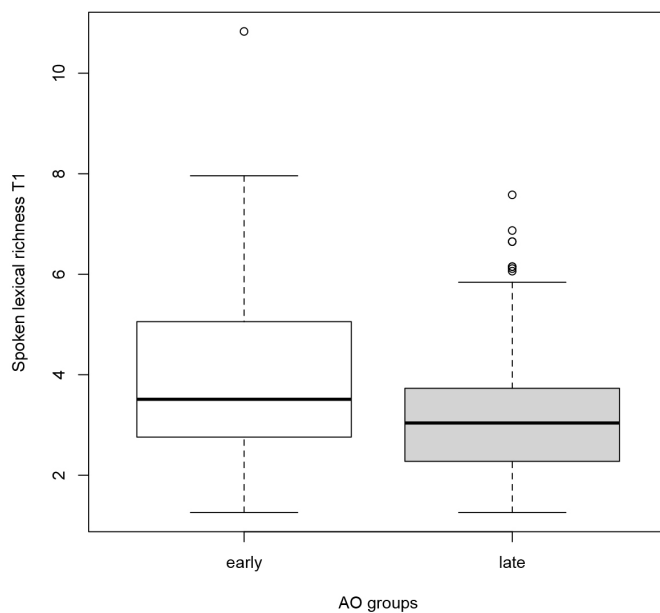
- 1 Written content words:  $\beta=0.15\pm0.02$ ,  $t=7.09$ ,  $p<.001^{**}$ ; spoken content words:  $\beta=0.13\pm0.02$ ,  $t=6.41$ ,  $p<.001^{**}$ ; written function words:  $\beta=0.05\pm0.02$ ,  $t=2.26$ ,  $p=.023^{*}$ ; spoken function words:  $\beta=0.11\pm0.02$ ,  $t=6.07$ ,  $p<.001^{**}$ ) and of FL lexical transfer (written content words:  $\beta=0.07\pm0.02$ ,  $t=3.07$ ,  $p<.001^{**}$ ; spoken content words:  $\beta=0.00\pm0.00$ ,  $t=3.99$ ,  $p=.004^{**}$ )
- 2 L1 written content words:  $\beta=0.10\pm0.07$ ,  $t=2.12$ ,  $p=.002^{**}$ ; L1 written function words:  $\beta=0.39\pm0.12$ ,  $t=2.55$ ,  $p=.008^{**}$ ; FL written content words:  $\beta=0.06\pm0.03$ ,  $t=2.30$ ,  $p=.024^{*}$ ; FL written function words:  $\beta=0.19\pm0.11$ ,  $t=2.09$ ,  $p=.045^{*}$ ; L1 oral content words:  $\beta=0.07\pm0.02$ ,  $t=3.11$ ,  $p=.003^{**}$ ; L1 oral function words:  $\beta=0.11\pm0.04$ ,  $t=2.70$ ,  $p=.010^{*}$



**Figure 2.** Written productive lexical richness at Time 1 (Guiraud index/TU)

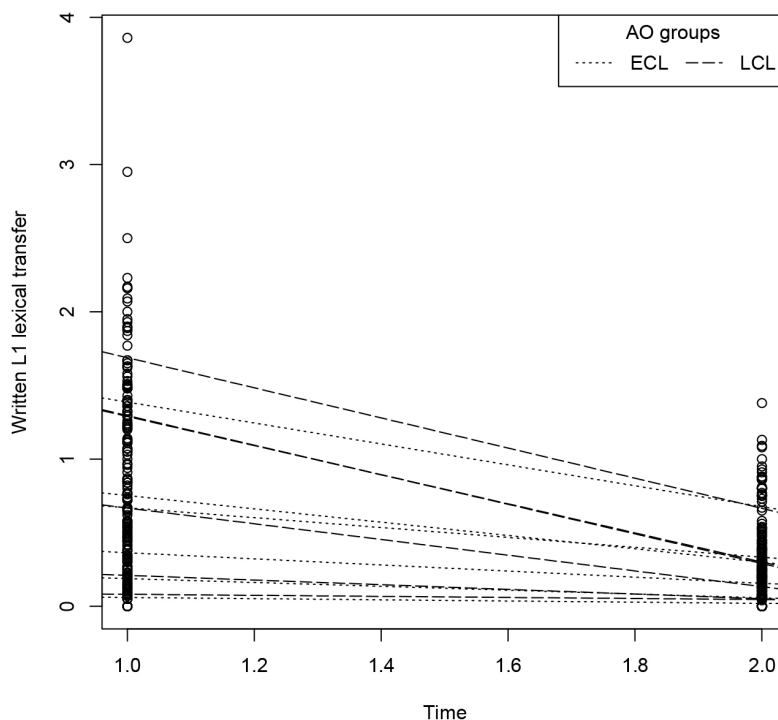


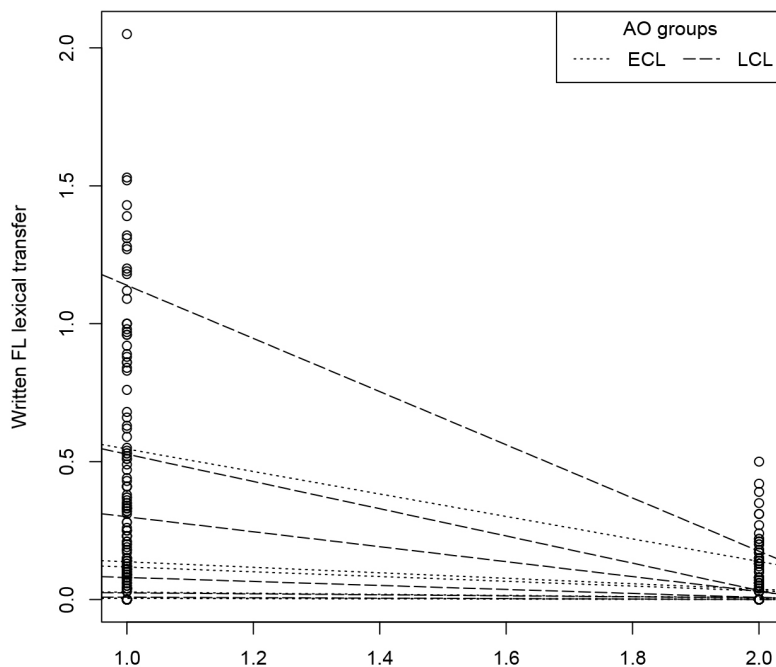
**Figure 3.** Oral productive lexical richness at Time 1 (Guiraud index/TU)



Finally, there was a significant decrease of transfer in the following areas: transfer of L1 content words (spoken:  $\beta=-0.19\pm0.07$ ,  $t=-3.66^{**}$ ; written:  $\beta=-0.31\pm0.14$ ,  $t=-2.14^{**}$ ), transfer of FL content words (spoken:  $\beta=-0.01\pm0.00$ ,  $t=-2.07^{**}$ ; written:  $\beta=-0.10\pm0.17$ ,  $t=-0.86^*$ ), transfer of L1 spoken inflections ( $\beta=-0.00\pm0.00$ ,  $t=-1.62^{**}$ ), and L1 syntactic transfer (spoken:  $\beta=-1.36\pm0.13$ ,  $t=-10.34^{**}$ ; written:  $\beta=-0.89\pm0.07$ ,  $t=-12.97^{**}$ ), while the transfer of L1 and FL function words and written L1 and FL inflections did not change with time. Figures 4 and 5 illustrate the decrease in the number of written L1 and FL lexical transfer errors:

**Figure 4.** Development of written L1 lexical transfer

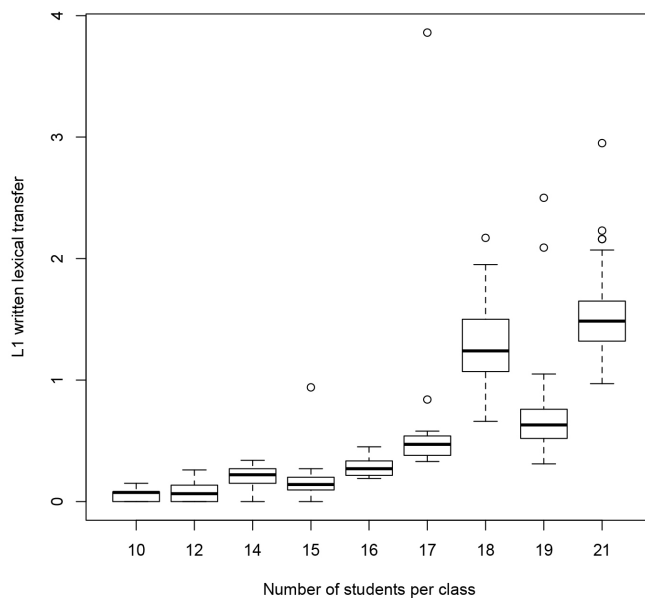


**Figure 5.** Development of written FL lexical transfer

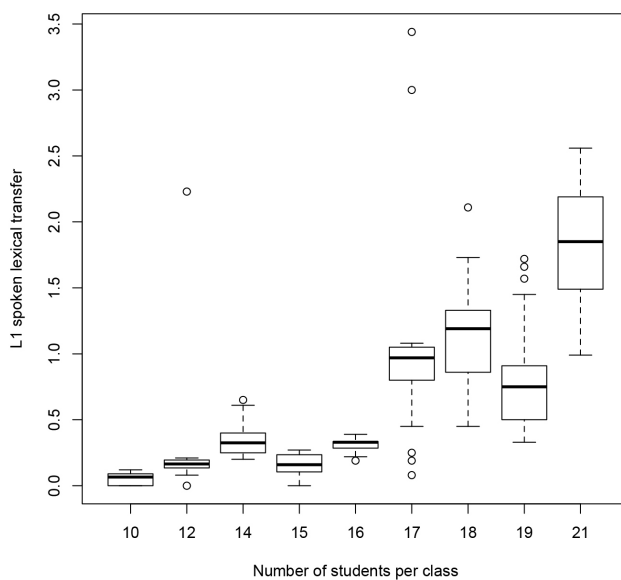
The figures also illustrate how AO influenced the change in performance over time in favor of the late starters (the “AO” by “time” interactions were significant for all the measures), i.e. the late starters displayed a stronger decrease in transfer (stronger slopes) over secondary school, so that in the end, the two AO groups ended up at the same performance level.

Furthermore, for all independent measures, the addition of a fixed main effect for class size led to an improvement in model fit compared to the model without such an addition, suggesting class size affected proficiency in this study. Figures 6 and 7 illustrate the effects of class size on lexical transfer from the L1 in the written and spoken data respectively:

**Figure 6.** Impact of class size on L1 lexical transfer (written content words) at Time 1 ( $\beta=0.15 \pm 0.02$ ,  $t=6.45$ ,  $p<001^{**}$ )



**Figure 7.** Impact of class size on L1 lexical transfer (spoken content words) at Time 1 ( $\beta=0.15 \pm 0.02$ ,  $t=7.13$ ,  $p<001^{**}$ )



As in our previous studies (see Pfenninger & Singleton, in press), we found a strong negative effect for class size: as the number of students within a class increased, TL performance tended to decrease at both data collection times, i.e. the amount of L1 and FL transfer increased.

Finally research question #3 was concerned with the extent to which the two AO groups show language awareness when discussing differences between their languages. Learners reported awareness of more similarities between French and English than between German and English. Some 32% of learners perceived similarities between French and English words (but not German and English), and the same learners also noticed that French and English differ considerably in their grammar and phonetic characteristics:

(17) *It's an opportunity to be learning several languages, for the following reasons: being understood in several countries, comparing words (similar words in French and English but NOT in German and English!), the learning technique is already known, English and French (grammar, pronunciation) not too similar no great risk of confusion, thank God! (12\_F\_ECL22)*

(18) *I personally had no great problems with the number of languages we had to learn. Sometimes it happened that I mixed languages (especially English and French, I never confuse German with English)... (12\_F\_ECL10)*

As far as the question of mixing is concerned, 65% of the LCLs and only 33% of the ECLs said they were conscious that they occasionally mixed up the languages at Time 1:

(19) *I see multilingualism as an opportunity but I sometimes mix up the many languages. Sometimes I notice that I'm doing it, sometimes not. (07\_F\_ECL08)*

(20) *Very useful and sensible to be able to learn so many languages "free". Later rather demanding, as a very large amount of vocab and grammar has to be learned by heart, and there are differences between the languages, which is confusing. (07\_M\_LCL54)*

(21) *To learn several languages is an opportunity, but switching between the 3 languages was not always easy for me. (07\_F\_LCL49)*

It is clear that some learners possess a highly analytical approach to languages, their differentiation and possible mutual support, and that they attend to the production of the languages in more or less deliberate ways (see also Bono, 2011):

(22) *With the different rules [of the different languages] I find it hard to sort things out. Especially French grammar is really difficult. I prefer to do one S too many than one too few, even in other languages!!* (07\_M\_ECL81)

(23) *I find French grammar very difficult, as there are so many rules. At primary school we didn't pay too much attention to whether or not another -s is added, but now in the upper level we're really drilled!* (07\_M\_ECL96)

However, only 11% of the learners producing such forms explicitly mentioned such strategies. In other cases, it is difficult to ascertain whether or not the learners consciously recognized their performance as having its source in the relevant linguistic system.

Concerning motivation, as we are all aware, this is highly individual and highly variable. The different attitudes and inclinations our participants reported with regard to their different languages did not seem to depend on the age at which instruction began, for example, or the stage of education they had reached. A frequent feeling reported was that English was more useful than French.

(24) *I think French shouldn't be learned. Because you only need it in France and French-speaking Switzerland. If you want to go to France, however, you just have to do a French course first. If French could be got rid of, children or teenagers could concentrate better on English, because with English you get further than with French.* (07\_LLL5\_M\_GER)

(25) *French is less necessary than English ...* (07\_LLH7\_M\_GER)

On the other hand French was sometimes favoured as a language of Switzerland.

(26) *I had English of course, a world language, but preferred French, as French is a language of the country.* (07\_ELL2\_F\_GER)

It is clear that some aspects of reported motivation relate to the particular class or teacher in question, which explains some of the cohort effects described above.

(27) *I like French more than English. But it all depends on the teacher.* (07\_ELL10\_M\_GER)

(28) *... my old French teacher wasn't open and friendly – I felt as if I didn't so much like going to class.* (07\_LLL3\_F\_GER)

But, according to our participants' reports, there seem sometimes to be imponderable individual characteristics that also play a motivating role.

- (26) *But when I now reflect on this early language learning, what strikes me is that I'm rather the French type than the English type. As funny as it may sound, French appeals to me more than English.* (12\_LLL9\_M\_GER)

## 5. Discussion

The first goal of this study pertained to the influence of AO on cross-linguistic influence at the beginning and at the end of secondary school. It has often been claimed that later L2 learners are more susceptible to transfer. Our results show that from a quantitative perspective, the L1 and the additional FL indeed exert greater influence on late starters' written and oral productions compared to early starters in terms of lexico-semantics in the short run. The transfer errors produced by the two AO groups also differ qualitatively at the beginning of secondary school in that the two groups display different types of lexical transfer. Early starters produce more lexical creations and calques than late starters, who in turn produce more borrowings, misspellings and interactional strategies. Although lexical creations and the more semantically oriented calques also derive from the conjunction of communicative need and lack of lexical knowledge (Bouvy, 2000), among other reasons (see Singleton & Little, 1991), it has often been suggested (e.g. Agustín Llach, 2010, 2011) that they imply higher proficiency in the TL, since they derive from the application of target language rules and are indicative of changing degrees of lexico-semantic competence. Lexical creations, for instance, indicate that the learner possesses some knowledge of the orthographic or phonetic conventions of the TL and generalizes them (Agustín Llach, 2011).

The hypothesis that lexical creations and calques are indicative of higher TL proficiency is confirmed by the results of the receptive vocabulary task and the analysis of lexical richness (Guiraud Index/TU) in the oral and written production tasks, which reveal that early starters have a higher degree of mastery of the TL vocabulary at Time 1, and know more words in the TL. Lexical proficiency, in turn, is a significant predictor of amount of L1 and FL transfer. Of course we must not dismiss the idea that the LCLs might have acquired the relevant TL lemmas, but during online production the correct lemma received less activation than the corresponding L1 lemma, which then provided the first part of the form. In other words, the LCLs might have had intact semantic representations, but just had difficulty accessing lexical representations (see also McDonald, 2006). According to McDonald and Roussel (2010), there is also "possible interference from having two phonological representations, one from each language, active at the same time" (431). As it was the case in many other studies (e.g. Paradis et al., 2000), it was not possible in this study to directly test the hypothesis that lexical gaps are responsible for these errors – although the results of the receptive



vocabulary test seem to confirm this hypothesis.

It is also noteworthy that while the age factor becomes evident at the beginning of secondary school, all the differences observed at Time 1 seem to be washed out with increasing TL proficiency over the course of secondary school. Furthermore, we could not detect any age-related differences between the two AO groups with respect to morpho-syntax at either data collection time. On the one hand, the lack of difference in syntactic transfer is an indicator that transfer is not a problem exclusive to late starters, as is sometimes suggested in naturalistic studies. On the other hand, while we were able to observe instances of inflectional morpheme transfer from German as well as from French, AO had no effect on the number of transferred inflections. As predicted, all our participants struggled with the plural forms of nouns ending in *-er*, as these are not marked overtly for plurality in German. Learners might thus unconsciously regard the plural *-s* as redundant and more frequently omit it in this context than in others (see Ringbom, 2015). Scheutz and Eberhard (2004) were among the first to analyze the masculine gender feature associated with the agentive suffix *-er* in German, which is automatically activated in bilinguals' (German/English) interpretation of morphologically related representations of the English agentive nouns that end in *-er*. Their results imply that "German-English bilinguals who begin acquiring their proficiency in English at age 8 or later should exhibit a male bias from the association of masculine gender with *er* in German" (582). Thus, according to them, L2 acquisition after the age of 8 entails interactive processing of L1 and L2 words and forms, whereas very early L2 learning (before age 7) might exhibit modular or independent processing. This offers a possible explanation for the finding that both early and late starters were found to frequently omit the plural marker in this study.

The instances of inflectional morphological transfer from the additional FL French presented in this study are prototypical examples of Jarvis and Pavlenko's (2008) 'assumed similarities', which do not actually exist between the languages. In our case here, the learners have *not* been able to perceive cross-linguistic similarities, but assume that such similarities exist. Furthermore, these inflections are also sufficiently 'despecified', i.e., they are not specific to French per se (see Bouvy, 2000), which increases their transferability. Odlin (1989) discusses very similar evidence found in a naturalistic setting in Fantini (1985), who showed that pluralization rules of one language can be employed in the production of another, as in the sentence *too manys cars* produced by a Spanish-English bilingual child. Our results also indicate that after 2.5 years of French instruction, the participants' level of proficiency is high enough to have content words and inflections from French transferred. Or to turn the argument around: only a relatively low level is required to have words from a language being activated and playing a role in the selection process. What is more, while our results corroborate previous findings that in semantic searches, learners seem to use

all available resources, exploiting all their languages, and that the activation of lexical items across several languages is a common approach to tackling lexical problems (e.g. Herwig, 2001), the use of French inflections at both data collection times also seems to be motivated by contextual factors: according to the learner reports, morphological agreement is drilled extensively in the French classroom, and this knowledge seems to be activated with all FLs learned by our participants. Some of them even seemed to be aware of making an intentional choice by adding markers of plurality and gender to nouns in any FL “just to be on the safe side” – entirely in the spirit of Kellerman (1978) a polysemous lexical item will have a field of meaning in which the “core” meaning may be more likely to be transferred than more idiomatic or figurative meanings. This strategy is evidenced by Dutch learners of English (and German, who describes the learner as an active decision-maker on what linguistic structures may be transferable.

Unsurprisingly, class size also has a significant effect on the amount of L1 and FL material transferred. The fact that FL performance is strongly influenced by class size has been observed in numerous studies on willingness to communicate in a classroom (see e.g. Cao & Philip, 2006). In one of our previous studies in which we presented a person-in-context relational view of age and motivation in SLA (see Pfenninger & Singleton, in press), we found that classroom effects (including class size) and school district can impact on students’ motivated behavior and, by extension, affect their FL achievements and mediate age-related differences.

Finally, one might pose the question: why do Swiss German learners resort to French when they write in English? On the basis of factors such as FL learning motivation, typology, proficiency levels and frequency of use, one might think that their L1 (Swiss German) or language of literacy (standard German), should prevail. For example, with respect to motivation, it appears that the learning of English and French brings identity into play, and when it does so it appears to generate strong emotions, arguably because the learners are aware of their potential future identities as citizens of the world, which, in the view of many learners, only includes the knowledge of English. French is clearly perceived as more ‘foreign’, and identification does not seem to be involved in its learning. However, while the prioritisation of the need to acquire English reduces students’ interest in learning French as a national language (see Pfenninger & Singleton, in prep.), the power and status of English does not seem to have an impact on students’ drawing on French as an additional linguistic resource to fill lexical gaps. A further explanatory element might be found in the easily perceived relationships (cf., e.g., Jarvis & Pavlenko, 2008) between English, German and French (cf, e.g. Ó Laoire & Singleton, 2009) note that, lexically, English is more Romance than Germanic. The Germanic lexical core of English (see Katzner, 2002: 42f.) comprises fewer than 5,000 items. Also, Germanic elements of English vocabulary mostly look very different from their German cognates because of the

effects of various phonological changes. Regarding morpho-syntax too English is very different from German; its verb forms are mostly not inflected for person; it is devoid of grammatical case inflections in noun phrases (with the single exception of the inflection 's/s'); and its word order is not affected by the category of clause in question.

## 6. Conclusion

The main conclusion to be drawn from this study has to do with the influence exerted by starting age on the quantity and quality of crosslinguistic influence in the oral and written production of Swiss secondary school students. We found that learners with different AOs, in different grades, and with different levels of proficiency transferred from the same languages but to differing extents, for different purposes, and in different ways. The early starters' lexical knowledge and vocabulary in the TL English were significantly better than those of the late starters at the beginning of secondary school. This discrepancy in proficiency was big enough to influence the degree of crosslinguistic influence (i.e. native and FL lexical transfer) present in the output of the two AO groups. The late starters, who were less proficient in terms of lexico-semantics at Time 1, transferred more elements from their background languages (German and French) than the early starters, i.e. the more proficient learners. These results confirm previous findings concerning the influence of proficiency on crosslinguistic influence (e.g. Navés et al. 2005; Muñoz 2007; Poullisse, 1990; Ringbom, 1987; but see also Cenoz, 2001). However, the number of content and function words transferred from the background languages might be related not only to proficiency but also to perceived and assumed similarities between source and target language, as well as contextual factors (e.g. class size and teaching approach).

It needs to be borne in mind, however, that the relationship between AO and crosslinguistic influence was limited to content and function words (see also Cenoz, 2001, who found a relationship between biological age and content words), as the older starters were not more susceptible to morpho-syntactic transfer than the early starters. What is more, the early starters were not able to retain their learning advantages in the long run; at the end of secondary school, we found no main effect for age across any of the dependent variables. An explanation for this can be found in cohort effects (vast between-class differences) as well as the fast lexical development of the late starters, as a consequence of which L1 and FL interference decreased in the late AO data within a shorter period of time (6 years) than in the early AO data (11 years). Thus the effect of AO on the presence of crosslinguistic influence was of limited duration, and was 'washed out' as the older starters were exposed to more FL instruction and grew in proficiency. In the longer run in a school situation, in other words, AO seems to have no impact on the amount of crosslinguistic influence that is detectable.

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## Appendix

**Table 5.** Impact of AO on L1 transfer from (Swiss)German at Time 2

	Oral				
	ECL <sub>2</sub>	LCL <sub>2</sub>	<i>Estimate</i>	<i>t</i>	<i>p</i>
Content words	0.52 (0.52)	0.53 (0.48)	-0.01 ± 0.25	-0.05	.943
Function words	0.02 (0.08)	0.01 (0.07)	-0.00 ± 0.01	-0.32	.707
Inflections	0.01 (0.04)	0.02 (0.04)	0.01 ± 0.01	1.24	.186
Morpho-syntax	0.80 (0.94)	0.83 (1.06)	0.02 ± 0.03	0.68	.489
	Written				
	ECL <sub>2</sub>	LCL <sub>2</sub>	<i>Estimate</i>	<i>t</i>	<i>p</i>
Content words	0.30 (0.27)	0.30 (0.31)	-0.02 ± 0.14	-0.14	.853
Function words	0.03 (0.08)	0.05 (0.11)	0.03 ± 0.01	2.00	.052
Inflections	0.01 (0.04)	0.02 (0.05)	0.01 ± 0.01	1.23	.205
Morpho-syntax	0.17 (0.18)	0.19 (0.21)	0.03 ± 0.24	0.13	.895

**Table 6.** Impact of AO on FL transfer from French at Time 2

	Oral				
	ECL <sub>2</sub>	LCL <sub>2</sub>	<i>Estimate</i>	<i>t</i>	<i>p</i>
Content words	0.00 (0.00)	0.00 (0.00)	n.a.	n.a.	n.a.
Function words	0.00 (0.00)	0.00 (0.00)	n.a.	n.a.	n.a.
Inflections	0.00 (0.00)	0.00 (0.00)	n.a.	n.a.	n.a.
	Written				
	ECL <sub>2</sub>	LCL <sub>2</sub>	<i>Estimate</i>	<i>t</i>	<i>p</i>
Content words	0.04 (0.09)	0.05 (0.09)	-0.00 ± 0.03	-0.13	.841
Function words	0.00 (0.00)	0.00 (0.00)	n.a.	n.a.	n.a.
Inflections	0.02 (0.05)	0.02 (0.05)	0.001 ± 0.01	-0.14	.818