

# **Acquiring English as a Third Language: A Processability Perspective**

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## **Abbreviations**

AUX Auxiliary

CEFR Common European Frame of Reference

CS Code Switching

DMM Dynamic Model of Multilingualism

DST Dynamic Systems Theory

EMM Enhanced Multilingual Monitor

FD/L3A Fundamental Difference of L3A

FDH/L3A Fundamental Difference Hypothesis concerning Third Language Acquisition

FOC Focus

GF Grammatical Function

INV Inversion

L1 First Language

L1A First Language Acquisition

L2 Second Language

L2A Second Language Acquisition

L3 Third Language

L3A Third Language Acquisition

LFG Lexical Functional Grammar

NP Noun Phrase



OBJ Object

PL Plural

SG Singular

SUBJ Subject

TOP Topic

V2 Verb-second

WIPP Without Identified Pragmatic Purpose

## **Abstract**

Some scholars in the relatively new field of Third Language Acquisition (L3A) studies claim that the difference between L2A (Second Language Acquisition) and L3A is a fundamental one. According to them, L3 learners have advantages over L2 learners. These advantages are supposed to show in the domains of a general cognitive superiority due to their bilingual starting point of acquiring the L3, with transfer from the L2, metalinguistic knowledge and awareness, and more elaborated learning strategies deemed possible. This study aims at falsifying this fundamental difference hypothesis concerning L3A (FDH/L3A) from a language processing perspective by showing that the development of English morphosyntax is similar with both ESL and English L3 acquisition, in other words, that learners of English proceed through the same stages of grammatical development independently of previously acquired languages.

These stages of development are those formulated by Pienemann (2011, p. 14) in his Processability Theory (PT), which is the framework guiding the hypotheses of the present study. In order to test the hypotheses, which basically predict no qualitative differences to be found between L2A and L3A while allowing for minor, quantitative differences, a group of German-Turkish learners of English (experimental group, n=14) is compared to a group of German learners of English (control group, n=14) in this cross-sectional study. The informants' current stage of English L2/L3 interlanguage (IL) is determined using PT-inherent methodology.

Results show that the trilinguals exhibit the same implicational nature in the upper stages within the overall development of English morphosyntax as do the bilinguals. As for the lower stages, no stage transitions could be evidenced since the informants were too advanced. However, neither was counter evidence against the implicational nature of the lower stages found.. Minor quantitative differences that affect variation, but not development, were found with the trilingual group, and were probably due to transfer from Turkish. The FDH/L3A was proven inadequate to explain differences between L2A and L3A. Further studies in the field of L3A as well as L3 didactics are recommended not only to focus on the differences between L2A and L3A, but also to acknowledge the same universal language processing and learning principles that hold for L2A and teaching L2s.

# 1 Introduction

There has been much interest recently in exploring the relatively new field of Third Language Acquisition (L3A) research. Scholars dedicated to the specific examination of acquiring third languages often express the differences between L3A and L2A<sup>1</sup>. Some of them claim that the differences between L2A and L3A are fundamental (cf. Marx & Hufeisen, 2004, p. 142), and therefore the reason why L3A studies should be perceived as a field in its own right, independent from classic L2A studies.

L3A studies focus largely on the bilingual basis of L3A, transfer effects (especially from the L2), metalinguistic knowledge and awareness and use of learning strategies. These studies on the acquisition<sup>2</sup> of an L3 tend to report mixed results. In other words, in a number of studies, the bilinguals acquiring an L3 are found to have advantages over monolinguals acquiring the same language as L2, but in other studies, this is not the case.

Processability Theory (PT, Pienemann, 1998 and elsewhere) is a theory of L2A that is based on language processing and the staged development of morphosyntax in any target language of any learner. Since the framework of PT is rooted in classic L2A, the focus of PT studies has not been specifically the acquisition of an L3, although it has been observed that within PT studies some target languages were L3s (in the study of Håkansson et al. 2002, for instance; cf. *ibid*, p. 269). PT as a theory capable of explaining similarities between L1A and L2A would not assume qualitative differences to hold between L2A and L3A.

PT has been extensively used for both modelling and testing the acquisition of a number of target languages, and is a theory of language acquisition that is both psychologically and linguistically well-founded. This approved theory of L2A merits application to and within the interesting and promising field of L3A studies, which is rather dominated by DST (Dynamic Systems Theory) approaches that tend to contradict

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<sup>1</sup> The less common abbreviation 'L2A' (as compared to the more common 'SLA') is used in this thesis for reasons of analogy to 'L3A'. The original terminology in quotes, however, is left untouched and may deviate.

<sup>2</sup> The terms 'acquisition' and 'learning' (as well as 'acquirer' and 'learner') are used interchangeably in this thesis, however acknowledging that – depending on theoretic background – they may have different notions.

core assumptions of PT by conceptualizing language acquisition as being unstable and unpredictable.

However, to my knowledge, the PT framework has not extensively been used to explicitly investigate L3A characteristics empirically. Apart from a few studies on its related transfer theory, the DMTH, PT studies so far have refrained from making claims on L3A. The present study bridges this gap by applying a processing perspective on an approach that explicitly seeks to compare the acquisition of English as an L3 with ESL (the acquisition of English as an L2). From a PT point of view, a qualitative difference between the two would only be evidenced in the case of different routes of acquisition or developmental stages. The question is whether PT's conservative stance on L3A can also be defended on an empirical basis, in other words, whether it can be used to falsify claims of the FDH/L3A (Fundamental Difference Hypothesis concerning L3A).

The aim of this study is to demonstrate that stages of English acquisition are the same for both L2A and L3A, and that they appear to be as previously defined for ESL within the PT framework (cf. Pienemann, 2011, p. 14). I will thus attempt to falsify the FDH/L3A in its general, radical form from the perspective of language processing.

Not all the domains of language acquisition for which advantages for bilinguals are postulated can be tested here. This would be beyond the scope of the present thesis. However, by showing that in the domain of language processing no qualitative differences exist between L2A and L3A, the FDH/L3A as such is falsified, since the development of grammar in any target language cannot be regarded as a peripheral area of language acquisition, but rather, as I will argue, as its core.

To do so, I will compare a group of German-Turkish learners of English as L3 (n=14) with a group of German learners of English as L2 (n=14). Informants from both groups stem from forms 5 (n=4), 7 (n=4) and Q1 (n=6). The data collected and analyzed is cross-sectional in nature. The suggested hierarchy for ESL will be confirmed with the L2 learners and also shown to be productive for the L3 learners.

The study as presented here confirms the applicability of PT to any kind of language acquisition and questions the FDH/L3A as well as related didactical reflections. It shows that with some areas – such as transfer or variational tendencies like simplification – differences indeed exist between L3A and L2A, but that these do not

move beyond a quantitative level, thus rejecting a view of L3A as being fundamentally different from L2A.

The structure of the remainder of this thesis is as follows. Chapter 2 provides an overview of the literature on L3A studies and evaluates the sum of studies in the field. Chapter 3 presents models that have been suggested for L3A. Chapter 4, then, outlines the framework adopted here, which is PT, along with the PT-based hypotheses. Chapter 5 provides an overview of the empirical basis for testing these hypotheses. After this, the results of my studies are presented (Chapter 6) and discussed (Chapter 7). Chapter 8 concludes the thesis, summarizing main findings as well as pointing out limitations and future recommendations.

## 2 Literature Review

### 2.1 Introduction

The question as to whether acquiring a third or further language is in any way superior to acquiring one's first foreign language is answered by a clear 'yes' as far as folk wisdom is concerned. Generally people tend to associate either greater ease, increased speed or both with such multiple language acquisition as compared to (pure) L2A (cf. Cenoz, 2013, p. 74).

Research in the comparatively young field of L3A studies tries to answer the afore-mentioned question and others that are related to it, empirically, and seeks to identify the factors, conditions and circumstances that can possibly trigger advantages of L3A over L2A. The roots of L3A studies lie in the field of L2A. The following summary describing how the branch of L3A research came into being is largely adapted from Buttkewitz (2011, pp. 6-7).

Until well into the 1980s particular attention was not generally paid to differentiating between L2A and languages beyond that, in other words, L3A. The main concern of L2A studies was merely to show the particularities of acquiring a foreign language (non-native tongue), i.e. detecting commonalities and differences as compared to L1A. This is why many studies from the 1960s, 1970s and 1980s (in some cases also later than that) were declared to be L2A studies although the informants were already bilingual or multilingual, implying that L3A (or the acquisition of a fourth, fifth, nth language) was really involved here.

This fact is relevant insofar as from the 1980s on, more and more voices could be heard wanting to assign a role *sui generis* to L3A (cf. Aronin & Hufeisen, 2009a, pp. 2-3). In other words, these scholars did not want to accept any longer the subsuming of tri- and multilingualism under the umbrella term bilingualism, for they claimed that the acquisition of a third language was qualitatively different from the acquisition of a second (cf. *ibid.*).

Attention was brought to the fact that the majority of the world's population was not bilingual, but tri- or multilingual (cf. Aronin & Hufeisen, 2009b, pp. 156-57) and that this distinction should also be reflected in language acquisition studies. Notably, the larger

part of the world's population does not learn the global language English as their first foreign language, but rather as their second (or third, fourth, nth; cf. introduction in Cenoz & Jessner, 2000, p. viiif.). In general, the didactics of modern foreign languages that are mostly taught as third languages (e.g. Spanish and French in Germany) would – in the case that differences between L2A and L3A be found - profit from future results to make possible adjustments to their teaching methods.

In recent times, explicit contributions to L3A and multilingualism studies are on the increase. Whereas studies in bilingualism and L2A studies are still the predominant research branch, the number of studies that consciously assume a fundamental difference between L2A and L3A (FD/L3A in the following) is rising. At the beginning of the 21<sup>st</sup> century major steps have been taken towards independence of L3A research. To establish L3A studies as a field in its own right, the *International Association of Multilingualism* was founded in 2003. In 2004, the English-language *International Journal of Multilingualism* was published for the first time. Publishing house Schneider/Hohengehren has been publishing a special series on multilingualism since 2005. In addition, leading scholars of the field have been organizing their own conferences on L3A and multilingualism since the last decade.

Whereas there is no debate about the fact that L3A is more complex than and therefore different to L2A, the question as to whether this difference can be called fundamental is a different one. Scholars who explicitly emphasize L3A studies as an independent field of study generally also adhere to the FDH/L3A. Other researchers have already hinted at the commonalities of L1A and L2A, though not denying the well-known differences between these two forms of language acquisition. This latter group tends to focus more on the commonalities of L2A and L3A and is more cautious about the 'F' in the FDH/L3A. They continue subsuming both processes under the label of foreign language acquisition, classically represented by the umbrella term L2A (cf. Jessner, 2008, p. 19; more on terminology in Section 2.2). The framework adopted in this thesis – Processability Theory – is an instance of this latter approach (more on PT in Section 4).

The main linguistic areas that have been the focus of L3A literature are: metalinguistic awareness due to the bilingual basis that is involved (the fact that one is already bilingual when starting to acquire a third language), cross-linguistic influence (CLI, especially from the L2) and (meta-)linguistic learning strategies (cf. Cenoz, 2013,

p. 75). These three domains are supposed to be those in which L3 acquirers are superior to L2 acquirers. After clarifying some necessary terminological conventions (2.2), the remainder of this chapter will present studies on the bilingual basis of L3A (2.3), on CLI (2.4) and further relevant phenomena such as learning strategies and metalinguistic awareness (2.5). The chapter concludes with a summary and evaluation of the state-of-the-art L3A research (2.6).

## **2.2 About the Term ‘L3’**

At this point a clarification could be helpful as to what is meant by the terms that are related to the present issue of multilingualism. In the literature, there is no consensus about the exact definition of what constitutes an L3. This is because several factors – or the combination of some of them – can be used for the definition. Among them are language dominance, use, location, and chronology of acquisition (cf. Jaensch, 2013, p. 74).

Each of these factors could theoretically be agreed upon to be the relevant factor for defining what an L3 is. The problem is that each of them is subject to change. Already with bilingualism the difficulty can arise as to which of the two languages of the bilingual should be called the L1 and which the L2:

Studies of SLA are mainly concerned with the L1 and the L2, and the use of these terms has been rather clearly defined, at least until research on language attrition studies started questioning whether the term L1 refers to the language system acquired first or to the dominant language in a bilingual system. Due to the dynamics of multilingualism, that is, the changes which usually take place in the course of time with regard to language proficiency and consequently language dominance in a multilingual repertoire, the use of the terms L1, L2 and L3 becomes even more problematic. (Jessner, 2008, p. 18)

To me, the factor of chronology of the acquired languages seems to be the most straightforward choice, since it corresponds to the original idea behind the “L + number” abbreviation (L1 = first language, L2 = second language, and so on) and is feasible for a research project such as this. Therefore, in the remainder of this thesis the term ‘L3A’ is used to denote the acquisition of any language after two other languages – at least up to a certain degree – have already been acquired. According to Cummins’ interdependence and threshold hypotheses (Cummins, 1976; 1991), a certain degree of proficiency is needed in the previous language(s) in order to be able to transfer abstract knowledge to the target language (cf. Cenoz & Valencia, 1994, p. 195). One must add that it is neither



clear how high the mentioned proficiency should be, nor how it could be operationalized and tested. Still, as Jaensch (2013, p. 74) points out, “[r]esearch has made clear that even low levels of proficiency in an intervening language can affect the initial-state of a learner’s L3”.

Of course, it is a question of standpoint whether one subsumes bilingualism under multilingualism or vice versa (or L2A under L3A or vice versa). For the remainder of this chapter, the respective terms will be clearly differentiated. In other words, the term ‘L2’ will never be used to denote a third or further language. This might sound as if I have agreed upon the implications of the FDH/L3A, but this is not the case. The adoption of this terminology is a methodological necessity in order to accurately test the FDH/L3A, since the meticulous differentiation of L2 and L3 is part of the FDH/L3A itself. In other words, not respecting (at least methodologically) the differences that are assumed by the FDH/L3A would make any researcher unable to falsify the claims contained in it.

## **2.3 The Bilingual Basis of L3A**

### **2.3.1 Introduction**

Proponents of the FDH/L3A consider the bilingual basis that L3 acquirers have as one of the main advantages over L2 acquirers (the latter having only their L1 as linguistic basis). Having already acquired an L2 is considered a major beneficial experience for L3A. As Cenoz (2013, p. 73) puts it:

We could compare this experience to walking (L1), then learning to drive a car (L2) and then facing the challenge of driving a bus (L3). The experience of driving a car, despite involving different skills and strategies, can nevertheless be extremely useful when driving another type of vehicle: the starting point is not the same as for an absolute beginner. Even though the difference seems clear, it has not been acknowledged in SLA studies that refer to any target language as ‘L2’, paying little attention to the learners’ language learning background or experience.

The metaphor used by Cenoz seems intuitively appealing, but the question is whether it is a valid one without specifying the details and conditions of the involved bilingualism and its role in L3A any further, and whether it is supported by data. In the following paragraphs, some studies and overview articles are summarized that either support or contradict Cenoz’ view of the role of bilingualism as a superior basis for further language acquisition.

### 2.3.2 Research That Supports L3A Advantages Through Bilingualism

Proponents of the FDH/L3A claim that the existence of bilingualism *per se* gains the L3 acquirer the following general cognitive advantages: “a heightened level of metalinguistic awareness, creative or divergent thinking, communicative sensitivity and further language learning. All these are skills which develop at the higher level of creativity and reorganization of information” (Jessner, 2008, p.29). Cenoz (2013, pp. 73-74) also ascribes advantages to L3A due to these “outcomes of bilingualism”.

Cenoz and Valencia (1994) conducted a cross-sectional study in the Basque country with 320 informants (cf. *ibid.*, p.199). About half of them were monolinguals (L1 Spanish) acquiring English as L2, whereas the other half was bilingual (L1 Spanish, L2 Basque or vice versa), acquiring English as L3. Students were between 17 and 19 years old and were in their last year of secondary school (cf. *ibid.*). Cenoz and Valencia tested five dimensions of proficiency in English: 1. speaking ability, 2. listening comprehension, 3. reading comprehension, 4. writing and 5. vocabulary and grammar (cf. *ibid.*, p.200). The test of vocabulary and grammar consisted of three multiple-choice tests of linguistic competence (cf. *ibid.*).

With the language combination Cenoz and Valencia examined (Spanish – Basque – English), they were able to examine the effect of bilingualism on an abstract level. In other words, cross-linguistic influence (CLI, cf. Section 2.4) from Basque – the language the monolinguals did not have in their linguistic repertoire - was unlikely to obtain due to the typological unrelatedness to both Spanish and English (cf. *ibid.*, p. 205). Other factors they examined were age, intelligence, motivation, and exposure to the target language (cf. *ibid.*, pp. 201-202). They summarize their findings as follows:

[The] results support our main hypothesis: bilingualism has a positive mediating effect on third language learning. The [...] inclusion of bilingualism significantly improved the prediction of English language achievement, once the effect of other predictors had been accounted for [...]. Furthermore, there were no interaction effects between bilingualism and the other predictors, so the effect of bilingualism was obtained regardless of the effects of the [other] variables. (*ibid.*, p. 204)

Cenoz also published an overview article on L3A (Cenoz, 2003, quoted after Jessner, 2008), the results of which Jessner summarizes and evaluates as follows:

In an extensive overview, Cenoz [...] found a tendency towards mixed results in studies on the effects of bilingualism on further language learning which she related to the diversity of the studies concerning the specific aspects of proficiency, methodology used and the testing context. Summarizing, she pointed out that the majority of studies on general proficiency indicated a positive effect of bilingualism on TLA [=L3A; my note] and that this effect was linked to metalinguistic awareness, language learning strategies and communicative ability, in particular in the case of typologically close languages. The overview also showed that more research is needed to explore the complexity and diversity of TLA. As already pointed out by Bialystok (2001), a bilingual does not have across-the-board metalinguistic advantages or universally superior metalinguistic abilities but increased abilities in tasks that require selective attention. Additionally, her latest work (Bialystok et al. 2004), focusing on executive functions in bilingual adults, suggested cognitive advantages of bilinguals across the lifespan. (Jessner, 2008, p. 30)

More recently, Jessner conducted the so-called *Tirolstudie* (Jessner, 2006, summarized in Buttkewitz, 2011, pp. 44-45), in which she investigated the factor of (heightened) metalinguistic awareness – one of the factors that is attributed to the cognitive outcomes of bilingualism by adherents of the FDH/L3A. She took metalanguage used by her informants as an explicit expression of metalinguistic awareness (cf. Jessner, 2006, p. 106). The 17 informants were also learners of English as an L3, with German and Italian as their L1 and L2s. They were studying English at the University of Innsbruck and were assigned level B2 within the CEFR (cf. *ibid.*, p. 86) and were highly proficient in German and Italian. Among other things, their use of metalanguage was tested as they were to write a letter, a summary and an essay in English (cf. *ibid.*, pp. 85-86). This was achieved by different methods, TAPs among them.

Eight out of her 17 informants made use of metalanguage, which was observed to co-occur often with language switches (code-switching). Jessner concludes that the monitoring function in language production is more effective with multilinguals:

[T]he tendency to show a higher level of attention in trilingual processing in the present study – however limited its scope may be – might perhaps count as support of the development of EMM – and the causal relationship between its extension and the increased level of metalinguistic awareness (*ibid.*, p. 117).

Haenni Hoti et al. (2011, summarized in Buttkewitz, 2011, pp. 45-48) tested Cummins' (1991) interdependence hypothesis as adapted to L3A. They wanted to know if L2 skills in listening and reading comprehension facilitate these same skills in the L3. In Switzerland, they conducted a longitudinal study with 928 informants. The mentioned skills were tested in French and English, with German (the local language) reading comprehension checked additionally (cf. Haenni Hoti et al., 2011, p. 98). The authors thus compared the difference between the presence vs. absence of English comprehension skills that had been learned at school by one set of the informants. They assumed that the informants who had studied English at school previously would outperform their peers who lacked previous knowledge of English (cf. *ibid.*, p. 99).

Lambert 1974 (quoted after Cenoz, 2003, p. 82) introduced the notion of additive vs. subtractive bilingualism or contexts of bilingualism. According to him, positive effects of bilingualism (=additive) only obtain when both languages in question are both spoken and fostered, along with the culture in which these languages are embedded. If a language is not valued and, as a consequence, not practiced or fostered institutionally, the positive effects of bilingualism do not show, and the context is a subtractive one. Haenni Hoti et al. 's (2011) study clearly constituted a case of an additive context, since all the involved languages were practiced and fostered institutionally (cf. *ibid.*, p. 100).

The authors interpret the results of their study as confirming their hypotheses:

Even after just 2 years of instruction of previous (and 1 year of simultaneous) English instruction consisting of two to three lessons a week from Grades 3-5, a positive effect of this previously acquired language knowledge on the acquisition of French can be demonstrated to exist (*ibid.*, p. 112).

### **2.3.3 Research That Does Not Support L3A Advantages Through Bilingualism**

As has been shown in the previous section, there are a considerable number of studies that report advantages of L3A compared to L2A due to the existence of bilingualism. However, the results mentioned should be considered with caution, since they are limited in several ways (more on these limitations in Section 2.3.4). What is more, a number of studies do not present evidence for the mentioned advantages; at times they even report disadvantages connected to bilingualism.

This is the case especially with bilingualism in immigration contexts. In Europe, many countries have immigrants who acquire the language of the respective country – which is the L1 for the majority – as an L2 and – consequently – any language that is L2 for non-immigrants will be an L3 for immigrants, and so on. In her latest review article, for instance, Cenoz reports about the outcome of immigrant L3A in the Netherlands:

Several studies have been carried out with immigrant bilingual learners in the Netherlands. For example, Sanders & Meijers (1995) reported no differences in the acquisition of English as a third language between immigrant Turkish-Dutch or Arabic-Dutch bilingual learners and monolingual Dutch learners. Schoonen et al. (2002) focused on proficiency in written English by immigrants who were bilingual in their L1 and Dutch (L2) and Dutch L1 learners of English. No significant differences were found between the two groups in this study. (Cenoz, 2013, p. 75)

FDH/L3A proponents like Cenoz argue that this lack of positive evidence in immigrant contexts is due to the presence of a subtractive context of bilingualism. In other words, the cognitive advantages of bilingualism do not show due to other factors: “However, it is important to remember that immigrant learners may also be at a disadvantage because of their socioeconomic status or other social and cultural factors” (ibid.).

What can furthermore be observed is that Cenoz herself in her 2013 paper seems to contradict the results of one of her (Cenoz & Valencia, 1994) previous studies when she claims that:

the effect of bilingualism on L3A may not be as strong as that of other variables such as intelligence, socioeconomic status, motivation and exposure, and may even be hidden by those variables (Cenoz, 2013, p. 77).

On the same page she also explains why the results of studies on the role of bilingualism in L3A are so heterogeneous (ibid., highlighted by author):

Different results from studies on the effect of bilingualism on TLA [= L3A, my note] are also related to how language proficiency is tested. Research studies that focus on overall L3 achievement and use a number of tests to measure different dimensions of proficiency report more advantages for bilinguals than studies that focus on a very specific aspect of language proficiency. **These findings are not surprising, since bilinguals do not necessarily have advantages across-the-board in every aspect of TLA**, so studies that select a narrow linguistic focus may not find any differences.

### 2.3.4 Summary, Evaluation and Conclusion

Studies and overview articles on the bilingual basis of L3A reveal mixed results. As Cenoz (ibid.) points out (see quotation above), advantages are usually found when the scope of the respective study is broad, whereas research on specific domains within the target language proficiency does often not report significant differences between L2 and L3 acquirers of the same language.

Even though the designs of the mentioned studies are varied, commonalities can be identified within the group that reports advantages and within the group that does not. Assuming that the differentiation between declarative and procedural knowledge (cf. Paradis, 1994) is a valid one<sup>3</sup>, and furthermore assuming that there is a rather clear assignment of linguistic skills to either declarative or procedural knowledge (which is implied in a non-interface position), the following can be said. Those studies that investigate skills that contain much or at least a certain degree of declarative knowledge – such as listening and reading comprehension, writing and meta-language – tend to find advantages for L3 acquirers over L2 acquirers. The declarative part of their bilingual basis thus seems to be facilitative when it comes to declarative skills in the target language. Those studies that investigate skills that contain exclusively or predominantly procedural knowledge – such as the spontaneous production of morphosyntactic structures in the target language – tend not to find advantages. The procedural part of the learners' bilingual basis (specifically: of their L1 and of their L2) thus does not seem to be facilitative in any way for any domain in the target language, which is due to the very nature of procedural knowledge – it is highly specialized and cannot simply be transferred (cf. Pienemann, 1998, p. 61; Paradis, 1994, p. 393; Levelt, 1989, pp.9-10).

The view of Cenoz and Todeva (2009, p. 278, quoted after Cenoz, 2013, p. 76) that “prior linguistic knowledge helps on all levels of language“ is too general. Declarative knowledge in a previously acquired language might help for declarative skills in the target language, but from a non-interface-position view, declarative skills cannot simply be taken over from one language to another.

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<sup>3</sup> Although research in the last decades has clearly confirmed this distinction, nowadays the notion of the dichotomy of declarative and procedural knowledge is challenged, especially within the framework of DST (cf. Lowie & Verspoor, 2011). More on this in Section 3.7.

## 2.4 Cross-Linguistic Influence

### 2.4.1 Introduction

Whereas Section 2.3 has dealt with the bilingual basis of L3A, this section focuses on CLI, a more concrete form of transfer, i.e., that of concrete linguistic material that might or might not be transferred to the target language. It is not always easy to distinguish between the two elements (the global, cognitive bilingual basis, independent of language typology, and the more purely linguistic CLI), but since these elements are suggested as two separate, major pillars that are supposed to constitute L3A superiority over L2A in the literature (cf. Cenoz, 2013, p. 72), the distinction will be kept.

A theoretical factor of CLI given in L3A, but not in L2A is the possibility of transfer from the L2 (in other words, from a language that is not the learner's mother tongue; cf. Cenoz, Jessner, & Hufeisen, 2001). This immediately leads to the question as to whether – within CLI – this factor (transfer from L2 to L3) might be the one responsible for a possible fundamental difference between L2A and L3A. Proponents of the FDH/L3A would agree with this (cf. Jessner, 2008, p. 31), and the following pages will deal with studies that have empirically tested the mentioned phenomenon.

Still, of course, one has to specify further the linguistic domain in which CLI might occur. CLI in L3A (CLI/L3A in the following) has been observed to obtain in both reception and production, with the former being the core area. Many scholars argue that it is more likely to occur in the initial state of L3A (cf. Rothman, 2010, p. 109). Within both reception and production, CLI can occur in the domains of lexis and morphosyntax, with the majority of the studies devoted to lexis<sup>4</sup>. Based on the findings observed, several models have been suggested in the last two decades that make differential predictions about the nature of CLI/L3A, and especially about which factor should be given priority. Factors that have been identified in the literature are proficiency, recency of use, (psycho) typology, L2 status (cf., e.g., Falk et al., 2015, p. 228) and processability (cf., e.g., Håkansson et al., 2002; Pienemann & Håkansson, 2007).

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<sup>4</sup> Phonetic/ Phonological CLI has also been observed to occur (cf. Jaensch, 2013, pp. 81-82), but since it is not relevant for the present thesis due to its morphosyntactic (and, to a lesser degree, lexical) focus, it will not be dealt with any further. The interested reader is referred to the mentioned publication and the literature listed therein.

Several studies on CLI/L3A from the last three decades will be presented now, starting with those dedicated to reception (2.4.2). Within the subsequent section on production (2.4.5), the different CLI/L3A models will be introduced. The chapter ends with a summary and an evaluation of the findings and models in the area of CLI/L3A (2.4.6).

#### **2.4.2 CLI/ L3A in Studies on Language Reception**

The assumption that knowledge of a language that is related to the language to be acquired can enhance the understanding of the latter is intuitively appealing. This has been observed already with L2 acquirers, who are able to understand a considerable portion of L2 input in the case that their L1 is related to their L2 (cf. Carvalho & Bacelar da Silva, 2006, p. 187). Logically, both the L1 and the L2 could theoretically facilitate comprehension of the L3, thus research in L3A comprehension processes is especially interested in the role of the L2. Both Singleton and Little (1984) and Müller-Lancé (2003) tested this assumption empirically. The following paragraphs on these two studies are largely adapted from Buttkewitz (2011, pp. 15-18).

About thirty years ago, Singleton and Little tested the reception of a Curriculum Vitae (CV), which was written in Dutch and presented to their informants both in written and audio formats (cf. Singleton & Little, 1984, pp. 260-61). Informants were not told that the CV was in Dutch. The study was conducted at Trinity College, Dublin, and was designed as a comparison between students with L2 French and others with L2 German. The L1 was probably English for all of them; the authors are not explicit about this point.

The informants were to answer questions on the comprehension of the CV and were allotted half an hour to complete the questionnaire. They also had the possibility to listen to an audio version of the CV as often as they wanted. Afterwards, in a retrospective questionnaire, they were asked to estimate their perceived difficulty of the CV, the strategies they employed to understand it and which format of the CV they found more helpful for understanding it.

The L2 German group significantly outperformed their L2 French peers (cf. *ibid.*, p. 264). They recognized and identified German-Dutch cognates more readily and perceived the experiment as easier (in average) than did the French L2 group. Also, all of the informants who reported to have used the transfer strategy explicitly said that knowledge of German had helped them most during the task. (cf. *ibid.*, p. 265).



Müller-Lancé (2003) conducted cross-sectional and longitudinal studies on the reception of Romance language sentences by learners who already knew another Romance language. Because of the large lexical overlap, it is particularly reasonable to assume facilitative transfer in such a scenario.

In the cross-sectional study, 174 language learners from various institutions were tested for their Spanish and Italian text comprehension. In the longitudinal study, 21 students of Romance philology were tested for all of their language skills. To this end, a multilingual word association test as well as TAPs and learner type tests were carried out (cf. Müller-Lancé, 2003, p. 117). The informants' previous linguistic knowledge was given an extra focus by asking for learning biographies (cf. *ibid.*, p. 118).

The central results of the study confirm the assumption mentioned above; informants applied transfer of linguistic knowledge from another Romance language (cf. *ibid.*) to an even larger extent than intralingual strategies (from the same language). Hardly any transfer from the L1 (German) could be evidenced.

### **2.4.3 Interim Conclusion: CLI with L3 Reception**

Considering together the results of Singleton and Little (1984) and Müller-Lancé (2003), the following can be said. Transfer that facilitated comprehension of the L3 occurred, and the L2 was not only a possible source, but even the main linguistic resource, and superior to L1 in this respect. Concerning the factors responsible for this outcome, two of them can be regarded as compatible with the results: (Psycho-)typology and L2 status.

Psychotypology refers to the perceived linguistic distance of two (or more) language systems, whereas typology refers to the factual linguistic distance between two (or more) structures/ domains of a given language (cf. Jaensch, 2013, p. 77). Both of them would explain the results equally well: In Singleton and Little's study, the informants made use of German since it is closely related to Dutch, both factually and also in their perception. The same holds for Müller-Lancé's studies. The so-called 'L2 status' or 'foreign language effect' (cf. Bardel & Falk, 2007) – although usually applied to production, see 2.4.4 – could also explain the results, since the typologically closest language to the L3 in both studies was the L2. A different research design would be needed here to disentangle the two factors, (psycho-)typology vs. L2 status.

Even though these results are fully compatible with the FDH/L3A, some caution is needed when interpreting them. First, it has to be pointed out that the occurrence of transfer with reception cannot simply be assumed to work equally with production (more on CLI/ L3A in production in the next section). Second, Singleton and Little (1984, p. 264) report that in spite of the amount of observed transfer, there were still a considerable number of questions answered correctly by very few informants although transfer from German would have been an effective strategy to be used here. They mention that the difficulty of about two thirds (!) of the questions must be explained by factors other than typological distance of the involved languages (cf. *ibid.*). Thus, when it comes to understanding an L3 transfer from a typologically related L2 (or L1) can be facilitative. It still has yet to be explained why in some cases this effect does not obtain even though the languages in question are typologically very close to each other.

It also should be pointed out that the two studies reported here stem from a European context, with European language constellations. To my knowledge, there are few studies on CLI/L3A with a focus on reception involving other language constellations, e.g. Asian or African. Still, since the predicted advantages hold only for typologically close languages, the Germanic and Romance languages involved in the studies here serve as a case in point.

#### **2.4.4 CLI/ L3A in Studies on Language Production**

It is well known that when it comes to acquiring a foreign language, producing that language generally lags behind comprehension. In other words, one can usually understand much more of a given target language than what one can express in that language (cf. also the notion of passive bilingualism; e.g. Baker, 2011, p. 7).

Within the last two or three decades, several studies have been conducted on CLI/L3A within the domain of language production (lexis and morphosyntax). It is also (mainly) this domain for which the different models of CLI/L3A have been proposed. Some studies on written production - with no explicit link to one of the models - will be presented now, followed by those regarded as evidence for the CEM, the L2-status model, the TPM, and the DMTH (oral production).

## Written Production

In a compilation on third languages edited by Dentler, Hufeisen and Lindemann (2000), Sigrid Dentler (2000), Uwe Kjær (2000), and Beate Lindemann (2000) all contributions focus on the written production of L3 German by L1 Scandinavian (Swedish/ Norwegian) learners with L2 English. The following is a summary of Buttkewitz (2011, pp. 26-31), where the three studies mentioned are presented in more detail.

Dentler (2000) investigated both lexical and syntactic transfer from L2 to L3 (apart from orthographic transfer, which will not be discussed here). She grouped her informants according to their L2- and L3-learning time (four groups in total; cf. *ibid.*, p. 77). In general, Dentler reports that in her study L2 influence on L3 was considerable. As far as lexical transfer is concerned, informants often made use of ‘false friends’. Confusion of this kind of words that exhibit a high degree of formal similarity in the two respective languages is already well-known from L1 English learners of L2 German (and vice versa), and entire books have been published on the issue in order for teachers to be aware of the difficulty (e.g. König & Gast, 2012).

On the level of syntax, Dentler also identified some constructions as exhibiting similarities to their respective English counterparts. She concretely names the progressive form, the passive, postpositions involving gerunds, and causatives (cf. Dentler, 2000, pp. 81ff.). Interpreting her results, she ascribes a role to the L2 as being responsible for many of the mentioned errors that her informants committed in their written production. Still, she also acknowledges that there are typical errors that can be observed with any L1/L2 in the production of German as a target language, for instance, the sequence ADV+SVO (cf. *ibid.*; cf. also Pienemann, 1998, and Section 2.4.4.). In other words, she hints at the fact that there are certain regularities in the acquisition of German that are independent of previous linguistic knowledge.

Her most significant observation addresses the relationship between the phase of acquisition (i.e., beginner vs. advanced learner) and type/ amount of transfer. Whereas in the beginning phase of L3A, ‘false friends’ are rather common, their use decreases over the use of time. In more advanced learners, on the other hand, grammatically more demanding, syntactic constructions are transferred (cf. Dentler, 2000, pp. 81ff.). She explains this with a cognitive approach based on Levelt (1989) and De Bot (1992) (both quoted after *ibid.*, p.192). At this point it should be mentioned that the results are also

perfectly compatible with the DMTH, which predicts exactly this relationship between course of time and type/amount of transfer (cf. Section 2.4.4).

Kjär (2000) analyzed the mistakes of Swedish university learners of German in an exam written in 1998 (cf. *ibid.*, p. 49). The informants had acquired English as an L2 previously at school and during one year at university before starting to acquire German (cf. *ibid.*, p. 46). Many of the mistakes could be classified as cases of overgeneralization (meaning intralingual transfer, from the L3 itself, cf. *ibid.*), and there was transfer from the L1 Swedish. Transfer from L2 also occurred, and – similar to Dentler (2000) – lexis and morphosyntax were two of the areas involved. Note that due to the typological relatedness of all three of the involved languages, it was sometimes not possible to pinpoint whether the source language was the L1, the L2, or both of them (cf. *ibid.*).

Kjär also emphasizes the dynamics of L2 influence on L3 during the course of acquisition of the latter. He states that transfer in the areas of semantics and syntax only becomes possible when sufficiently large language (system) portions of the target language have been internalized, in order to enable, for instance, misguided associations with lexical representations at all (cf. *ibid.*, p. 45). This tendency is, again, compatible with the DMTH (cf. Section 2.4.4.). Furthermore, he maintains that it is evident that the combination of two related languages results in a strong transfer effect (cf. *ibid.*, p. 51). In other words, he stresses the importance of the psychotypology factor in the case of combined L1+L2 transfer on L3.

Lindemann (2000) focused on translations. She investigated Norwegian university students' German translations (with German as their L3 and English as L2) from the years 1995 and 1996. She also asked her informants to record metalinguistic comments on the words, expressions, formulations etc. they had chosen at home. In accordance with her experience, she expected them to perform worse than on, e.g., essays (cf. *ibid.*, p. 57).

Much lexical influence from the L2 (English) became obvious in her study. She noticed that the learners often came up with only an English word even in expressions that occur frequently in the target language (cf. *ibid.*, p. 59, cf. also the title of her publication that refers to this phenomenon). They usually rejected this linguistic material from their L2s as fast as it turned up and perceived this interference as disturbing (cf. *ibid.*).

Lindemann's results are in line with Green's (1986) concept that there are different levels of activation of the several languages in a multilingual's repertoire. In this vein, the L2 English would have a high level of activation, though not as high a level as the target language itself. There were even cases in which an informant seemed to prefer the lexical material from the L2 to that of the L1, although the L1 would have been the 'better' option for the particular word or expression (cf. *ibid.*, p. 63).

In the domain of syntax, what is striking with this study is that even informants who according to Lindemann were otherwise able to formulate a German subclause using correct word order (cf. *ibid.*, p. 61) failed to do so in this translation task. She explains this in the following way:

[Es] dürfte [...] nicht von der Hand zu weisen sein, daß [sic] die Nebensatzwortstellung des Englischen, die mit der des Norwegischen mehr oder weniger identisch ist, dem Lerner im Laufe seiner langjährigen Lernerfahrung mit der ersten Fremdsprache sehr vertraut geworden ist und somit 'automatisch' vom Lerner als akzeptabel herangezogen wird (*ibid.*, p.61)

*(It can probably not be rejected that the subclause word order in English, which is more or less identical with the Norwegian one, has become very familiar to the learner during the course of his many years of learning experience with his first foreign language, and is therefore 'automatically' applied by him as an acceptable solution.).*

Summarizing these three Scandinavian studies on CLI/L3A in written production, one can say that the factors (psycho-)typology, L2 status, and L2 proficiency could be regarded as explaining the relatively high amount of L2 transfer in L3 essay writing or translation. The typological relatedness of all three languages sometimes makes it hard to pinpoint the exact source language for a given structure. But it is probably safe to say that an L2 that is typologically related to the L3 will probably show its influence both on L3 lexis and syntax. Some of the results also seem to point to a privileged status of the L2 in CLI/L3A, or, in other words, a high activation of L2 in the learner's mind. Still, the typological relatedness of English to both German and Swedish/Norwegian does not allow us to disentangle this factor from (psycho-) typology (more on this in the next section dedicated to oral production), except for single cases of word choice. Concerning L2 proficiency, one can say that – assuming that Cummins' (1991) threshold hypothesis is right – it was high enough to allow for transfer from that language. Still, it would be necessary to include groups of informants with lower proficiency to make a valid comparison here.

There are more studies on CLI/L3A in the domain of written production (cf., e.g., Gibson et al. 2001; Carvalho & Bacelar da Silva 2006; summarized in Buttkewitz, 2011, pp. 31ff.), but since the framework adopted in this thesis – PT – was originally designed to account for oral production, the focus of this part of the literature review also reflects this. The interested reader is referred to the mentioned publications and references therein.

### **Oral Production – Models of CLI/L3A**

In the last two decades, some models have been suggested that try to give a principled account of CLI/L3A (cf. Table 2-1 below for an overview; cf. Chapter 3 for global models on L3A as a whole). The studies set up to test them are usually based on oral production (exceptions are Sanchez, 2011, and Rothman, 2010), which is why they will be presented within this section<sup>5</sup>. Studies on oral L3 production that are not explicitly linked to one of the models will be presented along with the model that is most compatible with the respective results.

#### **CEM**

Flynn, Foley and Vinnitskaya (2004) have suggested the Cumulative Enhancement Model (CEM). The CEM allows for transfer from any previously acquired language in a non-exclusive sense. In other words, in contrast to the TPM (see below), the learner does not settle on one source language at any point in time. It only predicts positive or facilitative transfer to obtain, which means that in the case of a theoretically negative transfer effect, knowledge of the respective, different structure in a previously acquired language remains neutral (cf. *ibid.*, p.14).

Flynn et al.'s theoretical motivation for their model is the assumption of cognitive economy, in other words, the human mind's avoidance of acquiring anything that has been previously acquired (cf. Rothman & Halloran, 2013, p. 57). Although this might sound appealing on a general level, the question when it comes to concrete production of grammatical structures is how the grammar building mechanisms 'know' when a structure is facilitative and when it is not (cf. *ibid.*).

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<sup>5</sup> They have been summarized in Wirbatz and Buttkewitz (forthc.), and where they are introduced it is largely adapted from mentioned publication.

Their data come from L1 Kazakh child and adult learners of L3 English who have acquired Russian as an L2 previously (cf. *ibid.*, p.10). They compared the learners' patterns of acquisition in the production of three types of restrictive relative clauses (cf. *ibid.*, p.3). As Rothman (2010, p. 110) states, "their results demonstrate that the L2 can influence development of CP structures in L3 acquisition, and that experience in any previously acquired language can be taken advantage of in the acquisition of any subsequent language".

## L2 Status Model

However, in the literature on CLI/L3A there is considerable evidence that transfer from previously acquired languages is not always facilitative (cf. Rothman, 2010, p. 111). The L2 Status model, suggested by Bardel and Falk (2007), focuses on the foreign language effect, that is, on the assumption that in L3A the L2 is especially available for transfer since it is – similar to L3 and in contrast to L1 – a foreign language to the learner. The difference in terms of language storage and processing, according to Bardel and Falk 2012, is that L1A is largely characterized by acquiring procedural knowledge, whereas the L2 and the L3 are rather characterized by the acquisition and use of declarative knowledge (Falk, Lindqvist & Bardel, 2015, p. 227). In their view, an essential outcome of this is that "in L3 acquisition, the L2 acts like a filter, making the L1 inaccessible" (Bardel & Falk, 2007, p. 480).

Bardel and Falk tested a small number of informants (nine in total) on their placement of negation in initial-state L3 Swedish and L3 Dutch (both V2 languages, cf. *ibid.*, p.470). Informants differed as to their L1-L2 constellations: Five of them had English as their L2 (a non-V2 language), the other four had Dutch and/or German as their L2 (a V2 language; cf. *ibid.*, p.470ff.). They expected both groups to transfer the placement of the negated element from their L2s, that is, the group mentioned first would differentiate between thematic and non-thematic verbs, and the group mentioned last would prefer postverbal negation generally (cf. *ibid.*, p.473f.). The language constellations they investigated, in combination with a focus on the negation structure permitted Bardel and Falk to also test a no-transfer hypothesis, a transfer-from-L1-hypothesis, and the CEM (cf. *ibid.*, p.473). They report a statistical difference regarding placement of negation in the two groups and therefore view their transfer-from-L2 hypothesis as confirmed (cf. *ibid.*, p.480).

Their data seem to allow the conclusion that “the L2 status factor is stronger than the typology factor in L3 acquisition” (ibid., p.480), but it should be pointed out that there are also some shortcomings with Bardel and Falk’s study.

Pienemann et al. (2013, p. 143) criticize mainly two points. The first is that Bardel and Falk’s study is based on a limited dataset. The second point is that some key theoretical concepts in their approach, particularly the notion of ‘strongest L2’, lack validity. This means it is very likely that many or all of their informants had other ‘L2s’, which should have been investigated in order to exclude transfer from those other languages (cf. ibid., p.151f.).

In addition to this, Pienemann et al. add the following criticism concerning the manner in which Bardel and Falk elicited their data. They report to have applied “the so-called Direct Method (Baker and Prys Jones, 1998, p. 671), according to which learners produce semi-spontaneous speech in interaction with their teacher” (Bardel & Falk, 2007, p. 461). The fact that not purely spontaneous speech was produced by Bardel and Falk’s informants opens the possibility that chunks and formulae may be contained in their data:

In very early L2 classes learners’ utterances often consist of formulae and repetitions of the teacher’s utterances, and the structures these appear to contain are not generated by their newly developing non-native formulator. Instead, they are unanalysed large entries in the lexicon. Therefore special care needs to be taken to distinguish between formulae/ repetitions and productive learner utterances (Pienemann et al., 2013, p. 153).

In a replication study with data from the universities of Paderborn and Ludwigsburg (‘PALU’) that took the afore-mentioned special care to differentiate between productive speech and formulae, Pienemann et al. demonstrated that “the initial L3 word order and the initial position of negation is neither determined by the L1 nor by the L2 and that it can be predicted on the basis of processability” (ibid., p.143).

Bohnacker (2006), though allowing for transfer from the L1, also favors the L2-status-factor. Trying to rebut Håkansson et al.’s (2002) claim that V2 in German can only be produced relatively late, she interprets their findings that Swedish beginning learners of German did not produce V2 productively, due to transfer from English, which the learners had acquired to a high degree before they came in contact with German. Bohnacker therefore tried to exclude this confounding variable by contrasting the oral German production of L1 Swedish learners with and without knowledge of L2-English



(three respectively, six in total). She found a difference in outcome among the informants with and without previous knowledge of English; the group with knowledge of English produced 45% V2-violations in their L3 German, whereas the group without knowledge of English achieved a score of 100% accuracy in their L2 German V2-structures. Bohnacker interprets this result as confirming the L2 status factor. In other words, she maintains that interference from English triggered the V2 violations in the one group, whereas the other group – the ‘true L2 acquirers’ – had recourse only to their L1, Swedish, which also is a V2 language (cf. Bohnacker, 2006, p. 443f.).

Bohnacker’s study thus is not only an attempt to show the impact of transfer from an L2 in L3A, but also to play off processability of given structures against this. Pienemann and Håkansson (2007) responded to Bohnacker’s paper and voiced the following criticism. Although Bohnacker (2006, p. 443) claims that her informants were *ab-initio* learners of German, they had already been exposed to the target language for four months (cf. Pienemann & Håkansson, 2007, p.490) and thus were more advanced than real initial-state learners. Pienemann and Håkansson argue that due to their high motivation to acquire the language, all six informants had already proceeded up to the PT stage at which V2 is processable (cf. *ibid.*). Another point which is closely related to this is the methodology Bohnacker used, particularly the decision to rely on accuracy rates. Pienemann and Håkansson maintain that accuracy rates are not a reliable measure for acquisition (cf. Pienemann, 1998, pp. 137-138; detailed explanation in Section 4.4.1) and therefore suggest the PT-related emergence criterion to be used. Applying the emergence criterion and implicational scaling to Bohnacker’s data, Pienemann and Håkansson show that her study does not falsify PT, but rather confirms it and its integrated theory on transfer, the DMTH (cf. *ibid.*, p.485; more on this in the respective part on the DMTH below).

Sanchez (2011) also intended to play off transfer of previous linguistic knowledge, in her case, of a specific basic word order of a concrete, previously learned language, against processability-based universal canonical word order in a given target language. “The study presented here refutes this premise [canonical word order as conceptualized by PT, my explanation] by showing strong evidence of the use of (S)OV orders at the initial state of L3A in an instructed context” (Sanchez, 2011, p. 220). She tested the written production of 148 initial-state learners of English (Spanish-Catalan bilinguals; 83 with, 65 without knowledge of German; English was thus chronologically the L4 or L3

for them, respectively; cf. *ibid.*). Sanchez reports having found (S)OV word orders in the production of the group with previous knowledge of German (cf. *ibid.*) and interprets this as being due to transfer from their L3 German (cf. *ibid.*).

Even though one has to acknowledge that the (S)OV structures some of Sanchez' informants produced in their English written texts might indeed have been facilitated by knowledge of German, her interpretation of having refuted underlying concepts of PT is not the only way to view her results. Sanchez herself admits (*ibid.*, p.230) that for future research it would be desirable to test for oral production, since it is not guaranteed that the reported (S)OV sequences would also materialize in spontaneous, oral production. The written modality she focussed on usually involves much more use of declarative and metalinguistic knowledge (cf. Paradis, 2009, p. 29), which puts the study outside the scope of phenomena for which PT claims to account (more details on PT in Section 4.2).

Furthermore, Sanchez seems to have misunderstood the PT-based concept of canonical word order as always being SVO independent of target language typology (cf. *ibid.*, p.220). This is not the case; note that canonical word order is different depending on the target language. In Turkish (cf. Buttkewitz, *forthc.*) or Japanese (cf. Di Biase & Kawaguchi, 2002, p. 289), for instance, it is SOV. Even if some informants of Sanchez' (2011) study also transferred SOV to English in oral, spontaneous speech, this would not contradict PT, since both SOV and SVO can be equally valid canonical word orders that are – at first – unalterable and can only later be modified (such as XVSO in German, for instance, Håkansson et al. 2002). There is no obvious psycholinguistic difference between SVO and SOV: in both cases, the SUBJ precedes the OBJ, which is crucial for mapping processes between different syntactic and semantic levels of grammatical production (more on this in Section 4.2.3). Still, I would assume that with a minimal amount of target-like input in English, any learner with any type and amount of previous linguistic knowledge would adapt his basic word order to the target-like English canonical word order, SVO, after a very brief period of time, since it is psycholinguistically easy to produce (cf. Kawaguchi 2005, in this study the opposite basic word order – SOV – was readily produced by L1 English learners of L2 Japanese).

## TPM

Rothman (2010; 2013) suggested the Typological Primacy Model (TPM). In contrast to Bardel and Falk (2007), Bohnacker (2006) and Sanchez (2011), he ascribes the highest importance in (adult) morphosyntactic CLI/L3A to the factor of psychotypology. His own definition of the TPM (Rothman, 2010, p. 112) is as follows:

Typological Primacy Model: Initial State transfer for multilingualism occurs **selectively**, depending on the comparative perceived typology of the language pairings involved, or psychotypological proximity. Syntactic properties of the closest (psycho)typological language, **either** the L1 **or** L2, constitute the initial state hypotheses in multilingualism, **whether or not** such transfer constitutes the most economical option (highlighted by author).

From this definition two aspects of the TPM are immediately clear to the reader:

1. transfer can only come from either the L1 or the L2; at a given point in time the learner/speaker makes this decision based on (psycho-)typological proximity.
2. Transfer can be facilitative and non-facilitative. With these two assumptions Rothman's model differs from assumptions of other scholars who allow for transfer from both L1 and L2 at the same time (cf. e.g. Bohnacker 2006; Sanchez 2011; Pienemann et al. 2013), and from those who only allow facilitative transfer (cf. the CEM, Flynn et al. 2004).

In his 2013 paper, Rothman explains (Rothman, 2013, p. 7) which factors he believes are responsible for the learner to decide from which language to transfer, from his L1 or his L2. These factors form a hierarchy and are considered one after the other in the following order: the lexicon, phonological/ phonotactic cues, functional morphology and syntactic structure (cf. *ibid.*). He furthermore assumes that, once the learner has decided on either his L1 or his L2, "transfer is complete from one previous system (in the same sense as FULL TRANSFER, see Schwartz & Sprouse, 1996)". (*ibid.*, p.1)

Rothman's (2010) data, presented to corroborate his model, come from L3 learners of either Spanish or Brazilian Portuguese, both closely related Romance languages, who had Italian - another Romance language - and English as their L1s and L2s. The major relevant difference between the Italian/Spanish-English bilingual informants was that one set of them were native speakers of English and had acquired Spanish as an L2, whereas the other set were native speakers of Italian and had acquired English as an L2 (cf. *ibid.*, p.107). This language pairing allowed Rothman to contrast the L2-status-factor (cf. Bardel & Falk 2007) with (psycho-)typology. The domain he investigated was adjectival interpretations. "The data show that, irrespective of the L1 or

the L2, [his] L3 learners demonstrate target knowledge of subtle adjectival semantic nuances obtained via noun-raising, which English lacks and the other languages share” (cf. Rothman, 2010, p. 107). In other words, as Rothman had assumed, there was no significant difference between the behavior of the group whose beneficial knowledge came from their L1 and the group whose L2 knowledge was the linguistically more helpful resource.

The results of Rothman’s study thus confirm that the L2 is not necessarily always privileged in L3A, and that typology can be a stronger factor. Note that Rothman’s informants had to complete cloze tests and to answer grammaticality judgement tasks (cf. Rothman, 2010, p. 116), which is why his results neither confirm nor falsify PT/ the DMTH, since for doing so, spontaneous speech production in the target language has to be elicited. His results are in principle also compatible with the CEM, since the knowledge from previously acquired Romance languages was exclusively facilitative for the informants. Still, as Rothman himself maintains, there is considerable evidence that CLI/L3A can be non-facilitative (cf. *ibid.*, p.111).

Some other CLI/L3A studies on oral production will now be presented that are not explicitly linked to the TPM, but consider the factor of (psycho-)<sup>6</sup>.

Möhle (1989) reports about a pilot study in which 22 students of Spanish (L1 German, two to three years of university Spanish) were asked to retell a short mute film sequence in Spanish (cf. *ibid.*, p.180). One half of the group studied English besides Spanish, the other one French. It was supposed by Möhle and fellow researchers that transfer would occur from another foreign language, even on a subtle level (cf. *ibid.*, p.179).

The main findings of the study are the following: 1. Transfer mostly obtained in the domain of lexis (cf. *ibid.*, p.186f.). In syntax, no transfer could be observed, which Möhle argues is due to the fact that – based on the generally low target language proficiency – subjects almost exclusively produced main clauses (cf. *ibid.*, p.184); 2. More than transfer from other languages, intralingual strategies were employed by the informants in order to overcome lexical problems (cf. *ibid.*, p.186). This finding seems to

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<sup>6</sup> The following paragraphs are a summary of Buttkewitz, 2011, pp. 19-25.

contradict Müller-Lancé's (2003) results (cf. Section 2.4.2), but one must remember that Müller-Lancé focused on L3 reception; 3. Probably the most significant finding is that those informants who studied English at the same university made more recourse to their French (typologically close to Spanish) than to their English (typologically not as close to Spanish as French), although their French proficiency was usually lower and their last exposure to French was further in the past than was that of the other group (cf. *ibid.*, p.190). This means that the most compatible interpretation of the results of Möhle's (1989) study is that the factor of (psycho-)typology is superior as compared to L2 proficiency:

[T]he question [...] if speech production in a foreign language is influenced by other foreign languages [...] seems to depend on the degree of linguistic distance in given cases more than on the mastering of or familiarity with the influencing language (*ibid.*).

Cenoz (2001) reports about a study with 90 Spanish-Basque bilinguals acquiring English as an L3 in the Basque country. Some of her informants had Spanish as L1 and Basque as their L2, with the rest it was the other way around (cf. *ibid.*, p.11f.). They were audio- and videorecorded while retelling the frog story (Mayer 1969) in English. Instances of borrowing and foreignizing were analyzed, which means that the focus of the study was on lexical transfer (cf. Cenoz, 2001, pp. 11-12).

About 50% of all her informants made recourse to lexical transfer (cf. *ibid.*, p.16). Those whose L2 was Basque made slightly more use of that language than Basque L1 speakers. This finding can be seen as moderate evidence for the L2-status-factor (cf. *ibid.*, p.18), but it is only a tendency and not a fundamental difference. Another significant result was that with both groups transfer from Spanish was more frequent than from Basque, which speaks in favor of (psycho-)typology. This is further corroborated by the fact that the exclusively Spanish expressions underwent the process of foreignizing (within the target language English) – this never occurred with Basque (cf. *ibid.*).

De Angelis and Selinker (2001) present a case study of two multilinguals' oral Italian production conducted in England. A free interview was conducted with one of them in which he was asked to translate English words into Italian from a word list (cf. *ibid.*, p.51). The other informant's proficiency in Italian was higher, which is why he was asked to summarize some Italian evening news (cf. *ibid.*, p.52). Only their language production was analyzed, though of course with the given tasks, reception was also

involved. For both informants, Spanish was the language acquired immediately before starting to learn Italian (which was the L3 for the more proficient informant, for the other one it was already his L4).

For both informants, lexical and morphological transfer that mostly came from Spanish could be observed. De Angelis and Selinker report the transfer that occurred in their study as being exclusively subconscious, formal transfer (cf. *ibid.*, p.51). They maintain that transfer of meaning requires a very high proficiency in both source- and target language, which was not the case in their study (cf. *ibid.*, p.49f.).

De Angelis and Selinker suggest that Green's (1986) concept of different levels of activation of languages in a multilingual's mind explains their results. According to Green's foreign language mode (cf. De Angelis & Selinker, 2001, p. 56), the language acquired before the target language – which was the L2 and L3 for the two mentioned informants here – has a higher level of activation and can therefore more readily be used for transfer. This explanation would, in principle, coincide with L2-status-factor. Still, they also consider psychotypology as an explaining factor, which they think can be applied on the level of word selection (cf. *ibid.*, p.55). They assume that in such cases phonologically similar lexemes and morphemes are activated simultaneously across all existing language systems (cf. *ibid.*, p.51). With the given language combination, the factors L2-status and typology cannot be empirically disentangled, which is why one cannot claim superiority for one of these factors with the present research design. One would need a different combination of languages, which De Angelis and Selinker also suggest for future studies (cf. *ibid.*, p.57).

Ringbom (2001) argues for differentiating between formal and conceptual transfer within the domain of lexis in CLI/L3A. Referring to a 1987 study of English L3 production in L1 Finnish informants with Swedish as their L2, he claims that formal lexical transfer usually comes from the L2 (which would partly coincide with L2-status-factor) and conceptual transfer from the L1 (cf. *ibid.*, p.60; this would contradict L2-status-factor). This is confirmed by the different nature of transfer that could be observed in the mentioned 1987 study. Ringbom claims, however, that conceptual transfer could also come from the L2 in case of closely related L2 and L3 combined with a distant L1, such as with Arabic or Chinese learners of Western languages (cf. *ibid.*, p.66). Concerning the language combination in the study reported by him (L1 Finnish, L2 Swedish, L3

English), one must ask how close exactly the L2 and L3 would have to be, and also how distant the L3 would have to be, since with the given language constellation the basic requirements demanded by Ringbom are already generally met (Swedish and English are rather closely related to each other, Finnish is not). Thus, leaving conceptual transfer aside, one could explain his results with the factor of language typology, which seems to favor the (formal) transfer of cognates in CLI/L3A production.

Tremblay (2006) conducted a study on L3 German vocabulary production (thus also on lexical transfer). Her informants were thirteen L1 speakers of English aged nineteen to twenty-five (cf. *ibid.*, p.110). At the time of the study they were enrolled in a German course and had been learning that language for two to three years. She assumed the degree of CLI to be higher with a higher degree of L2 exposure and proficiency (cf. *ibid.*), which is why she subdivided her thirteen informants into three groups: one with low L2 exposure and proficiency, one with low L2 exposure, but high proficiency, and one with both high L2 exposure and proficiency. Oral speech data from all informants was elicited by a sequence of events consisting of twenty-five cartoons (cf. *ibid.*, p.112). Tremblay analyzed two kinds of CLI: neologisms and Code-Switching (CS), which were then categorized according to their origin appearing to stem from L1, L2 or L3 (cf. *ibid.*). Since CS is not the focus of this literature review, only the results concerning transfer will be discussed.

Tremblay found all three groups to transfer more from their L1 English than from their L2 French (cf. *ibid.*). In the low proficiency group, hardly any transfer from French occurred (cf. *ibid.*, p.117), a result that is compatible with Cummins' (1991) threshold hypothesis. In the high-exposure group, transfer from the L2 (in the sense of neologisms influenced by French) obtained significantly more often (cf. *ibid.*, p.114). Tremblay concludes from this that L2 exposure exerts essential influence on the way L3 learners can use their L2 knowledge to produce neologisms (cf. *ibid.*, p.117). French-based 'slips of the tongue' occurred only in the high-proficiency group (cf. *ibid.*, p.116). She explains this with a higher (or, as Cummins would put it: sufficiently high) degree of L2 activation (cf. *ibid.*, p.116f.), which was not the case in the two low-proficiency groups. On the basis of these observations, Tremblay ascribes both quantitative and qualitative differences to CLI/L3A depending on L2 exposure and -proficiency (cf. *ibid.*, p.116).

Tremblay also offers a possible explanation as to why L1 influence was dominant in her study. She argues that on the one hand L2 proficiency could have been too low in general (even for the high-proficiency group). If it had been higher, there could have been more transfer from the L2 generally. On the other hand, she maintains, L3 proficiency might already have been too high (cf. *ibid.*). This is compatible with the broadly shared view that CLI/L3A is more substantive with the onset/ initial state of L3A (cf. Rothman, 2010, p. 109), and is combined with the assumption that L1 influence holds for about twice as long (cf. Tremblay, 2006, p. 116).

Leaving aside the speculations regarding proficiency, what can be clearly stated is the fact that in the language constellation in Tremblay's study the L1 (English) and L3 (German) are more closely related to each other than any of these two languages with the L2 (French). In other words, the factor of (psycho-)typology can explain why all the informants made more recourse to their L1 than to their L2, independent of proficiency and exposure. The study thus provides some evidence for the TPM (though the TPM, due to its exclusive focus, cannot explain why there was some transfer from the L2 as well) and counterevidence to the L2-status-factor (according to which the status of an L2 *per se* is a stronger factor than typology, which clearly is not compatible with Tremblay's results).

## DMTH

The Developmentally Moderated Transfer Hypothesis (DMTH; cf. Håkansson et al. 2002; Pienemann et al. 2005a, *inter alia*) is a PT-based theory/ model of transfer that considers the constraining factor of processability (the core of PT; more details on PT in Section 4.2) as being the main factor when it comes to CLI/L3A in spontaneous, oral production. It is the theory of transfer that I have adopted and which will also be discussed in Section 6.3 in relation to the English L3 data that I have elicited.

Pienemann's (1998) work on Processability Theory already discussed the role of influence from the mother tongue critically (cf. *ibid.*, p.80ff.). Note that at the time Pienemann wrote this, L3A research was still in its infancy and thus the role of the L2 in L3A was not much of an issue, but rather the role of the L1 in (pure) L2A. At any rate, the basic view of transfer from L1 could easily be extended to mean influence from any previous language – and thus also of an L2 in L3A. The role and general significance of



transfer as conceptualized within a PT-framework is expressed by Pienemann (1998, pp. 81-82) as follows.

In other words, I hypothesize that the L1 formulator will not be ‘bulk-transferred’. Instead, the learner will re-construct the Formulator of the L2. This would not exclude that in the course of this process L1 procedures be utilised. However, I hypothesise that such L1 transfer always occur as part of the overall reconstruction process. Any other type of transfer of L1 procedures would not be in tune with the intermediate L2 procedures constructed at that point and would therefore be unable to feed into the processor.

The DMTH thus assumes a selective role of transfer. Note that this is in stark contrast to positions such as FT/FH (which suggests ‘bulk transfer’ such as mentioned in the quotation above, cf. Schwartz and Sprouse 1996) and related/ derived theories. It is also incompatible with claims that support the FDH/L3A on the basis of substantive transfer from L2.

It might be useful at this point to outline and clarify some common misunderstandings of the DMTH, since there are some publications (e.g. Bohnacker 2006, Bardel & Falk 2007, Sanchez 2011) that obviously misunderstood at least parts or derived claims of it, along with empirical evidence in favour of it.

“The DMTH is a no-transfer-theory”

As Bohnacker (2006) and Bardel and Falk (2007) understand the DMTH, it is a theory that rules out transfer altogether. In their view, processability as a factor is diametrically opposed to transfer. A variant of this view is that the DMTH supposedly does not allow for transfer at the initial state (cf. Sanchez 2011). But this is not correct. This misunderstanding is addressed in Pienemann (2011). As he points out, the DMTH “predicts that transfer **is possible** if the structure to be transferred is processable” (Pienemann, 2011, p. 82, highlighted by author). In other words, once a structure is processable in an L3, from a PT-perspective nothing speaks against transferring that structure from the L1 or L2 (or both in case they are identical in L1 and L2). Processability, thus, is not per se directed against transfer, but rather constrains transfer.

Even at the initial state of Ln-acquisition, processability does not prohibit every kind of transfer. Although this scenario is not mentioned in publications on the DMTH like Lenzing et al. (2013) or Pienemann et al. (2003), the principle that ‘what can be processed can also be transferred’ also applies to the initial state of Ln-acquisition. This

means that – theoretically – a basic word order like SOV could be transferred to a SVO language, as Sanchez (2011, see above) reports to have found. I want to point out two reflections on this possibility. The first is that developmental readiness would NOT rule out such kind of transfer, since there is nothing in SOV per se that should impede the learner from processing it, and since it is another basic word order in many languages (such as Turkish, cf. Buttkewitz, *forthc*; or Japanese, cf. Di Biase & Kawaguchi, 2002, p. 289). SOV and SVO even share the property that ‘SUBJ precedes OBJ’, which means that in terms of mapping/ alignment procedures there is no basic psycholinguistic difference between the two (cf. Buttkewitz *forthc*.). The second reflection is an objection to this possibility. According to Pienemann (2011, p. 82), such a type of transfer will only obtain if it is not ‘boldly contradicted by the input’ (cf. *ibid.*). But exactly this will be the case; any learner that is exposed to a minimum of English input is immediately confronted with its basic, canonical SVO structure, which is rather salient and can hardly be ignored.

If observations such as Sanchez’ (2011) were also found with spontaneous, oral production (remember that Sanchez 2011 focussed on written English, which the DMTH does not account for), this would not contradict the DMTH. Still, as explained above, it is very unlikely, since the frequency of SVO in the input is high enough to trigger this structure right from the start with any learner of English, irrespectively of previous linguistic knowledge.

“With the DMTH, transfer itself becomes superfluous”

Another misunderstanding found in the literature is that the concept of developmentally moderated transfer does not make sense in itself. Again, it is based on the misconceived assumption that processability and transfer are ‘antagonists’. Bardel and Falk (2007, p. 465) express it the following way:

A fundamental question is how developmentally moderated transfer can be either confirmed or disconfirmed. If the ILG [= Interlanguage Grammar, my explanation] has to wait for a positive transfer effect until it has reached a particular processability level, then transfer itself becomes superfluous. If the structure is already processable in the ILG, transfer is not a necessary strategy.

What Bardel and Falk ignore here is that PT distinguishes meticulously between acquisition and accuracy. Whereas it is right to say that PT does not assume transfer to help processability, it does assume that processability can help transfer, and this will show in accuracy. In other words, facilitative transfer will show in a (significantly) higher

accuracy in the use of a processable structure as compared to the accuracy of the same processable structure without any ‘help’ of previously acquired linguistic knowledge. This means that if one compares different groups of learners – those with and those without knowledge of a potentially facilitative structure in at least one of their previously acquired language systems – the DMTH predicts no differences in terms of the point of the first productive and systematic use of the target structure (due to universal processability constraints). But it does predict differences in terms of the accuracy levels of the target structure with the two different groups. The group that has a similar or the same structure in their linguistic repertoire will use that structure more accurately once it becomes processable, possibly up to the point of categorical acquisition (= 100% accuracy). This phenomenon has been observed and confirmed by several scholars (see empirical evidence below).

“The DMTH only accounts for facilitative transfer”

Probably due to the focus of the empirical evidence for the DMTH, Bardel and Falk interpret PT and the DMTH as allowing only for positive transfer (cf. *ibid.*, p.463). But there is evidence both in theory and in data that the DMTH also accommodates negative transfer effects. Pienemann et al. (2013, p. 143) state that “positive **and negative** effects of the L1 will be visible at predictable points of development“ (highlighted by author). There is no reason why the DMTH should allow only facilitative transfer to occur. It simply assumes that once developmental readiness is given, structures from other languages can be transferred to the target language, be they helpful for constructing the target language grammar or not.

In their reanalysis of Bohnacker’s (2006) data, Pienemann and Håkansson (2007) demonstrated that her learners were all developmentally ready to process the V2 rule, but did so with different accuracy levels (cf. *ibid.*, p.491f.). They attribute this as being due to the presence vs. absence of knowledge of English (cf. *ibid.*). In other words, Pienemann and Håkansson explain the categorical acquisition of V2 by the group without previously acquired English (the ‘true L2 learners’ of German) by exclusively facilitative transfer from their L1 Swedish, whereas for the L3 learners of German (who had knowledge of L2 English) it was a blend of both facilitative (from their L1) and non-facilitative (from their L2) transfer that lead to their non-categorical accuracy levels.

Further empirical evidence for the DMTH is presented in Pienemann (2011, pp. 78-82). The studies mentioned in Pienemann 2011 are summarized in Wirbatz and Buttkewitz (forthc.) as follows:

Håkansson, Pienemann & Sahyeli (2002) showed that the V2 property of German was not transferred by L1 Swedish learners of initial-state L2 German. Since V2 is a developmentally late structure, it cannot be transferred at the lower stages, even though it is also present in the L1. Haberzettl (2005) demonstrated that once a learner has reached a certain stage in the target language he is able to transfer a similar (or identical) structure from his L1, which leads to a higher accuracy in the production of that structure. Her Turkish learners of German produced the split-verb construction with a higher degree of accuracy than her Russian learners of German. Kawaguchi (2005) examined whether L1 English learners of Japanese transferred their native SVO word order to the target language and found that they did not do so. Instead, they produced the correct SOV order from the start. This confirms the prediction of PT and the DMTH that the acquisition of developmentally early structures in a target language is not altered by any transfer effects.

#### **2.4.5 Interim Conclusion – CLI/L3A with Production**

The most important factors relevant for CLI/L3A have been discussed now in both written and oral production. Models that propose one or several of these factors as being the decisive element have been presented: the CEM, L2-Status-Factor, the TPM, and the DMTH, along with the evidence to which the authors who adhere to the respective models refer. Although the factors discussed in the literature as possibly enhancing or triggering CLI/L3A are the same for written and oral production, the models have largely been established on the basis of oral data.

The models that have been discussed here differ as to whether they allow transfer from L1 and L2 or from only one of them, as to whether they allow for non-facilitative transfer, as to which factor they predict to be the most relevant, and as to when transfer can occur (in other words, whether they focus only on the initial-state or not). A summary of these models with the mentioned criteria is provided in Table 2-1.

Regarding research design and methodology used, one can clearly discern that the vast majority of studies on CLI/L3A are so heterogeneous that comparability is severely limited. The following factors, considered to be the most salient, have contributed to this: language constellations/combinations, focus on procedural vs. declarative knowledge, focus on initial-state vs. advanced learners, focus on accuracy vs. focus on emergence. With few exceptions, the research designs did not allow a direct

<b>Models of CLI/L3A</b>	<b>L2-Status-Factor</b>	<b>Cumulative Enhancement Model (CEM)</b>	<b>Typological Proximity Model (TPM)</b>	<b>Developmentally Moderated Transfer Hypothesis (DMTH)</b>
<b>(Main) Proponents</b>	Bardel & Falk 2007	Flynn, Foley & Vinnitskaya 2004	Rothman 2010	Håkansson, Pienemann & Sayehli 2002 and Pienemann, Keßler & Lenzing 2013
<b>Psychological/-linguistic Motivation</b>	Representation of L2 in mind of L3-acquirer more similar to L3 than is L1, therefore transfer comes exclusively from the L2	Cognitive Economy/ mind avoids relearning any procedures/ structures that have been acquired previously	Cognitive economy/ mind avoids relearning any procedures/ structures that have been acquired previously + 'entrenchment' <sup>7</sup>	Transfer is constrained by processability of the structure in question
<b>Source Language for Transfer</b>	Only L2	L1 and/or L2	L1 or L2	L1 and/or L2
<b>Allowance of Non-Facilitative ('Negative') Transfer</b>	Yes	No	Yes	Yes
<b>Full vs. Partial Transfer</b>	Not clear; tendency: Full (cf. Bardel & Falk, 2007, p. 479)	Partial	Full	Partial
<b>Focus only on Initial State</b>	Tendency: Yes	No	Yes	No

**Table 2-1: Overview of CLI/L3A Models**

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<sup>7</sup> Once the mind has decided for which language to transfer (L1 vs. L2), it settles on this decision and does not any more scan the other candidate for possibly transferable structures.

comparison of the various factors possibly involved. For instance, L2-status and typology could not be kept apart in studies in which the L2 and L3 were closely related to each other.

Summarizing the evidence for the CLI/L3A models – however tentative and small the comparison might be – to my understanding, several of their predictions haven't been shown to be borne out. These are the following:

- 1). CLI/L3A is not only facilitative, but can be non-facilitative, therefore the CEM has to be dismissed.
2. CLI/L3A does not always exclusively stem from the L2, which means that at least a strong version of the L2-status-factor-model has to be dismissed as well.
3. CLI/L3A does not obtain to a massive degree ('bulk transfer') at the initial state. If one discriminates between productive use on the one hand and echoing and/ or using metalinguistic knowledge on the other hand, this claim – which is probably the most controversial one – can be corroborated empirically.
4. CLI/L3A can come from various languages at the same time, which is why the premise of the TPM that the mind decides on one exclusive source language for transfer also has to be rejected.

Still, the overwhelming majority of studies did confirm the significance of the factor of (psycho-)typology. The factor itself should not be rejected altogether with its hosting model, the TPM (which is true to a lesser extent for the other models also). With a look at the many studies that show that learners preferably transfer structures from languages that are typologically similar to the target language, I suggest that (psycho-)typology is the main triggering factor in CLI/L3A. In other words, the amount of transfer in L3A depends to a large degree on the question whether the learner can draw on a structure that is highly similar or identical to the respective structure in the target language.

Although agreeing with Rothman on the importance of the factor of (psycho-)typology, the evidence for the DMTH has shown that typology alone is not enough for a structure to be transferred (cf., e.g., the question above as to whether and when V2 can be transferred from one Germanic language to another). Typology might be a triggering factor in CLI/L3A, but – according to the DMTH and the evidence for it – processability is a constraining factor, not only in language acquisition generally, but also for CLI/L3A

specifically. In other words, if typology induces a learner to transfer, processability ‘decides’ whether the intended transfer is already developmentally possible or not yet.

#### **2.4.6 Cross-linguistic Influence: Conclusion**

Summarizing the nature and impact of CLI/L3A, the following can be said. As could be expected, CLI/L3A is more frequent – and more facilitative if language typology allows this – with language reception than with production. This simply reflects the parallel fact that usually one can understand more than what one can express (cf., e.g., Richards & Schmidt, 2013, p. 462) in any target language. Of course, this effect is enhanced if one already knows a language that is typologically very similar to the target-L3.

Within language production, the written modality appears to allow more conscious transfer from a previously acquired knowledge due to its highly academic and metalinguistic nature. With oral production, several factors may be responsible for CLI/L3A, namely L2 proficiency, -exposure, -recency of use, - status, (psycho-)typology and processability. Independently of identified factors, lexis is the area that is mostly affected by CLI/L3A, but morphosyntactic transfer has also been found.

Several models that build upon these factors have been suggested – the CEM, L2-Status, the TPM and the DMTH are the most well-known ones. The studies set up to confirm or disconfirm one of the mentioned factors – be it in the framework of one of the models or independently of it – exhibited quite different outcomes due to their often highly heterogeneous research design, methodology and focus. As Jaensch (2013, p. 82) puts it: “different domains, properties, language combinations and proficiencies can produce different results”.

Still, several of the single predictions the models make can be falsified by the data that is currently available. CLI/L3A does not obtain massively at the initial state, is not limited to either L1 or L2, and is not only facilitative.

Also on the basis of the existing data on CLI/L3A, the factor of (psycho-)typology can be identified as being the most reliable predictor of source of transfer. In other words, if a language is typologically closely related to the target language, the learner will likely transfer from that language.

The DMTH adds to this the constraining factor of processability. Data that has confirmed the DMTH shows that even in cases of typological relatedness, structures will not be transferred if the respective learner/ speaker is not yet developmentally ready to process the structure.

As regards the impact of CLI/L3A, my conclusion is the following. It is true that CLI/L3A can be quantitatively more extensive than CLI/L2A due to the existence of one more language in the language repertoire. Still, it is qualitatively the same as transfer from the mother tongue in L2A: it obtains only if a certain degree of typological relatedness between two (or more) languages is given, and even then it only materializes if the structure to be transferred is processable. This is identical in L2A and L3A. In other words, as far as CLI/L3A is concerned, from a processability perspective the FDH/L3A cannot be confirmed. At least it can be excluded as the decisive element for constituting the supposed fundamental difference between L2A and L3A.

## **2.5 Further Relevant Phenomena in L3A**

### **2.5.1 Introduction**

As has been discussed in Section 2.3, there is always some degree of bilingualism involved in L3A. Proponents of the FDH/L3A claim that bi- or multilinguals do not have advantages over monolinguals only in the form of facilitative CLI (which can stem from either L1 or L2 with L3A as mentioned in Section 2.4), but also in the form of general cognitive advantages. In other words, even if a given language constellation does not gain the bilingual advantage through CLI, scholars such as Jessner would still consider such a learner as a better language acquirer than a monolingual one:



That is, in contrast to monolinguals, bi- or multilinguals have a different knowledge of their L1, their L2, a different kind of language awareness and a different language processing system. This new concept has been supported by various studies of the cognitive aspects of multilingualism in which **bilinguals have turned out to be better language learners than monolinguals**, as described above (Jessner 2008, p. 21, highlighted by author).

These cognitive aspects can be subdivided into learning strategies, metalinguistic awareness and pragmatic sensitivity. Some exemplary studies belonging to each of these three categories will be presented now along with the most important findings.

### 2.5.2 Learning Strategies

Mißler (1999, p. 2) defines learning strategies as “von Lernern zielgerichtet eingesetzte Verfahren zur Optimierung von Lernprozessen“ (*procedures that are applied purposefully by learners to optimize learning processes*). Cenoz (2013, p. 75) explicitly mentions such learning strategies as one of the grounds on which bilingual superiority over monolinguals is built. Scholars such as Thomas (1992) and Müller-Lancé (2003) would agree. Publications by Mac Laughlin and Nayak (1989), Mißler (1999), and Psaltou-Joycey and Kantaridou (2009) also deal with this issue. They are summarized in Buttkewitz (2011, pp. 48-52). The following paragraphs are largely based on this summary.

Mac Laughlin and Nayak (1989) assume that language learning experts use different strategies and techniques for processing information than do beginners (cf. *ibid.*, p.5). They resume the 1970s approach of *the good language learner* but switch its focus to language processing. Viewing language acquisition as a complex process, Mac Laughlin and Nayak compare the strategies used to those used in chess by beginner and expert players (cf. *ibid.*).

According to these scholars, the processing of information involved in foreign language acquisition assumesthe organization of sets of related subtasks and their components (cf. *ibid.*). Two crucial processes required for language learning are automatization and restructuring. Mac Laughlin and Nayak maintain that in experienced language learners these processes are more effective than in those less experienced (cf. *ibid.*, p.7). In their view, experienced language learners –equated with multilinguals here – exhibit automatized auditory recognition skills, pattern recognition skills, word decoding skills and an enhanced auditory memory (cf. *ibid.*).

Mac Laughlin and Nayak report about a study conducted by Nayak et al. (1987, quoted after Mac Laughlin & Nayak, 1989, p. 11). In this study experienced language learners were compared to less experienced learners (operationalized by the number of previously acquired languages) as they acquired elements of an artificial linguistic system (cf. *ibid.*). Informants were also asked for introspective reports (cf. *ibid.*, p.13).

The main finding of this 1987 study is that the more experienced language learners were more ready to switch the strategies used according to need (cf. *ibid.*, p.11). The authors interpret this as showing that the experienced language learners had already reached a metaprocedural level: “More experienced learners may more quickly step up to the metaprocedural level and weigh the strategies and tactics they are using” (*ibid.*). Though a tendency for metaprocedural gains was observed with the multilinguals, the differences from the monolinguals in this study were rather subtle ones (cf. *ibid.*, p.14).

Mißler (1999) empirically investigated the relationship between experience with learning languages and usage of learning strategies. She assumed that the more experience one has with learning foreign languages, the more frequently one will employ learning strategies. She operationalized language learning experiences with: number of acquired languages, stays abroad, use of a language outside the classroom and time spent acquiring a language (cf. *ibid.*, p.9). Learning strategies were further subcategorized as affective, social, mnemonic, cognitive, metacognitive and compensation strategies. Apart from strategy use, Mißler also investigated the relationship between language learning experience and personality variables, but this will not be reported here due to space limitations.

125 adult foreign language learners were tested at three German universities. They had all been studying their respective current target language for four to six months. The target languages were three Romance languages and Turkish, and were at least the L3 for the informants (cf. *ibid.*, p.10). Informants filled in two questionnaires, one on language learning experience and the other one on strategy use (the SILL survey). In addition, a personal interview about foreign language learning biographies was conducted with each of the informants for at least half an hour (cf. *ibid.*, p.10f.).

Mißler indeed found significant correlations between language learning experience and strategy use. For instance there was a strong correlation between the variable stays abroad and the use of compensation strategies (cf. *ibid.*, p.12). In other words, her main finding is that certain foreign language learning experiences often lead to the use of a concrete strategy. As she (Mißler, 1999, p. 17) puts it:

The [...] study shows that the amount of experience should be operationalized by several variables as the significance of correlations varies depending not only on the extent *but also on the type of experience considered* (highlighted by author).

A decade later, Psaltou-Joycey and Kantaridou (2009) investigated multilinguals' use of learning strategies. They assumed that both the degree of multilingualism and the proficiency in the target language influence the use of learning strategies (cf. *ibid.*, p.460). Concretely, their hypotheses stated that 1. Trilinguals use more strategies more frequently than bilinguals and 2. Trilinguals with a high proficiency in the target language use different strategies than those with low proficiency (cf. *ibid.*, p.466). With their research design, they were able to test these assumptions. Psaltou-Joycey and Kantaridou tested 1555 Greek students using the SILL as their main research instrument. Before filling in the SILL, informants were asked for their highest language certificate of the CEFR in all the languages they knew and were consecutively assigned to one of six groups (each of which represented different degrees of the two relevant criteria – multilingualism and proficiency; cf. *ibid.*, p.464f.).

The results of their study confirmed both hypotheses (cf. *ibid.*, p.467ff.). As Psaltou-Joycey and Kantaridou (*ibid.*, p.471) put it: “both the strategies the trilingual groups employ and the personality type they have developed show a self-directed approach to language-learning and indicate learner autonomy”. This, in addition to Mißler (1999), this study underscores the role of achieved proficiency in acquired languages as being relevant for strategy use.

### **2.5.3 Metalinguistic Awareness**

Metalinguistic Awareness means the ability to distance oneself from the language one uses and to be able to see and talk about it as an object (cf. Tunmer & Herriman, 1984, p. 12). According to scholars who adhere to the FDH/L3A, metalinguistic awareness is one constitutive element of the supposed fundamental difference (cf., e.g., Cenoz & Valencia, 1994, pp. 196-97).

Jessner (2006, summarized in Buttkewitz, 2011, pp. 44-45) published a monograph on metalinguistic awareness. She views metalinguistic awareness and cross-linguistic awareness as together forming general language awareness (cf. Jessner, 2006, p. 116).

In the so-called Tirol study, conducted at the University of Innsbruck/ Austria, Jessner investigated (among other things) the metalanguage of 17 German-Italian bilinguals acquiring English as L3 (cf. *ibid.*, p.84). She maintains that metalanguage is “the most explicit expression of the students’ metalinguistic awareness” (*ibid.*, p.106). Her informants were highly proficient in both German and Italian and advanced in their English (about B2 of the CEFR, cf. *ibid.*, p.86). They were required to write a letter, a summary and an essay (cf. *ibid.*, p.85f.). Among other instruments, TAPs were used to measure the metalanguage used by the informants.

Eight out of the seventeen informants made use of metalanguage (cf. *ibid.*, p.107). Jessner analyzed only those instances of metalanguage that were connected to a language switch, and furthermore only those related to lexical retrieval processes (cf. *ibid.*, p.106). From the analysis of her results, Jessner concludes the following: 1. Metalanguage can have a control function, for it often occurs immediately before language switches, 2. The use of the concrete language within their metalanguage can be an indicator for language dominance among multilinguals, 3. The number of language switches that are due to metalanguage seems to be related to the number of languages involved in a respective compensation strategy (cf. *ibid.*, p.111).

The assumption that raising multilinguals’ metalinguistic awareness helps them when it comes to acquiring a new language related to a previously-learned language has found its way into modern foreign language teaching didactics. The EuroCom project website, for instance, in a state-of-the-art article by Jessner (2008, p. 36) is reported to claim the following:

As explained on their website, EuroCom **makes learners aware** of their prior language knowledge, that is, due to their European origin ‘they already know an unexpectedly large amount about the new language, which gives them greater self confidence in starting to learn the language. The learners first discover how much they do not need to learn. They see that they have not taken full advantage of the linguistic capital that they already possess, and that they only need to take this and invest it in the new language’. (highlighted by author)

In their approach called the ‘Seven Sieves’, EuroCom equips learners of Romance languages with different metalinguistic strategies for their reading comprehension:

EuroCom organizes text material into what is called the Seven Sieves. New learners are compared to prospectors extracting the ‘gold’ – their previous language knowledge – from the new language by passing it through seven sieving processes. (Jessner, 2008, p. 37)

The learner goes through the following seven different steps (taken from *ibid.*):

1. Words from the *International Vocabulary* list are extracted.
2. Vocabulary knowledge about the language family is provided.
3. Sound correspondence formulae are given.
4. Spelling/ pronunciation correspondences are provided.
5. Pan-romance syntactic structures are explained.
6. Morphosyntactic elements common to the language family are explained.
7. Lists of Greek and Latin prefixes and suffixes are provided.

EuroCom argues that

at the end of this process the learner will have become aware of what a large store of familiar knowledge they already had, or has become available to them in extremely productive formulae. And this not just for one language, but for eight other languages as well. (*ibid.*)

#### **2.5.4 Pragmatic Sensitivity**

Pragmatic sensitivity, also called pragmatic awareness or communicative sensitivity, is considered to be further developed within L3A than with L2A (cf. Jessner, 2008, p. 29). In other words, proponents of the FDH/L3A assume that in a given communicative situation, the linguistic behavior of a bilingual who acquires the target language as an L3 will be more adequate than that of a monolingual acquiring the same language as an L2.

Safont Jordà (2005, summarized in Buttkewitz, 2011, pp. 52-53) conducted a study in the Valencian Community (Spain) to test this assumption. To this end, she compared a group of Spanish-Catalan bilingual students acquiring English as L3 with Spanish monolingual students acquiring English as L2 (160 in total, cf. *ibid.*, p.102) using an English role play and discourse completion test. Apart from bilingualism, Safont Jordà also considered previous instruction, proficiency and task type as being factors that possibly influence pragmatic sensitivity.

With the exception of proficiency, which seemed only partly influential on pragmatic sensitivity in this study, all the factors mentioned were found to exert an influence on communicative awareness (cf. *ibid.*, p.164ff.). Safont Jordà concludes that her research “indicates that knowing more than two languages benefits the development of pragmatic competence and the degree of pragmatic awareness” (*ibid.*, p.168).

### **2.5.5 Conclusion**

Learning strategies, metalinguistic awareness and pragmatic sensitivity are sometimes hard to separate because they overlap to a certain degree (for instance, metalinguistic knowledge used within a certain strategy). Similar to but more abstract than CLI, having some form of previous knowledge has possible advantages.. Again, the question is whether this knowledge can be used right away, how much of it, and for which areas of the target language.

As far as learning strategies are concerned, a tendency has been observed for multilinguals to use more and different strategies than bilinguals. But it would not be adequate to speak of a fundamental difference here, since Mißler (1999) pointed out in her study that the increase in learning strategies was almost linear (cf. *ibid.*, p.304). This means that there is no exponential ‘jump’ from L2A to L3A, but rather a steady increase with each language further acquired. In addition to this, to say that more language learning experience leads to more and better strategy use in general would be an oversimplification. Rather it became clear in Mißler’s (1999) study that a concrete form of language learning experience (say, stays abroad) correlates with a concrete learning strategy (say, compensatory strategies). I find no obvious reason why this finding should favor multilinguals over mono- or bilinguals. For instance, a bilingual who has spent more time abroad than a multilingual who acquired several languages in classroom settings will probably be better at using compensatory strategies.

Furthermore, it should be kept in mind that both in the studies of Mißler (1999) and Psaltou-Joycey and Kantaridou (2009) only indirect methods of measuring the use of learning strategies (and also of proficiency in given languages) were applied. Informants were asked to think about and self-report their proficiency and strategy use (on a meta-level). Since no direct test of actual proficiency and strategy use was conducted, generalizability of the mentioned studies is further limited.

The exemplary Tirol-study on metalinguistic awareness (Jessner 2006) shows only a tendency for multilinguals to have developed a higher level of this metalinguistic awareness. Due to the rather small number of informants, the results are generalizable only to a certain extent, which Jessner admits (cf. *ibid.*, p.117). This is increased by the fact that only half of her informants made use of metalanguage at all. The mentioned tendency, thus, would have to be confirmed by further studies with more informants, and the exact conditions under which metalinguistic knowledge can be effectively used for language production and acquisition would need to be outlined. Assuming a non-interface position, even a high metalinguistic awareness will not help a learner produce grammar spontaneously and productively. If one excludes the chance of thinking about the language that a given informant is about to produce, particularly grammar, he<sup>8</sup> can rely only on his procedural knowledge.

Safont Jordà's (2005) results suggest that bilinguals who acquire an L3 have a pragmatic sensitivity which is more developed than that of monolinguals acquiring that language as L2. Still, other factors she investigated, like previous instruction in pragmatics, task type and (partly) proficiency, influenced the degree of pragmatic awareness as well. In other words, an L2 acquirer who is already highly proficient in the target language and has been explicitly taught some guidelines for appropriate behavior in a given communicative situation might behave more adequately (in a linguistic sense) than an L3 acquirer who lacks this teaching and is less proficient in the target language. More research in the area of multilingual pragmatics is urgently needed to shed more light on the interplay of the single factors.

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<sup>8</sup> For ease of readability, the male pronoun will be used in a generic way in this thesis.

## 2.6 Literature Review: Conclusion

I will now roughly sketch what can be concluded from existing literature in the field of L3A. L3A studies is still a relatively young field and is mostly run by researchers who are adherents of the FDH/L3A. Those scholars who argue against a fundamental difference also carry out L3A studies, but still do so within the framework of L2A studies.

Defining L3A and what an L3 is, is even more difficult and less agreed upon than L2A and what an L2 is. The different possible acquisition combinations and routes makes it immediately clear that L3A is more complex than L2A, and it is very important to stick to a clear definition of what an L3 is. Within the empirical basis of this thesis, L3 simply means the third language in a chronological sense (the simultaneous acquisition of three languages does not play a major role in this thesis since it is not as common as acquiring the L3 after L1 and L2).

One of the major grounds for the FDH/L3A is the bilingual basis which is involved in any form of L3A. Summarizing the literature on this, one can find mixed results, and the tendency to find cognitive advantages among bilinguals only obtains at a rather global level. Following the distinction between declarative and procedural knowledge (cf. Section 2.3.4), one can furthermore see that these advantages are related to declarative knowledge. In other words, being bilingual does not imply advantages for the acquisition or the use of procedural linguistic knowledge. In addition to that, individual differences are a major factor that can outweigh the bilingual basis, meaning that a gifted monolingual language learner could acquire an L2 more effectively than a less gifted bilingual learner acquiring the same language as L3.

On a less abstract linguistic level, CLI is suggested to be another major element of the FDH/L3A. The majority of the literature on L3A is dedicated to CLI, which hints at the importance attributed to this phenomenon by proponents of the FDH/L3A. It is within this field where several models of transfer and often also reflections about the initial state in L3A have been proposed. The models are partly in conflict with each other. From the variety of studies the following can be concluded:

There is ample evidence for CLI/L3A to obtain, with reception outweighing production and lexis outweighing morphosyntax, as could be expected. CLI/L3A is more complex than with L2A, and data have shown that there can be transfer from both the L1



and the L2, and it can be both facilitative and non-facilitative. Some of the models, particularly the CEM and L2-Status model, have been falsified or at least challenged by this finding. The factor of (psycho-)typology seems to be relevant in some way for any kind of transfer, but as the DMTH and corresponding data have shown, it cannot outweigh the factor of processability. From a PT perspective, thus, CLI/L3A could possibly help the L3-acquirer, but it is subordinate to developmental readiness. It is not a ‘toolbox for skipping stages of processability’ and therefore cannot be regarded as constituting a fundamental difference to L2A.

Less studies have been conducted on further phenomena related to the FDH/L3A, such as the use of learning strategies, metalinguistic knowledge and pragmatic sensitivity. Again, the factor of being bilingual implied a tendency to use more and various strategies, possess more metalinguistic knowledge and be pragmatically more sensitive. But it should be pointed out that other factors, such as explicit teaching of pragmatics, for instance, have been shown to be equally important. Furthermore, advantages that possibly exist within these areas do not touch upon the acquisition or use of procedural knowledge, but remain on a rather global, often metalinguistic level.

All in all the following conclusion can be drawn. On the one hand, there is evidence that L3A differs from L2A in that it is more complex. L3A studies are an important contribution to general linguistics and to our understanding of learning language. When acquisition of a target language in general is concerned, being bilingual might help with organizing the learning process and using linguistic material from previously acquired languages with certain tasks requiring metalinguistic or declarative knowledge. On the other hand, no specific advantages have been found in the acquisition or use of procedural knowledge, such as is needed when producing grammatical structures spontaneously and productively. Assuming that the acquisition and use of morphosyntax in a given target language is the core of acquiring that language, the literature provides no evidence for a fundamental difference between L2A and L3A. Neurolinguistic studies using brain imaging and similar procedures confirm this lack of clear evidence for different processes supposedly involved in L2A and L3A (cf. Buttkewitz, 2011, p. 64). This means that the claim of EuroCom, for instance, suggesting that a multilingual who already knows languages typologically related to the target language can take a shortcut when acquiring the latter (cf. Jessner, 2008, p. 36) is too optimistic; no shortcut can be

taken that bypasses developmental stages of target language grammar. The developmental stages for English as a target language will be explained in detail in Section 4.3.

## **3 Modelling L3A**

### **3.1 Introduction**

Several models have been proposed that conceptualize L3A and its respective factors and processes. Some of them are extensions of originally monolingual models, and others have specifically been designed for L3A/ multilingualism. A crucial question here is whether it is necessary to have separate models for L3A or whether extending/ adapting existing models is sufficient. Some of the most significant models related to L3A will be introduced now. If not indicated otherwise, information about these models is taken from Jessner (2008, pp. 21-26).

### **3.2 Levelt (1989) and De Bot (1992, 2004)**

Levelt's (1989) model of speech production is the most widely used in the field. His 'blueprint of speech' was originally designed to model the online production of fluent speech within a monolingual speaker. Levelt conceptualized the process of speech production as taking place in different modules, ranging from the Conceptualizer to the Formulator (more details on his model in Section 4.2.2). The output of one module is the input to the next module, and any module has to 'wait' for input from the previous module in order for it to work.

De Bot (1992) extended Levelt's (1989) model to bilingual speech production (cf. Lowie & Verspoor, 2011, pp. 272-274). Based on observations on code-switching and CLI, De Bot raised the question as to which modules should be doubled for a bilingual speaker (cf. *ibid.*). He suggested that at least part of the preverbal message is language-specific, which is why there could be two Conceptualizers, a suggestion that did not remain undisputed (cf. *ibid.*). De Bot further assumed that there could also be two Formulators and Lexicons, at least with unrelated languages. In the case of typologically related languages he claimed that the same Formulator and Lexicon could be used (cf. *ibid.*). Since this assumption of a continuum is not compatible with a modular approach, he later adhered to the so-called subset hypothesis (based on Paradis 1987), meaning that there is one lexicon, with varying degrees of interconnectedness within single lexical items (cf. *ibid.*).

### **3.3 Green (1986, 1998)**

The subset hypothesis was partly influenced by Green (1986), who has been mentioned above (cf. Section 2.4.4, TPM). Green introduced the notion of different activation levels in a multilingual speaker's languages. From his studies on code-switching and bilingual aphasia he had observed that bilinguals do not simply switch their languages on and off; rather they are accessible to varying degrees. He conceptualized this finding with three different possible levels of language activation: 'selected', 'active' and 'dormant'. The selected language is the language the speaker has chosen to speak in a given moment. An active language has not been selected, but can still occur in the output due to its relatively high level of activation. A dormant language is further in the background and will not easily influence the output.

In 1998, Green refined his idea further, leading to the inhibitory model. As Jessner (2008, p. 22) explains it:

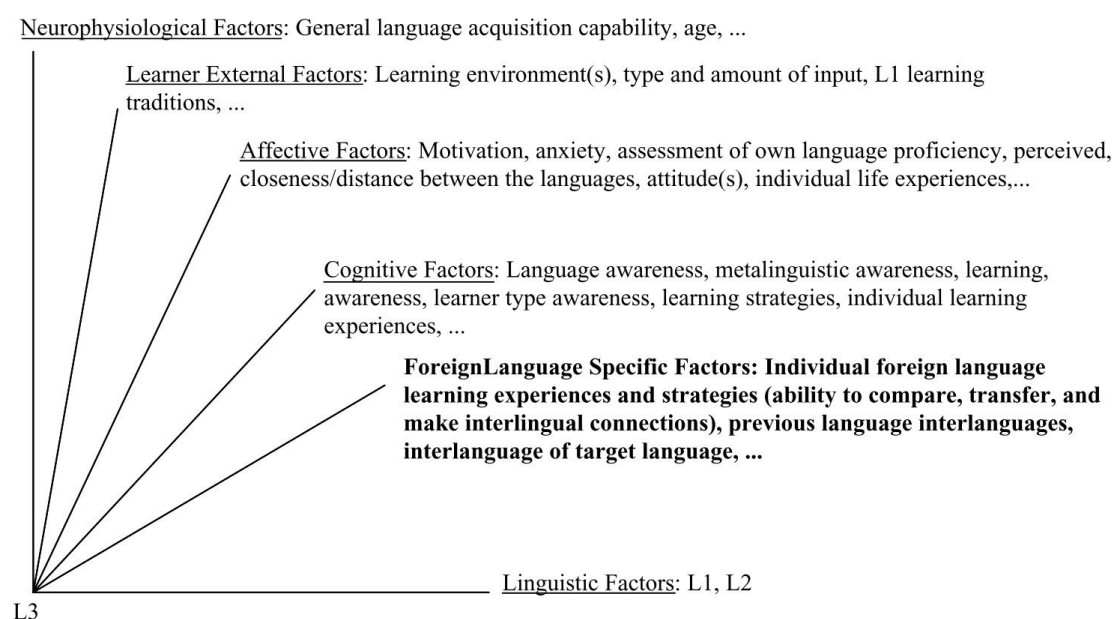
About a decade later, Green (1998) developed the inhibitory model which emphasizes multiple levels of control. A language task schema inhibits potential competitors for production at the lemma level by virtue of their language tags. A supervisory attentional system monitors the established schemata. The cost of switching is described as asymmetrical, as switching to the suppressed language in unbalanced bilinguals takes longer.

### **3.4 Grosjean (1998, 2001)**

Grosjean's concept of a language mode is related to this, but develops it slightly further. In his 'bilingual view of bilingualism' (Jessner, 2008, p. 22), language mode means the "state of activation of the bilingual's languages and language processing mechanisms at a certain point in time" (Grosjean, 2001, p. 2, quoted in Jessner, 2008, p. 22). According to this concept, a trilingual person can be in a tri-, bi- and monolingual mode. In other words, the speaker decides on a base language ('selected' in Green's terminology) and on how many of the other languages should be activated in a given situation. Which language mode a speaker is in is determined by factors such as language mixing habits, usual mode of interaction, presence or absence of monolinguals, degree of formality, form and content of the message and socio-economic status of the interlocutors.

### 3.5 Hufeisen and Marx (2007)

Whereas the previously mentioned models were originally focused on monolinguals (Levelt 1989) or bilinguals (the other mentioned ones), Hufeisen and Marx's (2007) model tries to capture the dynamics that are – as they maintain – characteristic of L3A (cf. Jessner, 2008, p. 23). In their holistic approach, they try to list all the (major) factors that influence multiple language acquisition and categorize them as depicted in Figure 3-1:



**Figure 3-1:** Hufeisen and Marx's (2007) model (taken from *ibid.*, p.314, quoted after Jessner, 2008, p. 23, bold in the original)

### 3.6 Herdina and Jessner (2002)

Herdina and Jessner's (2002) Dynamic Model of Multilingualism (DMM), as the name suggests, is also specifically designed to account for multilingualism. Similar to Hufeisen and Marx's (2007) model, it tries to consider all the possible factors and parameters that influence processes in L3A. The DMM is described in Buttkewitz (2011, pp. 9-12), on which the following paragraphs are based.

The approach of the DMM is called analytic holism and it is based on Dynamic Systems Theory (DST). It assumes that the interaction of all the elements that constitute L3A and L3 usage has an impact that goes beyond the mere sum of these elements. The

DMM focusses on the dynamics and variability of the proficiency in and interaction of the single language systems within a learner.

CLI (studies on CLI have been described in detail in Section 2.4) fulfills, according to the DMM, a crucial role in L3A due to its dynamic character. According to Jessner (1998, p. 154), CLI between two or more languages in the mind of a learner determines the function and development of the whole system. This always leads to qualitative change in the entire system, as Jessner and Herdina (2000, pp. 92ff.) maintain. The authors of the DMM identify many factors on many levels (social, psychological, linguistic) that influence CLI, but do not include concrete predictions of its occurrence and the necessary conditions.

Another element of the DMM is the Enhanced Multilingual Monitor (EMM) (mentioned in a quotation by Jessner in Section 2.3.2 above). This monitor is believed to have a control function over the multilingual's whole language use and supposedly goes beyond error detection and correction (cf. Jessner, 2006, p. 59). It is closely connected to metalinguistic awareness and as Jessner (2006, p. 117) assumes, due to increased metalinguistic knowledge of the single languages known to a learner also enhances general metalinguistic knowledge as such.

Language learning strategies and pragmatic sensitivity are other domains which adherents of the FDH/L3A adduce (cf. Sections 2.5.2 and 2.5.4). In the DMM, strategies are considered to be a major element that influences the multilingual learning process, especially compensation strategies. Pragmatic sensitivity, according to the DMM, is heightened in multilinguals. In other words, they have advantages over monolinguals in "the culturemes of politeness, greeting, thanking and addressing" (Jessner, 1997, pp. 22-23, quoted after Hufeisen, 2003, p. 104).

Apart from these elements that are predominantly psycholinguistic in nature, the DMM also includes factors of a social or psychosocial nature, such as emotional aspects, volition, self-esteem and anxiety of the learner (cf. also Hufeisen and Marx's 2007 model, illustrated in Figure 3-1). These factors are not further discussed here since the focus of the thesis is psycholinguistic.

In sum, the DMM stresses the interdependence of a range of factors from various levels that influence each other. As a consequence of its DST approach, the DMM

crucially hinges on the dynamics of the whole process of L3A, which is perceived as being multilayered and highly sensitive to changes within any of the involved domains.

### **3.7 Discussion**

Some models from the last few decades have now been introduced, all of which are either dedicated to L3A or at least have something to say about L3A. The more current models tend to have incorporated DST ideas, such as Hufeisen and Marx (2007) and Herdina and Jessner (2002). The focus of these models is much more global than, for instance, Levelt (1989), which focuses on speech production. Proponents of the FDH/L3A maintain that their new models are necessary innovations accounting for L3A (cf. Marx & Hufeisen, 2004, p. 142). They do not consider models such as Levelt's as adequate to reflect L3A processes.

Lowie and Verspoor in their 2011 chapter discuss at length “whether or not the Levelt model would survive another update to present-day insights” (ibid., p.267). They show how de Bot (1992, cf. Section 3.2) adjusted the Levelt model to bilingual speakers while remaining faithful to its basic principles (cf. Lowie & Verspoor, 2011, p. 267) and asked whether these basic principles are still tenable today. To that end, Lowie and Verspoor review each single element of Levelt's model and try to evaluate whether (and if so, how) it would have to be adapted to a dynamic multilingual approach (cf. ibid., p.269).

In their description of general characteristics of Levelt's model, Lowie and Verspoor state that one of its premises, modularity of mind (cf. ibid., p.268), is reflected in the relative autonomy with which the single components in the model work. In the abstract, they claim that “the modular principle of the model is also its Achilles' heel” (cf. ibid., p.267). They criticize, inter alia, that Levelt's modules are perceived as separate and sequential (cf. ibid., p.274), whereas from a DST perspective, and based on data, subsystems may interact and even change over time (cf. ibid.).

They further criticize that Levelt's model makes use of clear categories and boundaries, e.g., between the Conceptualizer and the Lexicon. As they discuss the Conceptualizer, for instance, they argue against “our idealization of having categories for things” (ibid., p.276). In their view, “fuzzy subsets” (ibid., p.280) explain existing data much better. Lowie and Verspoor also argue against maintaining the distinction between

declarative and procedural knowledge (cf. *ibid.*, p.284) on which a great part of the model is based. Within their conclusion (*ibid.*, p.285), they provide the following evaluation and outlook:

Levelt's model explained quite a deal of data and cannot simply be rejected. Still, we should start to think in different, more open ways, although DST is still in its infancy and the fax and computer metaphors of the 1980s (that were compatible with and illustrative of a modular approach, my explanation) have influenced our thinking very strongly. In the long run, DST will be more adequate to explain the phenomena of multilingual speech processing.

Though Lowie and Verspoor show a clear tendency for abandoning the Levelt model, they admit two facts: 1. The Levelt model has explained “a great deal of data” (*ibid.*), an amount with which DST clearly cannot keep up, and 2. “DST is still in its infancy” (*ibid.*), still in a process of maturation. Apart from that, before embracing a DST approach to language acquisition, one should keep the following two caveats in mind:

1. The focus of Levelt's model is not comparable to either Herdina and Jessner's (2002) or Marx and Hufeisen's (2007). The latter two models adopt “perspectives that seek to build connections across multiple linguistic systems” (Pienemann, 2015, p. 146), whereas Levelt's model – and with-it PT (cf. Section 4.2) – have a tight, focused perspective (cf. Pienemann, 2015, p. 146). In other words, if one wants to make predictions about a learner's developing grammar, a DST-based model such as reviewed above would simply be too broad. Of course, this does not mean that DST-based models involve factors that are not relevant for L3A. It simply means that they do not make any predictions due to their lack of precision. The second point is closely connected to this:

2. If one reads labels and terms used by DST adherents' approaches to language, one notices the same or similar terms used by other, more conservative approaches to L2A, such as *dynamic*, *variation* or *emergence/ emergentist*. Pienemann (2015, pp. 140ff.) points out that one should be aware that within DST approaches, these terms are either not operationalized at all (and thus not testable) or operationalized in a way that is incompatible with the construct being tested (such as operationalizing emergence by accuracy rates, cf. also Section 4.4.1).

Therefore, in my view the Levelt model is still the best candidate for modelling language production (and thus partly – acquisition) – even if applied to L3A in the second decade of the 21<sup>st</sup> century. Lowie and Verspoor are right in as much as the model is a



simplification. But this is not necessarily a disadvantage, since any model has to simplify certain aspects of any highly complex process in order to produce testable predictions. As long as the model is able to make these predictions and to explain the relevant parts of given data, I do not see why its modularity and tendency to categorize processes should be an obstacle for using it. One should only be aware of the fact that – as Lowie and Verspoor have pointed out – there are findings that challenge some of its assumptions. Still, as long as there is no equally precise and focused model that captures these changes, Levelt's model should be preferred to its DST competitors when it comes to explaining a learner's oral production, even if L3 data is concerned<sup>9</sup>.

### **3.8 Summary**

The models that are suggested by Levelt, De Bot, Green, Grosjean, Marx and Hufeisen and Herdina and Jessner to account for data in L3A have now been introduced. Whereas Levelt's model has a very narrow focus and was originally proposed for monolinguals, the latter two models are specifically designed for L3A and are quite global. Levelt's model follows a modular approach, whereas the more current models are connected to DST. Although there are some findings that challenge assumptions within Levelt's model, it is still the one that should be preferred when studying language production of learners, since its focus is satisfactorily narrow, its concepts have been operationalized and the model as such has received much confirmation by data from the last two to three decades.

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<sup>9</sup> cf. also Imre Lakatos' approach of refined falsificationism (Lakatos, 1970).

## **4 Theoretical Framework**

### **4.1 Introduction**

PT, as mentioned in Chapter 1, is the theory that has been chosen as the framework for the present thesis and its underlying study on the acquisition of English as a Third Language. PT has been adopted for the following reasons. Firstly, it is embedded in both a linguistic and a psycholinguistic theory that are exact as well as highly formalized (in the case of the former). This situation makes PT sufficiently precise and explicit in its predictions and therefore readily testable, a characteristic that many other theories or frameworks in L3A studies unfortunately do not exhibit (cf. Section 3.7). PT and its predictions have furthermore been confirmed in a wide array of studies on the acquisition of typologically diverse languages. In the remainder of this chapter, Processability Theory and its core components and predictions along with the specific PT hierarchy of English as a Second Language (ESL) will be briefly outlined.

### **4.2 An Outline of Processability Theory**

#### **4.2.1 Introduction**

PT is a theory of grammatical development (morphosyntax) that seeks to explain the different stages of acquisition of the target language grammar through which any learner of that target language has to proceed (cf. Pienemann, 1998). It was developed by Manfred Pienemann in 1998 (cf. Pienemann, 1998) and has precursors in aspects of the Multidimensional Model (cf. Pienemann, 2015, p. 131) and Clahsen's (1979, 1984) strategy approach (cf. Pienemann, 1998, pp. 45-53). This cannot be treated here due to space limitations. Explicitness was added to PT by adopting Levelt's model of speech production (cf. Sections 3.2 and 3.7) as its psycholinguistic basis and LFG (cf. Section 4.2.3) as its linguistic basis.

The original version of PT was exclusively dedicated to the developmental problem in L2A, in other words, the question of why all learners of a given target language exhibit commonalities in the route of acquiring that language irrespective of their L1s (cf. *ibid.*, p.234ff.). PT's answer to the developmental problem will become clear in the remainder of this chapter.

The 2005 extension of PT (cf. Pienemann et al., 2005b) began addressing the logical problem in L2A, the question as to where linguistic knowledge of the learner's target language comes from, when input directed towards him is excluded. Depending on the answer one gives to the logical problem in L2A, the initial state of acquiring a foreign language will look different.

With regard to the logical problem and the initial state, "PT contains a minimal, but explicit set of assumptions about the initial state, and formal aspects of grammar are assumed to develop out of the minimal components contained in the initial state" (Pienemann, 2015, p. 145). Specifically, PT assumes basic notions of constituency, the one-to-one mapping of semantic roles and the basic notion of predicate-argument structure to be part of the innate basis of the initial state (cf. *ibid.*). "All other formal aspects of language develop from this" (*ibid.*). PT therefore adopts neither a nativist nor a functionalist stance on L2A, but rather is located in the middle of these two poles (cf. Pienemann, 1998, pp. 36-37 & 310).

The kind of language acquisition PT claims to account for should be explicitly stated here. Since it is generally accepted by scholars in the field that there are considerable differences between L1A and L2A (cf. Pienemann, 1998, p. 311), it would not be adequate to leave this question untouched, especially when confronted with the claims of the FDH/L3A. As has already been noted, the focus of PT is on development in morphosyntax of a given language by a given learner. Though it acknowledges the differences between L1A and L2A (cf. *ibid.*), PT assumes the core processes in this area – exchange of grammatical information and mapping processes on increasingly higher levels (cf. Section 4.2.3) – to be the same in all kinds of language acquisition. Of course, this also means that PT does not assume fundamental differences between L2A and L3A in the area for which it is designed, in the development of processing procedures of morphosyntactic structures.

PT thus claims to account for regularities in the development of morphosyntax in any kind of language acquisition. Still, there is an important caveat to be considered (more on this in Section 7.4): PT shares core assumptions of Levelt's (1989) model, meaning it also shares the conviction that it is necessary to keep declarative and procedural knowledge apart (cf. Pienemann, 1998, pp. 40-41). Excluding learners' utterances that have been brought about using declarative knowledge is therefore one of PT's

methodological aims (more on that in Section 4.4). This means that PT is exclusively focused on the spontaneous, oral production of a given target language (although some scholars within the framework are currently researching the question as to which extent the theory can also be applied to written production, cf., e.g., Håkansson & Norrby, 2006, and reception, cf., e.g., publications in Lenzing, Nicholas & Roos, forthc.).

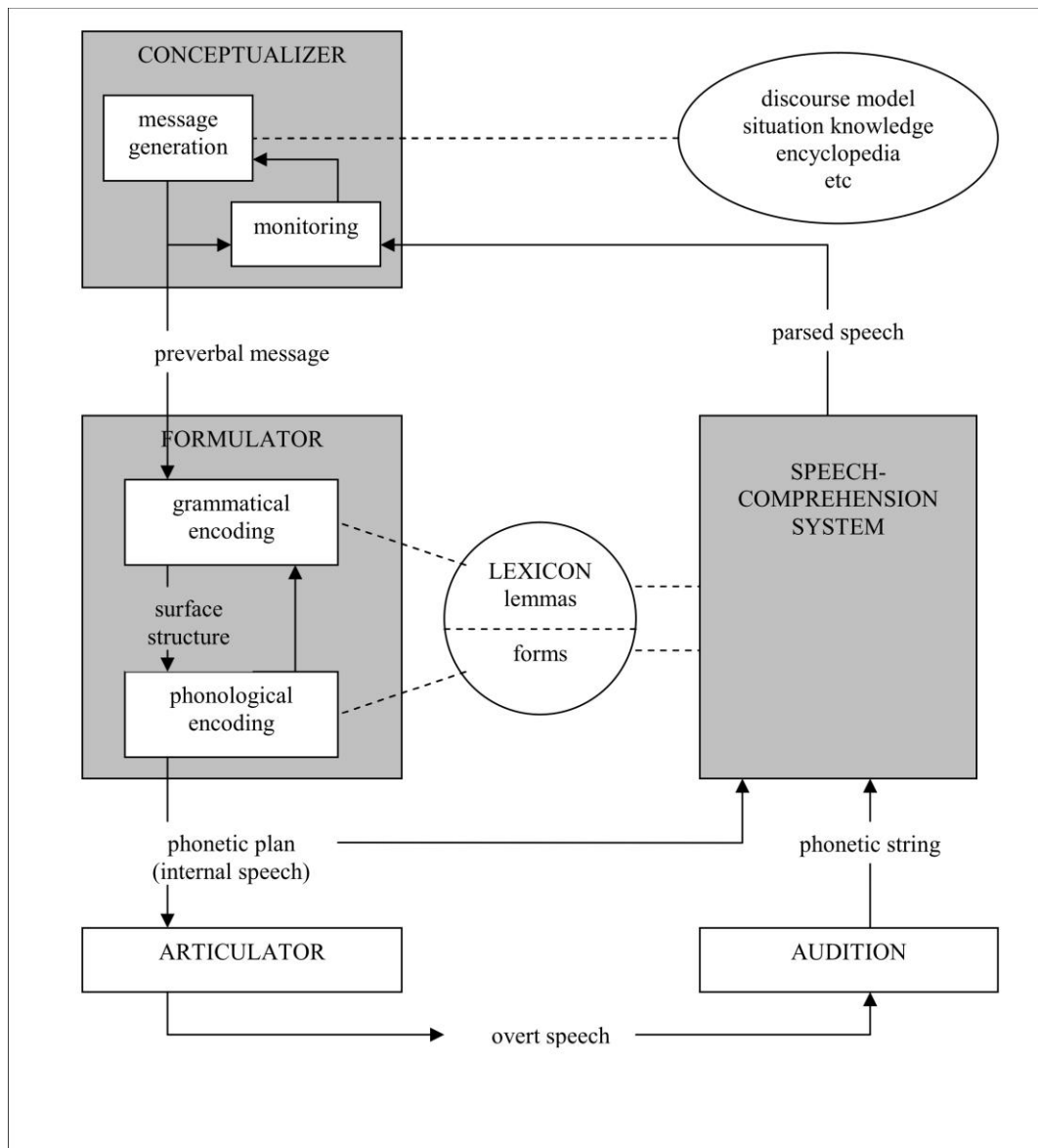
The remainder of this Section 4.2, will introduce in some detail the psycholinguistic basis (Levelt's 1989 model of speech production) as well as the linguistic basis (LFG) of PT. After that, central PT concepts such as hypothesis space and generative entrenchment will be presented, along with a brief recapitulation of the DMTH.

#### **4.2.2 PT's Psycholinguistic Basis: Levelt's (1989) Model of Speech Production**

Levelt's (1989) 'blueprint for the speaker' has already been introduced in Section 3.2. Also, the validity of the model as compared to more current models explicitly designed for L3A has been discussed in that section. However, the necessary details of the single modules of the model have not yet been mentioned. At this time, a description of the relevant elements of Levelt's model along and its adoption within PT is due.

The model (cf. Figure 4-1) consists of three major components: the Conceptualizer, the Formulator and the Articulator. It also contains a Speech-Comprehension System, which is responsible for monitoring self-produced internal and overt speech. In the Conceptualizer, a communicative message – the sum of propositions a speaker wants to convey in a given moment – is generated. This preverbal message is the output of the Conceptualizer and at the same time the input to the Formulator.

The Formulator then converts the preverbal message – a conceptual structure – into a phonetic plan – a linguistic structure. In order to achieve this, two types of encoding are necessary: grammatical and phonological encoding. In grammatical encoding, the preverbal message is turned into a surface structure. In phonological encoding, the surface structure is converted into a phonetic plan, also called internal speech, which is the second-to-the-last step of speech processing. Finally, the Articulator transforms the internal speech into overt, audible speech by using the various parts of the human phonetic system.



**Figure 4-1:** Levelt's (1989) Model of Speech Production (taken from Levelt, 1989, p. 9)

In Figure 4-1, boxes represent processing components, whereas a circle or an ellipse stands for a knowledge store. There are two different knowledge stores depicted in the illustration, which are used for message generation and both grammatical and phonological encoding. In the course of message generation, the speaker relies on and is influenced by the ongoing discourse, situational knowledge, general knowledge of the world, etc. In the course of grammatical and phonological encoding, the speaker accesses the mental lexicon, specifically a concrete lemma within grammatical encoding and the form of that lemma within phonological encoding. PT focuses precisely on the Formulator, and within the Formulator the grammatical encoding, that PT focusses on.

Pienemann (1998, p. 39) says that before the emergence of PT, several scholars had already pointed out the interrelationship between L2A and language processing. This interrelatedness is the reason for adopting Levelt's (1989) framework of speech processing as PT's psycholinguistic basis. Pienemann (1998, p. 39) explains the main line of argument for the original (1998) version of PT in the following way:

the task of acquiring a second language implies the acquisition of the *skills* needed for the processing of the language. This approach which focuses solely on the transitional aspect of SLA derives its explanatory power from the fact that a set of observations, developmental patterns, can be reduced to a more basic set of operations, processing procedures (emphasis in original).

It is these processing procedures that PT seeks to explain. The universal order of these procedures is the core of PT's ability to account for development in morphosyntax in the acquisition of any language with any typological affiliation. It is therefore useful to discuss the hierarchy of processing procedures which were already identified by Levelt (1989, pp. 236ff.) and spelled out explicitly using a theory of grammar, LFG, by Pienemann (1998, 2005; cf. Section 4.2.3). But before we turn to this, some basic premises of speech production that led to the assumption of such a hierarchy should be briefly summarized (based on Pienemann, 2005, pp. 3ff.; examples are my own).

1. *Processing components are relatively autonomous specialists which operate largely automatically.*

This premise accounts for the speed of normal, fluent speech. Processing components need to work automatically in order to achieve the speed of fluent speech. According to Levelt (1989, p. 70), fluent speech results in about 2 to 3 words per second in a normal conversation. Processing components also need to work autonomously to handle highly specific tasks, such as information exchange within a phrase (more on the exchange of grammatical information in Section 4.2.3), and to augment the processing speed needed for fluent speech.

2. *Processing is incremental.*

This premise maintains that the Conceptualizer can start processing new information before previous information has been processed completely, which is due to processing components working simultaneously alongside one other. It is called 'incremental processing' (Kempen and Hoenkamp, 1987) and contributes to the explanation of the

speed of fluent speech. Based on this incremental nature, each processing component can ‘see’ only a small part of the entire language-processing event, rather than the whole process. In other words, there is not much ‘lookahead’.

3. *The output of the processor is linear although it may not be mapped onto the underlying meaning in a linear way*

The third premise explains the link between non-linearity and memory. Levelt (1989) remarks that the order of clauses does not always match the ‘real’ order of events, as in the example shown in (1).

(1) *Before the officer arrested the suspect, he handcuffed him.*

In the example above, the first clause describes an event that happens after the one in the second clause. In order to produce this kind of sentence, the speaker has to store propositional content in memory. What is more, information also needs to be stored in sentences involving agreement. This is exemplified in (2), involving subject-verb agreement:

(2) *The officer arrests the suspect.*

Note that in the case of example (1) the speaker needs to store propositional content, whereas in example (2) it is grammatical information that must be stored.

4. *Grammatical processing has access to a grammatical memory store that can hold grammatical information.*

Propositional content and grammatical information both need to be stored temporarily in order for the speaker to successfully generate a message. Still, there is a major difference between them. With propositional content, the speaker must focus on it. It is a conscious process. Stored grammatical information, on the other hand, is highly specific, and no attention needs to be directed towards it. For instance, a fully mature English speaker who utters a sentence such as in example (2) will not be aware of the necessity to match the grammatical information ‘Third Person Singular’ between *the officer* and *arrests*.

Memory retention of grammatical information can occur on different levels. The higher the level, the more complex the production of the linguistic structure in question. In other words, only when a learner has acquired the necessary procedures to exchange grammatical information on the level in question can he produce the respective structure productively. This is in line with predictions of IPG (Incremental Procedural Grammar; cf. Pienemann, 1998, p. 80). The exchange of grammatical information is one of the key concepts of PT. Based on IPG suggestions and research in the field of language processing, Pienemann (ibid.) suggests the following implicationally ordered hierarchy of processing procedures:

- lemma access
- category procedures
- phrasal procedures
- S-procedure
- subordinate clause procedure

These procedures are explained by Pienemann (ibid.) in the following way:

This hierarchy reflects the temporal alignment of procedures and rules in IPG which starts with the activation of the lemma. The latter contains information about lexical category membership which calls the category procedure. The head of the phrase calls the phrasal procedure, based on the category information in the lemma. The phrasal procedure also acts as a repository for phrasal information. The grammatical information of the phrase is decided by language-specific Appointment Rules. Once the grammatical function of a phrase is determined it can be attached to the S-node and the S holder can store sentential information.

The hierarchical nature of this list arises from the fact that the procedure of each lower level is a prerequisite for the functioning of the higher level: A word needs to be added to the L2 lexicon before its grammatical category can be called. Only if the grammatical category of the head of phrase is assigned can the phrasal procedure be called. Only if a phrasal procedure has been completed and its value is returned can Appointment Rules determine the function of the phrase. And only if the function of the phrase has been determined can it be attached to the S-node and sentential information be stored in the S-holder.

It should be noted here that Levelt's model was updated in 1999 by Levelt, Roelofs and Meyer. The conceptual level at the lexical access stage was especially revised, which had repercussions for PT. Due to space limitations this will not be described here; the interested reader is referred to the mentioned publication for further details.



### 4.2.3 PT's Linguistic Basis: LFG

#### General Information and Reasons for Adopting LFG

Lexical Functional Grammar (LFG; cf., e.g., Bresnan, 2001; Dalrymple, 2001; Falk, 2001) is the linguistic feeder theory to PT. It has been chosen because it is psychologically plausible due to its compatibility with Levelt's model and respective empirical evidence from speech processing. Moreover, it is able to explain grammatical phenomena from the whole typological range of languages worldwide (in contrast to transformational grammars). The following paragraphs are based on Pienemann, 1998, pp. 93-98 and Pienemann et al., 2005b. Pienemann (1998, p. 93) introduces LFG's basic characteristics and architecture like this:

LFG belongs to the "family" of unification grammars, the most prominent characteristic of which is – as the name suggests – that of the unification of features. Put simply, the process of feature unification ensures that the different parts that constitute a sentence do actually fit together [...].

LFG consists of three parts: (1) a constituent structure (= c-structure) component that generates "surface structure" constituents and c-structure relationships, (2) a lexicon, whose entries contain syntactic and other information relevant to the generation of sentences, and (3) a functional component which compiles for every sentence all the grammatical information needed to interpret the sentence semantically.

The interaction of these three components is subject to a set of well-formedness conditions, which are basically very general rules constraining the process of feature unification, ensuring that all properties of an f-structure are compatible with each other. We will see that many types of ungrammaticality in SLA can be explained on the basis of functional ill-formedness.

#### Basic Architecture and Elements of LFG

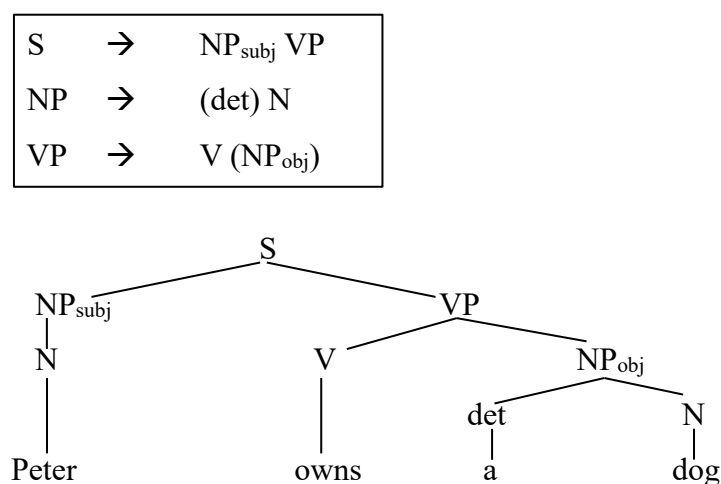
One of the major differences between LFG and transformational accounts of grammar is that LFG, as the name suggests, assumes that grammar is lexically driven. Put simply, LFG expects much grammatical information to be present in the lexicon. This is formalized through lexical entries, in which both defining and constraining grammatical information is provided in the form of equations (a subscript 'c' indicates a constraining equation). An example of the lexical entries of the sentence *Peter owns a dog* is provided in Figure 4-2. Note that in a lexicalist approach to linguistics and L2A, acquiring the target language grammar hinges crucially on the presence and correctness of the single lexical entries. In other words, annotating the (L2, L3, etc.) lexicon is a major task for the learner which goes far beyond the level of acquiring vocabulary.

Peter:	N,	PRED	=	“Peter”
owns:	V,	PRED	=	“own” (SUBJ, OBJ)
		TENSE	=	present
		SUBJ PERSON	=	3
		SUBJ NUM	=	SG
a:	DET,	SPEC	=	“a”
		NUM	=	SG
dog:	N,	PRED	=	“dog”
		NUM	=	SG

**Figure 4-2:** Lexical Entries of the Words Contained in *Peter owns a dog* (taken from Pienemann, 1998, p. 94)

Apart from lexical entries, in LFG there are a number of semantic and syntactic levels that are assumed to work in parallel. In other words, no level is prior to another, but – as will become clear further below – they have to be checked against each other. The LFG levels that are relevant for PT (at least for versions of PT not later than 2005) are c-structure, f-structure and a-structure.

C-structure (constituent structure) is the surface syntactic structure of a given utterance. In contrast to transformational grammar, LFG does not view c-structure as a transformation of a deeper structure, but rather as the direct result of operating phrase structure rules. Furthermore, grammatical functions are not assumed to be directly inherent to the c-structure’s “geometry”, but are grammatical primitives (more on grammatical functions in the next paragraph). They are usually subscripted in phrase structure rules and tree diagrams as illustrated in Figure 4-3 (taken from *ibid.*):



**Figure 4-3:** Phrase Structure Rules (box) and C-structure (tree diagram) for *Peter owns a dog*

F-structure is another syntactic level of LFG's. F-structure (standing for functional structure) specifies the grammatical functions and their relations in a given utterance. Grammatical functions (GFs) such as SUBJ and OBJ are universal, which means that f-structure as such is largely universal, whereas c-structure is highly language-specific (cf. Dalrymple, 2001, p. 45). Representationally, f-structure is simply depicted as "a list of those pieces of grammatical information needed to semantically interpret the sentence" (Pienemann, 1998, p. 95). A (simplified) f-structure of our example sentence is given in Figure 4-4 (taken from *ibid.*):

---

PRED	"own" (SUBJ, OBJ)	
TENSE	present	
SUBJ	PRED	"Peter"
OBJ	SPEC	"a"
	NUM	SG
	PRED	"dog"

---

**Figure 4-4:** F-structure of *Peter owns a dog*

A-structure (argument structure) is "considered to be a lexical syntactic construct" (Lenzing, 2013, p. 33). What exactly is present in a-structure is disputed among scholars. Bresnan (2001) adopts the view that it has a semantic and a syntactic side (semantic side: meaning of predicator, syntactic side: the arguments this predicator needs; cf. Lenzing, 2013, p. 32). At any rate, it contains the predicator and its argument roles, along with a hierarchical ordering of these roles according to their prominence, and information about the syntactic classification of the roles (cf. *ibid.*). It is thus an interface between lexical semantics and the syntax of the respective predicator. The predicator in our example sentence is the verb *to own*. Its a-structure is illustrated in Figure 4-5. As will become clear further below, there is a universal hierarchy of thematic roles in terms of their prominence as well as an intrinsic classification of these roles, both of which are relevant for mapping processes that involve a-structure.

'own < (beneficiary) (theme) >'

**Figure 4-5:** A-structure of the Predicator *to own* (my example)

In addition to the three levels that have been introduced above, LFG posits well-formedness conditions (as already indicated in the Pienemann, 1998, p. 93 quotation above). These are the Uniqueness Condition, the Completeness Condition and the Coherence Condition (the following explanation and examples of the three conditions have been taken from Lenzing, 2013, pp. 15ff.). The Uniqueness Condition assures that each attribute has only one value. This rules out sentences like *\*the boys yawns*, since the attribute of NUM would have two values in this sentence (SG and PL at the same time). The Completeness Condition states that all the arguments of a predicate must also be present in the f-structure, ruling out sentences like *\*Paula buys* (the OBJ is missing here). The Coherence Condition rules out other functions that appear, but are not motivated by the predicate, e.g. sentences like *\*Paula runs the book*, which contains an object although there should be none.

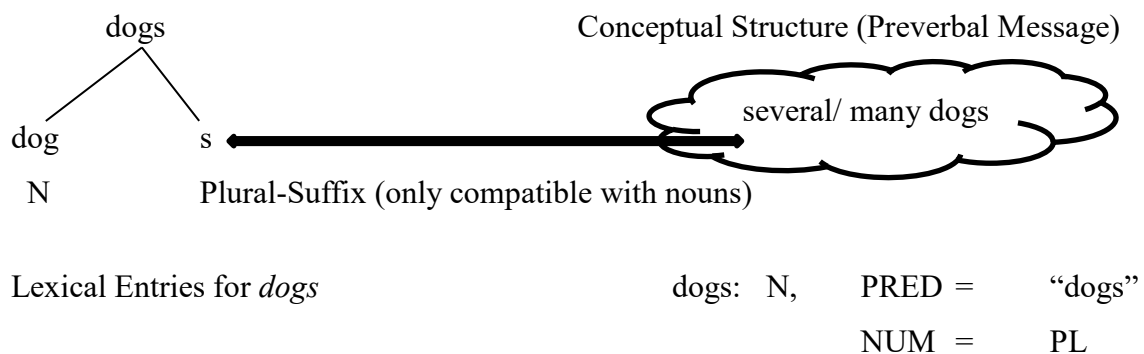
Obviously, these conditions have been formulated in view of native speakers of a given target language. However, Pienemann (1998, p. 97) points out that language learners' seeming violations of, say, the Uniqueness Condition, can also be due to a lack of lexical annotation, where whole entries might be missing. This is especially relevant for chunks (or formulae), which are unanalyzed entries that only later may be analyzed by the learner once he has developed the necessary processing procedures. Still, "grammatical encodings cannot be learnt without the UC [= Uniqueness Condition, my explanation]. And it is the learning of grammatical encodings which a theory of language acquisition seeks to explain" (ibid.).

### **How LFG Accounts for Exchange of Grammatical Information: Feature Unification**

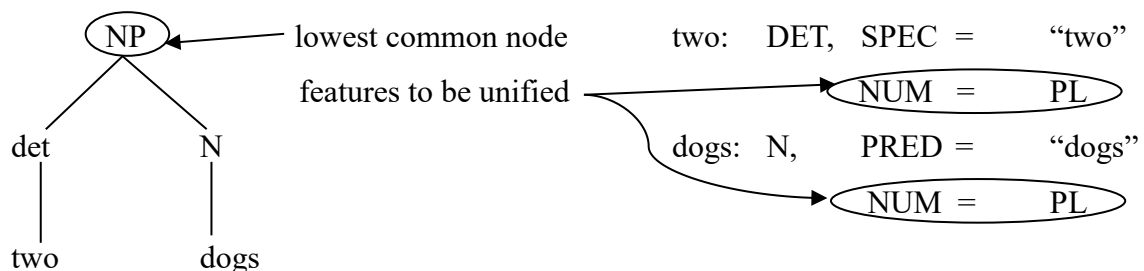
In Section 4.2.2 Levelt's model of speech production along with its premises have been introduced. One of the points made is that in online, real-time language production grammatical information has to be held in a memory specifically equipped for grammatical information. This phenomenon can be formalized linguistically using LFG, which, in turn, helps PT to specify (formally/ linguistically) why certain structures are acquired later than others (cf. Section 4.3 for a processing hierarchy of ESL).

As has been noted above, LFG is a lexicalist account of grammar that assumes that much grammatical information is present in the lexicon. According to LFG, the exchange of grammatical information is accounted for on the basis of (lexical) feature unification. It is "a psychologically plausible process that involves (1) the identification

of grammatical information in the lexical entry, (2) the temporary storage of that information and (3) its utilisation at another point in the constituent structure” (Pienemann, 1998, p. 73). Concerning the locus of unification, Pienemann et al. (2005b, pp. 141-42) assume it to be the lowest common node (talking about the c-structure representation of a given utterance). Depending on the level of that lowest common node, the procedure required for accomplishing the unification is different: If only an affix has to be added at the sublexical level<sup>10</sup> (cf. Kawaguchi, 2005, p. 265 for Japanese), the category procedure is sufficient (illustrated in Figure 4-6). If features have to be matched on the phrasal level (illustrated in Figure 4-7), the phrasal procedure has to be operative. If features of words contained in different phrases have to be matched (illustrated in Figure 4-3 and 4-4, repeated here for convenience as Figure 4-8) – which is the case, e.g., with subject-verb-agreement in English – only the S-procedure has the capacity to realize this.

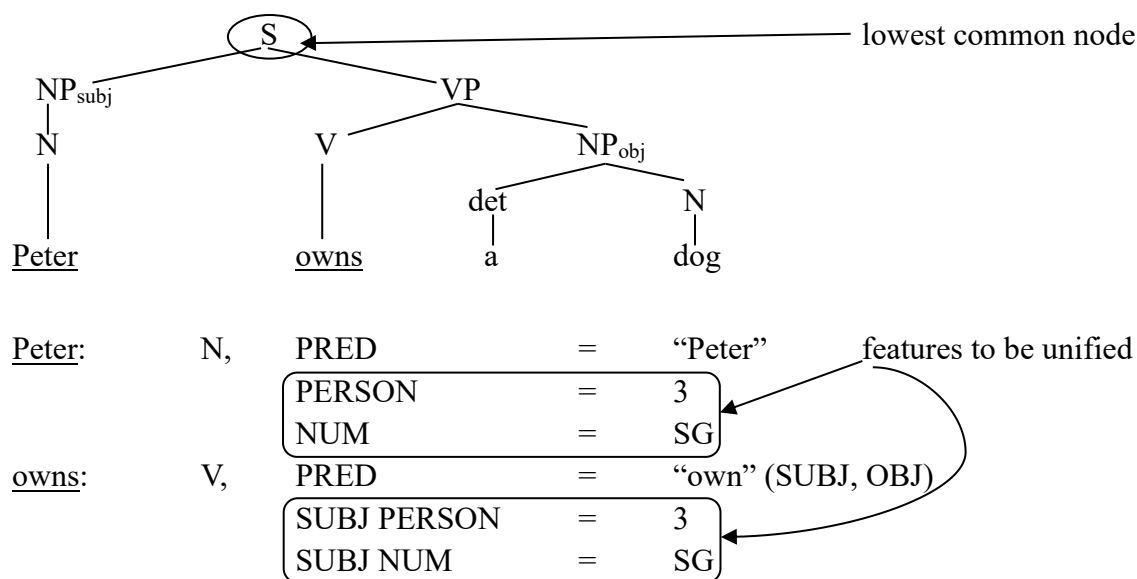


**Figure 4-6:** Sublexical Tree, Correspondence with Conceptual Structure and Lexical Entries for *dogs*



**Figure 4-7:** C-Structure and Lexical Entries for the NP *two dogs*

<sup>10</sup> Note that unification here does not occur between two lexical elements in an utterance, but rather between conceptual structure and the suffix. The category procedure is needed, though, to allow the affixation, since in the example only the category of N (noun) allows for adding a plural suffix (-s). Further note that in LFG, sublexical processes are not considered to be part of syntax, since according to its Lexical Integrity Principle, morphologically complete words are the ‘atoms’ of syntax (cf. Falk, 2001, p. 4).



**Figure 4-8:** C-Structure and Selected Lexical Entries for *Peter owns a dog*

### **LFG’s Account of Linguistic Non-linearity: Unmarked Alignment, LMT and TOPIC**

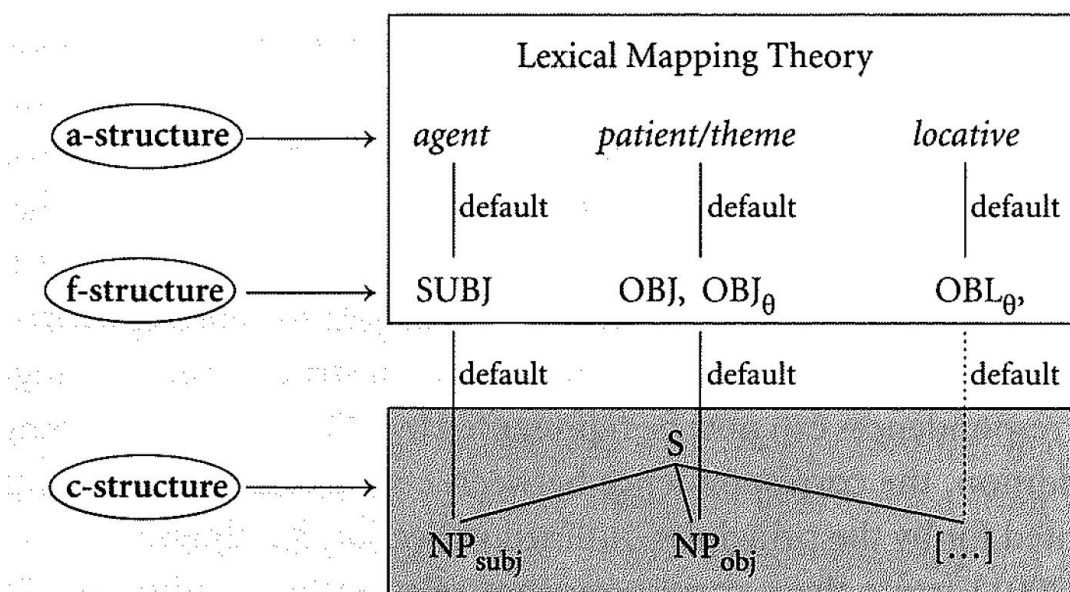
Feature unification as conceptualized within the original version of PT (Pienemann, 1998) is able to explain why there is a difference in processability of lexical, phrasal and inter-phrasal morphology. Still, there were a range of linguistic structures – such as the passive – that could not be explained on that basis. In the extended version of PT (Pienemann et al., 2005b) innovations within LFG were adopted in order to be able to explain a wider range of linguistic phenomena. These innovations basically affect the three PT-relevant linguistic levels of LFG: a-structure, c-structure and f-structure.

The Unmarked Alignment Hypothesis concerns all three of the mentioned levels. It says that

[in] second language acquisition learners will initially organize syntax by mapping the most prominent semantic role available onto the subject (i.e. the most prominent grammatical role). The structural expression of the subject, in turn, will occupy the most prominent linear position in c-structure, namely the initial position (Pienemann et al., 2005b, p. 229).

In other words, this hypothesis specifies how beginning learners of a given language handle the necessary mapping of the different linguistic levels, which results in canonical

word order and default mapping of thematic roles onto GFs. It can be illustrated as follows:



**Figure 4-9:** Unmarked Alignment, after Pienemann et al., 2005b, p. 230

As can be seen in Figure 4-9, the lines representing the mappings between a- and f- and f- and c-structure are straight; there is no line crossing any other, which graphically represents the assumptions that these mappings are standard, default mappings and do not constitute any major difficulty in processing. Note that Lenzing (2013) revised the Unmarked Alignment Hypothesis by the Multiple Constraints Hypothesis (MCH), saying that beginning learners do not map GFs since f-structure is not accessible from the start.

LFG's lexical mapping theory (LMT; cf. upper box in Figure 4-9) explains regularities and deviations in the mapping of a- and f-structure, in other words, of thematic roles onto GFs. In LMT the following constructs and principles are assumed:

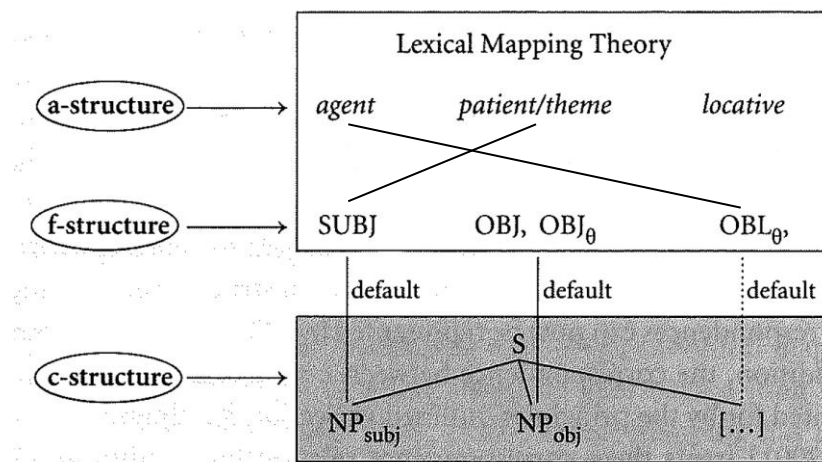
1. hierarchically ordered semantic role structures,
2. a classification of syntactic functions along two dimensions,
3. principles of lexical mapping from semantic roles to (partially specified) functions, and
4. well-formedness conditions on lexical forms.

(taken from Pienemann et al., 2005b, p. 214)

Due to space limitations the details of the single assumptions on this list as well as their justification cannot be presented here. The interested reader is directed to Pienemann et al., 2005b.



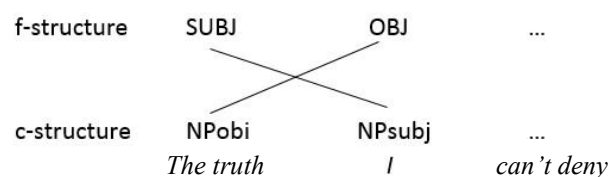
Suffice it to say that LMT can exactly explain why structures such as the passive and exceptional verbs constitute cases of non-linear mapping, which in turn attributes a linguistic justification to PT-based assumptions that such structures cannot be assembled productively by initial-state learners. Figure 4-10 (adapted from Figure 4-9) illustrates non-default mapping between a- and f-structure as needed in an English passive sentence:



**Figure 4-10:** LMT Modelling Non-default Mapping Between A- and f-Structure in an English Passive Sentence

Note that when comparing Figure 4-9 with Figure 4-10 the thematic role-GF mappings do not simply change symmetrically; in an English passive sentence, the agent (if present) is not expressed by an OBJ, but by OBL. Further note that in the case of the passive, f- to c-structure mapping remains the default (cf. lower box in Figure 4-10).

However, in languages such as English, canonical word order (as a result of default mapping between f- and c-structure) can be broken up in favor of discourse/pragmatic functional needs. Consider the sentence *The truth, I can't deny*. Canonical word order is broken up here, since the speaker wants to topicalize the OBJ. It is a pragmatically motivated variation on the canonical SVO sentence *I can't deny the truth*. In such a case, f- to c-structure mapping would look as illustrated in Figure 4-11:



**Figure 4-11:** F- to c-Structure Mapping for the Topicalized Sentence, *The truth, I can't deny*

Pienemann et al. (2015, p. 239) proposed the TOPIC hypothesis, which envisages an L2 learner's development from Unmarked Alignment to more flexible, pragmatically motivated word order such as in the example above. It reads:

In second language acquisition learners will initially not differentiate between SUBJ and TOP. The addition of an XP to a canonical string will trigger a differentiation of TOP and SUBJ which first extends to non-arguments and successively to [arguments] thus causing further structural consequences (ibid.).

The first deviation from canonical word order that learners of configurational languages are predicted to exhibit, allowing XP adjunction, has been empirically confirmed for several L2s (cf. Pienemann et al., 2005b, p. 233). Note that with XP-adjunction (and with the next step, TOPicalization, as well), the difference to Unmarked Alignment is not only in the non-default mapping between f- and c-structure. Within f-structure, discourse functions (such as TOP and FOC) are added that have to be aligned with other functions (ADJs at the beginning, OBJs and others later on). Due to space limitations, this will not be further illustrated here. Further note that Bettoni and Di Biase (2013) revised the TOPIC hypothesis in favor of their Discourse Functions Hypothesis, which also includes the discourse function FOC (Focus) and which allows application to a wider range of typologically different languages. Please refer to the mentioned publication for more details.

#### **4.2.4 Central Constructs in PT**

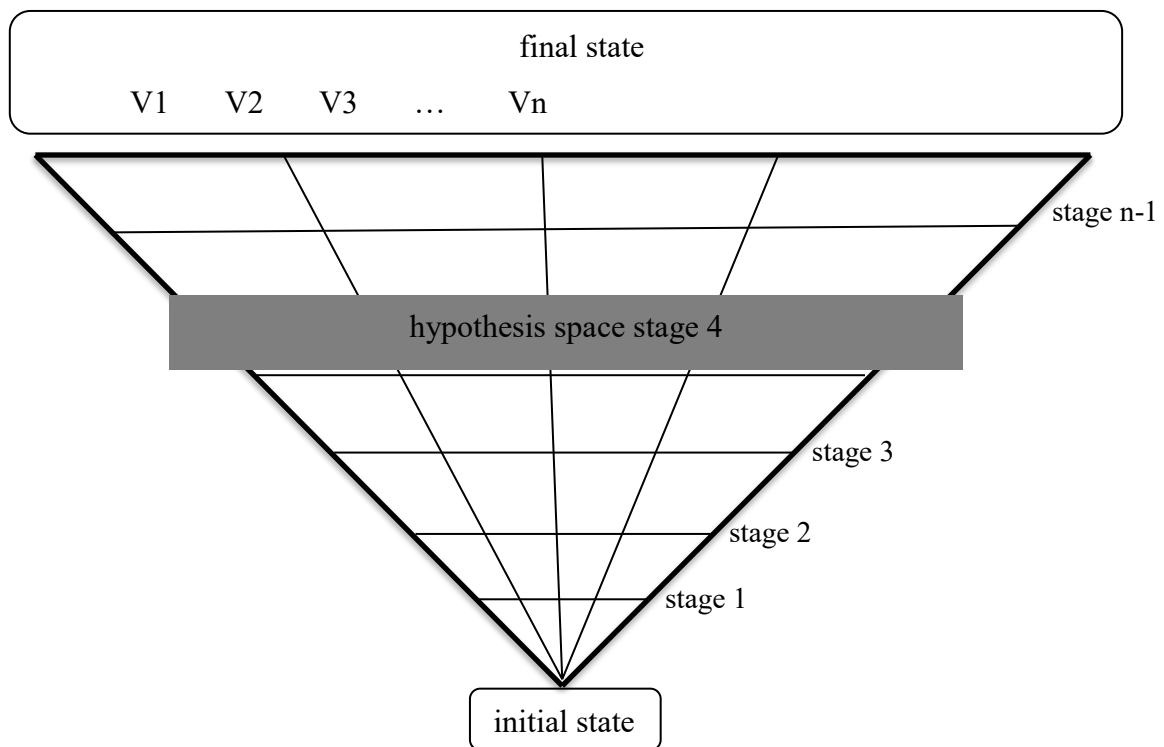
After the two feeder theories of PT have been introduced, the basic idea behind PT as well as its architecture and formalism should have become clear. Still, there are a couple of constructs that need further clarification. Before turning to the application of PT to English as well as methodological issues – these constructs will be presented. They account for crucial phenomena discussed in the L2A literature of the last few decades, such as the relationship between variation and development, ultimate attainment, and L1 transfer.

#### **Hypothesis Space**

Meisel, Clahsen and Pienemann (1981) in their multidimensional model took the stance that development and variation are two different dimensions of L2A (cf. Pienemann, 1998, p. 232). At the time of the emergence of PT, there was much debate about this issue, and some scholars (especially from the variationist linguistic camp) proposed other

models, which unfortunately were hardly testable since key factors within them could not be operationalized (cf. *ibid.*, p.237). The multidimensional model made the assumption that “linguistic variation is systematic” (cf. *ibid.*, p.238). The most obvious limitation of the multidimensional model was that it was not able to define interlanguage variation in an *a priori* manner (cf. *ibid.*).

Hypothesis Space, however, as part of PT, overcame this shortcoming by being able to exactly define which interlanguage variational features are processable at which stage. Pienemann (1998, p. 231) explains Hypothesis Space in the following way: “the processing procedures which are available at any one stage constrain the range of structural hypotheses. This range of structural hypotheses will be referred to as Hypothesis Space”. The concept of Hypothesis Space is illustrated in Figure 4-12:



**Figure 4-12:** Hypothesis Space, Development and Variation (adapted from Pienemann, 1998, p. 232)

In the figure above, horizontal lines represent stages of acquisition and therefore development. Vertical lines stand for variation. At the initial state, there is little or no variation. This changes in the course of development up to the final state, where a broad range of interlanguage varieties can be found. In other words, the higher the achieved stage, the more structural possibilities (“hypotheses”) the learner has.

Pienemann (1998, p. 235) exemplifies the range of possible hypotheses a learner has at hand at a given stage like this: In English L2A, wh-question formation such as *where is he going?* can only be produced correctly at stage 5 (cf. Section 4.3 for PT stages of ESL). Before that, at stage 4, learners will exhibit different ‘solutions’ to the learning problem. One learner might produce the version *where he going?*, another one *where is going?*, and yet another one *where he is going?*. In terms of development, all these ‘solutions’ are the same (they all use processing procedures available at stage 4). Referring back to Figure 4-12, thus, they can all be located within the grey box. In terms of variation, though, they are different: whereas the first two options make use of omission (leaving out the pronoun in the first and the auxiliary in the second one), the third option simply fronts the wh-word followed by canonical word order. The different ‘solutions’ to developmental problems correspond to different learner types (cf. *ibid.*). It will become clear below why certain (variational) hypotheses can have negative repercussions for future development within a learner.

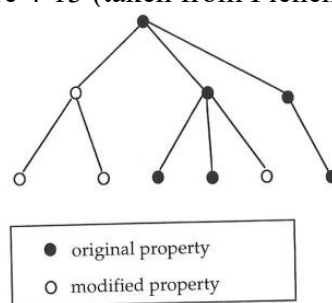
### Generative Entrenchment

Pienemann (1998, p. 316) introduces the concept of Generative Entrenchment as follows (*italics in original*):

My basic thesis is that different outcomes and developmental paths in language development are, at least partly, due to different developmental dynamics, caused by differences in the initial hypotheses and that the process of development can be fundamentally similar, with respect to language processing, despite fundamentally different outcomes and different developmental paths.

The basic mechanism behind developmental dynamics is the principle that developmentally early decisions bias the further development of the interlanguage system. This percolation of structural properties in developmental processes is known in biology and philosophy and has been termed “*generative entrenchment*” by Wimsatt (1986, 1991).

An illustration of development as a generative process in which structures increase in complexity is provided in Figure 4-13 (taken from Pienemann, 1998, p. 317):



after Wimsatt (1986, 1991)

**Figure 4-13:** Generative Entrenchment

When applied to language acquisition, there are two key points that directly follow from generative entrenchment. Simplifying matters a bit, one could say that one is beneficial, whereas the other one can be detrimental. The first point is that “not all structural decisions have to be revised in the developmental process every time a structural change occurs” (ibid.). This is beneficial for the learner in as much as it is a major computational saving. On the other hand, a developmentally early ‘bad choice’ influences further development in a negative way, since the decision is not revised, but rather built upon.

To exemplify this, let us return to our example of English question formation above. It has been pointed out that there is a difference in variation with the different ‘solutions’ to the learning problem at stage 4: one could be called the omission-strategy, the other one the canonical-order-strategy. Let us suppose a learner consistently opts for the omission-strategy, that is, only and exclusively produces questions such as *where he going?* or *where is going?*. The crucial point here is that this decision (usually an unconscious one) has negative effects on the two stages to follow (in English). At stage 5, the learner becomes developmentally ready to invert SUBJ and AUX, which is later (stage 6) cancelled again (cf. Section 4.3). But – obviously – since the learner always omits either the SUBJ or the AUX in such questions, there is no possibility to invert these two elements in the sentence. The omission-strategy has become generatively entrenched. Note that this is not the case for the canonical-order-strategy. As soon as the learner reaches stage 5, he is able to switch SUBJ and AUX, which he used previously (aligning them in canonical order). Needless to say, both options may lead to clearly distinct ultimate attainment (ultimate in the sense of highest possible PT stage).

## **The DMTH**

The Developmentally Moderated Transfer Hypothesis (DMTH) has already been outlined above (cf. Section 2.4.4). It is PT’s integrated theory on transfer and basically claims that cross-linguistic influence from any language is constrained by processability. The DMTH therefore is a selective theory of transfer, since it predicts both that transfer will occur - if and only if the structure in question is processable - and will not occur - if the structure in question is not processable. The DMTH itself, empirical evidence for it, and a clarification of common misunderstandings have been provided above (Section 2.4.4). Now that the core mechanisms of PT have been explained in detail, a more thorough summary of the rationale behind the DMTH might be helpful.

It is the DMTH's aim to explain why even in cases of close similarity between L1 and L2 (or L2 and L3, L1 and L3, etc.) 'bulk transfer' (Pienemann, 1998, p. 81) is not assumed to occur. Pienemann (ibid., p.80) provides the following rationale:

One might wonder if it should not be possible to utilise a subset of procedures from the L1, at least those that overlap to some extent with the L2. However, it needs to be pointed out that this would lead to internal problems, because all of the above processing procedures need to be orchestrated in a language-specific way. If any one of them is missing or incompatible with the rest, the Formulator is inoperable. If, for instance, the lexical category information is missing, category and phrasal procedures cannot be called. If diacritic features are missing or have no values or values which are not compatible with those listed in agreeing phrases or if they are incompatible with the Functorisation Rules, then the processor will be inoperable.

In other words, the unlikeliness of full transfer in terms of a PT conceptualization can be accounted for by the highly specific nature of both processing procedures and lexical entries. Pienemann (cf. ibid., p.81) goes on to exemplify the latter with the case of German learners' acquisition of the English definite determiner (*the*). German has a highly complex system of determiners that exhibit diacritic features of gender, case and number. English lacks such a system and thus also these diacritic features. Full transfer would mean that the learners take all these diacritic features from German over to English even though there is no evidence for them in the input. It is much more likely and natural that the learners 'start from scratch' in terms of annotating their lexicon, since "there is no obvious *a priori* way for the learner to know [which of the diacritic features of the L1 apply to the L2]" (ibid.).

### **4.3 Application of PT to the Acquisition of English (ESL)**

Now that PT and its underlying psycholinguistic and linguistic feeder theories have been introduced, it is time to show the resulting stages of acquisition that have been suggested for English as an L2 (ESL). Table 4-1 below shows the six stages along with the morphological and syntactic structures which are processable at each respective stage. Syntactic structures are followed by one example. Morphological structures are followed by three examples: one case of correct suppliance of the respective morpheme, one case of oversuppliance/overgeneralization and one case of non-application of the morpheme. On methodological issues concerning valid evidence of syntactic and morphological structures see Section 4.4. In the following, each stage presented in Table 4-1 will be briefly explained.

Stage	Syntax	Morphology	+	>	-
6	Cancel inversion	I wonder where he is? I wonder what he wants to eat			
5	Do-2nd Aux-2nd Neg-do 2nd	Why did she eat that? Where have you lost it? Why didn't you to tell me?	3sg-s	he eats he is eats	he eat
4	y/n inversion Copula inversion Particle shift	Have you seen him ? Is he at home? Where is she? Turn it off!			
3	Do-fronting Adverb-fronting Neg+Verb	do he live here? Today he stay here	pl-agreement	two cat-s a cats	two cat
2	Neg+SVO	no me live here me live here you live here	past-ed plural-s poss.-s	she play-ed cat-s Pat's cat	go-ed V+0 he saw two cat Pat's Pat cat
1	Single word Formulae	How are you? – Where is X? – Hello – Five Dock - Central			

**Table 4-1:** ESL Processability Hierarchy (taken from Pienemann, 2011, p. 14)

At stage 1, a learner of English has not acquired any grammatical rules. He is unable to exchange any grammatical information and has to start annotating the words he acquires (e.g. for category). Utterances at this stage consist of single words and formulaic phrases (e.g. “how are you”) that are stored as single lexical items and which are also typically taught at the onset of beginners’ English classes. Note that even though learners at this stage can utter phrases such as “how are you” which – from a target-language standpoint – contain grammar, the grammar is not used productively. Rather the sentence is assembled as an unanalyzed, lexical chunk.

At stage 2, also called the category procedure stage, learners have annotated the (majority of) words in their lexicon for category (such as N, V, A, P, etc.). This categorization is the necessary prerequisite for adding morphemes that fit to the category, such as plural -s for nouns and past -ed for verbs. Note that no information exchange with other constituents is required. Morphemes that mark plural or past reference, for instance, can immediately be derived from conceptual structure (cf. explanation and figure in Section 4.2.3). Further note that at this stage, adding -ed to verbs that require irregular past tense forms (such as “\*goed”) is common, which simply shows the learner’s ability

(and desire) to add a morpheme that fits to the category of its stem. Acquiring irregular forms is a lexical task and occurs throughout the learning process (i.e., also at higher stages). As far as syntax is concerned, a learner at this stage is able to handle basic English word order, which is SVO, due to default mapping processes as envisaged by Unmarked Alignment and follow-up theories (cf. Section 4.2.3). Furthermore, a negating element (such as *no*) can be placed before the canonical string SVO.

At stage 3, also called the phrasal procedure stage, learners are able to exchange grammatical information on the phrasal level. For English morphology, this means that plural agreement (as illustrated in the example in Section 4.2.3) can be executed productively. In terms of syntax, adverbs and the auxiliary *do* can be fronted, which corresponds to the intermediate step conceptualized in the TOPIC hypothesis; in other words, a differentiation between the GFs SUBJ and TOP is now productive within the learner's f-structure. Negating a verb directly (not at the beginning of a sentence) also becomes possible at this stage. Note, again, that even if elements are fronted at this stage, the canonicity in terms of the syntax of the rest of the utterance remains untouched. Further note that the term *do*-fronting exclusively corresponds to initial sentence position, but not to morphological form. This means that a learner at this stage is not expected to say *does he live here?* but rather *do he live here?*, since information exchange between constituents is not developmentally possible yet.

Concerning morphology, no fundamental innovations can be detected at stage 4. As for syntax, learners are now able to invert the SUBJ and the copula (or auxiliary). This leads to utterances such as *have you seen him?* or *is she at home?*. They can also execute the operation of particle shift productively (e.g., *take it off*). Note that in the case of *have you seen him?* not only the usual word order is altered, but grammatical information has to be kept in memory (the information that the form of the lexical verb has to be a past participle, cf. Pienemann, 1998, p. 174 for a more formal account).

Canonical English SVO word order is further altered at stage 5, where learners can put *do* or another auxiliary in second position, immediately following a fronted wh-word. The difference between *do*-support and using another auxiliary such as *have* is that the form of the lexical verb is different: whereas *do*-support necessitates the infinitive, the auxiliary *have* triggers a past-participle lexical verb. In both cases, this grammatical information has to be exchanged across constituents, at the S-node. This is why this stage



is also called the S-procedure stage. In the domain of morphology, emergence of the S-procedure allows the learner to unify the grammatical information of 3-SG between the SUBJ and the verb of the sentence (as illustrated in the example, *Peter owns a dog* in Section 4.2.3).

English also exhibits a stage 6 in terms of the development of processing procedures. For English as a target language, there is a rule to cancel inversion in a clause once it becomes subordinated (as in indirect questions, such as *I wonder when he comes*). The command to do this can be captured in the form of a c-structure rule (cf. Pienemann, 1998, p. 176 for more formal details). The grammatical information to cancel inversion in the subclause is contained in the complementizer, which belongs to the main clause. Since this command is executed in the subclause, information exchange occurs across sentence boundaries here (at the S' level). A learner who is able to productively do this can be claimed (within the PT framework) to have reached the highest stage in the acquisition of English morphosyntax, i.e. the subordinate clause procedure.

Note that generally, in all the six stages of L2 English, learners proceed from lexical to categorical rules. This can be exemplified with the procedure mentioned in the previous paragraph, called cancel INV(ersion). In order to produce an English subordinate clause (in which INV is cancelled), the following rule can be assumed (taken from *ibid.*):

$$S \rightarrow (\text{COMP})_{\text{ROOT}=-} \text{NP}_{\text{Subj}} (\text{V})_{\text{INF}=+} (\text{V})_{\text{INF}=-} (\text{NP}_{\text{Obj1}}) (\text{NP}_{\text{Obj2}}) (\text{ADJ})$$

This rule does not only account for subclauses that have been produced correctly (i.e., cancelling INV), but also those in which INV is not cancelled. A fictitious learner of English might utter the sentences *\*I asked if could he come home* and *I asked when he could come home* (cf. *ibid.*). Instead of assuming unsystematic variation within the learner here, it is more reasonable to view the difference in accuracy as a reflex of the lexical nature of the learning process: the learner might have classified *when* as a complementizer (COMP), leading to the correct word order in the subclause, whereas he might not have classified *if* as COMP, thus leading to (incorrect) main (= root) clause word order in the *if*-sentence (cf. *ibid.*).

The PT-stages for ESL are not only clearly defined and accounted for on a psycholinguistic and formal linguistic basis. There is overwhelming empirical evidence for their validity. Pienemann (1998, pp. 177ff.) mentions a study by Johnston (1985) on adult learners of English and Pienemann and Mackey (1993) on child ESL, two important studies that confirm the suggested stages of acquisition for ESL. Now, about twenty years later, there are many more studies in the same vein, e.g. Di Biase, 2002, Mansouri and Duffy, 2005, Keßler, 2006, 2007. The reader might recall that the focus of this thesis is the acquisition of English as an L3, thus the question is whether this hierarchy proposed for ESL is also applicable to L3 English (cf. Section 4.5.2 below).

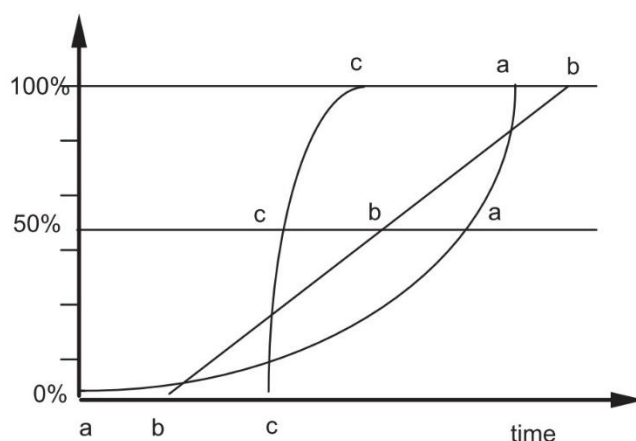
#### **4.4 Testing PT: Some Methodological Necessities**

In Section 2.4.4 above it has been stated that there are a number of theories and studies that claim to have found counter-evidence to PT. It was further stated that in order to falsify PT and its predictions, a methodology that is incompatible with the theory one wishes to test should not be used. Unfortunately, this has been neglected by some of these scholars. In order to be able to make valid claims about whether or not a given dataset contains evidence for or against PT, it is imperative to follow the research methodology adopted by studies within the PT framework. One might wonder why this is so. The reason is that PT is a modular approach to language acquisition that makes very specific predictions. These specific predictions can only be tested with specific methods of measurement that are compatible with the construct being tested. Below I will briefly explain the methods used in the PT framework and why they better test the predictions made by PT than other methods that are used in the field.

##### **4.4.1 Accuracy vs. Emergence**

One of these other methods used in the field of language acquisition studies is that of measuring accuracy rates. It has been used, for instance, in the morpheme studies (Dulay & Burt, 1974, cited in Ellis, 1994). The assumption behind this is that the structures that show higher accuracy in production are those that are acquired earlier. The problem with this is that accuracy values are unstable and can fluctuate, depending on the structure, communicative situation, the speaker's mood, etc. In other words, "it is impossible to predict how suppliance in obligatory contexts will develop in any given structure and learner" (Pienemann, 1998, p. 138). It is possible that structures that emerge later in a

learner's interlanguage reach a given level of accuracy (say, 80%) earlier than structures that emerged before them (and vice versa). This fact is illustrated in Figure 4-14, in which a, b, and c all stand for different linguistic structures (e.g. different morphemes). It becomes immediately apparent that at different accuracy rates (e.g., at 1%, 50% and 90%) the order of the structures (in the sense of which structure reaches the level first temporarily) differs. There is no one-to-one relationship with emergence. Thus, using accuracy values is arbitrary and unreliable for measuring development.



**Figure 4-14:** Accuracy and Development (taken from Pienemann, 1998, p. 137)

In addition to that, in language acquisition studies that use accuracy values as a yardstick, the value chosen for representing mastery of a structure varies considerably (cf., e.g., Ellis, 1994, Pallotti, 2007). There is no consensus as to when one can say that a learner has mastered a given structure. Pienemann (1998, p. 138) suggests detecting the first emergence of a structure as a superior way of measuring development. He defines it as follows:

The one cut-off point which remains constant, however, is the point of *emergence*, which is also relevant for other reasons. From a speech processing point of view, emergence can be understood as the point in time at which certain skills have, in principle, been attained or at which certain operations can, in principle, be carried out. From a descriptive viewpoint one can say that this is the beginning of an acquisition process, and focusing on the start of this process will allow the researcher to reveal more about the rest of the process (*italics in original*).

In other words, Pienemann suggests using a qualitative instead of a quantitative criterion. Below it will be explained how this emergence criterion can be operationalized in the context of investigating both interlanguage morphology and syntax.

It should be noted, however, that a preference for the emergence criterion over accuracy values does not imply rejecting the latter altogether. The reader may recall that in Section 4.2.4 about the DMTH accuracy does indeed play a role. According to the DMTH, significantly different values of accuracy are expected between learner groups who exhibit the commonality of having acquired a given structure while also exhibiting the difference of presence vs. absence of facilitative transfer (cf. the studies presented in Section 2.4.4 the description of which includes the expression ‘categorical acquisition’, meaning an accuracy level of 100%).

There are two major fallacies into which any researcher adopting the emergence criterion as a methodological yardstick may fall. In other words, there are two kinds of ‘evidence’ for the acquisition of a given structure that should not be counted as evidence. The first is lexical chunks, or formulae/ formulaic utterances. The second is non-target like form-function relations that can make the researcher believe a certain structure has been acquired although the learner uses it in a different way than as within target-language grammar. This second point is dealt with further below in the section on Distributional Analyses. Let us turn to the previous point first, since it is more directly related to the operationalization of the emergence criterion.

A learner might produce a series of words that appear to be containing grammar, but it is really one large unanalyzed entry, similar to a single word. An example of such a case would be a learner who has memorized the sentence *Peter likes ice-cream*. A ‘blind’ analysis would perceive this sentence as containing one instance of SV agreement, although no such processing procedure was at work in reality. In order to avoid this, different requirements have been set up for counting morphological and syntactic structures as having emerged. What both have in common is the underlying intention that the emergence criterion is to detect not just the first occurrence of a form in the data per se, but rather the first systematic and productive occurrence (cf. Pallotti, 2007, p. 366).

For morphology, this means that a minimum of morphological variation (to ensure systematicity) and a minimum of lexical variation (to ensure productivity) has to be present in order to speak of emergence of the morpheme in question (cf. *ibid.*, p.367). For instance, if one wished to show that the past morpheme -ed has emerged in a given dataset, one would have to find two different verbs both exhibiting this morpheme, as well as at least one of these verbs without the (or with a different) morpheme.

For syntax, due to its inherent properties, the emergence criterion is a bit ‘less demanding’. Concerning, e.g., the emergence of a specific word order which is to be tested, two occurrences with different lexical material are sufficient to consider it as emerged (cf. Pienemann, 1998, p. 133). Systematic use can be taken for granted with a syntactic structure (as long as it is not the only syntactic pattern that occurs in the data), which is why one must check for only productive use (as opposed to formulaic use).

When applying the emergence criterion to actual data, four types of evidence are logically possible (more on the graphical representation of these four types below in the section on Distributional Analyses):

- (1) no evidence, i.e. no linguistic contexts
- (2) insufficient evidence; i.e. very small number of contexts;
- (3) evidence for non-application; i.e. non-application in the presence of contexts for rule x;
- (4) evidence for rule application; i.e. examples of rule application in the presence of contexts (Pienemann, 1998, p. 146).

Evidence of types (1) and (2) is inconclusive, which is why they should be avoided if possible. However, real data sets often contain these types of evidence to a certain degree due to a small interlanguage sample or a few communicative contexts for the structure in question (cf. *ibid.*). Yet they do not falsify the implicational nature of a given dataset (more on implicational scaling in the respective section below).

#### **4.4.2 Distributional Analysis**

Now that the emergence criterion as well as its operationalization have been introduced, it is time to turn to distributional analysis. Distributional analysis refers to a thorough examination of how often a given linguistic structure is supplied in which context. It is commonly used in linguistic field work and has been adopted by Pienemann (1998, p. 139) as a method for explicitly laying out the usage development of a given structure. With distributional analysis, the language acquisition researcher can spell out the interlanguage rule for a linguistic structure at a given point in time. This procedure offers a great advantage over a simple calculation of accuracy of suppliance in target-language contexts. This advantage is that it does not disguise interlanguage regularities and their dynamics by adopting an exclusively target-language oriented point of view.

It can be illustrated by the development of a fictitious learner's suppliance of the English regular past-tense marker *-ed*. Consider Table 4-2, which provides the (idealized) distributional analysis of this particular morpheme (taken from *ibid.*):

time	t1	t2	t3
time reference, past	+	+	+
time reference, present	+	–	–
aspect, progressive	+/-	+/-	–
(weak) lexical verb +ed	57	59	65
modal	+/-	+/-	–
(strong) lexical verb +ed	51	21	10
irregular past	49	79	90

**Table 4-2:** Development of the Marking of Past in Different Environments

Crucially, the functions and environments of *-ed* insertion listed in this table as well as their values at the three different points in time (t1-t3) reveal interlanguage regularities as well as their development. From the table it can readily be extracted, for instance, that the fictitious learner used the past marker for both past and present time reference at t1. From t2 onwards, he exclusively supplied *-ed* in past contexts. However, at this point of time he still overgeneralized the past marker, using it also in the environment of modals (e.g. *\*he had to walked home*, *ibid.*, p.140). This changes at t3: Here the learner's usage of *-ed* insertion is confined to past contexts without modals, which is the target-language norm. More developmental facts can be concluded from Table 4-2, but the mentioned development should suffice for the moment. Note that such a distributional analysis can and should also be conducted with cross-sectional studies, since it reveals any learner's use and contexts of use of a given structure at the point of data collection. This has important repercussions for interpretation of the interlanguage rule system at that point of time. Further note that the linguistic contexts one includes in the distributional analysis can be varied according to the hypotheses one aims to test (cf. *ibid.*).

#### 4.4.3 Form-Function Relationships and Factorizing Diacritic Features

As has been pointed out above (Section 4.2.3), the core psycholinguistic mechanism PT seeks to explain is the unification of features, largely diacritic features such as NUM, PS, GENDER, CASE, etc. However, PT can only explain such processes accurately if the relationship between the morpheme and its function is one-to-one, as, for instance, in the Turkish locative, where the only diacritic feature the morpheme bears is CASE = LOC.

If the relationship is one-to-many or many-to-many, the learner has to tackle tasks that are quite distinct: to acquire the respective processing procedures, to acquire the different diacritic features and to figure out the manifold relationships that exist between form and function in the target language. Although PT is not designed to account for the latter task in itself, there is a methodological way to separate the two aspects. Pienemann (1998, p. 159) calls it ‘factorizing diacritic features’ and it means designing the distributional analysis in such a way that every logical relationship between form and function of one or more morphemes is captured in a table. In this way, whether a learner uses a subset of the target-language system to mark a given function can be tested. This is illustrated in Table 4-3 with a sample from one learner’s adjectival affixation in Swedish L2 (from Håkansson, 1996, reported in Pienemann, 1998, p. 160, Figure 4.3-9 therein). Note that target-language Swedish adjectival affixation is a case of many-to-many relationships.

Form	Function		
	plural uter/neuter	singular uter	singular neuter
-a	7/9	*0/7	*0/7
zero	*2/9	7/7	*7/7
-t	*0/9	*0/7	0/7

**Table 4-3:** Analysis of Form-Function Relationship in Swedish Interlanguage Adjectival Affixation

In such a table, the researcher can readily analyze the learner’s own system of form-function relationships. From the values in this table it can be concluded that the learner uses a subset of the target-language system. He does not use the *-t* suffix at all and does not include the feature of gender (yet). Nonetheless, he systematically applies a zero/*-a* opposition to mark singular and plural (cf. *ibid.*, p.161). “A non-factorized analysis would not have revealed the striking regularity underlying this sample” (*ibid.*). Note that what has been said above about distributional analysis and factorizing diacritic features underlines PT’s learner-/ interlanguage-centered approach to language acquisition and moves away from any ‘target-language bias’ (cf. *ibid.*, pp.162-164) that other theories of language acquisition of the time exhibited.

#### 4.4.4 Implicational Scaling

Implicational Scaling is the last methodological step applied within the PT-framework. It allows a given learner or learners to be assigned to a given stage of processability in the target language. It has already been part of the Multidimensional Model (Meisel, Clahsen, & Pienemann, 1981) and “has long been recognized as highly productive in representing dynamic aspects of interlanguage (e.g. Hyltenstam 1978)” (Pienemann, 1998, p. 134). The first scholar to use implicational scaling was Guttman (1944, quoted after Rickford, 2002, p. 144), who used this method within the social sciences. He was followed by DeCamp 1971 (reported in Hymes, 1971, quoted after Rickford, 2002, p. 144), a creolist, who first applied the method within linguistics.

“In linguistics [...] implicational scales depict hierarchical co-occurrence patterns in the acquisition or use of linguistic variables by individuals or groups, such that *x* implies *y* but not the reverse.” (italics in original, Rickford, 2002, p. 143). Or, with a more narrow focus on language acquisition:

The basic point [of implicational scales, my comment] is this: cumulative learning processes can be represented by successive additions of linguistic rules to the interlanguage system: rule 1 + rule 2 + rule 3. In this way changes in the interlanguage system can be accounted for by the addition of rules [...]  
When analysing interlanguage corpora one can apply the following logic of implicational scales to individual interlanguage samples. For any set of rules that is learnt in a cumulative fashion the following is true: if sample A contains rule 3, then it will also contain rule 2 and rule 1 (Pienemann, 1998, p. 134).

An idealized implicational scale obtained from longitudinal data is shown in Table 4-4:

	time 1	time 2	time 3	time 4
rule 1	–	+	+	+
rule 2	–	–	+	+
rule 3	–	–	–	+

**Table 4-4:** Idealized Implicational Scale (longitudinal data, taken from *ibid.*)

This table documents the presence and absence of three linguistic rules at four different points of testing in the production of a fictitious learner. The ‘–’ stands for absence and the ‘+’ stands for presence of the rule in the interlanguage sample. The learner moves from complete absence of rules at time 1 to presence of all three rules at time 4. The implicational regularity can be captured in the following statements: The presence of rule three includes the presence of rules two and one. The presence of rule two includes the



presence of rule one. In other words, these rules are accumulated during the process of acquisition and none will be lost.

Such an implicational scale may also be set up for cross-sectional data, as in Table 4-5:

	informant 1	informant 2	informant 3	informant 4
rule 1	-	+	+	+
rule 2	-	-	+	+
rule 3	-	-	-	+

**Table 4-5:** Idealized Implicational Scale (cross-sectional data)

The obvious difference here, of course, is that the different points in time have been replaced by different informants. This implies that the previous table (4-4) only depicted the development of a single learner/informant, whereas Table 4-5 makes a claim about the current state of rule development of four different informants. Since this thesis is based on cross-sectional data, this type of scale will be the one presented in Section 6.2.

The reader might wonder what a non-idealized scale might look like. Staying with the cross-sectional type, such a non-idealized scale – one which is more likely to be found in reality – could be as illustrated in Table 4-6:

	informant 1	informant 2	informant 3	informant 4
rule 1	-	+	+	+
rule 2	-	-	+	⊖
rule 3	⊕	/	-	+

**Table 4-6:** Non-idealized Implicational Scale (cross-sectional data)

In this table, there are two *errors*: one with informant 1 (rule 3) and one with informant 4 (rule 2). In addition, there is a gap or empty cell with informant 2 (rule 3). Errors and gaps have been circled for ease of recognition. An error in an implicational scale is any deviation from the pattern (i.e. a ‘+’ where one should have expected a ‘-’ and vice versa, cf. Hatch & Lazaraton, 1991, p. 207). Moving away from the mathematical/representational side, it means that a learner in a given set knows a rule he is not expected to know or does not know a rule he is expected to know (ibid.).

An empty cell is the result of lack of positive or negative evidence for rule-application, which happens, e.g., when there are very few or no communicative contexts for production of even the linguistic context of a given rule. Whereas a perfect scale (meaning a perfect pattern with complete absence of both errors and empty cells) provides undisputable evidence of scalability of the rules involved, the existence of errors and empty cells may obviously produce problems for the interpretation of the data (cf. *ibid.*, p.215). There are mathematical/ statistical procedures that have been developed to test the goodness-of-fit of a given scale, in other words, whether one can justifiably speak of an approximation to a perfect scale or not (cf., e.g., Guttman's procedure as reported in Hatch & Lazaraton, 1991; Jackson's 1949 "Plus Percentage Ratio"; Green's 1956 "Index of Consistency", the latter two quoted after Rickford, 2002, p. 157).

In the Guttman procedure, the number of errors in a scale is included in the calculation (cf. Hatch & Lazaraton, 1991, p. 210). This is because the existence of an error provides clear counter-evidence to the scale and this has to be reflected in the mathematical result. However, it is less clear whether (and if so, then how) empty cells should be included in the calculation (cf. *ibid.*, p.215). Rickford (2002, p. 157) criticizes Pienemann (1998, p. 180) on that issue in the following way:

Ignoring empty cells in a table, and computing scalability figures only on the basis of filled cells, amounts to a leap of faith that if the empty cells were to be filled, they would pattern in accord with the implicational predictions of the scale model. This is clearly not a valid procedure. To avoid it, we simply have to continue collecting data until our scales contain no empty cells, or devise procedures for filling the empty cells by other means, for instance, reproducing the proportions of attested deviations (see Pavone, 1980, pp. 111-19).

Concerning the avoidance of empty cells, I wish to respond to Rickford's suggestions. It is often not possible to collect more data until all gaps have been filled whether for practical reasons (e.g. the informant is no longer available) or due to the research design (e.g. the point of data collection is highly relevant for the results, that is, collecting more data at a later point of time would distort the results) or both. His suggestion concerning a reproduction of the attested deviation proportions only makes sense if there are deviations/ errors. Even if there are a few, they will not have much mathematical weight when there are many other cells filled according to the predicted pattern. In other words, Pavone's procedure only makes sense if there is a considerable amount of error, which was not the case in any of Pienemann's (1998) implicational tables. Furthermore, Pienemann himself (1998, p. 147) justifies his procedure as follows:

To resolve this situation one can resort to a version of the continuity assumption that also underlies Brown's (1973) acquisition criterion: If a structure has been acquired it will be a constant part of the interlanguage system at later levels of development. In this way one discounts the single and isolated occurrence of seeming rule application as an aberration in the data.

There is, of course, a degree of circularity in this argument when one wants to empirically demonstrate the continuity of interlanguage development. But I believe that this risk is quite calculable, because the ambiguity under discussion is not such that type 4 evidence precedes type 3 evidence followed by type 4 evidence [= an *error* in methodological terms, PB]; in other words the ambiguity does not arise from a situation where rule application alters with non-application in consecutive interviews in the presence of ample contexts for the rule. In fact, no such cases occur in the data discussed in this book. It is the latter finding which gives me the confidence that the above version of the continuity assumption can be supported empirically.

Although this quotation is not from the section in which Pienemann describes his understanding of implicational scaling, it contains crucial principles to be applied with this procedure. Summing up his argument, one must clearly distinguish between the impact of errors and empty cells. An error provides counter-evidence against scalability of a given data-set. but, taking for granted the continuity assumption, empty cells can be reasonably assumed to fit to the general pattern. As I argued above, this is especially the case if there are only very few empty cells and very few or no errors in the whole implicational table, since this would even show when calculating a 'proportion of attested deviations' (Pavone, 1980, pp. 111-19 quoted after Rickford, 2002, p. 157).

One might wonder whether it is necessary at all to calculate a measure of goodness-of-fit for an implicational table that almost looks perfect. Hatch and Lazaraton (1991, p. 210) state that "[in] applied linguistics, some researchers set up an implicational table and stop there. For them a visual pattern is evidence enough that a scale exists". In their (H&L's) view, calculating the Coefficient of Scalability ( $C_{scal}$ , cf. *ibid.*, pp.210-212 for details of how to calculate it) gives "extra weight to the evidence" (*ibid.*). I doubt that any extra weight is achieved with this; it simply spells out mathematically what can be seen at first glance anyway, since an implicational scale is fundamentally qualitative –not quantitative – in nature. If one wanted, for instance, to measure scalability of the implicational tables presented within the PT-framework, one would always come up with a high degree of scalability (sometimes even up to 100%). Nonetheless, for the sake of scholars who would argue in favor of the necessity of calculating such figures, I will briefly return to this point in Chapter 6, which deals with the results, arguing that the  $C_{scal}$  can only be calculated for certain tables, and doing so results in 100% scalability for the current dataset (cf. Section 6.2).

One last question about the nature of implicational scaling should be answered at this point. It is the question as to which comes first: data or the implicational scale? In other words, is an implicational scale used to discover the implicational nature of the data (= *a posteriori*), or is actual data used to confirm a hypothesized implicational hierarchy (= *a priori*)? Concerning implicational scaling per se, it should be noted that both directions are possible; there is nothing in an implicational scale as such that contradicts either an *a posteriori* or an *a priori* use of it. Rickford (2002, p. 148) reports that scholars such as DeCamp and Bickerton opted for the *a posteriori* approach, whereas quantitativists went for the *a priori* usage. Although parts of the PT hierarchy for ESL, for instance, were based on *a posteriori* findings of regularities in the acquisition of certain structures, it should be noted that the stages of the overall hierarchy have first been explained theoretically (using LFG and Levelt's 1989 model, see above) and later confirmed empirically. In other words, PT is inherently a 'theory-first' approach to language acquisition (deductive).

It might now be useful to summarize the major methodological procedures used in PT as well as how they relate to each other. For ease of understanding, they will be mentioned in chronological order, that is, in the order a researcher applies them when analyzing his data. The first thing that should be done is to set out a distributional analysis, i.e., a close examination of which structures are used in which linguistic contexts by the informant(s). This has the benefit of revealing interlanguage regularities that would be lost in the case of a target-language oriented approach. After this, the emergence criterion is applied, which has proven to be a more reliable criterion than using accuracy values. Within the distributional analysis, each cell is examined as to whether it can reasonably be argued to contain a minimum of systematic and productive use of the respective structure. If this is the case, the quantitative number (e.g., 6/10; six uses out of ten linguistic contexts) is converted into a '+'. If it is not the case, a '-' must be inserted; if there are not enough or no contexts, a '/' is used to represent this. In other words, applying the emergence criterion to a data-set converts quantitative into qualitative data (= a distributional analysis into an implicational scale; cf. Pienemann, 1998, pp. 133-153). From the implicational scale, finally, the informant's stage of acquisition of the target language can be located, simply by identifying the highest present rule/ structure (the level of the 'highest +' in the table).

#### **4.4.5 A Brief Note on Developmental ‘Trailers’**

Section 4.2 above outlines how the increasing level of complexity of grammatical information exchange and mapping operations explain different stages of processability through which the learner must pass in the acquisition of the target language. Being at the verge of passing to the next stage is usually termed ‘developmental readiness’ within the PT framework (cf., e.g., Mansouri & Duffy, 2005). A question that comes up both from a methodological and an empirical point of view is whether every learner who is ready to acquire a grammatical structure will always and immediately do so. The answer is a clear ‘no’. Since developmental readiness is only the prerequisite, but not the only factor that triggers acquisition, the learner will not necessarily acquire a given structure as soon as he can process it. As Keßler et al. (2011, p. 150) put it: “developmental readiness does not guarantee acquisition”.

This fact also explains why so-called ‘developmental trailers’ (cf. Pienemann, 1998, pp. 244ff. for details) – linguistic subdomains in which a learner lags behind stagewise – do not falsify PT. If, for instance, a learner shows clear evidence for productive stage 5 morphology, but lacks productive stage 5 syntax, he lags behind in the domain of syntax at this stage – but has nonetheless acquired the general psycholinguistic procedures required for this stage (the S-procedure in this concrete case). Other factors – input frequency and presence/ absence of a communicative need among them – may explain why the other subdomain structures have not yet emerged in the learner. It may, thus, be the case that a learner exhibits some structures from within one stage, but lacks all the others. As should have become clear now, he is still considered to have achieved the respective stage. This will become relevant when setting up and interpreting an implicational table for PT-related data (cf. Section 6.2).

## **4.5 Research Questions and Hypotheses**

### **4.5.1 Introduction**

In this section, the research questions and hypotheses of this thesis will be outlined. They are based on three pillars: L3A studies and their results (cf. Chapter 2), PT studies and predictions (cf. Chapter 4) and my own observations and reflections. Generally speaking, the thesis aims at falsifying the FDH/L3A. Obviously, this is a very general endeavor that has to be further specified and operationalized. A numbered list may be the best way to present the questions that I found to be a direct consequence of this aim and to be practical/ testable within the given constraints of time and space.

### **4.5.2 Research Questions**

1. Is the acquisition of English as a Third Language (ETL) fundamentally different from the acquisition of English as a Second Language (ESL)
  - a. as far as the developmental path in morphosyntax is concerned?
  - b. as far as the pace of acquisition is concerned?
2. Do German-Turkish students acquiring L3 English have any advantages due to their knowledge of Turkish, in other words, do they make use of facilitative transfer from Turkish, as opposed to German students acquiring L2 English?
3. Is there any difference concerning transfer from German between the L2 and L3 acquirers of English?

For ease of comparison, I will not comment on these questions further here, but will rather present the answers to these questions – my hypotheses – immediately. Comments and explaining remarks on both the questions and hypotheses as well as an operationalization of the latter will be provided below.

### **4.5.3 Hypotheses**

1. The acquisition of English as a Third Language (ETL) is hypothesized to be not fundamentally different from the acquisition of English as a Second Language (ESL)
  - a. as far as the developmental path in morphosyntax is concerned
  - b. probably as far as the pace of acquisition is concerned.
2. German-Turkish students acquiring L3 English do not have considerable advantages due to their knowledge of Turkish. No substantial amount of facilitative transfer from Turkish that might put them in a superior position as compared to German students acquiring L2 English is expected.
3. There is no fundamental difference concerning transfer from German between the L2 and L3 acquirers of English.

#### **4.5.4 Explanations and Comments on the Questions and Hypotheses**

Let us start with question 1. This is a direct reflection of the general claim that the FDH/L3A makes, namely that L3A is fundamentally different from L2A. If this was the case, the acquisition of any concrete target language – in this case, English – would be different according to its status as either L2 or L3. In the (sub-)questions 1a and 1b, then, the PT-perspective enters. Since the focus of PT is on the development of morphosyntax, the crucial question is whether grounds for the FDH/L3A could also be detected within this area. Subquestion 1b is not exclusively limited to a PT-perspective, but can be readily tested using PT (more details below). Questions 2 and 3 accommodate the seminal importance the FDH/L3A ascribes to CLI/L3A. The concrete language constellation of the informants had to be stated in question 2 (more details in Section 7.4) since the level of CLI is less global and more specific than the general level reflected in question 1. This can be seen, for instance, in the role (psycho-)typology plays here (cf. Section 2.4). Question 3 is motivated by theories of CLI/L3A that make a distinction between different source languages available for transfer, such as the L2-status hypothesis (cf. Section 2.4.4). Note that further questions could be generated in relation to the FDH/L3A, such as whether cognitive advantages obtain for the L3 acquirers or whether they show pragmatically more adequate behavior than L2 acquirers. But exploring this would be beyond the scope of this thesis.

The hypotheses, as noted above, are targeted against the FDH/L3A and are rooted in PT predictions. Since PT follows a modular approach to language acquisition, question 1 can only be answered theoretically by PT through answering subquestions 1a and 1b. According to PT predictions, there are no grounds for assuming either different stages of acquisition of English L2 vs L3 or a possibility of skipping any of these stages (or both). The psycholinguistic mechanisms involved in spontaneous speech production have to be acquired in the same order, without any shortcuts, for both L2 and L3 learners. Subhypothesis 1a, therefore, bears in mind the staged development in the acquisition of the grammar of any target language for any learner. Subhypothesis 1b, as noted above, could be assumed independently of PT: pace (or speed) of acquisition can be measured using different tools. However, PT stages offer a practical orientation. Since, according to PT, any learner has to pass through the target language stages, pace of acquisition can be measured by the period of time a learner needs to achieve a given stage of

processability. At least some proponents of the FDH/L3A would also assume advantages for L3 acquirers in this area, which is why it has been included here.

Note that whereas a PT-perspective on subquestion 1a can only result in subhypothesis 1a, the answer to subquestion 1b could be variable even within the PT-framework. L3 acquirers proceeding faster through PT stages than L2 acquirers would not falsify PT. Interestingly, Pienemann et al. (2005b, p. 231) in the context of discussing the unmarked alignment hypothesis concede that “L2 learners know the basic architecture of syntax with its three parallel levels of structure. In other words, it implies that L1 knowledge is transferred at an abstract level”. Elaborating further on this idea of basic linguistic architecture transfer at an abstract level, one might assume that multiple language acquirers have gained more expertise in ‘how language works’ compared to L2 learners. Still, to my knowledge there is no L3A study tackling exactly this assumption. What is more, it remains unclear how possible advantages at such an abstract level would translate into the language-specific processes of building processing procedures. Therefore, I do not assume any advantages for L3 acquirers that touch considerably upon the area of morphosyntax; my answer to question 1b, thus, is also not affirmative. Note, however, that the word ‘probably’ was included here to reflect the more cautious nature of subhypothesis 1b, due to a lack of direct PT predictions. In other words, subhypothesis 1a follows directly from PT predictions and subhypothesis 1b follows only indirectly.

Hypotheses 2 and 3 are based on two elements: typology and the DMTH. Note that the DMTH does not support the FDH/L3A even in cases of typological relatedness of the languages in question. In such a case, accuracy values for the structure in question are predicted to be higher than in the case of lack of transfer. But, and crucially, this affects the dimension of variation, not of development. In the current thesis, however, the language which L3 acquirers have and L2 acquirers lack is Turkish, which is not related to the target language at all (whereas German is related – of which both groups have knowledge). Table 4-7 (information therein is from [www.ethnologue.com](http://www.ethnologue.com), Dyson & Håkansson, 2017, p. 85; Nordlinger & Bresnan, 2011, p. 9) presents an overview of the typological similarities and differences between English, German and Turkish. English and German are both West-Germanic, fusional SVO-languages, whereas Turkish is a Southern-Turkic, agglutinative SOV-language. In terms of configurationality, Turkish is the least configurational language of the three. It makes much more functional use of morphology than of syntax as compared to German and especially English. In view of



this apparent typological similarity between English and German on the one hand and the obvious typological difference between these two and Turkish, the amount of facilitative transfer from Turkish to the target language English is predicted to be minor. The only transfer that could stem from Turkish could be lexical in nature, or – in the case of morphosyntax – would be non-facilitative (e.g. if informants transferred the verb-final position of Turkish to English, cf. Section 2.4.4 for the theoretical possibility of such transfer within the DMTH). The described language constellation makes it possible to test the FDH/L3A in both its abstract (language-independent advantages for L3-acquirers) and its concrete form (a fundamentally different behavior of L3-acquirers as compared to L2-acquirers due to L2-influence on the target L3).

-	English	German	Turkish
Language family affiliation	Indo-European → Germanic → West-Germanic	Indo-European → Germanic → West-Germanic	Altaic → Turkic → Southern-Turkic
configurationality	configurational	rather non- configurational	non-configurational
head vs dependent- marking	more dependent- marking	more dependent- marking	double-marking
basic word order	SVO	SVO	SOV
morphological type	fusional	fusional	agglutinative

**Table 4-7: Overview of Major Typological Characteristics of English, German and Turkish**

Even the majority of FDH/L3A proponents would agree with Hypothesis 2. The reason it has been kept is this: the global formulation of the FDH/L3A, i.e., the claim that L3A is still fundamentally different from L2A even if there are no massive advantages due to CLI, invited to choose the language constellation mentioned in Hypothesis 2 (more details on the informants in Section 5.2). This makes it easier to keep general, abstract advantages assumed by the FDH/L3A apart from concrete linguistic advantages due to CLI, and therefore facilitates a falsification of the FDH/L3A in its global form through Hypothesis 1. In other words, Hypothesis 2 has been formulated for completeness reasons and does not directly contradict the FDH/L3A. However, together with Hypothesis 3 it allows testing the DMTH and its conservative stance on transfer as compared to other theories of CLI that are – at least partly – conceptually closer to the FDH/L3A.

#### **4.5.5 Operationalized Hypotheses**

The motivation of the three research questions and hypotheses has been outlined now. However, in the form presented in Section 4.5.3 they are not readily testable. What is missing is the operationalization, which can be applied by providing the exact information necessary to test them, which in turn can be extracted from the previous paragraphs. The operationalized hypotheses are as follows:

1. Both ESL and ETL are constrained by the same psycholinguistic mechanisms as outlined in PT:
  - a. ETL exhibits the same stages of morphosyntax development as outlined for ESL and is subject to the same constraints, i.e., that no stage can be skipped.
  - b. Proceeding through the stages mentioned in 1a is probably not – on average – faster with ETL than with ESL, i.e., all else being equal, at a given point in time two comparable learners (one ETL, one ESL) will be located at the same stage.
2. All transfer that occurs is subject to predictions of the DMTH, i.e., only what can be processed will be transferred. Due to the typological distance, no facilitative morpho-syntactic transfer from Turkish is predicted to occur with the L3 acquirers. Lexical and/ or phonological transfer may occur, but will not have any developmental repercussions, though that transfer may have an impact on variation.
3. All transfer that occurs is subject to predictions of the DMTH, i.e., only what can be processed will be transferred. Due to the typological closeness, facilitative morpho-syntactic transfer from German may occur alongside lexical and/ or phonological transfer with both L2 and L3 acquirers without a qualitative difference. No transfer from German will have any developmental repercussions, though it may have an impact on variation.

#### **4.6 Summary of Chapter Four**

This chapter has outlined the framework adopted for the current thesis: Processability Theory. PT is a psychologically and linguistically explicit and plausible theory of language acquisition. Though the theory itself as well as its constituting foundations have been challenged by some scholars, the empirical evidence in favor of staged development is overwhelming and there is no reason, even theoretically, why a different approach that makes less precise predictions should be followed for the acquisition of an L3. PT predictions can be tested using PT-inherent methodology, such as laying out a distributional analysis for linguistic structures, applying the emergence criterion and developing an implicational scale (in the case that the implicational nature of the data can

be confirmed). Applying PT-internal logic and using PT-inherent methodology, the following hypotheses will be tested (cf. previous section): Concerning development in morphosyntax, there is no fundamental difference between ESL and ETL, nor can a fundamental difference in the domain of transfer from previously acquired languages be expected. According to the DMTH, only those structures will be transferred that can be processed, which may have an impact on variation, but not on the overall course of development.

## **5 Empirical Basis**

### **5.1 Introduction**

In the previous chapter the PT framework, which has been adopted as the theoretical basis for the current thesis, has been introduced. This chapter presents the empirical basis, in other words, the manner of collection and type of data that is used to test the hypotheses as outlined in Section 4.5.

In Section 5.2, information about the informants will be provided. Section 5.3 explains which type of data was needed, and Section 5.4 describes the procedure of the data collection. Section 5.5 informs about additional methods of data analysis, and Section 5.6 concludes the chapter with a summary.

### **5.2 The Informants**

To test the hypotheses formulated in Section 4.5.5, it was necessary to compare a group of learners of English as L3 (ETL) with a group of learners of English as L2 (ESL). It was further necessary to ensure equality of the two groups as much as possible in terms of other factors that influence language acquisition, such as age, educational background, motivation, etc. Unlike the case mentioned in Section 2.3.3, a comparison of two such groups only makes sense empirically if the L3 learners can be considered to have a true bilingual basis. In other words, a subtractive linguistic context in which one of the two previously acquired languages is not being fostered educationally had to be excluded, since proponents of the FDH/L3A do usually not accept such contexts as grounds for the claimed advantages of L3 learners.

Such an additive context was found at Gymnasium Eringerfeld, a grammar school in North-Rhine Westphalia (NRW), Germany, which apart from fostering German as the country's official language also fosters literacy in Turkish as the heritage language of the great majority of the students. Since 2008, students at that school have the option to select Turkish as their second foreign language (cf. [bezreg-arnsberg.nrw.de](http://bezreg-arnsberg.nrw.de); English, like with many other schools in NRW, is the first). In other words, the ETL group exhibits an additive German-Turkish linguistic basis. Twenty such informants declared their

willingness to participate in the research project, 12 of them male, 8 female<sup>11</sup>. The survey administered to them (cf. Section 5.4.1) led to the conclusion that while the L1 vs. L2 status varied (two informants claimed to have both German and Turkish as L1, 17 students reported Turkish as their mother tongue, one informant stated German as his L1), they were all more or less balanced in these languages. Informants in this group were aged 11 to 18, and four, six and ten informants, respectively, visited classes 5, 7 and Q1<sup>12</sup>.

Informants for the ESL group came from the grammar school branch of Georg-Müller-Schule, a comprehensive school in Bielefeld, North-Rhine-Westphalia, Germany. Since a considerable number of this school's students are reported to have a Russian-German background (p.c. with principal), special care was taken to ensure that actual German monolinguals without knowledge of Russian (apart from knowledge of a few words, among some ) were selected for this group. 14 such informants declared their willingness to participate in the research project, 8 of them female, 6 male. Similar to the ETL group, informants in the ESL group were aged 10 to 18 and four, four and six informants, respectively, visited classes 5, 7 and Q1.

Note that in the remainder of this thesis for ease of comparison *trilinguals* refers to the German-Turkish learners of English (the ETL group), whereas *bilinguals* refers to the German learners of English (the ESL group). This simplified terminology includes the – however underdeveloped - target language (English) when counting the involved languages. It is a more straightforward way to refer to the type of language acquisition involved as compared to chapters above, where the target language is not included in the count. As can be seen in Tables 5-1 and 5-2 below, some of the informants from both groups reported having knowledge in one or more other languages (They had to state their

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<sup>11</sup> Note that in this thesis, no specific analyses as to possible gender-related differences are performed. It would be beyond the scope of this project and is left for future research.

<sup>12</sup> In the North-Rhine-Westphalian school-system, after nine years (G8) or ten years (G9) of school, the so-called 'Oberstufe' currently consists of the year groups E, Q1 and Q2 (= 'Einführungsphase'; *introductory phase*; 'Qualifikationsphasen' 1 and 2; *qualification phases* 1 and 2), ending with the certificate of 'Abitur' (~ *A-levels*). In other words, depending on the chosen school track, for some students Q1 is chronologically class 11 (those within G8), whereas for others it is chronologically class 12 (those within G9). The informants selected for data collection for this thesis were all G8-students, which means that for all of them Q1 was equivalent to class 11. Within the Q-phase, students have to select two 'Leistungskurse', courses that are especially demanding and are supposed to provide a higher level in the respective subject than the other courses, called 'Grundkurse' (*basic courses/ subjects*). All informants in the framework of this thesis attending Q1 (i.e., from both groups) were participants in the English 'Grundkurs'.

proficiency in English and in any other known foreign languages). One might ask whether this does not disqualify the distinction between *trilinguals* and *bilinguals* that is made here, given that many of the informants from both groups could theoretically be considered multilingual. Two reasons will be given as to why the terminology adopted here is still justifiable.

First of all, there is a difference between the status of a language that has been learned at home in an informal context, and languages learned at school (cf. Cenoz, 2013, p. 81). The trilingual informants already spoke two languages before coming into contact with any language taught as a school subject, whereas the bilingual informants spoke only one language before coming in contact with languages taught at school. Second, English is a true L3 for the trilinguals and a true L2 for the bilinguals in terms of both chronology (English is the very first language one starts acquiring in both schools researched) and proficiency (Compared with English, no informant claimed to have a higher proficiency in any language). Moreover, since some informants in both groups had knowledge of additional languages, this factor can be considered controlled. Thus, in the present research design, true English L3-acquirers were compared to true English L2-acquirers. An overview of the informants summarizes the information provided in this and previous chapters and is provided below.

Code	Gender	Year of Birth	Age	education father	education mother	L1	L2 (since age)	ENG proficiency (self-reported)	knowledge of further languages
P01	f	1997	17	HS	HS	TUR	GER (3)	decent	-
P02	m	1997	17	Abi	HS	TUR	GER (5)	decent	-
P03	m	1996	18	RS	Abi	TUR	GER (4)	basic	SPA (basic)
P04	m	1997	17	Abi	HS	TUR	GER (4)	basic	-
P05	f	1998	17	RS	RS	TUR	GER (3)	basic	FRE (basic)
P06	m	1998	16	HS	NO	TUR	GER (4)	decent	-
P07	m	1998	17	Uni	HS	TUR	GER (2)	good	FRE (decent)
P08	m	1998	16	RS	HS	TUR & GER		good	-
P09	m	1997	17	HS	RS	TUR	GER (4)	good	FRE (basic); DUT (decent)
P10	f	1997	17	RS	RS	TUR	GER (3)	good	FRE (basic)
P11	m	2000	14	HS	N.A.	TUR	GER (4)	decent-good	SPA (basic)
P12	m	2001	13	Uni	Abi	TUR	GER (5)	good-very good	FRE (decent)
P13	m	2001	13	HS	RS	TUR	GER (4)	decent-good	FRE (basic)
P14	f	2001	13	Abi	N.A.	TUR	GER (5)	good	-
P15	f	2001	13	Abi	Abi	TUR	GER (3)	decent	-
P16	f	2001	13	RS	RS	TUR	GER (4)	basic	-
P21	f	2004	11	Abi	Abi	TUR & GER		good	FRE (basic)
P22	f	2004	11	Uni	N.A.	TUR	GER (3)	good	DUT (basic)
P23	m	2003	11	N.A.	N.A.	GER	TUR (3)	good	-
P24	m	2004	11	Uni	Uni	TUR	GER (3)	decent-good	-
<b>Legend:</b>									
Gender		m - male/ f - female							
Certificates		HS - Hauptschule/ GS - Grundschule/ RS - Realschule/ Uni - University/ Abi - Abitur (A-Levels)/ N.A. - not known/ reported/ NO - no certificate							
Languages		GER - German/ TUR - Turkish/ SPA - Spanish/ FRE - French/ DUT - Dutch							

**Table 5-1:** Overview Biodata of Trilingual Informants

Code	Gender	Year of Birth	Age	education father	education mother	ENG proficiency (self-reported)	knowledge of further languages
R01	m	1998	17	Uni	Abi	good-decent	LAT (since class 6)
R02	m	1997	17	HS	RS	good-decent	RUSS (basic), FRE (basic)
R03	f	1997	18	RS	RS	basic	-
R04	f	1997	17	RS	HS	decent	LAT (since class 6), FRE (basic), SPA (basic)
R05	m	1997	18	RS	RS	decent	LAT (since class 8)
R06	f	1998	17	RS	Abi	very good	LAT (very good), FRE (very good), SPA (very good), LGER (basic)
R11	f	2002	13	RS	RS	good	FRE (decent)
R12	f	2001	13	RS	N.A.	decent	FRE (basic)
R13	m	2002	12	RS	RS	basic-decent	FRE (basic)
R14	m	2002	12	N.A.	Abi	decent	FRE (basic)
R21	f	2004	11	N.A.	Uni	basic	-
R22	f	2003	11	N.A.	N.A.	decent	-
R23	m	2004	10	RS	RS	decent	-
R24	f	2004	10	Abi	Abi	decent	-
<b>Legend:</b> <i>Gender</i> m - male/ f - female							
<i>Certificates</i> HS - Hauptschule/ GS - Grundschule/ RS - Realschule/ Uni - University/ Abi - Abitur (A-Levels)/							
N.A. - not known/ reported/ NO - no certificate							
<i>Languages</i> GER - German/ TUR - Turkish/ SPA - Spanish/ FRE - French/ DUT - Dutch							
LAT - Latin/ RUSS - Russian/ LGER - Low German							

**Table 5-2:** Overview Biodata of Bilingual Informants

As can be concluded from Tables 5-1 and 5-2, informants were comparable in terms of age, educational background<sup>13</sup> and school class visited. In the case of the trilinguals, all had attended German kindergarten, and for almost all of them German was chronologically their L2 (in other words, they had exclusively learned and spoken L1 Turkish before entering the German kindergarten). Nevertheless, due to intensive contact with German in kindergarten and afterwards, some of them reported a certain degree of German-dominance. Trilingual informants were coded with a capital P, bilingual informants with a capital R.

For both reasons of practicability and comparability, of the 20 trilingual informants who participated in the data collection, only 14 were subsequently analyzed and compared to informants in the bilingual group. Within the latter group, all 14 original informants were kept, allowing a matching of informants from the subgroups of classes 5, 7 and Q1, resulting in the constellation depicted in Table 5-3 below. Informants from both groups (trilinguals – ‘P’, bilinguals – ‘R’) with numbers 21 to 24 visited class 5 at the moment of data collection; numbers 11 to 16, class 7; and numbers 1 to 10, class Q1.

<sup>13</sup> Educational qualifications were converted into numerals (i.e. no qualification = 0, “Grundschule” = 1; “Hauptschule” = 2; “Realschule” = 3; “Abitur” = 4; “Universität” = 5). Then the median was calculated for these values in tables 5-1 and 5-2, which was 3 in both cases. In other words, the central tendency for parents of informants (from both groups) was to have achieved a “Realschulabschluss”.

Trilingual Informant Code	Age (at point of data collection)	Grade attended at point of data collection	Bilingual Informant Code	Age (at point of data collection)
P01	17	Q1	R01	17
P02	17	Q1	R02	17
P05	17	Q1	R03	18
P06	16	Q1	R04	17
P08	16	Q1	R05	18
P10	17	Q1	R06	17
P11	14	7	R11	13
P12	13	7	R12	13
P15	13	7	R13	12
P16	13	7	R14	12
P21	11	5	R21	11
P22	11	5	R22	11
P23	11	5	R23	10
P24	11	5	R24	10

**Table 5-3:** Overview Subgroups of Eventually Analyzed Informants from Both Groups

### 5.3 Type of Data

A requirement of PT is spontaneous, oral speech data (cf. Section 4.4). Speech samples have to be long enough and rich enough to reduce the possibility of type (1) and (2) evidence (cf. Section 4.4). How this last requirement was fulfilled is described in Section 5.4. The factor of spontaneous speech was challenged by the fact that data was collected at school, a formal instruction place where much declarative knowledge is used and fostered through rule explanation and conscious rule application exercises, often to the detriment of implicit, procedural knowledge. Put simply, students are not often encouraged to use their language in a relatively free way, but rather to think about what they say and how they say it. Section 7.2 explains how this potential danger for data validity was taken into account.



## **5.4 Method of Data Collection**

### **5.4.1 Circumstances of Data Collection**

Data was collected from March, 2015 to June, 2015 for the trilinguals and from April, 2015 to June, 2015 for the bilinguals. Collecting the data at the two schools almost simultaneously ensured that the current interlanguage state of the informants of both groups was measured at more or less the same point in time, namely, at the end of the school-year 2014/15. Before the recording sessions were conducted, informants were handed a survey asking about their previous linguistic knowledge and family background (cf. Appendix A). They were also given a declaration of consent in German or Turkish (depending on their parents' proficiency in German) which had to be signed by the parents (cf. Appendix B).

The trilinguals' data was collected at both schools (Gymnasium Eringerfeld and Georg-Müller-Schule) in quiet classrooms that were allotted by school staff for the research. With a few exceptions, informants were recorded alone. Informants P15 and P16 of the trilingual group and informants R03 and R04 of the bilingual group were recorded together. In the case of informants P22, P23 and P24 another student was present merely as a 'moral support', but this person did not speak at all during the recording. Interviews lasted between 30 and 50 minutes and were recorded with a professional recording device, then later transcribed by the researcher himself (with the exception of P06 and P08, which were largely transcribed by my colleague's student assistant).

In any of the recording sessions, the respective informant was greeted in German and thanked for the willingness to participate. Some German was used for the very first sentences to create a familiar atmosphere (to 'break the ice'). After a few minutes, the language was switched to English. From that point on, the interview was recorded. The recording microphone was relatively small (to avoid distraction by the presence of such a device) and remained unnoticed by many of the informants. Participants had declared their willingness to be recorded in the consent letter (cf. Appendix B). They were assured that the data would only be used for scientific purposes and that their names would be anonymized subsequently. They were encouraged not to think about their utterances and not to perceive the data collection session as a kind of school test. Participants were clearly advised that there was no right or wrong concerning their utterances.

It should also be mentioned that apart from the English data, German and Turkish data were also elicited from the trilinguals in a separate session. Elicitation material from the same pool as the English elicitation sessions was used. The original idea was to be able to analyze the current state of all three of the trilinguals' languages according to levels of processability. Doing so, however, would be far beyond the scope of the present thesis. Another thesis might be written on the basis of these data. Thus, they remain available for future analysis.

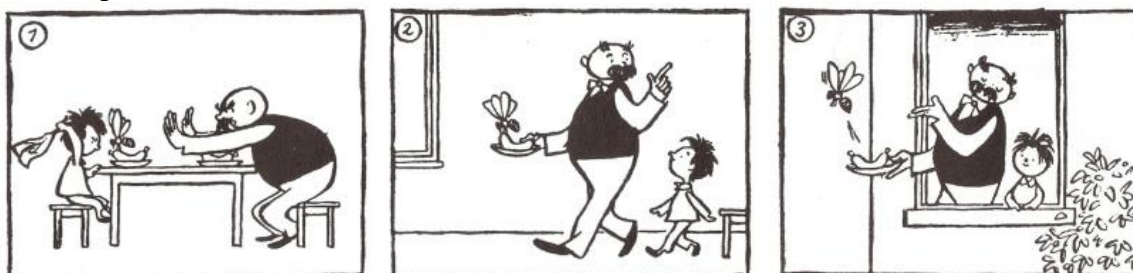
#### 5.4.2 Elicitation of Structures

It can be quite challenging to create communicative situations that cover all the structures present in the PT-hierarchy of ESL (cf. Section 4.3) are covered. Pienemann (e.g. in Pienemann & Mackey, 1993) suggests using communicative tasks to elicit the respective structures. In doing so, a specific communicative need is triggered that necessitates production of at least the linguistic context for the targeted structure. In order to cover many structures from the mentioned hierarchy, a range of elicitation material was used, partly taken from other sources, partly of my own creation. It may be best to list the elicitation tasks that were used (cf. Tables 5-4 a and b) along with a subsequent illustration of the material and a brief explanation.

Task Name	Targeted ESL Structures	Task Name	Targeted ESL Structures
Free conversation	various	Martian task	Syntactic phenomena within question formation; various
Father-son-stories (2)	3-SG-s, ADJ-fronting, PL-marking; various	Mr./Mrs. Lee	3-SG-s
Spot-the-difference I	3-SG-s, ADJ-fronting, PL-marking, negation; various	Tell-the-question task	INV in direct and CANCEL INV in indirect questions
Spot-the-difference II (questions)	Syntactic phenomena within question formation, negation; various	Action video clips	Passive
Spot-the-difference III	3-SG-s, ADJ-fronting, prepositions, PL-marking, negation; various		

**Table 5-4:** Tasks and Targeted ESL Structures Used in the Recording Sessions

In the free conversation, informants were asked for their hobbies, their city of origin and whether or not they liked the school. Immediately following this, they were to retell two father-son-stories (from Ohser 2016, illustrated in Figure 5-1, cf. Appendix E/ DVD for complete elicitation material). Due to the presence of two independent actors, the use of 3-SG-s was triggered. Adv-fronting was expected to occur, e.g., while moving from one picture to the next in the description (“then...”). PL marking and other structures were also expected.

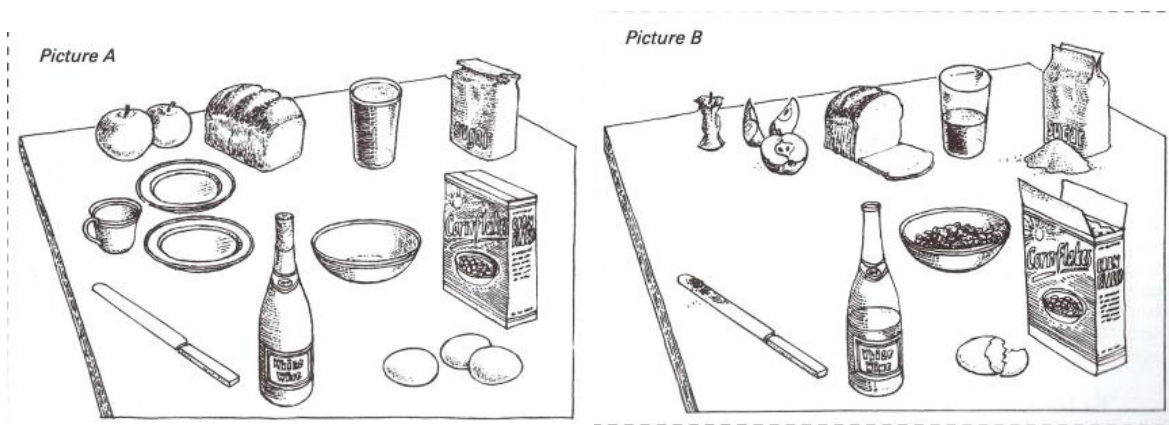


**Figure 5-1:** Father-son-stories (illustration)

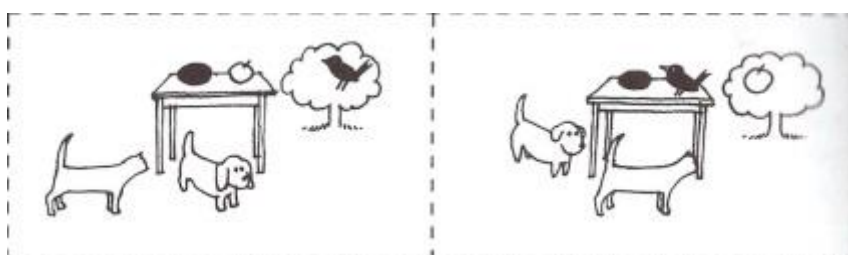
The following three tasks employed can be classified as spot-the-difference tasks. In all of them, informants had to talk about the differences (tasks I and III of this type) or discover them through questions (task II of this type). In addition to the structures mentioned above, with these tasks the syntactic phenomena involved in English question formation (such as Aux-2<sup>nd</sup> etc.) were triggered (task II) as well as prepositions (task III). In the course of comparing, negation was another expected structure. These tasks are illustrated in Figures 5-2, 5-3 and 5-4, respectively. Note that while the pictures for tasks II and III are taken from Ur (1988, p. 200 & 169f.), pictures for tasks I are my own material.



**Figure 5-2:** Spot-the-difference Task I (illustration)



**Figure 5-3:** Spot-the-difference task II (illustration)



**Figure 5-4:** Spot-the-difference task III (illustration)

The so-called Martian Task followed. It is a free question-asking task in which the researcher pretends to be an alien from Mars and the informant has to find out details about his life by asking questions. Some informants preferred celebrities, e.g. soccer-stars like Cristiano Ronaldo, to a martian. At any rate, syntactic phenomena involved in question formation were especially triggered with this task. In the following, so-called Mr (or Mrs) Lee Task, 3-SG-s was triggered because daily routines/ habitual actions are depicted in a series of (cartoon-like) pictures. At the top left corner of each picture within this task, a watch h shows the time at which the respective action is usually performed by Mr/ Mrs Lee. Informants are supposed to move from picture to picture and start or end the sentence describing the action with “at X o’clock”. Typical actions depicted are getting up, having breakfast, going to work, going to bed, etc. Informants could choose between a day in the life of Mr or Mrs Lee, as they preferred. Each task contained nine such pictures depicting the usual actions performed from morning to night in a typical day in the life of these characters.

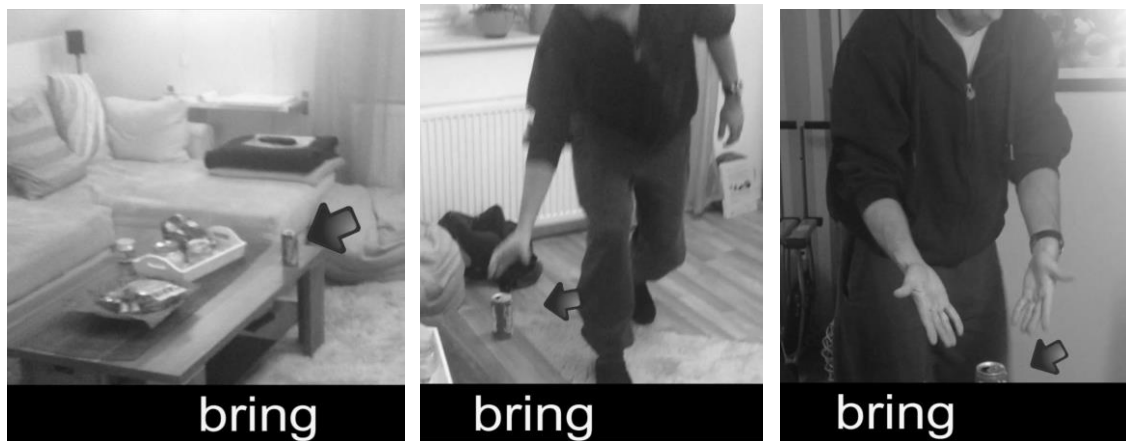
The next task, usually conducted in two runs (except for P01 and P10), can be called Find-the-question Task, and is illustrated in Figure 5-5 (again, this is my own material). It depicts a person who is asking himself something. The informants had to formulate a fitting direct question in the first run (INV could be elicited this way) and an indirect question in the second run (CANCEL INV elicited). Note that in the first run, the introductory formulation ('he wonders') as well as some of the question words that were merely complementizers (such as 'if', cf. picture 1 in Figure 5-5) had to be manually covered to avoid confusion.



**Figure 5-5:** Find-the-question task (illustration)

The last task that was applied targeted the English passive. Note that the English passive as such is not part of the ESL hierarchy because it contains subparts that are located at different stages of processability (cf. Keßler & Keatinge, 2009, p. 67). At any rate, it is a structure that requires at least stage 6 (cf. *ibid.*, p.85) be acquired in order to produce it correctly and target-like, both syntactically and morphologically. Thus, eliciting the passive was useful to compare the behavior of the trilinguals with the bilinguals. The informants had to describe the action depicted in a short video clip (cf. Figure 5-6; my own material, incentive given by Anke Lenzing). In each of these clips, the <patient> of the action (which is supposed to be mapped onto SUBJ in target-like English passive) was marked by a red arrow. Informants were encouraged to start their sentences with the person or item marked by that arrow. In order to avoid lexical difficulties, the verb was displayed in a black bar below.

Both reversible and irreversible verbs were used, as well as distractors (verbs that were supposed to be used in the active since the arrow pointed towards the <agent> of the action). In the case of Figure 5-6, an irreversible verb is triggered ('to bring'). Here it could also be checked whether the informants dominated the irregular past participle ('brought').



**Figure 5-6:** Action Video Clips (illustration)

## 5.5 Method of Data Analysis

The transcripts of the informants' English production were analyzed by a distributional analysis and applying the emergence criterion, which resulted in an implicational scale (cf. Section 4.4.4). Moreover, word lists were created for all informants using the concordance tool KWIC51. On the basis of this, type-token-ratios could be calculated. In addition to that, the use of transfer from both Turkish and German was analyzed, as well as the informants' use of simplification strategies and pronoun confusion. From a PT point of view, all these phenomena affect variation, but not development (but note possible repercussions of variational tendencies on development as conceptualized by Generative Entrenchment, cf. Section 4.2.4).

It may be best to describe the exact focus of the different analyses here before turning to the results. As concerns transfer, four structures were analyzed. The first is of syntactic nature; declarative sentences were categorized as to where the verb was placed. With this, two potential transfer effects could be tested, one stemming from Turkish, another one from German. The one from Turkish is verb-last. If subjects in the trilingual group transferred the position of the verb from Turkish (and with it possibly basic word order as such, SOV in this case), they would produce verb-last sentences in English as illustrated in the hypothetical example (1):

- (1) \*Peter ice-cream likes.  
 Peter dondurma beğeniyor. (SOV, correct in Turkish)  
 Peter ice-cream like-PRES-3-SG  
 ‘Peter likes ice-cream.’

The second structure analyzed from German is V2. In German, after certain fronted ADJs the element immediately following in the sentence must obligatorily be the verb; this structure could theoretically be transferred to English (cf. the DMTH-related debate on this issue in Section 2.4.4). This is illustrated in the hypothetical example (2), which has been adapted from Håkansson et al. (2002, p. 252):

- (2) \*Yesterday went he to Stockholm.  
 Gestern fuhr er nach Stockholm. (XVSO/ V2, correct in German)  
 ‘Yesterday he went to Stockholm.’

Note that in (1) a low-level structure would be transferred (canonical word order), whereas with German V2 a high-level (stage 5 in German) structure would be transferred, which – according to the DMTH – should only be possible if the respective informant has developmentally reached this stage.

The third structure analyzed within the transfer domain is morphosyntactic in nature. Informants showing any preference for either of the two possible English POSS-constructions (i.e., the ‘possessor-last’ *of*-construction, *the house of the doctor* or the ‘possessor-first’ GEN-construction, *the doctor’s house*) was analyzed. This was motivated by the different preferences of the other two languages involved; whereas both German and Turkish know and use the GEN construction, only Turkish makes default use of possessor-first constructions like English<sup>14</sup>. Concerning PT and the DMTH, no qualitative processing differences are predicted even in the case of a different preference because the two constructions do not differ in their stage of processability (both involve exchange of grammatical information on the NP level).

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<sup>14</sup> Turkish: *doktorun evi* – “*doctor’s house*”. It should be briefly noted that in German this is also theoretically possible (*des Doktors Haus*), but is considered archaic, it is rarely used in current spoken German (cf. Duden: Kunkel-Razum, 2006, pp. 834-35). A possessor-last construction (*das Haus des Doktors*) would clearly be preferred in such cases in German (cf. *ibid.*).

The fourth structure is morphological in nature. The occurrence of neologisms that showed clear morphological influence of any of the two other languages was analyzed. Note that depending on the morpheme, where and how it is used, processability constraints apply at different levels.

The term simplification here refers to a variational tendency (cf. Pienemann, 2011; Chapters 2 and 5) of a given learner. In the present thesis, the phenomena of omission and confusion were treated as being simplifying strategies within a learner's interlanguage. As far as omission is concerned, based on certain characteristics of Turkish as shown in Table 5-5 (cf. also Section 4.5.4) it could be assumed that the trilinguals would drop certain elements more often than their bilingual peers.

elements	English	German	Turkish
<b>Pro-drop</b>	illicit	illicit	licit
<b>copula-drop</b>	illicit	illicit	no copula in present contexts
<b>definite article drop</b>	illicit	illicit	no definite article
<b>indefinite article drop</b>	illicit	illicit	licit
<b>Prep-drop</b>	illicit	illicit	three cases marking spatial relations → often no prep required

**Table 5-5: Overview of Licit and Illicit Omission in English, German and Turkish**

Suppliance vs. omission of subjects, the copula, articles, verbs and prepositions was therefore analyzed for the entire corpus. Omission of the copula is illustrated in the hypothetical example (3):

- (3) \*The boy six years old.  
 'The boy is six years old.'

Confusion in this context specifically refers to confusion of *is* and *are* (including *was/ were*), *have* and *has*, and *do* and *does*. In Turkish, these elements either do not exist or are identical, which may facilitate confusion. Of course, this can only justifiably be called a simplification strategy in the case of (more or less) complete fusion, in other words, e.g., if a learner consistently overgeneralizes *is* to PL contexts, etc. Such an overgeneralization is illustrated in (4):



- (4) The cat is under the table. \*The flowers is on the table.  
'The cat is under the table. The flowers are on the table.'

Related to this is the phenomenon of PRO-confusion. This was included in the present thesis because – again due to possible transfer effects – the trilingual group might theoretically have difficulties with the pronouns, especially the 3-PS-SG ones, since in Turkish there is only one 3-PS-SG pronoun (*o*, meaning *he, she, it*). All personal and possessive pronouns were checked for both their intended meaning and use in the entire corpus to detect all deviations from the target-language norm. Such a deviation is illustrated in the hypothetical example (5):

- (5) In the morning the woman wakes up. \*Then he has breakfast.  
'In the morning the woman wakes up. Then she has breakfast.'

As explained in Section 2.5.3, metalinguistic knowledge is one of the pillars of the FDH/L3A. Though the main focus of the present study is on morphosyntax, some clearly metalinguistic comments and utterances suitable for analysis can be found in the data. The analysis chosen here is based on Williams and Hammarberg's (1998) classification of types of metalanguage. In their paper, Williams and Hammarberg (1998, p. 295) suggest the categories *edit*, *meta*, *insert* and *wipp*. *Edit* refers to the marking of self-repair and turn-taking etc. *Meta* is used for asides, to comment on L3 performance or to ask for help. *Insert* indicates lexical insertions to overcome lexical problems in the target language, and the fourth category, *WIPP*, encompasses all those utterances that could not be assigned a clear pragmatic purpose (= Without Identified Pragmatic Purpose). All metalinguistic comments of informants from both groups were classified according to this scheme.

## 5.6 Summary

This chapter outlined the empirical basis of the present study. It consisted of fourteen German-Turkish learners of English from Gymnasium Eringerfeld (Germany) and a group of fourteen German learners of English from Georg-Müller-Schule (Germany). In each group, four informants attended class 5, four informants class 7, and six informants class Q1. The research design is thus cross-sectional, but the longitudinal aspect can be simulated through the different age groups/ classes that were tested. The final aim is to compare the acquisition of English as an L3 (trilinguals) with the acquisition of English as an L2 (bilinguals).

The aim of the study was to trigger spontaneous oral speech, which was achieved through communicative tasks, relying on different visual elicitation material (pictures and video-clips) partly adopted from other literature/ studies and partly my own. PT-inherent methodology, as introduced in Section 4.4, was applied to the data as well as some further analyses focusing on potential transfer and metalinguistic effects. The next chapter will present the results of the various analyses.

## 6 Results

### 6.1 Introduction

This chapter presents the results obtained from the data collection and data analysis described in the previous chapters. It is structured as follows. Section 6.2 presents the findings concerning hypothesis 1, which is covered by the distributional analysis and implicational scaling. Hypotheses 2 and 3 are partly answered by different analyses, which is why Section 6.3 presents the analysis on transfer (together with the answers on hypotheses 2 and 3). Section 6.4 introduces the analyses on simplification and PRO-confusion, which also contains answers to hypotheses 2 and 3, along with an overview of average accuracy rates. After that, in Section 6.5 the results of further analyses, such as the use of metalinguistic knowledge and lexical characteristics, will be shown. Section 6.6 concludes the chapter with a summary.

### 6.2 Findings Concerning Hypothesis 1

This section deals with the predictions made in hypothesis 1 (operationalized version). It is repeated here for convenience:

1. Both ESL and ETL are constrained by the same psycholinguistic mechanisms as outlined in PT:
  - a. ETL exhibits the same stages of morphosyntax development as outlined for ESL and is subject to the same constraints, i.e., that no stage can be skipped.
  - b. Proceeding through the stages mentioned in 1a is probably not – on average – faster with ETL than with ESL; i.e., all else being equal, at a given point in time two comparable learners (one ETL, one ESL) will be located at the same stage.

For subhypothesis 1a, counter-evidence would be the absence of an implicationally scalable hierarchy of structures for the trilinguals (at least as the concrete form of the ESL hierarchy is concerned). In other words, finding a sufficient number of errors in the resulting implicational table would falsify Hypothesis 1a. Note that in such a case staged development within ETL would not be falsified per se, but only staged development that follows the same stages as with ESL. Finding an implicationally scalable hierarchy that resembles the one for ESL, on the other hand, would confirm Hypothesis 1a.

Assuming Hypothesis 1a was confirmed, and thus rejecting any fundamental difference in staged development of morphosyntax in ESL as opposed to ETL, Hypothesis 1b could still be falsified. If this was the case, a difference in rate of acquisition between ESL and ETL would be given. Note that with the current research design it is not possible to obtain a completely valid rejection or confirmation of Hypothesis 1b – one would need a much larger corpus for this, since it is a quantitative hypothesis. For Hypothesis 1b, thus, only a tendency will show. The tendency will either be in favor of Hypothesis 1b (if the highest achieved stages of informants within one class across the two groups are broadly the same) or against it (if the highest achieved stages of informants within one class across the two groups differ considerably). Note that in the latter case only a strong deviation in one direction would constitute moderate evidence for trilingual superiority in rate of acquisition, namely if the achieved stages for the trilinguals were higher with the younger informants (assuming that the Q1 informants have all safely reached the highest PT stage). Theoretically, of course, it would also be possible to find the opposite, in other words, a result that would hint towards L2A superiority in terms of rate of acquisition.

Three steps were taken to arrive at the distributional analysis, described as follows. Steps one and two will be illustrated by one particular informant whereas step three, the final distributional analysis and implicational scaling, includes all informants of the respective group in one table. MS Excel 2013/ 2016 was used for all steps.

In step one, each informant's transcript was checked for the structures suggested in the ESL hierarchy (cf. Figure 6-1 as an illustration with informant R06). For each structure, presence vs. absence in an obligatory context were noted (cf. Figure 6-1, 'application'/'non-application'). For optional structures, only presence could be counted since there are no obligatory contexts. Accuracy rates were calculated for the non-optional structures (number of suppliance divided by total number of contexts). In addition, any linguistic particularity that was immediately conspicuous was noted in the 'observations' box at the bottom right. A preliminary diagnosis of the informant's highest-achieved-stage was given at the end of this analysis (bottom left).

[illegible]

**Figure 6-1: Exemplary Distributional Analysis of Informant R06 (Step One)**

Also within this first step, morphological structures were counted separately (as illustrated for informant P10 in Table 6-1 below). This is because especially with morphology, one must be careful not to count instances of overgeneralizations (e.g., in the case of 3-SG-s marking of a verb in a non-3-SG context<sup>15</sup>) and to document whether there is lexical variation with the morpheme in question. Only those morphemes that showed no self-repair, no overgeneralizations and no echo of the researcher's production were counted as 'applied' in the table illustrated in Figure 6-1.

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<sup>15</sup> Note that the overgeneralizations of plural -s depicted in fields H12 and H14 in Table 6-1 are a different case: here the overgeneralization happens to lexemes that should be formed differently, whereas an overgeneralization that speaks against systematic use of a structure is an overgeneralization to inadequate contexts (which in the example would mean the overgeneralization of plural -s to singular contexts).

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	<b>P10 MORPHOLOGY</b>																			
2																				
3	<b>Possessive -s</b>				<b>Plural -s</b>				<b>Past -ed</b>				<b>Plural Agreement</b>				<b>3-SG-s</b>			
4	expression	applied	not applied	overgeneralized	expression	applied	not applied	overgeneralized	expression	applied	not applied	overgeneralized	expression	applied	not applied	overgeneralized	expression	applied	not applied	overgeneralized
5	father's head	x			books	x			showed	x			two fingers	x			wants to catch	x		
6	Mr. Lee's day	x			friends	x			do		x		three fingers	x			holds	x		
7					movie nights	x			learnt	x			four mobile phones	x			sting		x	
8					eyes	x			destroyed	x							looks like	x		
9					balloons	x			wake up		x						throws	x		
10					notes	x			hold		x						opens	x		
11					clothes	x			take away		x						eats	x		
12					rubbishes	x		x	ordered	x							drinks	x		
13					restaurants	x			searched	x							stands	x		
14					childs	x		x	changed	x							touches	x		
15																	shows	x		
16																	comes	x		
17																	wants	x		
18																	makes	x		
19																	starts	x		
20																	looks	x		
21																	leaves	x		
22																	goes	x		
23																	cleans	x		
24																	wants to sleep	x		
25																	tells	x		
26																	means	x		
27																	greet	x		

**Table 6-1:** Morphological Overview of Informant P10

The analysis conducted within step two is illustrated in Table 6-2 below. It served two purposes: First, it unravelled the different structures that were summarized under one label within the ESL hierarchy. This was the case with the syntactic structures from stages 4 to 6. Note that a label such as ‘CANCEL INV’ stands for a general operation rather than for a single structure, which is why it is necessary to show the exact structures with which, e.g. inversion is cancelled, and with which it is not. Second, it served to check the morphemes that were tested for systematic use. Note that with the morphemes in the ESL hierarchy form-function-relationships are not a major issue, since the relationship between form and function is always 1:1 (e.g.: form: -s, function: 3-SG). This means that in this distributional analysis, the possible fields that could be filled were always four per structure (cf. Table 6-2). Note that possessive -s is not present here because it was excluded from analysis due to a low level of occurrence in the corpus.

	A	B	C	D	E	F	G	H
2	<b>Informant:</b>		<b>P06</b>					
3	<b>INV vs. NON-INV</b>							
4	wh-word +				trigger verb + wh-word +			
5	uninverted structures		inverted structure		uninverted structures		inverted structure	
6	S + mod + VO	9	mod + SVO	3	S + mod + VO	8	mod + SVO	0
7	S + be <sub>SUX</sub> + VO	0	be <sub>SUX</sub> + SVO	0	S + be <sub>SUX</sub> + VO	0	be <sub>SUX</sub> + SVO	0
8	S + have <sub>SUX</sub> + VO	0	have <sub>SUX</sub> + SVO	0	S + have <sub>SUX</sub> + VO	0	have <sub>SUX</sub> + SVO	0
9	S + cop	0	cop + S	4	S + cop	1	cop + S	0
10	SVO	1	VSO	0	SVO	3	VSO	0
11	S + do + VO	0	do + SVO	2	S + do + VO	0	do + SVO	0
12	S + neg_do + VO	0	neg_do + SVO	0	S + neg_do + VO	0	neg_do + SVO	0
13	"to-construction"	-			"to-construction"	0	-	
14	S-omission	1						
15	<b>Form-Function Relationships</b>							
16								
17	3-SG-s							
18								
19		s added	s not added					
20	3-SG-context	9	18					
21	other context	0	193		Plural -s			
22								
23	past -ed					s added	s not added	
24					plural context	8	0	
25		ed added	ed not added		other context	0	308	
26	past context	1	3					
27	other context	2	214					
28								

**Table 6-2:** Step Two Analysis (Form-Function Relationships) of Informant P06



Several observations can be made on the basis of Table 6-2. Concerning syntax, there is a qualitative difference between structures introduced with a *wh*-word (those that require INV in the target language) and indirect questions and similar structures (that require CANCEL INV in the target language) with informant P06. Whereas the informant uses both inverted and uninverted structures with *wh*-words, he exclusively uses uninverted ones with indirect questions and similar structures. Note that both syntactic operations (INV and CANCEL INV) have been acquired (three different structures within both INV and CANCEL INV that are used several times by him), but only the latter seems to have been acquired categorically by P06. In the context of INV structures, this informant exhibits less than 50% accuracy (taking the single structures together), whereas he commits no errors in the context of CANCEL INV structures.

Concerning morphology, the tables of the three different morphemes displayed in the lower part of Table 6-2 each stand for three prototypical possible distributions. They differ in the number of cells filled with a zero, ranging from zero to two. A perfect target-like distribution can be observed with plural *-s*: In singular contexts the morpheme is never applied (without exceptions), whereas in plural contexts it is always applied (without exceptions). The case is slightly different with 3-SG-*s*: whereas the informant is categorical in his avoidance of this morpheme in non-3-SG contexts, within 3-SG contexts he is not categorical in supplying it. In fact, he supplied it in exactly one third of all obligatory (= 3-SG) contexts. Note that – as has been stated above several times – this observation concerns accuracy and not development: the morpheme in question here counts as acquired (9 cases of suppliance is enough to conclude this if productive and systematic use are given). With the past *-ed* morpheme, again the case is slightly different. There are no empty cells here, which means that the informant sometimes does not apply the morpheme in obligatory contexts (in fact three times as often as he does), but also sometimes applies it in other contexts. With this morpheme, evidence for emergence is not sufficient (only one instance, plus two overgeneralizations), which means that even though the morpheme was found in the data, evidence for functional use is not given. Note that there were only four obligatory contexts for the morpheme, and due to the emergence of the other two morphemes that are supposed to be located at the same (= plural *-s*) and a higher (= 3-SG-*s*) stage of processability, it can be assumed that with more obligatory contexts the informant would have supplied the necessary evidence for having acquired this morpheme.

After the two steps mentioned, the final distributional analysis and the resulting implicational scaling were established as a third and last step to determine the achieved stages of processability of the informants' English. This was done as follows. The original numbers from step one (the individual distributional analysis) were left either untouched or changed, in the case that results from step two indicated that a given structure should not be considered acquired. Theoretically this would have been if a given morpheme was detected as unsystematically used; in other words, if there had been many instances of overgeneralization of the morpheme in question to inadequate contexts. But this was never the case.

As became clear in conducting step one, three structures were rarely used by any informant. These are neg do<sup>2nd</sup>, particle shift, and possessive -s. This is partly because they are optional structures and partly because there were no explicit communicative contexts that specifically triggered these structures. They have therefore been excluded from the analysis concerning Hypothesis 1. Note that possessive -s will be briefly dealt within Section 6.3.

On the following pages, the final results of step three will be presented, i.e. the final distributional analysis along with the implicational table. The tables on top of a page are those with results for the trilinguals whereas those below are those of the bilinguals, permitting a direct visual comparison. Tables 6-3 and 6-4 show the final distributional analysis, which, in turn, is the basis for the implicational scaling depicted in Tables 6-5 and 6-6. Tables 6-7 and 6-8 show the same implicational table with a different order; Informants have been sorted now not according to number (which, as explained above, corresponds to school class visited), but according to the highest achieved stage. Tables 6-9 and 6-10 contain the last derivation from the original implicational scaling: In these tables, only the respective stages and their status with each informant (acquired vs. not acquired) are displayed. In other words, several structures located at the same stage have been summarized so that only the respective stage remained. Practically this means that if there was at least one '+' for any structure of a given stage, the stage itself was assigned a '+', indicating it was considered achieved/ acquired.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Stage	Structure	P01	P02	P05	P06	P08	P10	P11	P12	P15	P16	P21	P22	P23	P24
2	6	Cancel INV	10/10	12/12	9/10	11/11	11/11	13/13	0/1	21/21	0/0	1/1	1/3	0/11	1/10	0/8
3	5	Do 2nd	0/2	0/3	2/6	2/2	1/2	1/2	0/10	4/6	0/3	(0/1)	3/4	0/2	0/4	0/3
4		Aux 2nd	1/2	3/8	4/5	3/13	7/8	2/2	1/9	5/11	0/2	1/1	1/4	5/6	1/2	1/1
6	4	3-SG-s	20/44	28/33	16/52	12/34	12/14	36/37	1/36	13/33	17/26	1/20	8/25	4/20	1/24	1/31
7		y/n-inversion	(0/1)	4/4	3/3	3/3	2/2	(1/1)	6/6	4/5	2/2	5/5	3/3	3/3	2/5	6/7
8		copula inversion	6/8	10/10	10/14	6/10	4/5	10/10	5/5	7/7	11/11	4/4	5/8	6/9	9/9	7/7
10	3	do-fronting	5/12	6/6	/	(0/1)	4/5	5/5	0/2	/	/	/	(1/1)	(1/1)	0/2	/
11		adv-fronting	18	22	34	38	43	43	33	38	23	17	47	10	27	9
12		neg-verb	4	17	13	11	3	12	10	9	6	2	6	7	2	1
13		pl-agreement	7/8	6/7	/	4/4	4/4	3/3	2/3	2/2	2/2	(1/1)	/	(1/1)	(1/1)	2/2
14	2	(neg) SV(O)	73	59	80	75	139	148	92	97	68	51	50	49	25	65
15		past -ed	0/7	1/2	3/5	6/9	11/11	6/11	5/17	4/5	/	1/2	/	(1/1)	/	3/3
16		plural -s	16/16	14/14	11/11	8/8	13/13	10/10	8/8	6/6	4/4	4/4	5/5	7/7	8/8	4/4
18	1	single word/ formulae														

**Table 6-3:** Distributional Analysis Trilinguals

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Stage	Structure	R01	R02	R03	R04	R05	R06	R11	R12	R13	R14	R21	R22	R23	R24
2	6	Cancel INV	9/9	7/9	6/6	3/5	9/9	12/12	11/11	11/11	0/2	7/8	6/6	0/12	0/2	(1/1)
3	5	Do 2nd	2/3	3/5	(0/1)	(1/1)	6/8	7/8	2/4	2/3	1/5	1/5	(0/1)	0/8	(0/1)	0/6
4		Aux 2nd	1/7	6/6	1/3	6/6	5/5	5/5	4/7	7/8	5/5	3/4	8/8	6/6	1/6	0/2
6	4	3-SG-s	9/14	20/32	17/21	19/20	57/60	45/45	19/53	25/38	6/39	17/48	9/45	2/27	22/34	27/51
7		y/n-inversion	4/4	/	3/3	4/4	5/5	3/3	/	6/6	12/12	4/4	3/3	/	3/3	4/4
8		copula inversion	8/10	10/11	6/9	7/7	8/8	10/10	8/8	10/10	8/9	7/8	8/8	13/13	9/9	13/13
10	3	do-fronting	2/2	7/7	(0/1)	2/2	3/3	5/5	6/6	(0/1)	2/10	2/2	3/3	(0/1)	/	3/3
11		adv-fronting	17	42	21	22	28	47	34	18	36	27	14	9	34	16
12		neg-verb	17	14	5	6	9	8	7	12	13	6	5	(1)	(1)	5
13		pl-agreement	3/3	/	5/5	/	4/4	4/4	(1/1)	/	3/3	3/3	/	5/5	2/2	2/2
14	2	(neg) SV(O)	84	103	49	67	98	149	98	86	85	86	55	64	57	65
15		past -ed	5/6	4/4	2/2	3/3	11/11	4/6	2/5	2/3	/	0/3	/	/	/	/
16		plural -s	5/6	8/8	5/5	(1/1)	11/11	17/17	3/3	4/4	9/9	4/4	3/3	2/2	4/4	4/4
18	1	single word/ formulae														

**Table 6-4:** Distributional Analysis Bilinguals

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Stage	Structure	P01	P02	P05	P06	P08	P10	P11	P12	P15	P16	P21	P22	P23	P24
2	6	Cancel INV	+	+	+	+	+	+	-	+	-	(+)	(+)	-	(+)	-
3	5	Do 2nd	-	-	+	+	(+)	(+)	-	+	-	(-)	+	-	-	-
4		Aux 2nd	(+)	+	+	+	+	+	(+)	+	-	(+)	(+)	+	(+)	(+)
6		3-SG-s	+	+	+	+	+	+	(+)	+	+	(+)	+	+	(+)	(+)
7	4	y/n-inversion	(-)	+	+	+	+	(+)	+	+	+	+	+	+	+	+
8		copula inversion	+	+	+	+	+	+	+	+	+	+	+	+	+	+
10	3	do-fronting	+	+	/	(-)	+	+	-	/	/	/	(+)	(+)	-	/
11		adv-fronting	+	+	+	+	+	+	+	+	+	+	+	+	+	+
12		neg-verb	+	+	+	+	+	+	+	+	+	+	+	+	+	(+)
13		pl-agreement	+	+	/	+	+	+	+	+	+	(+)	/	(+)	(+)	+
14	2	(neg) SV(O)	+	+	+	+	+	+	+	+	+	+	+	+	+	+
15		past -ed	-	(+)	+	+	+	+	+	+	/	(+)	/	(+)	/	+
16		plural -s	+	+	+	+	+	+	+	+	+	+	+	+	+	+
18	1	single word/ formulae														

**Table 6-5:** Implicational Scaling Trilinguals (original order)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Stage	Structure	R01	R02	R03	R04	R05	R06	R11	R12	R13	R14	R21	R22	R23	R24
2	6	Cancel INV	+	+	+	+	+	+	+	+	-	+	+	-	-	(+)
3	5	Do 2nd	+	+	(-)	(+)	+	+	+	+	(+)	(+)	(-)	-	(-)	-
4		Aux 2nd	(+)	+	(+)	+	+	+	+	+	+	+	+	+	(+)	-
6		3-SG-s	+	+	+	+	+	+	+	+	+	+	+	+	+	+
7	4	y/n-inversion	+	/	+	+	+	+	/	+	+	+	+	/	+	+
8		copula inversion	+	+	+	+	+	+	+	+	+	+	+	+	+	+
10	3	do-fronting	+	+	(-)	+	+	+	+	(-)	+	+	+	(-)	/	+
11		adv-fronting	+	+	+	+	+	+	+	+	+	+	+	+	+	+
12		neg-verb	+	+	+	+	+	+	+	+	+	+	+	(+)	(+)	+
13		pl-agreement	+	/	+	/	+	+	(+)	/	+	+	/	+	+	+
14	2	(neg) SV(O)	+	+	+	+	+	+	+	+	+	+	+	+	+	+
15		past -ed	+	+	+	+	+	+	+	+	/	-	/	/	/	/
16		plural -s	+	+	+	(+)	+	+	+	+	+	+	+	+	+	+
18	1	single word/ formulae														

**Table 6-6:** Implicational Scaling Bilinguals (original order)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Stage	Structure	P12	P05	P06	P08	P10	P02	P01	P21	P22	P15	P16	P23	P11	P24
2	6	Cancel INV	+	+	+	+	+	+	+	(+)	-	-	(+)	(+)	-	-
3	5	Do 2nd	+	+	+	(+)	(+)	-	-	+	-	-	(-)	-	-	-
4		Aux 2nd	+	+	+	+	+	+	(+)	(+)	+	-	(+)	(+)	(+)	(+)
6		3-SG-s	+	+	+	+	+	+	+	+	+	+	(+)	(+)	(+)	(+)
7	4	y/n-inversion	+	+	+	+	(+)	+	(-)	+	+	+	+	+	+	+
8		copula inversion	+	+	+	+	+	+	+	+	+	+	+	+	+	+
10	3	do-fronting	/	/	(-)	+	+	+	+	(+)	(+)	/	/	-	-	/
11		adv-fronting	+	+	+	+	+	+	+	+	+	+	+	+	+	+
12		neg-verb	+	+	+	+	+	+	+	+	+	+	+	+	+	(+)
13		pl-agreement	+	/	+	+	+	+	+	/	(+)	+	(+)	(+)	+	+
14	2	(neg) SV(O)	+	+	+	+	+	+	+	+	+	+	+	+	+	+
15		past -ed	+	+	+	+	+	(+)	-	/	(+)	/	(+)	/	+	+
16		plural -s	+	+	+	+	+	+	+	+	+	+	+	+	+	+
18	1	single word/ formulae														

**Table 6-7:** Implicational Scaling Trilinguals (sorted by highest achieved stage)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Stage	Structure	R06	R05	R01	R11	R02	R12	R04	R03	R21	R14	R13	R22	R23	R24
2	6	Cancel INV	+	+	+	+	+	+	+	+	+	+	-	-	-	(+)
3	5	Do 2nd	+	+	+	+	+	+	(+)	(-)	(-)	(+)	(+)	-	(-)	-
4		Aux 2nd	+	+	(+)	+	+	+	(+)	+	+	+	+	+	(+)	-
6		3-SG-s	+	+	+	+	+	+	+	+	+	+	+	+	+	+
7	4	y/n-inversion	+	+	+	/	/	+	+	+	+	+	+	/	+	+
8		copula inversion	+	+	+	+	+	+	+	+	+	+	+	+	+	+
10	3	do-fronting	+	+	+	+	+	(-)	+	(-)	+	+	+	(-)	/	+
11		adv-fronting	+	+	+	+	+	+	+	+	+	+	+	+	+	+
12		neg-verb	+	+	+	+	+	+	+	+	+	+	+	(+)	(+)	+
13		pl-agreement	+	+	+	(+)	/	/	/	+	/	+	+	+	+	+
14	2	(neg) SV(O)	+	+	+	+	+	+	+	+	+	+	+	+	+	+
15		past -ed	+	+	+	+	+	+	+	+	/	-	/	/	/	/
16		plural -s	+	+	+	+	+	+	(+)	+	+	+	+	+	+	+
18	1	single word/ formulae														

**Table 6-8:** Implicational Scaling Bilinguals (sorted by highest achieved stage)



The results can be summarized as follows. All informants in both groups have acquired at least stage 4 of the ESL hierarchy. For all informants –including the English L3 learners – the implicational nature of the given structures and stages is clearly present. In other words, every trilingual informant seems to pass through the same stages of development in English morphosyntax as do the bilingual informants. However, there is only evidence for stages 4, 5 and 6 as being separate stages, since the structures assigned to lower stages in the PT literature were all mastered by all informants. This means that with the present dataset positive evidence for the implicational nature of the lower stages is missing

Still, there is no negative evidence against the assumed order of the lower stages. All the structures of the lower stages (2 and 3) had been acquired by the informants, so there were no stage gaps, which would have constituted clear counter-evidence to the assumed hierarchy. Any influence of Turkish, thus, cannot have been pervasive: Even though the target L3 (English) is typologically very distant from the L2 Turkish, no categorical negative transfer was found that would have led to non-acquisition of entire ESL structures of the lower stages. In particular, Table 6-7 clearly shows (with very few exceptions) that the trilingual informants had acquired basic English word order (SVO), plural agreement and basic inversion phenomena, even though these structures are different (SOV) or absent (PL-agreement; inversion) in Turkish. Hypothesis 1a, thus, has been partly confirmed by the data.

As far as Hypothesis 1b is concerned, it may be best to give a quantitative overview of achieved stages of informants from both groups. Among the trilinguals, there is a threefold distribution. In other words, there are informants located at three different stages of processability. Seven informants are located at the highest stage (6), three at stage 5 and four at stage 4. Among the bilinguals, however, there is only a twofold distribution. In other words, all informants can be assigned one of two stages of processability, namely 5 and 6. Ten informants have achieved stage 6, the other four are located at stage 5. As has been explained above, for Hypothesis 1b only a tendency can be stated. This tendency is as follows. For the current dataset, Hypothesis 1b can be confirmed. Stages achieved by the trilingual group are not higher (in average) than with the bilingual group. In fact, the bilingual group in average has achieved higher stages (Median = 5.5 for the trilingual and Median = 6 for the bilingual group), which difference

was statistically not significant applying the U-test<sup>16</sup>,  $U_{\text{emp}} 69 > U_{\text{crit}(95)} 55$ ;  $z = -1.53$  after correction of tied ranks;  $p > .05$ ). Note, however, that the slight tendency only applies to informants from classes 5 and 7. All informants from class Q1 have achieved the highest processability stage. In other words, it seems as if the trilingual group lags slightly behind the bilingual group as far as pace of acquisition is concerned (if one simulates a longitudinal study through the three different subgroups involved here). However, at a given point of time they catch up with their bilingual peers, also achieving the highest possible developmental stage 6. Taking the results of this study as a basis, this point in time must be beyond class 7, since at that point the bilingual group was still ahead of the trilingual group.

There are single informants who are located beyond (e.g., P12) or below (e.g., R13) the average achieved stage of their peers. Still, this individual variation is completely normal and expected. The reader will further remember that for a valid generalization of the tendency identified above a dataset using many more informants would be needed. It cannot be safely concluded here that the differences found are not due to other factors such as individual cognitive differences, motivation, quality and intensity of lessons, etc.

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<sup>16</sup> The way of reporting results of statistical tests in this thesis follows Meindl, 2011.



The reader may recall that in Section 4.4.4 I promised to return to the  $C_{scal}$  and the issue of mathematically demonstrating scalability of a given table. This may be the right place to do so. Any researcher familiar with implicational scaling will agree that it is only necessary – if at all – to calculate the  $C_{scal}$  in case there are errors (and/ or empty cells, according to some). A perfect scale will, of course, mathematically always result in a figure of 100% scalability. This would mean, then, that mathematically it would only be promising to calculate the  $C_{scal}$  for Tables 6-5 to 6-8. However, logically it does not make sense to do so. This is because not every structure listed in the table is assumed to be hierarchically higher or lower than the preceding or following one. Only the stages that they represent are assumed to be hierarchically, or implicationally, ordered. As explained in Section 4.2.3, the level of exchange of grammatical information together with mapping operations crucially differ from stage to stage, but are – logically – identical with structures belonging to the same stage. In other words, all structures located at the same stage (say, e.g., plural *-s* and past *-ed* at stage 2) do not stand in a vertical, but rather in a horizontal relationship to each other. This means that, in our example, it is not necessarily predicted that plural *-s* emerges before past *-ed* (cf. also part on ‘developmental trailers’, Section 4.4.5).

Calculating the  $C_{scal}$  for Tables 6-5 to 6-8, thus, is not allowed, since the logical prerequisites (assumed scalability for each line of the table) are not given. For Tables 6-9 and 6-10, however, the conditions to calculate the  $C_{scal}$  are fulfilled: all the lines present in these tables are assumed to be implicationally ordered. Even though the outcome is clear before the calculation, for reasons of completeness the four steps required in the course of calculating the  $C_{scal}$  (plus results) are depicted for both Tables 6-9 and 6-10 in Table 6-11 below. As predicted, the  $C_{scal}$  is 100% for both implicational tables. This means that the results concerning hypothesis 1a – that any learner passes through the known stages of acquisition of English morphosyntax – can be backed up statistically. It should be kept in mind, however, that for a complete confirmation of all the six stages of the ESL processability hierarchy more stage transitions would be needed (i.e. from stage 1 to stage 2, from stage 2 to stage 3, and from stage 3 to stage 4). The only stage transitions with the trilingual group that were found are those from stage 4 to stage 5 and from stage 5 to stage 6.

## **6.3 Findings Concerning Transfer**

### **6.3.1 Verb-last and V2**

As described in Section 5.5, three structures were specifically analyzed for potential transfer effects from Turkish and German: verb-last (“verb final” in the tables below) and V2, possessive forms and neologisms with language-mixed morphology. The analysis

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	<b>The four steps for calculating the Coefficient of Scalability (<math>C_{scal}</math>)</b>							<b>table 6-9</b>			<b>table 6-10</b>				
2	<b>Step 1: Calculating the Coefficient of Reproducibility (<math>C_{rep}</math>)</b>							no of errors = 0			no of errors = 0				
3	Formula:							no of Ss = 14			no of Ss = 14				
4								no of items = 5			no of items = 5				
5	$C_{rep} = 1 - \frac{\text{number of errors}}{(\text{number of Ss})(\text{number of items})}$														
6								$C_{rep} = 1 - 0 / (14 \times 5)$			$C_{rep} = 1 - 0 / (14 \times 5)$				
7															
8	taken from Hatch & Lazaraton 1991:210							$C_{rep} = 1 - 0 / 70 = 1 - 0 = \underline{1}$			$C_{rep} = 1 - 0 / 70 = 1 - 0 = \underline{1}$				
9	<b>Step 2: Calculating the Minimum Marginal Reproducibility (<math>MM_{rep}</math>)</b>							maximum marginals = 59			maximum marginals = 66				
10	Formula:							no of Ss = 14			no of Ss = 14				
11								no of items = 5			no of items = 5				
12	$MM_{rep} = \frac{\text{maximum marginals}}{(\text{number of Ss})(\text{number of items})}$														
13								$MM_{rep} = 59 / (14 \times 5)$			$MM_{rep} = 66 / (14 \times 5)$				
14															
15	taken from ibid.:211							$MM_{rep} = 59 / 70 = \underline{0,84286}$			$MM_{rep} = 66 / 70 = \underline{0,94286}$				
16	<b>Step 3: Calculating the Percent Improvement in Reproducibility</b>							$C_{rep} = 1$			$C_{rep} = 1$				
17	Formula:							$MM_{rep} = 0,84286$			$MM_{rep} = 0,942857$				
18															
19	$\% \text{ improvement} = C_{rep} - MM_{rep}$							$\% \text{ improvement} = 1 - 0,84286$			$\% \text{ improvement} = 1 - 0,942857$				
20															
21	taken from ibid.							$\% \text{ improvement} = \underline{0,15714}$			$\% \text{ improvement} = \underline{0,05714}$				
22	<b>Step 4: Calculating the Coefficient of Scalability (<math>C_{scal}</math>)</b>							$\% \text{ improvement} = 0,15714$			$\% \text{ improvement} = 0,057143$				
23	Formula:							$MM_{rep} = 0,84286$			$MM_{rep} = 0,942857$				
24	$C_{scal} = \frac{\% \text{ improvement in reproducibility}}{1 - MM_{rep}}$														
25								$C_{scal} = 0,15714 / (1 - 0,84286)$			$C_{scal} = 0,057143 / (1 - 0,942857)$				
26															
27	taken from ibid.:212							$C_{scal} = 0,15714 / 0,15714 = \underline{1}$			$C_{scal} = 0,057143 / 0,057143 = \underline{1}$				

**Table 6-11:** Calculating the  $C_{scal}$  for Tables 6-9 and 6-10

	A	B	C	D	E	F	G	H	I
1	<b>Declarative Sentences</b>				<b>SVO*</b>	<b>XSVO</b>	<b>XVSO</b>		
2	<b>Subj ID</b>	<b>comments</b>	<b>verb 1st</b>	<b>verb final</b>	<b>target-like Verb 2nd</b>	<b>Verb 3rd with ADJ-first</b>	<b>Verb 2nd with ADJ-first*</b>		
3	1	GER TF: in verbs quite apparent: - is on singing/ - comes.....back	0	0	261	15	$\Delta$ 0%	0	
4	2	GER TF: go...out/ is...black	0	0	244	25		5	$\Delta$ 17%
5	5		0	0	133	24	$\Delta$ 23%	7	
6	6		0	0	192	33		6	$\Delta$ 15%
7	8		0	0	164	43	$\Delta$ 4%	2	
8	10	GER TF: there is the...destroyed	0	0	171	55		3	$\Delta$ 5%
9	11	GER TF: which figure I play must	0	1	163	24	$\Delta$ 35%	13	
10	12		0	0	171	39		5	$\Delta$ 11%
11	15		0	0	56	21	$\Delta$ 19%	5	
12	16	many GER words in between	0	0	85	4		16	$\Delta$ 80%
13	21		0	0	43	15	$\Delta$ 74%	43	
14	22	GER TF: the dad will the wasp kill	0	0	98	5		5	$\Delta$ 50%
15	23	many GER words in between	0	0	87	1	$\Delta$ 96%	25	
16	24	many GER words in between	0	1	129	2		11	$\Delta$ 85%

	A	B	C	D	E	F	G	H	I
1	<b>Declarative Sentences</b>				<b>SVO*</b>	<b>XSVO</b>	<b>XVSO</b>		
2	<b>Subj ID</b>	<b>comments</b>	<b>verb 1st</b>	<b>verb final</b>	<b>target-like Verb 2nd</b>	<b>Verb 3rd with ADJ-first</b>	<b>Verb 2nd with ADJ-first*</b>		
3	1		0	0	135	18		0	△ 0%
4	2		0	0	108	38	△ 0%	0	
5	3		0	0	58	16		5	△ 24%
6	4		0	0	60	25	△ 17%	5	
7	5		0	0	153	28		3	△ 10%
8	6		0	0	209	39	△ 0%	0	
9	11	split verb again: <i>uh is the girl kiss from a man</i>	0	0	122	36		4	△ 10%
10	12		0	0	123	15	△ 29%	6	
11	13		0	0	100	35		1	△ 3%
12	14		0	0	79	27	△ 0%	0	
13	21		0	0	95	12		1	△ 8%
14	22	GER TF: <i>the son have the piggy bank . kaputt gemacht / the butter wird . from the person . crashed</i>		0	79	8	△ 20%	2	
15	23		0	0	66	26		6	△ 19%
16	24		0	1	100	14	△ 13%	2	

	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	
1																									
2	*following ADJs/verbs:																								
3																									
4	local adverbs/ copula (5x)																								
5	local adverb/ copula (5x); temporal adverb/ come (1x); local adverb/ aux (be) (1x)																								
6	temporal adverb/ copula (1x); local adverb/ copula (5x)																								
7	local adverb/ copula (2x)																								
8	local adverb/ copula (3x)																								
9	local adverb/ copula (13x)																								
10	local adverb/ copula (5x)																								
11	local adverb/ copula (5x)																								
12	local adverb/ have (4x); local adverb/ cop (12x)																								
13	local adverb/ fly (1x); local adverb/ go (1x); local adverb/ copula (38x); local adverb/ (be)come (2x); local adverb/ have (1x); local adverb/ look (1x)																								
14	temporal adverb/ fly zurück (1x); temporal adverb/ come (1x); local adverb/ copula (3x)																								
15	local adverb/ copula (18x); temporal adverb/ copula (1x); temporal adverb/ get (1x); temporal adverb/ go (1x); local adverb/ aux (be) (2x); local adverb/ come (1x); local adverb/ see (1x)																								
16	adverb of manner ('auf einmal'; GER) / come (1x); local adverb/ copula (10x)																								

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	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																		
2	*following ADJs/verbs:																	
3																		
4																		
5	local adverb/ copula (5x)																	
6	local adverb/ copula (5x)																	
7	local adverb/ change (3x);																	
8																		
9	local adverb/ copula (4x)																	
10	local adverb/ copula (5x); temporal adverb/ come (1x)																	
11	local adverb/ copula (1x)																	
12																		
13	temporal adverb/ go (1x)																	
14																		
15	temporal adverb/ copula (1x); temporal adverb/ come (1x)																	
16	local adverb/ copula (5x); local adverb/ look (1x)*																	
17	temporal adverb/ come (2x)																	

**Table 6-15:** Transfer Analysis (verb-last and V2) Bilinguals, Part 2

As claimed above, this analysis served to outline the use of verb-last and V2. Tables 6-12 and 6-13 are structured as follows. Only declarative sentences were analyzed for word order phenomena, since with questions in all of the involved languages word order is altered in many cases, which would have complicated the issue too much. Column A gives the informant identity (letters ‘P’ and ‘R’ have been left out). Columns C and D provide the raw number of sentences with verb first (included for completeness) and verb last word order, respectively. Column E represents target-like SVO canonical word order. For sentences with a fronted ADJ, two possible word orders were assumed: XSVO (target-like; column F) and XVSO (non-target-like, V2, columns G-I). Within the latter columns, the raw frequency of V3 as opposed to V2 in sentences with a fronted element is provided. Column B complements the table with space for further comments. Tables 6-14 and 6-15 directly refer to the usage of V2 (XVSO), laying out with which kind of adverb and which type of verb this structure was used, and how often. In all the tables, further comments were directly inserted through a box linked to the element to be commented. The concordance tool KWIC51 was used to aid the analysis.

Only two instances of verb-last were found with the trilinguals (zero with the bilinguals). The first instance, from P11, stems from a question (“*how Turkey you find?*”). This could possibly be an instance of transfer from Turkish. The second instance, from P24, occurs within a subclause (“*I have heard that Mars dead planet is*”), involving only the copula, and could at any rate be only a case of transfer from German. Comparing these two instances with the substantial amount of SVO and other word orders, the issue is clear: verb-last from Turkish is not transferred, neither by the younger nor the older

informants. All of them master canonical SVO word order in English, as was already evident from the distributional analysis (cf. sSection 6.2, step one).

The case is different with V2. Target-like V3 is the preferred option for both the trilinguals and the bilinguals. But there is a quantitative difference here; whereas the bilinguals' use of V2 only amounts to 9%, the trilinguals used this structure in almost a third of all declarative sentences with a fronted element. The U-test yielded a significant result for the V2/V3 ratio of the two groups (Median = .26 for the trilingual and Median = .11 for the bilingual group;  $U_{\text{emp}} 50.5 < U_{\text{crit}} (95) 61$ ;  $z$  after correction of tied ranks = -2.19;  $p = .01$ ). There is only one trilingual informant (P01) who did not use V2 at all (with the bilinguals it is four informants who did not use it). The tendency with the trilinguals is that the younger informants – specifically P16-P24 – seem to clearly prefer this non-target-like structure (note that P23, for instance, produced V3 only once, which results in 96% V2 usage). This age-related tendency cannot be found with the bilinguals, where R12 (a class-fiver) exhibits the highest ratio of V2 usage (which, nonetheless, is 'only' 29%).

According to the DMTH, V2 should only be processable once a given learner has reached the S-procedure (cf., e.g., Lenzen et al., 2013). For English, this means that a learner below stage 5 is not predicted to be able to produce this structure productively and systematically. Comparing the results of the trilingual group with the stages they have been assigned in Section 6.2, step 4, there seems to be a contradiction: informants P11, P16, P22, P23 and P24 have only been assigned stage 4 and should not be able to produce V2. However, they made substantive use of XVS structures. Among the bilinguals this problem does not arise, since all informants had reached at least stage 5.

Before interpreting this finding as counter-evidence to the DMTH, a closer look at the exact nature of these V2 structures by the mentioned informants is due. The respective columns in the tables above reveal the following: P11 and P16 do not use the structure with lexical verbs (apart from *have* with P16, which is uttered with previous pausing initially). P22, P23 and P24 mostly use the structure with the copula. P22 and P24 used the structure with a lexical verb (*come*) once. In the case of P23 it is up to four English lexical verbs (possibly less, depending on whether the informant said *geht* (GER), which means *goes* in English, or *get*); however, with P23 and P24 it was particularly

obvious that they intermingled many German words. Consider, for instance, this example uttered by P24:

*auf einmal (GER; = suddenly) come the boy with ice cream and balloons and the  
and the father uh see him komisch . an (GER; = to glance at sby strangely)*

In other words, production of V2 structures by these informants is severely limited (to the copula), and in cases of lexical verbs it is either produced with pausing or with German lexical material in between (or both). This means that XVSO structures do not seem to be used productively and systematically by these informants. Rather, they seem to be a reflection of what is known as relexification (cf. e.g. Schumann 1982).

Summing up the findings for transfer of word order, the following can be said. Transfer from Turkish in the form of verb last does not occur. Transfer from German occurs in the form of V2 – even more with the trilingual informants – but obviously in a conscious, metalinguistic way involving pausing and reflection, often in the environment of a mixed German-English code with mainly the copula. Instead of speaking of proper transfer, it seems more justified to view this as an instance of relexification. Thus, no syntactic transfer contradicting the DMTH was found. Hypotheses 2 and 3 have therefore been confirmed; no facilitative transfer from Turkish was observed, as predicted by Hypothesis 2. Transfer from German – as mentioned in Hypothesis 3 – occurred, but there is no fundamental difference as compared to the bilingual group. A quantitative difference, however, could be detected; the trilinguals transferred the German V2 structure three times as often as the bilinguals. At any rate, this kind of transfer is non-facilitative, since it is non-target-like. The trilingual group does not have an advantage, but rather a disadvantage in accuracy due to this tendency.

### **6.3.2 Genitive -s vs. *of*-Construction**

As far as possible transfer effects on the preference of one of the two different structures indicating possession is concerned, the following can be said. Both the trilinguals and the bilinguals had a clear preference for the *of*-construction as opposed to the genitive -s construction (which is also the reason why it was taken out of the distributional analysis, cf. Section 6.2). Still, a quantitative difference could be detected; whereas the bilingual group almost categorically rejected the genitive -s construction (only one recorded instance), the trilinguals used it in 23% of all possessive contexts (10 uses in a total of 35 contexts). This difference might be attributed to transfer from Turkish (as mentioned

above), where such a construction is the only possibility. According to the DMTH transfer within the possessive construction may occur from stage 3 onwards because grammatical information exchange on the phrasal level is required to be operational. Since all informants were located at least at stage 4, the finding is compatible with the DMTH. There are no beneficial repercussions in the area of variation; however, the structure is optional and can readily be replaced by the *of*-construction (with few exceptions), as the bilinguals usually did.



### 6.3.3 Neologisms Involving Morphological Transfer

One of the consequences of the creative and idiosyncratic nature of language and language acquisition is the possibility of adding a morpheme from a given language to another morpheme from the target language. This kind of transfer rarely occurred in the current dataset. Among the trilinguals, the only instance is P10 with *\*kämming*. In this case, the unknown English verb stem *comb* was simply replaced by its German counterpart *kämm* and complemented with the progressive *-ing* morpheme, which was target-like in the given context. In other words, the rationale for the transfer here was a lexical deficit. Among the bilinguals, it was the other way around. In other words, the stem was English and the functional morpheme was taken from German. This happened in the context of the description of actions shown in the passive video clips: *\*The girl wird gekiss* (= the girl is being kissed; R22) and *\*the girl wird gecarried* (= the girl is being carried, R23). This reveals two things: first, that the informants are aware that a passive form is needed, and second, that they do not know how to form this structure in English (yet). Another word form probably inspired by (but not directly taken from) German is *\*beautifulst one* (=most beautiful one, R04) – the German superlative is always formed synthetically and never analytically. Transfer from Turkish could not be observed within this domain. All the described cases require at least the category procedure, which was dominated by all informants involved in the study. No fundamental differences between trilinguals and bilinguals and no beneficial or detrimental consequences for development were found. In other words, this kind of transfer was random, as predicted by Hypothesis 3.

## 6.4 Findings Concerning Simplification

### 6.4.1 Omission and Confusion/ Overgeneralization

In this section, the results of simplification strategies will be presented. As mentioned above, specifically the phenomena of omission and confusion will be treated. Tables 6-16 and 6-17 below provide a quantitative overview of what was omitted or confused and how often by each group. Tables 6-18 and 6-19 further contain a qualitative ordering as they present the TOP 3 omitted and confused linguistic forms for each group directly resulting from the previous tables. The confusion of pronouns (PRO) will be dealt with further below.

	A	B	C	D	E	F	G	H	I
1	Evaluation Experimental Group								
2									
3	Tokens	Subj-Omission		Cop-Omission		Art-Omission		Verb-Omission	Prep-Omission
4	22235	normales S.	Pro-Drop	Singular Cop.	Plural Cop.	Def. Art.	Indef. Art.		
5	Raw No.	6	67	11	5	14	13	8	24
6	Quotient	0,03%	0,30%	0,05%	0,02%	0,06%	0,06%	0,04%	0,11%
7		0,33%		0,07%		0,12%			

	J	K	L	M	N	O
1						
2						
3	<b>Is/ Are (Was/ Were) Confusion</b>		<b>Have/ Has Confusion</b>		<b>Do/ Does Confusion</b>	
4	<i>Is inst of Are</i>	<i>Are inst of Is</i>	<i>Have inst of Has</i>	<i>Has inst of Have</i>	<i>Do inst of Does</i>	<i>Does inst of Do</i>
5	10	96	92	7	54	1
6	0,04%	0,43%	0,41%	0,03%	0,24%	0,00%
7	0,48%		0,45%		0,25%	

**Table 6-16:** Quantitative Overview Omission and Confusion Trilinguals

	A	B	C	D	E	F	G	H	I
11	Evaluation Control Group								
12									
13	Tokens	Subj-Omission		Cop-Omission		Art-Omission		Verb-Omission	Prep-Omission
14	17548	<i>normales S.</i>	<i>Pro-Drop</i>	<i>Singular Cop.</i>	<i>Plural Cop.</i>	<i>Def. Art.</i>	<i>Indef. Art.</i>		
15	Raw No.	0	18	2	0	3	1	1	17
16	Quotient	0,00%	0,10%	0,01%	0,00%	0,02%	0,01%	0,01%	0,10%
17		0,10%		0,01%		0,02%			

	J	K	L	M	N	O
11						
12						
13	<b>Is/ Are (Was/ Were) Confusion</b>		<b>Have/ Has Confusion</b>		<b>Do/ Does Confusion</b>	
14	<i>Is inst of Are</i>	<i>Are inst of Is</i>	<i>Have inst of Has</i>	<i>Has inst of Have</i>	<i>Do inst of Does</i>	<i>Does inst of Do</i>
15	4	20	37	2	66	2
16	0,02%	0,11%	0,21%	0,01%	0,38%	0,01%
17	0,14%		0,22%		0,39%	

**Table 6-17:** Quantitative Overview Omission and Confusion Bilinguals

	A	B	C	D	E	F
20	<b>Experimental Group: Statistics</b>					
21						
22	<b>Confusion</b> occurred more often than <b>omission</b> (a bit less than twice as often)					
23	<b>TOP 3 Simplification (Total):</b>			<b>raw</b>	<b>%</b>	
24	1	are instead of is		96	0,43	
25	2	have instead of has		92	0,41	
26	3	pro-drop		67	0,3	
27	<b>TOP 3 Omission:</b>					
28	1	pro-drop		67	0,3	
29	2	art-drop		27	0,12	
30	3	prep-drop		24	0,11	
31	<b>TOP 3 Confusion:</b>					
32	1	are instead of is		96	0,43	
33	2	have instead of has		92	0,41	
34	3	do instead of does		54	0,24	
35	<b>Tendency for:</b>					
36		replacing 3rd-sg auxiliaries with generic ones				
37		replacing sg cop/aux with pl one				

**Table 6-18:** TOP 3 Simplified Linguistic Forms Trilinguals

	I	J	K	L	M
20	<b>Control Group: Statistics</b>				
21					
22	<b>Confusion</b> occurred more often than <b>omission</b> (more than 3 times as often)				
23	<b>TOP 3 Simplification (Total):</b>			<b>raw</b>	<b>%</b>
24	1	do instead of does		66	0,38
25	2	have instead of has		37	0,21
26	3	are instead of is		20	0,11
27	<b>TOP 3 Omission:</b>				
28	1	pro-drop		18	0,1
29	2	prep-drop		17	0,1
30	3	art-drop		4	0,02
31	<b>TOP 3 Confusion:</b>				
32	1	do instead of does		66	0,38
33	2	have instead of has		37	0,21
34	3	do instead of does		20	0,11
35	<b>Tendency for:</b>				
36		replacing 3rd-sg auxiliaries with generic ones			
37		replacing sg cop/aux with pl one			

**Table 6-19:** TOP 3 Simplified Linguistic Forms Bilinguals

Tables 6-16 to 6-19 above contain the sum of simplification instances by the single informants of each group (except for PRO confusion, cf. further below). Since MS Excel was used for this analysis (along with KWIC51), it could be computed relatively easily with the program (summing up the respective cells of each informant within the group). For instance, cell C5 in Table 6-16 contains the sum of all instances of pro-drop among all trilingual informants, in this case, 67. As can be seen in Tables 6-16 and 6-17, upper part, subjects, the copula, articles, verbs and prepositions were investigated as to how often they were omitted. The first three of these were further subdivided into normal subject and pro-drop, singular and plural copula, definite and indefinite articles. In the lower part of Tables 6-16 and 6-17, confusion is depicted as affecting *is/are* (*was/were* was also included here), *have/has*, and *do/does*. Furthermore, the direction of confusion was investigated, in other words, whether an informant overgeneralized SG to PL or vice versa, or whether he overgeneralized 3-SG uses to other contexts or vice versa. Note that due to space limitations, further differentiation between AUX, copula, lexical uses etc. of the mentioned forms could not be made.

The simplified calculation of the quotient of simplification of a given form was due to time limitations: it was not calculated in opposition to non-simplified forms (e.g., pro-drop as opposed to supplied PRO), rather, as compared to the whole corpus ('tokens', cells A4 and A14 in Tables 6-16 and 6-17, respectively). This means that, to stay with the pro-drop example, in the whole trilingual corpus 0,30% of the total tokens are pronouns that were dropped by the informants. In this way the raw numbers provided in Tables 6-16 and 6-17 become comparable, as they are weighted against the total size of the respective corpus.

Tables 6-18 and 6-19 simply summarize the TOP 3 forms that were simplified by each group, providing an overall ranking as well as one within the two subdomains of omission and confusion, the latter of which could be considered synonymous to overgeneralization within the present analysis. In the following, the results will be presented, starting with the commonalities and finishing with the differences between the trilinguals and the bilinguals.

The phenomenon of simplification, well-known in the L2A literature (cf., e.g., Larsen-Freeman & Long, 2014, p. 282), occurred with both groups. Both the trilingual and bilingual informants seem to be more prone to simplifying by confusion/overgeneralization than by omission. In other words, they seem to prefer using another linguistic form rather than leaving an element out altogether. Within this domain of overgeneralization, both the trilingual and bilingual learners of English share the tendency to oversupply non-3-SG forms (*have* for *has*, *do* for *does*) and PL over SG cop and AUX (*are* for *is*).

As far as differences are concerned, the following can be said. The overall numbers for both omission and confusion are clearly higher with the trilingual group. The U-test as applied to the weighted figures of omission (ratio of omitted words per total no. of tokens) yielded a significant result (Median = .0055 for the trilingual and Median = .0020 for the bilingual group;  $U_{\text{emp}} 50 < U_{\text{crit}(95)} 61$ ). The phenomenon of PRO-drop, for instance, occurred three times as often among the trilinguals as among the bilinguals. In the trilingual group, PRO-drop ranks within the overall TOP 3, whereas in the bilingual group it does not. Speaking of omission in general, this did not seem to be a problem at all for the bilinguals (apart from prep-drop), whereas for the trilinguals it was.

The differences observed here could be explained, in case of the trilinguals, by influence from Turkish. In Turkish there is licit pro-drop and both articles and the copula (at least in present contexts) do not exist. This might have motivated the trilinguals to omit these elements in cases where the target language usually does not allow this. However, the differences are – again – rather of a quantitative nature, since the bilingual group also dropped the pronoun sometimes, which of course cannot be attributed to Turkish since they had no knowledge of Turkish.

As far as Hypotheses 2 and 3 are concerned – similar to what was said in the previous section – the differences that might be due to transfer from Turkish do not grant the trilinguals any advantages, but rather disadvantages as far as accuracy is concerned. In the case of copula drop, as has been stated above, an informant that consistently does this at a low stage of processability is in danger of generatively entrenching this feature, which has repercussions for higher stages (e.g. INV and CANCEL INV). However, even though the number of copula drop was higher among the trilinguals, there was not a single

informant who dropped the copula categorically. In other words, the variational tendencies found did not effect a qualitative change in processing.

#### 6.4.2 PRO Confusion

Tables 6-20 to 6-23 below illustrate the results regarding PRO confusion. Again, MS Excel and KWIC51 were used for this analysis. For each informant, a table such as 6-20 was used as template. Tables 6-20 and 6-21 contain the sum of confused PROs for the respective group. In these tables, the horizontal axis ('x-axis') represents the intended PROs<sup>17</sup> ('meant PROs' in the table), including all English pronouns in the cases NOM, DAT, ACC (i.e. personal pronouns) and GEN (i.e. possessive pronouns). The vertical axis ('y-axis') represents the PROs actually used, with the same range of PROs as on the horizontal axis. The fields that represent equivalence of intended and actual usage ('correct' usage from a target-language standpoint) are highlighted (white background), ranging from the top left (*I*, cell D7 in Table 6-20) to the bottom right (*them*, cell AA30 in Table 6-20). Visually speaking, the 'steps' of the 'stairs' cross the table from the top left to the bottom right corner. Whenever an informant's usage of a given PRO deviated from the intended one, an entry was made in a cell other than one of the 'steps' (either below or above it, in the respective cell), and the respective cell was highlighted (dark). The circles in Tables 6-20 and 6-21 mark clearly-visible key areas of PRO confusion that became apparent after the mere counting of correct and confused PRO usage.

Tables 6-22 and 6-23 provide a statistical overview of PRO usage and confusion of the two groups. All the figures within these tables can be directly calculated from the figures in the previous two tables. The three PROs listed under 'inaccurately expressed PROs' are those that were intended, but expressed differently ('incorrectly' from a target-language perspective). The 'wrongly used PROs' were actually used in the respective form by the informants, but the intended meaning deviated from this usage. In other words, the upper part of these tables has the horizontal axis, and the lower part has the

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<sup>17</sup> 'intended' from a target-language perspective; in the sense of the correct target-language lexical equivalent to the conceptually/ contextually required PRO. Obviously this approach simplifies the issue a bit, leaving aside the possibility of an interlanguage PRO *system* that differs from the one in the target-language (also cf. the comments on distributional analysis and form-function-relationships in Sections 4.4.2 and 4.4.3 above).

vertical axis as its starting point. Raw numbers as well as percentages are provided for all figures that are expressed within these tables.





64	<b>PRO Confusion Trilinguals Statistics</b>					
65						
66	Used pronouns (total):			2053		
67	of these confused:			112		
68	expressed in percentages:			5,46%		
69						
70	<b>TOP 3 inaccurately expressed PROs:</b>					
71	1.	her	24	out of	82	in %: 29,27%
72	2.	it	24	out of	180	in %: 13,33%
73	3.	she	21	out of	180	in %: 11,67%
74						
75	<b>TOP 3 wrongly used PROs:</b>					
76	1.	her	16	out of	74	in %: 21,62%
77	2.	his	28	out of	143	in %: 19,58%
78	3.	he	42	out of	590	in %: 7,12%

**Table 6-22:** TOP 3 Confused PROs Trilinguals

	P	Q	R	S	T	U	V
64	<b>PRO Confusion Bilinguals Statistics</b>						
65							
66	Used pronouns (total):			1604			
67	of these confused:			64			
68	expressed in percentages:			3,99%			
69							
70	<b>TOP 3 inaccurately expressed PROs:</b>						
71	1.	it	25	out of	149	in %	16,78%
72	2.	her	8	out of	78	in %	10,26%
73	3.	she	9	out of	197	in %	4,57%
74							
75	<b>TOP 3 wrongly used PROs:</b>						
76	1.	his	10	out of	83	in %	12,05%
77	2.	she	13	out of	201	in %	6,47%
78	3.	he	28	out of	493	in %	5,68%

**Table 6-23:** TOP 3 Confused PROs Bilinguals

The results of the analysis of PRO confusion will now be presented, starting with commonalities and then discussing differences. As can be read from the circled areas in Tables 6-20 and 6-21, ‘problematic areas’ were broadly the same among the trilinguals and the bilinguals. Both trilinguals and bilinguals had difficulties with basically the same pronouns, concretely with *he/ she/ it* and *his/ her/ its*. Furthermore, the set of the three most prominent inaccurately expressed pronouns was exactly the same in the two groups, namely *her, it* and *she*. Only the order of the first two was different. Also, the set of the three most prominent wrongly used PROs was almost the same: in both groups, *his* and *he* were part of this list and only the third element differed (*her* among the trilinguals, *she* among the bilinguals).

In general – as was also observed in the previous analysis – the trilingual group’s usage of pronouns deviated more strongly from the target-language norm than the bilinguals’. This can be read from the higher percentages in Tables 6-22 (as compared to Table 6-23). The difference, however, did not reach statistical significance with the t-test (arithmetic means of ratio of confused PROs per total no. of used PROs: trilinguals = .0521, bilinguals = .041;  $t = .279$ ;  $df = 26$ ;  $p > .5$ ). Furthermore, whereas the 3-SG PROs *he, she*, and *it* were all problematic for the trilinguals, the bilinguals generally seemed to struggle more with *it* than with the other two pronouns.

Transfer from German and Turkish can partly explain these results. In German, the neuter PRO *es* is not used as often as in English, especially with animals. This is relevant for the present study, since both the trilinguals and the bilinguals often designated animals such as birds and cats within the elicitation tasks as *he* or *she*, which is in line with the German classification (*er* or *sie*, respectively). In Turkish, there is only one 3-SG PRO, which is *o*. This can explain the further confusion of *he* and *she* within the trilingual group, which was particularly conspicuous in the Mr./Mrs. Lee Task (cf. Section 5.4.2 above)

Hypotheses 2 and 3 are again confirmed by these findings. Lexical transfer from both German and Turkish seems to be operative in the domain of PRO usage, but does not constitute a qualitative, but rather a quantitative, difference. The confusion of pronouns does not have any repercussions for development. In terms of accuracy or variational style/ learner orientation, of course, the findings again point towards

disadvantages of the trilingual group, since the German-Turkish learners of the current dataset deviate further from the target-language norm than do their bilingual peers.

### **6.4.3 Average Accuracy Rates**

Several times above it has been suggested that a different variational tendency exists between the two groups. If a more detrimental (from a target-language point of view) tendency really exists with the trilingual group, this should show in lower accuracy rates for the structures in question. At this place an overview of achieved accuracy rates as well as relevant average figures for the respective groups and subgroups is due in order to statistically grasp the suggested difference concerning variational tendencies.

The reader may recall that in Section 6.2 it was stated that for each informant accuracy rates were calculated for all structures in question. These accuracy rates were used to calculate the following figures, both for single structures and totals: average accuracy for a whole group; average accuracy for subgroups (e.g., class 7), average accuracy for the entire group and subgroups with morphological and syntactic structures. Tables 6-24 and 6-25 below present an overview of these figures. Note that optional and rarely-supplied-structures were excluded from this analysis. Again, the results show only a tendency, since the main focus of this thesis is qualitative in nature. For more reliable results a much higher number of informants would be needed.

Keeping in mind this caveat, if one compares Tables 6-24 and 6-25, three major observations can be made. First, as would be expected, a continuous improvement in accuracy rates can be detected from the younger to the older informants. The only exception here is the step from class 5 to class 7 within the trilingual group, where no improvement in accuracy occurred. Second, the bilinguals' accuracy rates were generally higher than the trilinguals'. In class 7, the difference is most obvious: total average accuracy exhibits a difference of 20% here (72% vs. 52%). Third, throughout the trilinguals' three age groups, accuracy rates are clearly higher with morphological structures than with syntactic ones. Among the bilinguals, this is only the case with the class 5 informants. Note, however, that the difference within the latter group amounts to only 11%, whereas the trilingual informants in class 5 show a difference of 30% in accuracy between morphological and syntactic structures (77% vs. 47%).

The tendency for a lower degree of target-language orientation in the trilinguals as compared to the bilinguals is thus confirmed by the accuracy average figures. The U-test, applied to the ratio of applied vs not-applied instances of obligatory structures within the two groups yielded a result narrowly past statistical significance (Median = 1.37 for the trilingual and Median = 2.59 for the bilingual group;  $U_{\text{emp}} 61 = U_{\text{crit}(95) 61}$ ).

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	Accuracy Rates Averages - Trilinguals																				
2																					
3	STRUCTURE	P01	P02	P05	P06	P08	P10	Average Q1	P11	P12	P15	P16	Average 7	P21	P22	P23	P24	Average 5	AVERAGE TrILis		
4	Cancel INV	100%	100%	90%	100%	100%	100%	98%	0%	100%	NO CONTEXT	NO CONTEXT	50%	33%	0%	10%	0%	11%	53%		
5																					
6																					
7	Do 2nd	0%	0%	33%	100%	50%	50%		39%	0%	67%	0%		0%	17%	75%	0%				0%
8	Aux 2nd	50%	38%	80%	23%	88%	100%	63%	0%	45%	0% NO CONTEXT		15%	25%	0%	50% NO CONTEXT		25%	34%		
9	3-SG-s	38%	82%	34%	33%	83%	96%	61%	4%	36%	63%	5%	27%	30%	0%	6%	0%	9%	32%		
10																					
11	y/n inversion	0%	100%	100%	100%	100%	100%	83%	100%	80%	100%	100%	95%	100%	100%	40%	86%	81%	87%		
12	copula inversion	75%	100%	71%	60%	80%	100%	81%	100%	100%	100%	100%	100%	63%	67%	100%	100%	82%	88%		
13																					
14																					
15	do-fronting	42%	100%	NO CONTEXT	0%	80%	100%	64%	0% NO CONTEXT	NO CONTEXT	NO CONTEXT		0%	100%	100%	0% NO CONTEXT		67%	44%		
16	pl-agreement	88%	86%	NO CONTEXT	100%	100%	100%	95%	67%	100%	100%	100%	92%	NO CONTEXT	100%	100%	100%	100%	95%		
17																					
18	past-ed	0%	50%	75%	50%	75%	60%	52%	33%	0% NO CONTEXT		50%	28%	NO CONTEXT	100%	NO CONTEXT	100%	100%	60%		
19	plural-s	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
20																					
21								Syntax Average Q1					Syntax Average 7					Syntax Average 5		Syntax Average Trilis	
22								71%					46%					47%		55%	
23								Morphology Average Q1					Morphology Average 7					Morphology Average 5		Morphology Average TrILis	
24								77%					62%					77%		72%	
25																					
26								Total Average Q1					Total Average 7					Total Average 5		Total Average TrILis	
27								74%					52%					59%		62%	
28																					

**Table 6-24:** Accuracy Rates Averages - Trilinguals

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U		
1	Accuracy Rates Averages - Bilinguals																						
2																							
3	STRUCTURE	R01	R02	R03	R04	R05	R06	Average Q1	R11	R12	R13	R14	Average 7	R21	R22	R23	R24	Average 5	AVERAGE Bilis				
4	Cancel INV	100%	78%	100%	60%	100%	100%	90%	100%	100%	0%	88%	72%	100%	25%	100%	100%	81%		81%			
5																							
6																							
7	Do 2nd	67%	60%	0%	100%	75%	88%		65%	50%	67%	20%		20%	39%	0%	0%		0%		0%	0%	35%
8	Aux 2nd	14%	100%	33%	100%	100%	100%		75%	57%	88%	100%		75%	80%	100%	100%		17%		0%	54%	70%
9	3-SG-s	64%	54%	82%	93%	93%	100%		81%	27%	52%	20%		35%	33%	23%	5%		58%		49%	34%	49%
10																							
11	y/n inversion	100%	NO CONTEXT	100%	100%	100%	100%		100%	NO CONTEXT	100%	100%		100%	100%	100%	NO CONTEXT		100%		100%	100%	100%
12	copula inversion	80%	91%	67%	100%	100%	100%		90%	100%	100%	89%		88%	94%	100%	100%		100%		100%	100%	95%
13																							
14																							
15	do-fronting	100%	100%	0%	100%	100%	100%	83%	100%	0%	20%	100%	55%	100%	0%	NO CONTEXT	100%	67%	68%				
16	pl-agreement	100%	NO CONTEXT	100%	NO CONTEXT	100%	100%	100%	100%	NO CONTEXT	100%	100%	100%	NO CONTEXT	100%	100%	100%	100%	100%				
17																							
18	past -ed	100%	100%	100%	NO CONTEXT	NO CONTEXT	0%	75%	100%	50%	NO CONTEXT	0%	50%	NO CONTEXT	NO CONTEXT	NO CONTEXT	NO CONTEXT	not calculable	63%				
19	plural -s	83%	100%	100%	100%	100%	100%	97%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	99%				
20																							
21								Syntax Average Q1				Syntax Average 7				Syntax Average 5				Syntax Average Bilis			
22								84%				73%				67%				75%			
23								Morphology Average Q1				Morphology Average 7				Morphology Average 5				Morphology Average Bilis			
24								88%				71%				78%				78%			
25																							
26								Total Average Q1				Total Average 7				Total Average 5				Total Average Bilis			
27								86%				72%				64%				76%			
28																							

**Table 6-25:** Accuracy Rates Averages - Bilinguals

Although the exact interplay of factors responsible for this outcome cannot be further investigated here, I would like to hint at possible explanations. The first two concern the generally lower accuracy rates in the trilinguals, while the third concerns the observed difference between morphology and syntax of this same group.

It has been described above (cf. Section 6.3) that the trilinguals made more recourse to transfer from German than did the bilinguals. Since German and English do not behave equally in some syntactic structures (e.g., V2 vs. non-V2), in these cases the result is non-facilitative transfer, a pitfall into which the trilinguals fell more frequently than the bilinguals. Furthermore the stronger tendency of the trilinguals to simplify and confuse linguistic forms also affects accuracy in certain cases. The presence of Turkish among the trilinguals (and the absence of it with the bilinguals) might at least partly explain the different mastery levels of syntactic and morphological structures. Since Turkish is much less configurational than both English and German (cf. Table 4.7/ Section 4.5.4), it relies more on morphology to mark relationships of constituents within a sentence. German-Turkish trilingual informants, thus, have some sort of expertise with (even multiple) morphological marking from two languages (German and especially Turkish), but less expertise with syntactic processes (only German). The bilingual informants, in contrast, have experience only with German, which distributes the functional load to syntax and morphology more or less as English does, a possible rationale for why no difference was found between the average degree of mastery of morphological and syntactic forms among the bilinguals. However, the exact interplay of factors that led to these results requires more thorough research with more informants.

It should be pointed out, once again, that the differences found in accuracy between the trilinguals and the bilinguals affect the level of variation, but not development. No single case of ‘generative entrenchment’ (cf. Section 4.2.4) was found, which would have affected the developmental dimension.

## 6.5 Further Findings

### 6.5.1 Metalinguistic Knowledge

The reader may recall that metalinguistic knowledge is one of the pillars of the FDH/L3A. It is now time to turn to the explicit analysis of the types of metalanguage that could be observed. Tables 6-26 to 6-27 below contain an exemplary extract of how the analysis was conducted as well as the final statistics that were eventually obtained.

In Table 6-26 and the left part of Table 6-27, all utterances containing metalanguage within the transcript of a given informant (P01 and P02 in our example here) were documented using MS Excel. Every single instance was then analyzed as to whether it could be categorized as EDIT, META, INSERT or WIPP (cf. Section 5.5 for an explanation of these categories). An 'x' was then written in the respective cell of the right side of Table 6-27. For instance, informant P01's first use of metalanguage is the utterance *yeah . at . uh. waspe (GER)* in line 4. The 'x' was therefore made in cell AB4, since the German word for *wasp* was inserted by P01. During the analysis it became clear that the default language for metalanguage was German, which is why English metalanguage was not integrated into the table itself, but documented at the left of it, in the 'comments' column in Table 6-27 (abbreviated ENG, cf. e.g. cell W12). Note that for a better understanding of the context of a metalinguistic utterance, the researcher's turn was sometimes documented as well (cf. letter 'C' utterances with informant P02 in Table 6-27). At the end the sum of all the entries in a given column (EDIT, META, INSERT and WIPP) was calculated, that is, the total of all uses of metalanguage of these categories with all informants within either the trilingual or bilingual group. This is depicted for both groups in Table 6-28. 'TriLis' stands for the trilinguals and 'BiLis' for bilinguals. In Table 6-28 the respective cells depicting INSERT are highlighted. This is because these numbers are not exact, since the documentation of utterances belonging to this category was not comprehensive. In other words, there were more instances of INSERT than those that were counted within the scope of the current analysis. The respective figures given in the table can therefore be understood as a minimum. No conclusion will be drawn about this category due to this lack of precision.



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Subj ID	P01													
2	Name														
3															
4	T	yeah . at . uh wespe (GER)?													
5															
6	T	yeah . the woman makes a two . shows two fingers on the left side and the boy stand on the left side of the girl and of the right picture uh													
7															
8	T	(laughs) uh . was fragt man so (GER)?													
9															
10	T	OK she's waking up and it . it is six . nein (GER)													
11															
12	T	uh the woman are carry from the boy?													
13															
14	Subj ID	P02													
15	Name														
16															
17	T	they eat sausage but the father uh makes uh nicht (GER) facial expression wie heisst das? (GER)													
18															
19	T	the right person are maybe kicking are playing soccer . jetzt weiss ich was ich eben falsch gemacht hab ich hab football gesagt ne (GER)?													
20															
21	C	mhm alright that's it thank you very much das war's (GER)													
22	T	eine frage heisst das ,bring' oder ,bringing' oder ,brings' oder (GER)													
23	C	uh meinst du die richtige form oder was? (GER)													
24	T	weil das waren ja passivsätze (GER)													
25	C	richtig uh das war ein unregelmässiges verb die eigentliche form ist ,brought' ,gebracht' sozusagen . aber das ist nicht schlimm das ist hi													
26	(end of interview)														

**Table 6-26:** Exemplary Analysis of Metalanguage with Informants P01 and P02, Part 1

	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	
1										Functions	EDIT	META	INSERT	WIPP	
2															
3									Comments etc.						
4									(default: GER)				x		
5									rising intonation						
6	she's smiling and . make three? . zeigt drei finger (GER)													x	
7															
8											x				
9															
10											x				
11															
12								ENG - but	insecurity signalled						
13									by rising intonation						
14															
15															
16															
17											x	x			
18															
19												x			
20															
21															
22												x			
23															
24												x			
25	ier keine schule es gibt kein richtig oder falsch .. das war's also vielen dank fuers mitmachen (GER)														
26															

**Table 6-27:** Exemplary Analysis of Metalanguage with Informants P01 and P02, Part 2

	A	B	C	D	E	F	G
1	<b>Statistical Overview Metalanguage</b>						
2							
3	TriLis	SUMS		EDIT	META	INSERT	WIPP
4				15	47	29	0
5							
6		ENG:	6				
7	rising intonation only:		3				
8							
9							
10	BiLis	SUMS		EDIT	META	INSERT	WIPP
11				17	43	50	0
12							
13		ENG:	5				
14	rising intonation only:		11				

**Table 6-28:** Statistical Overview Metalanguage Both Groups

In the following paragraphs the results of this analysis will be presented, again starting with commonalities before turning to differences. As far as the languages involved in metalanguage are concerned, the first qualitative observation that can be made is that Turkish metalanguage did not occur at all. Both the trilinguals and the bilinguals made only use of German and English. English metalanguage, however, was only used by the more advanced informants (class Q1). Furthermore, the category WIPP did not occur with any of the informants, which means that all metalanguage could be classified as either EDIT, META, or INSERT.

In both groups, metalinguistic comments were usually requests for help with lexical items, but included evaluations on competence (e.g. P05: *uh the uh the nichts sagen ich weiß frau .. oh mein gott* (GER)/ ‘*uh the uh the do not say anything I know what woman means...oh my god*’) or the lack of it (e.g. R13: *ah ich kann das nicht!* ‘*ah I cannot do this*’). The figures in Table 6-28 above show that the overall distribution among the three categories of metalanguage analyzed was virtually the same for the trilinguals and the bilinguals. The  $\chi^2$  test yielded the following result of the comparison between the trilingual and bilingual group in the three categories mentioned:  $\chi^2(2, n = 182) = 3.55, p > .05$ , which is statistically not significant.).

Moreover, some informants in both groups seemed to have grasped that with the last task passive sentences had to be formulated. One of them (P02) said it explicitly (cf. Table 6-26, line 24), and P21 made clear that she felt there was something wrong in meaning with an SVO word order without passive morphology for the respective

sentences. Also bilingual informants asked for the English equivalent of "*wird*" / "*wurde*" (the German passive auxiliary) thereby making clear that they knew the structure that had to be built.

As far as differences are concerned, only two minor details can be reported. First, the bilinguals seemed to use the rising intonation form without explicit metalinguistics more often than did the trilinguals. Second, signalling difficulties with a particular linguistic structure occurred only with the young informants within the bilingual group; within the trilingual group, two informants from Q1 also did so.

Summarizing the findings of this metalinguistic analysis, no striking differences were found between trilingual and bilingual informants. What was striking, though, is the (subjectively perceived) high level of a metalinguistic/ declarative mode (probably due to the school(ing) context) and the absence of the distinction found by Williams and Hammarberg (1998) between *instrumental* and *supplier language*. Within the current data, they seemed to be fused. This fused metalanguage was usually German for both groups. In other words, Turkish did not play a role at all for the trilinguals in this context. Obviously, apart from the lack of Turkish as a possible source for metalanguage, the other findings show only tendencies; a larger corpus would be needed to corroborate them as well as a clear operationalization as to when a given level of metalanguage counts as high and when as low.

The forms of metalanguage as found in the corpus do not seem to alter the quality of the data, since they usually only affect lexical material and post-hoc reflections about utterances. Furthermore, there was no qualitative difference in the use of metalanguage between the two groups. This means that, if there remain any traces of declarative knowledge being used to produce grammar, this effect should be levelled since it would then be very likely to have occurred in both groups, more or less to the same extent. Therefore, no advantages for the trilingual group due to transfer on an abstract level showed. The results gained from the present analysis contradict the 'metalinguistic-knowledge-pillar' of the FDH/L3A.

### 6.5.2 Findings on Lexis

The concordance tool KWIC51 has already been mentioned above. With the present dataset, it was also used to create a wordlist for each informant. This wordlist was copied to MS Excel, where it was further refined: incomplete words and those containing meta-information about the informant's production (such as 'laughs', which was not used by the informant, but rather inserted in brackets in the transcript to describe that he laughed at the given moment) were deleted, German words were taken out and inserted into an extra list (cf. below) and a further column with category/ part-of-speech membership was added.

On the basis of this detailed word list, several lexical analyses were possible. Although they are not directly related to the hypotheses, they serve to further illustrate the overall similarity of the production of English as an L2 and an L3 at comparable stages of development, in other words, to raise further doubts about the FDH/L3A.

The following pages provide an overview of the lexical analyses that were conducted. These are a Type-Token-Ratio (TTR) analysis (Table 6-29), an examination of the share of five major word categories (nouns, verbs, adjectives, prepositions and conjunctions; Tables 6-20 and 6-31 as well as Figures 6-2 and 6-3), the top three words (types) that were used (Table 6-32), and an overview of the share of German words (Table 6-33). All these analyses allow both a total group comparison (trilinguals vs. bilinguals) and finer-grained comparisons of peer subgroups (i.e., Q1, class 7, class 5).

The TTRs were analyzed because they can at least provide a tendency as to how rich in expression a given informant is. Though some scholars (cf., e.g., Vermeer, 2000, p. 65) reject TTRs as a valid measurement of lexical richness, they are used here because the total number of words is comparable for all informants. As can be concluded from Table 6-29, the average TTR of the trilinguals was slightly lower than that of the bilinguals (~0,18 vs. ~0,2). Among the trilinguals, a slight trend of a rising TTR with increasing age can be identified. However, the gain is minimal, and in the bilingual group no such trend even exists (note that the average TTR in the class fivers is the same as in the Q1ers). A general conclusion from this analysis is that there is no qualitative difference in lexical richness between the two groups.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	<b>Trilinguals</b>																	
2		<b>P01</b>	<b>P02</b>	<b>P05</b>	<b>P06</b>	<b>P08</b>	<b>P10</b>	<b>P11</b>	<b>P12</b>	<b>P15</b>	<b>P16</b>	<b>P21</b>	<b>P22</b>	<b>P23</b>	<b>P24</b>			
3	<b>Tokens</b>	1711	1939	1718	1686	2107	2178	1817	1950	1003	1053	1365	1128	1244	1164		<b>Sum</b>	22063
4	<b>Types</b>	327	370	283	313	363	393	296	306	203	174	223	204	193	221		<b>Sum</b>	3869
5	<b>TTR</b>	0,19112	0,19082	0,16473	0,18565	0,17228	0,18044	0,16291	0,15692	0,20239	0,16524	0,16337	0,18085	0,15514	0,18986		<b>Average TTR</b>	0,17536
6																		
7																		
8																		
9			<b>Q1 Statistics</b>					<b>Class 7 Statistics</b>					<b>Class 5 Statistics</b>					
10			<b>Average Tokens</b>				1918,5	<b>Average Tokens</b>				1455,75	<b>Average Tokens</b>				1225,25	
11			<b>Average Types</b>				353,33	<b>Average Types</b>				244,75	<b>Average Types</b>				210,25	
12			<b>Average TTR</b>				0,18	<b>Average TTR</b>				0,17	<b>Average TTR</b>				0,17	
13																		
14	<b>Bilinguals</b>																	
15		<b>R01</b>	<b>R02</b>	<b>R03</b>	<b>R04</b>	<b>R05</b>	<b>R06</b>	<b>R11</b>	<b>R12</b>	<b>R13</b>	<b>R14</b>	<b>R21</b>	<b>R22</b>	<b>R23</b>	<b>R24</b>			
16	<b>Tokens</b>	1430	1488	813	930	1756	2053	1592	1311	1377	1012	886	853	1067	980		<b>Sum</b>	17548
17	<b>Types</b>	285	292	212	203	335	369	272	257	249	224	199	172	214	224		<b>Sum</b>	3507
18	<b>TTR</b>	0,1993	0,19624	0,26076	0,21828	0,19077	0,17974	0,17085	0,19603	0,18083	0,22134	0,2246	0,20164	0,20056	0,22857		<b>Average TTR</b>	0,19985
19																		
20																		
21																		
22			<b>Q1 Statistics</b>					<b>Class 7 Statistics</b>					<b>Class 5 Statistics</b>					
23			<b>Average Tokens</b>				1411,67	<b>Average Tokens</b>				1323	<b>Average Tokens</b>				946,5	
24			<b>Average Types</b>				282,67	<b>Average Types</b>				250,5	<b>Average Types</b>				202,25	
25			<b>Average TTR</b>				0,21	<b>Average TTR</b>				0,19	<b>Average TTR</b>				0,21	

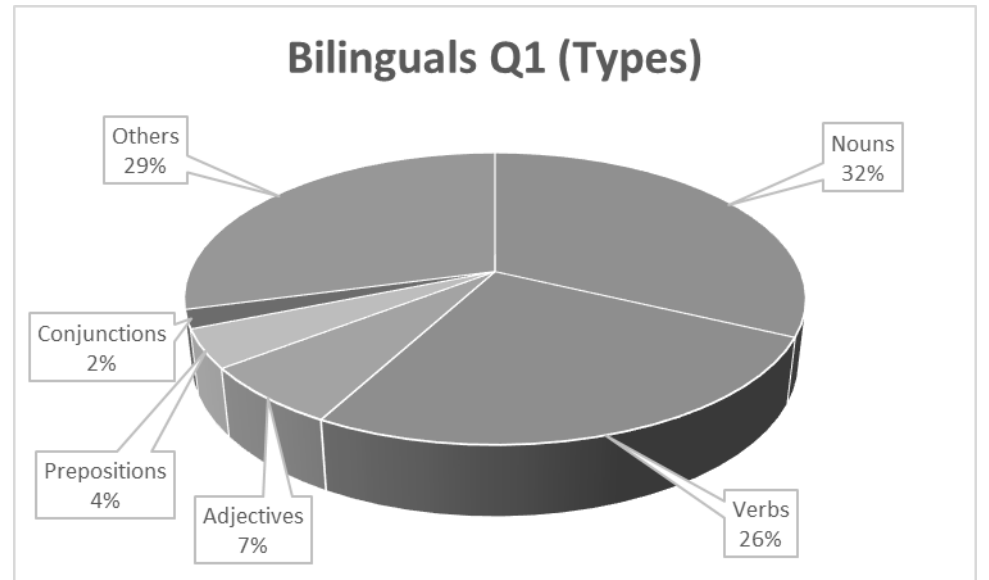
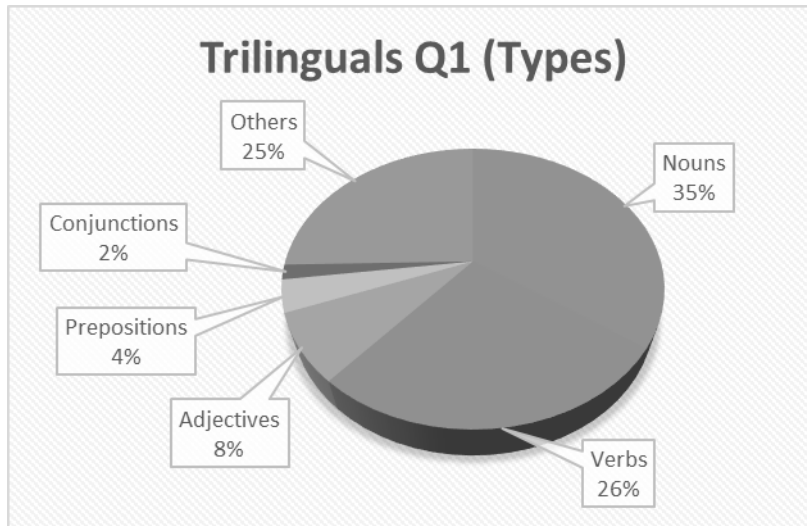
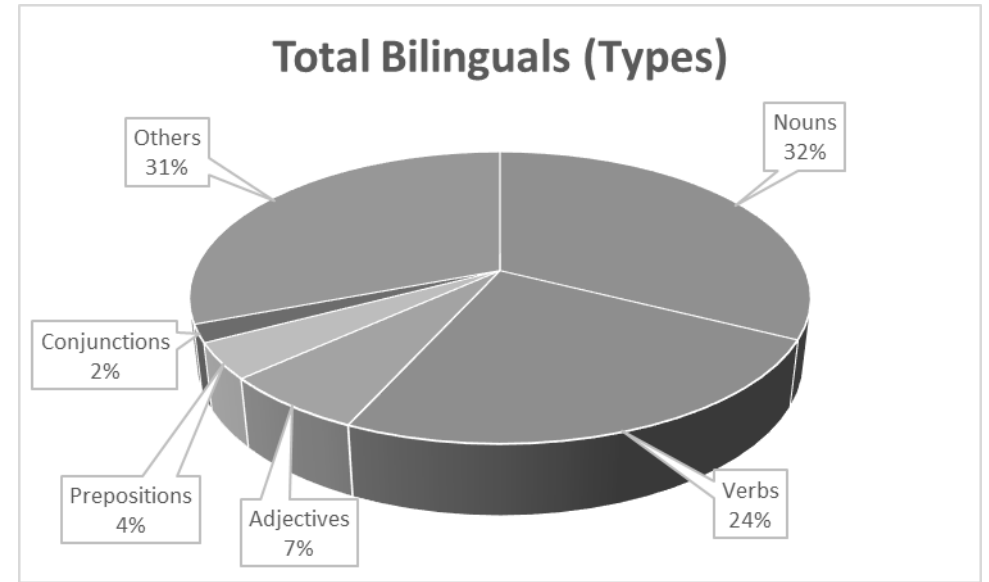
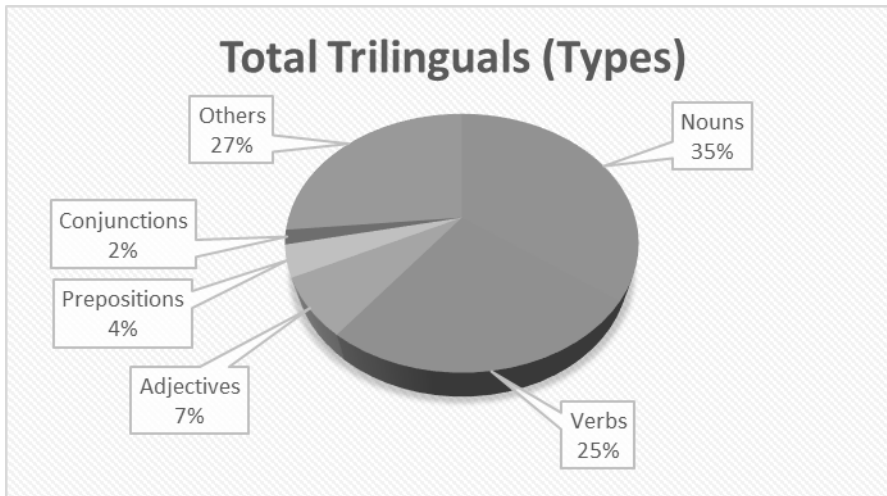
**Table 6-29:** Type-Token-Ratio (TTR) Analysis (both groups)

P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
<b>Trilinguals - Types</b>													
	Types Inf.	Nouns	Nouns	Verbs	Verbs	Adjectives	Adjectives	Preps	Prepositions	Conjs.	Conjunctions	Others	Others
P01	327	121	37,003058	86	26,299694	35	10,703364	13	3,9755352	7	2,1406728	65	19,877676
P02	370	123	33,243243	103	27,837838	35	9,4594595	14	3,7837838	7	1,8918919	88	23,783784
P05	283	98	34,628975	73	25,795053	19	6,7137809	12	4,2402827	5	1,7667845	76	26,855124
P06	313	101	32,268371	82	26,198083	24	7,6677316	11	3,514377	5	1,5974441	90	28,753994
P08	363	127	34,986226	89	24,517906	25	6,8870523	15	4,1322314	6	1,6528926	101	27,823691
P10	393	141	35,877863	113	28,753181	23	5,8524173	11	2,7989822	5	1,2722646	100	25,445293
Q1	2049	711	34,699854	546	26,647145	161	7,8574915	76	3,7091264	35	1,7081503	520	25,378233
P11	296	110	37,162162	75	25,337838	20	6,7567568	10	3,3783784	5	1,6891892	76	25,675676
P12	306	105	34,313725	84	27,45098	22	7,1895425	9	2,9411765	6	1,9607843	80	26,143791
P15	203	67	33,004926	46	22,660099	14	6,8965517	13	6,4039409	6	2,955665	57	28,078818
P16	174	54	31,034483	37	21,264368	13	7,4712644	12	6,8965517	5	2,8735632	53	30,45977
Class 7	979	336	34,320735	242	24,719101	69	7,0480082	44	4,494382	22	2,247191	266	27,170582
P21	223	75	33,632287	55	24,663677	18	8,0717489	8	3,5874439	3	1,3452915	64	28,699552
P22	204	82	40,196078	44	21,568627	10	4,9019608	9	4,4117647	3	1,4705882	56	27,45098
P23	193	79	40,932642	40	20,725389	10	5,1813472	8	4,1450777	2	1,0362694	54	27,979275
P24	221	76	34,38914	51	23,076923	15	6,7873303	8	3,6199095	5	2,2624434	66	29,864253
Class 5	841	312	37,098692	190	22,592152	53	6,3020214	33	3,9239001	13	1,5457788	240	28,537455
Total	3869	1359	35,125355	978	25,27785	283	7,3145516	153	3,9545102	70	1,809253	1026	26,51848

**Table 6-30:** Share of Five Major Word Categories – Trilinguals

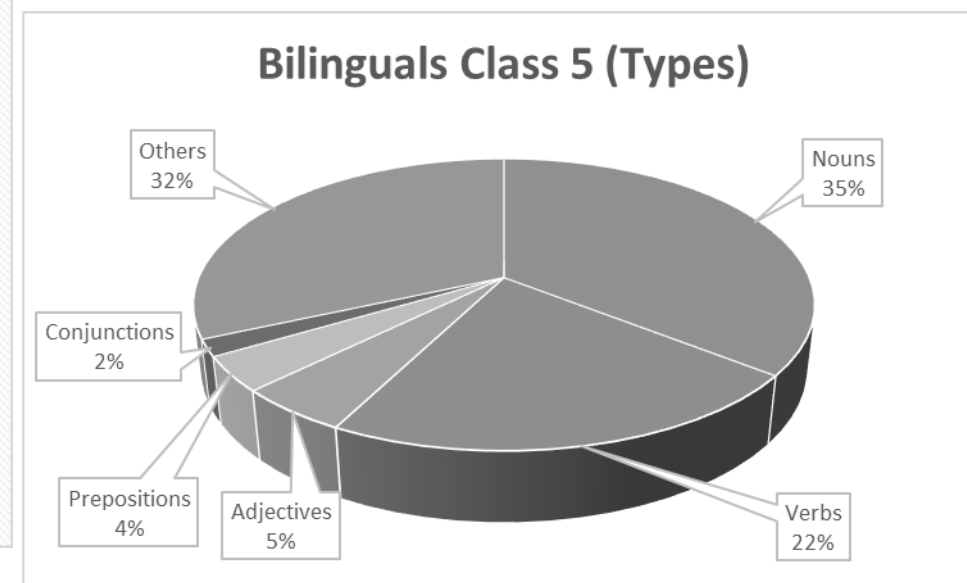
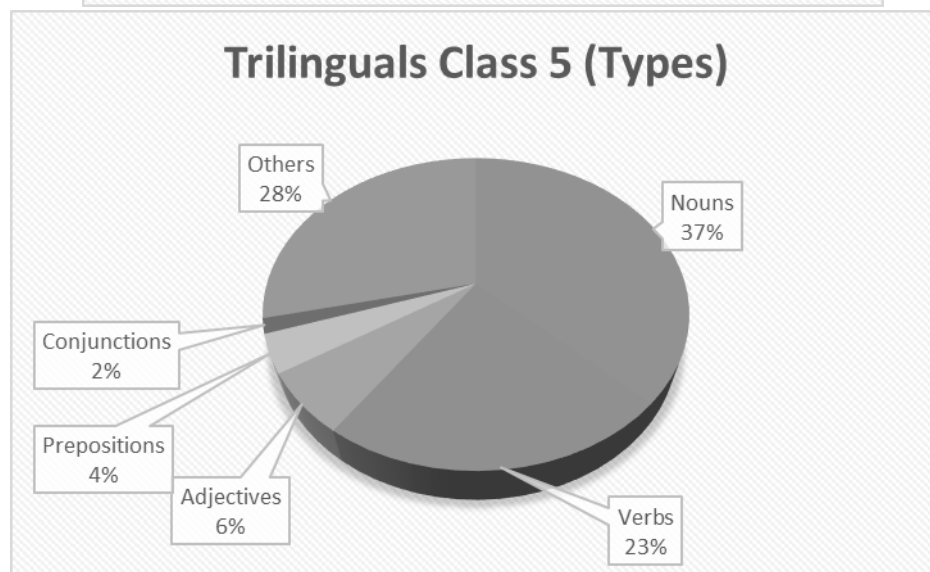
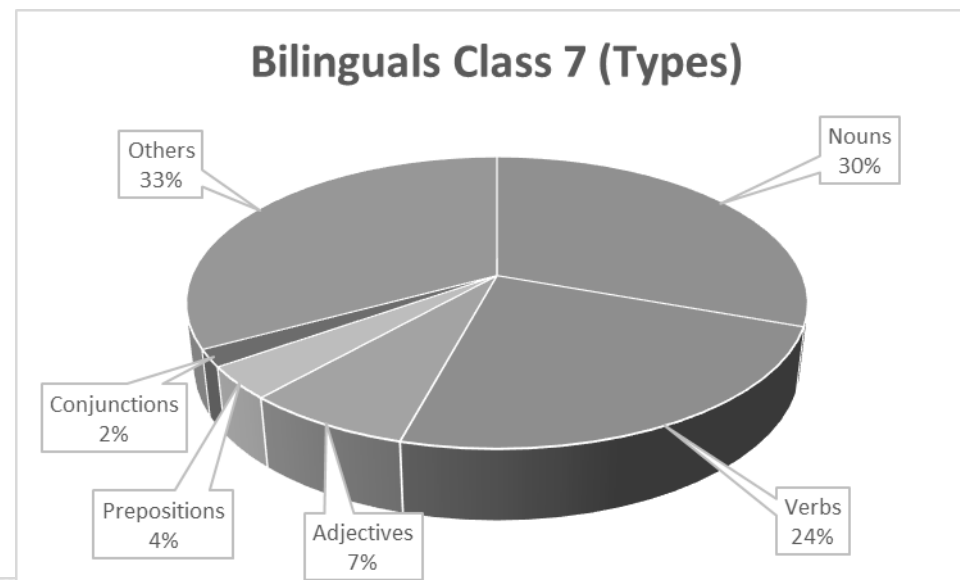
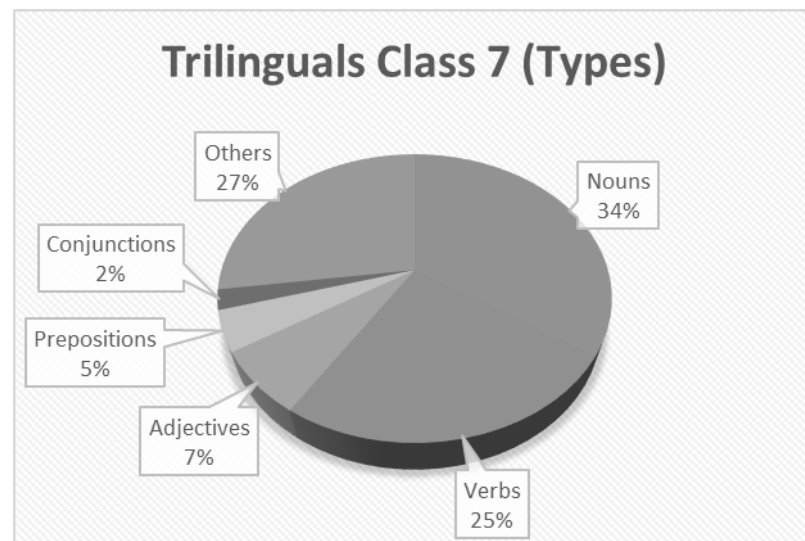
	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
25	<b>Bilinguals - Types</b>													
26		Types Inf.	Nouns	Nouns	Verbs	Verbs	Adjectives	Adjectives	Preps	Prepositions	Conjs.	Conjunctions	Others	Others
27	<b>R01</b>	285	90	31,578947	81	28,421053	21	7,3684211	12	4,2105263	4	1,4035088	77	27,017544
28	<b>R02</b>	292	92	31,506849	73	25	19	6,5068493	12	4,109589	5	1,7123288	91	31,164384
29	<b>R03</b>	212	66	31,132075	54	25,471698	11	5,1886792	10	4,7169811	5	2,3584906	66	31,132075
30	<b>R04</b>	203	66	32,512315	44	21,674877	11	5,4187192	10	4,9261084	6	2,955665	66	32,512315
31	<b>R05</b>	335	111	33,134328	89	26,567164	23	6,8656716	14	4,1791045	7	2,0895522	91	27,164179
32	<b>R06</b>	369	119	32,249322	97	26,287263	28	7,5880759	14	3,7940379	8	2,1680217	103	27,913279
33	<b>Q1</b>	1696	544	32,075472	438	25,825472	113	6,6627358	72	4,245283	35	2,0636792	494	29,127358
34														
35	<b>R11</b>	272	85	31,25	66	24,264706	21	7,7205882	9	3,3088235	5	1,8382353	86	31,617647
36	<b>R12</b>	257	67	26,070039	66	25,680934	20	7,7821012	10	3,8910506	5	1,9455253	89	34,63035
37	<b>R13</b>	249	85	34,136546	52	20,883534	17	6,8273092	9	3,6144578	5	2,0080321	81	32,53012
38	<b>R14</b>	224	69	30,803571	53	23,660714	16	7,1428571	8	3,5714286	4	1,7857143	74	33,035714
39	<b>Class 7</b>	1002	306	30,538922	237	23,652695	74	7,3852295	36	3,5928144	19	1,8962076	330	32,934132
40														
41	<b>R21</b>	199	71	35,678392	43	21,60804	8	4,0201005	9	4,5226131	3	1,5075377	65	32,663317
42	<b>R22</b>	172	67	38,953488	35	20,348837	4	2,3255814	7	4,0697674	3	1,744186	56	32,55814
43	<b>R23</b>	214	75	35,046729	48	22,429907	15	7,0093458	7	3,271028	4	1,8691589	65	30,373832
44	<b>R24</b>	224	75	33,482143	52	23,214286	14	6,25	8	3,5714286	5	2,2321429	70	31,25
45	<b>Class 5</b>	809	288	35,599506	178	22,002472	41	5,0679852	31	3,8318912	15	1,8541409	256	31,644005
46														
47	<b>Total</b>	3507	1138	32,449387	853	24,322783	228	6,5012831	139	3,9635016	69	1,9674936	1080	30,795552

**Table 6-31:** Share of Five Major Word Categories – Bilinguals



**Figure 6-2:** Share of Five Major Word Categories – Graphs (group totals plus Q1)





**Figure 6-3:** Share of Five Major Word Categories – Graphs (classes 7 and 5)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	<b>Trilinguals</b>														
2		<b>P01</b>	<b>P02</b>	<b>P05</b>	<b>P06</b>	<b>P08</b>	<b>P10</b>	<b>P11</b>	<b>P12</b>	<b>P15</b>	<b>P16</b>	<b>P21</b>	<b>P22</b>	<b>P23</b>	<b>P24</b>
3	<b>Word 1</b>	the	the	the	the	the	the	the	the	the	the	the	the	the	the
4	<b># Tokens</b>	173	187	217	200	155	211	155	191	122	132	130	118	207	120
5	<b>Word 2</b>	and	and	and	and	is	and	and	is	and	and	is	and	and	he
6	<b># Tokens</b>	88	67	98	84	90	84	112	96	58	54	64	66	71	50
7	<b>Word 3</b>	yes	is	is	is	and	is	he	in	is	is	picture	is	is	and
8	<b># Tokens</b>	60	64	62	76	89	80	74	66	45	41	59	35	39	45
9															
10									<b>Word</b>	<b>Tokens</b>					
11								<b>Top 1</b>	the	2318					
12								<b>Top 2</b>	and	916					
13								<b>Top 3</b>	is	692					
14	<b>Bilinguals</b>														
15		<b>R01</b>	<b>R02</b>	<b>R03</b>	<b>R04</b>	<b>R05</b>	<b>R06</b>	<b>R11</b>	<b>R12</b>	<b>R13</b>	<b>R14</b>	<b>R21</b>	<b>R22</b>	<b>R23</b>	<b>R24</b>
16	<b>Word 1</b>	the	the	the	the	the	the	the	the	the	the	the	the	the	the
17	<b># Tokens</b>	155	162	89	103	182	144	117	146	131	123	113	131	113	93
18	<b>Word 2</b>	is	and	and	and	and	and	and	and	and	and	and	and	and	and
19	<b># Tokens</b>	68	67	45	46	90	97	117	79	85	48	46	45	56	65
20	<b>Word 3</b>	and	is	on	is	a	yes	yes	a	he	is	a	is	is	he
21	<b># Tokens</b>	66	59	43	34	44	75	63	44	54	37	28	32	44	30
22															
23									<b>Word</b>	<b>Tokens</b>					
24								<b>Top 1</b>	the	1802					
25								<b>Top 2</b>	and	952					
26								<b>Top 3</b>	is	274					

**Table 6-32:** TOP 3 Words (types) Used (both groups)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	<b>Trilinguals - German Words</b>														
2		<b>P01</b>	<b>P02</b>	<b>P05</b>	<b>P06</b>	<b>P08</b>	<b>P10</b>	<b>P11</b>	<b>P12</b>	<b>P15</b>	<b>P16</b>	<b>P21</b>	<b>P22</b>	<b>P23</b>	<b>P24</b>
3	<b>ENG tokens</b>	1711	1939	1718	1686	2107	2178	1817	1950	1003	1053	1365	1128	1244	1164
4	<b>GER tokens</b>	51	189	201	25	5	70	126	73	75	141	37	148	105	261
5	<b>SUM</b>	1762	2128	1919	1711	2112	2248	1943	2023	1078	1194	1402	1276	1349	1425
6	<b>GER tokens (%)</b>	2,89	8,88	10,47	1,46	0,24	3,11	6,48	3,61	6,96	11,81	2,64	11,60	7,78	18,32
7															
8															
9															
10		<b>Total GER tokens Q1</b>		541				<b>Total GER tokens class 7</b>		415		<b>Total GER tokens class 5</b>		551	
11		<b>% of Q1 corpus</b>		4,55				<b>% of class 7 corpus</b>		6,65		<b>% of class 5 corpus</b>		10,11	
12															
13															
14	<b>Bilinguals - German Words</b>														
15		<b>R01</b>	<b>R02</b>	<b>R03</b>	<b>R04</b>	<b>R05</b>	<b>R06</b>	<b>R11</b>	<b>R12</b>	<b>R13</b>	<b>R14</b>	<b>R21</b>	<b>R22</b>	<b>R23</b>	<b>R24</b>
16	<b>ENG tokens</b>	1430	1488	813	930	1756	2053	1592	1311	1377	1012	886	853	1067	980
17	<b>GER tokens</b>	28	42	21	27	69	34	25	23	71	23	87	96	78	113
18	<b>SUM</b>	1458	1530	834	957	1825	2087	1617	1334	1448	1035	973	949	1145	1093
19	<b>GER tokens (%)</b>	1,92	2,75	2,52	2,82	3,78	1,63	1,55	1,72	4,90	2,22	8,94	10,12	6,81	10,34
20															
21															
22															
23		<b>Total GER tokens Q1</b>		221				<b>Total GER tokens class 7</b>		142		<b>Total GER tokens class 5</b>		374	
24		<b>% of Q1 corpus</b>		2,54				<b>% of class 7 corpus</b>		2,61		<b>% of class 5 corpus</b>		8,99	
25															
26															
27		<b>TOTAL</b>				<b>Total GER tokens TriLis</b>		1507		<b>Total GER tokens BiLis</b>		737			
28		<b>COMPARISON:</b>				<b>% of total corpus (22063)</b>		6,83		<b>% of total corpus (17548)</b>		4,20			

**Table 6-33:** Share of German Words (both groups)

After the TTR analysis, the word lists of the informants were examined as to the share of five major word categories. Nouns, verbs, adjectives, prepositions and conjunctions were chosen since they represent major parts-of-speech for open (nouns, verbs and adjectives) and closed categories (prepositions and conjunctions; cf., e.g., Yule, 2006, pp. 73ff.). This analysis was done both on the basis of types and tokens, but due to space limitations only the one based on types is shown here. Tables 6-20 and 6-31 show the quantitative results for the trilinguals and the bilinguals, respectively. Figures 6-2 and 6-3 are the graphical representation of the figures from these tables and allow a direct comparison of both totals and subgroups. It is evident that the shares of the single categories do not differ considerably across the groups (or subgroups) being compared. For each subgroup of both the trilinguals and the bilinguals the following is true: the category with the largest share are nouns (more than 30%), followed by verbs (more than 20%). Adjectives, prepositions and conjunctions are not used as often (taken together slightly more than 10%). There seems to be, thus, no qualitative difference between the trilinguals' and the bilinguals' preference for a given part-of-speech. Yet, the  $\chi^2$  test applied to the total numbers of types with the different categories yielded a significant result on the 5%-significance-level ( $\chi^2$  (10, n = 7376) = 19.1,  $p < .05$ ). However, the result is not statistically significant (and therefore supports the  $H_0$ ) when testing on the 1%-significance-level.

The top three words used by the trilinguals and bilinguals are similar (cf. Table 6-32): For both groups, they are the definite article, the default conjunction *and* and the singular copula (and auxiliary), in that order. The only difference that can be drawn from Table 6-32 is quantitative in nature. It is the use of *is*: this type can be found about two-and-a-half times more often in the trilingual corpus than in the bilingual one. This result suggests a counter-tendency to the assumption that the trilinguals should be more prone to omitting the copula (cf. Section 6.4.1 on omission).

Also quantitative in nature, but more thorough is the difference between the two groups as far as the amount of German words is concerned (cf. Table 6-33). As could have been expected, for both groups there is a clear tendency to rely on fewer German words with increasing age, but the figures for the trilingual group are higher overall (though not reaching statistical significance when applying the t-test to the ratio of German tokens per total number of tokens for the informants from both groups: arithmetic means: trilinguals = .069, bilinguals = .044;  $t = .069$ ;  $df = 26$ ;  $p > .5$ ). With some caution, this could hint at the assumption that the trilinguals here have a harder time speaking in a monolingual

mode, since they made more recourse to German (in average) than their bilingual peers in a situation in which only English was expected. If this was the case, again it would be rather a disadvantage than an advantage for the L3 acquirers.

## 6.6 Summary

This section summarizes the findings of Chapter 6. In Section 6.2, the results of Hypothesis 1 were reported. It was shown that the final implicational scaling resulted in similar PT stages of ESL across the two groups. The bilingual group – in this respect – even exhibited on average, slightly higher stages among the lower class informants. The oldest informants had all proceeded up to the highest PT stage of ESL.

Section 6.3 focused on possible transfer of different syntactic (e.g., V2) and morphological (e.g., POSS-construction) structures. The basic outcome was that there was no facilitative transfer from Turkish within the trilingual group, but transfer from German with both groups. The transfer of V2 was limited both lexically and language-mode-wise. This finding resembles a finding of Lenzing (2013, p. 248).

The trilingual group showed only a tendency to use the GEN-POSS-construction more often than the bilingual group; however, the trilingual group preferred the *of*-construction generally.

Section 6.4 investigated the use of simplification strategies such as omission and confusion (including PRO-confusion). It was found that for both groups confusion was more prevalent than omission, and the latter phenomenon was more of a problem with the trilingual group (e.g. PRO-drop). Informants from both groups were uncertain with the use of the same set of PROs (especially the 3-SG ones). Section 6.5 concluded the analyses with a look at metalinguistic knowledge and lexical particularities. As mentioned above, the metalinguistic level was demonstrated to be active. Again, this was true for informants of both groups. Only German and, to a lesser extent, English, were used for metalanguage; Turkish utterances could not be found among the trilingual informants. Concerning lexis, no categorical difference was found between trilinguals and bilinguals, though a mildly statistically significant difference could be detected at the 5%-level when comparing the distribution of tokens to the major word categories. Both groups exhibited similar TTRs. The share of German words was slightly higher among the trilingual informants, which was, however, not statistically significant

At this point, it may be useful to repeat the hypotheses along with the findings from the present study:

### **Operationalized hHypotheses With Results**

*1 Both ESL and ETL are constrained by the same psycholinguistic mechanisms as outlined in PT: 1a ETL exhibits the same stages of development of morphosyntax as outlined for ESL and is subject to the same constraints, i.e., that no stage can be skipped. 1b Proceeding through the stages mentioned in 1a probably is not – in average – faster with ETL than with ESL, i.e., at a given point in time two comparable learners (one ETL, one ESL) will be located at the same stage (all else being equal).* This hypothesis has been partly confirmed by the present data. The implicational scaling shows the upper ESL stages as outlined by PT to be present also with English L3 acquirers, and furthermore, the latter do not exhibit higher stages in average than their bilingual peers. Evidence for transitions between the lower stages could not be obtained with the present dataset. However, neither was counter-evidence found against the existence and order of the lower stages.

*2 All transfer that occurs is subject to predictions of the DMTH, i.e., only what can be processed will be transferred. Due to the typological distance, no facilitative morphosyntactic transfer from Turkish is predicted to occur with the L3 acquirers. Lexical and/ or phonological transfer may occur, but it will not have any repercussions for development, while it may have an impact on variation.* This hypothesis has also been confirmed. No facilitative transfer from Turkish was found. Some tendencies were found that could be due to the influence of Turkish (especially simplification strategies like omission and confusion), but these were obviously non-facilitative, which implies a lesser degree of target-language orientation for the trilinguals than for the bilinguals (a finding that concerns variation).

*3 All transfer that occurs is subject to predictions of the DMTH, i.e., only what can be processed will be transferred. Due to the typological closeness, facilitative morpho-syntactic transfer from German may occur alongside lexical and/ or phonological transfer in both L2 and L3 acquirers without a qualitative difference. All transfer from German will not have any repercussions for development, while it may have an impact on variation.* The DMTH element of this hypothesis seemed, at first sight, to have been falsified, since there were some trilingual informants that made use of V2 who

were located below the respective stage of processability. However, it could be shown that the contexts within which this transfer occurred were quite limited. These informants seemed to make use of relexification rather than proper linguistic transfer.

There was not a qualitative difference between the trilinguals and the bilinguals, but a quantitative one: the trilingual group made more use of non-facilitative transfer from German. As predicted by the hypothesis, this did not gain them any advantage, but has negative consequences for variation (again in the sense of a lower degree of target-language orientation as compared to the bilinguals). It is much harder to evidence facilitative transfer (cf. Chapter 7 below). At any rate, no qualitative difference was found between the two groups in the entire domain of CLI.

## **7 Discussion**

### **7.1 Introduction**

Summarizing the results from the previous chapter, a final evaluation of the FDH/L3A on the basis of the present data is the following: from a processing perspective, no fundamental difference can be claimed to exist between the acquisition of English as L2 and as L3. This chapter discusses the validity of the results (Section 7.2), the relation to previous studies in the field (Section 7.3) and the implications of the findings of this thesis (Section 7.4). Section 7.5 summarizes the chapter.

### **7.2 Validity of Results**

Any empirical study conducted should be checked for its validity and reliability (cf., e.g., Dörnyei, 2007). As far as reliability is concerned, the steadiness hypothesis predicts that a given learner does not exhibit stage fluctuations depending on the task that is chosen. This has been confirmed several times (cf. Pienemann & Liebner, 2011, p. 71). This implies that once validity is given, any study within the PT framework, if it is repeated, should come up with the same results as far as achieved stages are concerned, even if the tasks and other conditions of data collection are altered. Of course, PT investigates development, which is why repeating a cross-sectional study with the same informants at a later point of time would most likely result in higher achieved stages. Reliability of the current study, thus, can only be assumed, but cannot be tested.

Concerning validity, several elements of the present study could and should be checked, methodological as well as interpretational elements. In the following, the tasks that were used to elicit the data are briefly discussed, according to their potential threat to validity, followed by an outline of the interpretational basis of results on variation and transfer.

#### **7.2.1 Communicative Tasks**

The tasks that were used to elicit the data were described in detail in Section 5.4.2. As can be concluded from that section, the range of tasks was relatively large, which resulted in the production of contexts for all but a few structures from the ESL processing hierarchy (cf. Section 6.2). In other words, Pallotti's recommendation to "ensure that a variety of



tasks creates contexts for all test structures” (Pallotti, 2007, p.1 Appendix) was fulfilled. Apart from avoiding scarce of contexts, another jeopardy to avoid is that a given task is not communicative enough, in other words, that it leaves room for using declarative, metalinguistic knowledge. However, this is hard to operationalize and therefore to detect. Furthermore, as stated above, should there have been any structures that were produced exclusively using declarative knowledge, e.g. especially induced by the school context, this effect was levelled since it must have applied to both groups.

Apart from this, there is a further possible threat to validity with the last picture task, called CANCEL INV task in Section 5.4.2, that must be mentioned. The problem here is that informants might not have grasped the requirement to produce subordinate clauses in the second run of the task. For instance, instead of the targeted sentence *He wonders what he should eat* they might have produced *He wonders, what should I eat?*. In such a scenario, the acquisition vs. non-acquisition of CANCEL INV could not be tested, since the learner produced a (target-like) direct question (i.e., no subclause). However, a change of perspective (from 1-SG to 3-SG) was explicitly instructed by the researcher for the second run. In other words, whenever an informant produced an utterance such as the example above, he was advised to talk *about him* (the person on the picture), not from his perspective (*I*). This implies the necessity to produce a subordinate clause in the target language, since *\*He wonders, what should he eat* is not correct in standard English. In other words, if the informant – after the request to switch the perspective to 3-SG – also switched the word order to *He wonders what he should eat*, he provided evidence for the acquisition of CANCEL INV.

If he did not do so, the possibility still exists that the informant produced a – however non-target like – direct question (i.e., no subclause), which constitutes the remaining threat to validity of the design of the task. However, I think that by creating a situation in which at least within the target language the ambiguity is resolved, this risk is reduced. I would assume that the informants were familiar with the general concept of ‘subclause’ from German (and Turkish, in the case of the trilinguals) and that in the given situation they would try to formulate one, whatever the word order within it may be. However, for future studies I would recommend revising this task in order to avoid any ambiguity and to exclusively force the production of subordinate clauses. Since CANCEL INV is the only structure at stage 6 within the ESL processability hierarchy, the placing

of any informant at this stage should be guaranteed by an unambiguous task that triggers this structure.

### **7.2.2 Results on Variation**

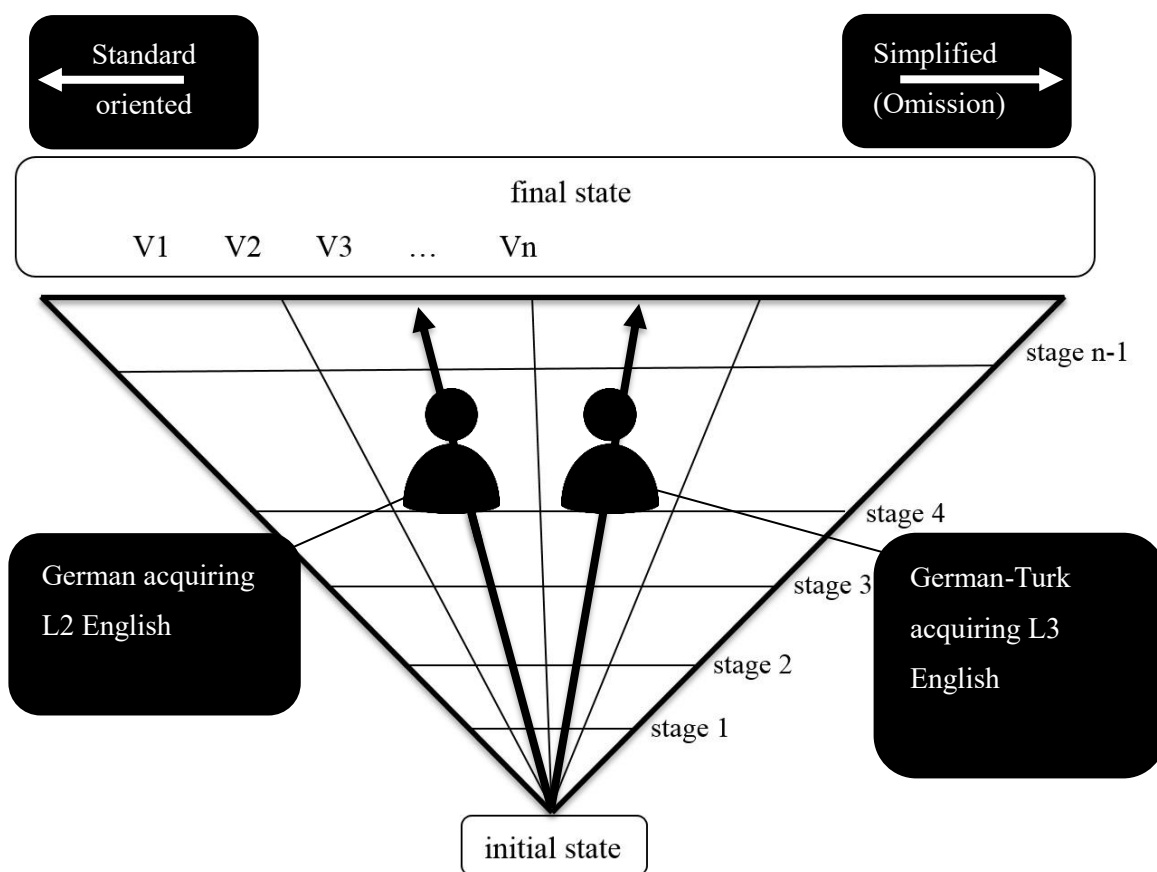
The reader may recall that in the previous chapter some of the findings were explained with recourse to variation. Results on lower accuracy by the trilinguals in the domains of pronoun drop and confusion as well as code-mixing with German were interpreted as indicative of variational phenomena. It is now appropriate to briefly outline the theoretical basis of this interpretation.

Within the PT conceptualization of language acquisition, development and variation are two dimensions that must be kept apart (cf. Section 4.2.4). As can be concluded, for instance, from Figure 4-12 on Hypothesis Space, repeated and modified here as Figure 7-1 for convenience and illustration, two learners can be located at the same stage of processability (stage 5 in Figure 7-1 here), but still exhibit highly differing tendencies as far as variation is concerned. Liebner and Pienemann (2011, p. 67) maintain the following concerning variational types, also called styles:

some learners solve developmental problems by eliminating redundancy, whereas others overuse Unmarked Alignment, and they do this consistently for all or most developmental problems. In fact, the preferred use of one of these mechanisms characterizes specific types of interlanguage variation.

In the present data, the average trilingual informant seems to exhibit a tendency towards elimination of redundancy, whereas the average bilingual is slightly closer to overuse of Unmarked Alignment (or, put differently, does not eliminate redundancy quite as often). Note, however, that this interpretation would need further corroboration by other, more fine-grained analyses of each single informant. At any rate the tendencies found here can reasonably be ascribed to different variational orientations, since they cannot be categorized as developmental phenomena, but are still clearly located within the area of core grammar production characteristics (and not, say, social or psychological traits, either, although these can affect variation, cf., e.g., Meisel, 1983, quoted after Pienemann, 1998, p. 141). Note that in Figure 7-1, only the relative order (in other words, trilinguals more oriented towards simplification than bilinguals) of the present study's findings is intended to be illustrated, not the exact placement within hypothesis space. This would

require both a clear operationalization of the whole range of variational phenomena for each stage as well as a broader empirical basis.



**Figure 7-1:** Possible Variational Difference Between Two Learners at the Same Stage of Acquiring English

### 7.2.3 Results on Transfer

Some of the results reported in Section 6 have been connected to transfer, or cross-linguistic influence (CLI), without explicitly laying out a theoretical basis. Although in trilingual settings transfer is more complex and therefore harder to evidence than in purely bilingual contexts (cf. Odlin, 2008, pp. 471 ff.), it can be done with certain structures under certain circumstances, as will be explained below. The focus will be only on non-facilitative, i.e., negative transfer.

Jarvis (1998, 2000; quoted after Odlin, 2008, p. 448) “argues that the most convincing evidence for transfer will demonstrate three characteristics: intra-group homogeneity, inter-group heterogeneity, and similarities between native language and interlanguage performance” (ibid.). These prerequisites are fulfilled in the case of transfer from Turkish with the present data set: informants within a group are relatively homogeneous as far as social background and language learning history are concerned (intra-group homogeneity), the trilingual informants differ from the bilingual ones almost exclusively by their additional knowledge of Turkish (inter-group heterogeneity in terms of linguistic background), and their interlanguage performance exhibits similar patterns as in Turkish (e.g., pro-drop and pro-fusion of 3-SG pronouns). Table 7-1 provides an overview of structures that – due to these circumstances – are very likely to have been influenced by characteristics of Turkish among the trilinguals (cf. Section 6.3):

<b>Structure</b>	<b>German</b>	<b>Turkish</b>	<b>English Interlanguage</b>
pro-drop	pro-drop illicit	pro-drop licit	considerable amount of pro-drop
3-SG-pronouns	<i>er, sie, es</i>	<i>o</i>	often confused
POSS-construction with GEN-s	very infrequent	frequent	structure used more often than bilinguals did

**Table 7-1:** Structures Used by Trilinguals With Possible Influence from Turkish

Although Jarvis’ requirements for evidencing transfer for the structures presumably stemming from Turkish are met, the strength of the argument is reduced by the fact that the differences between the trilinguals and the bilinguals’ use of all these structures were quantitative, and not qualitative, in nature (recall that the bilinguals also exhibited mentioned non-target-like forms in their interlanguage, albeit less frequently than the trilinguals). This fact might simply imply that the presence of Turkish among the trilinguals only reinforces (not: exclusively triggers) simplification tendencies that are

common in L2A/L3A anyway<sup>18</sup>. Furthermore, it would be necessary to compare these results of German-Turks with those of other language combinations (i.e. German plus another language) in order to see whether the findings depending on language typology will be challenged or confirmed.

The case with transfer from German is different: since both groups have knowledge of German, the factor of inter-group heterogeneity is not given here. However, I argue that the presence of V2 can still be quite safely attributed to German. The presence of V2 in German triggers the assumption that its presence in interlanguage English (with both the trilinguals and the bilinguals) is a case of transfer. However, this assumption is not sufficient, since the presence of V2 might theoretically be an instance of typical English interlanguage features, independent of previously acquired languages. It is exactly this point which gives me the confidence to ascribe a very high likeliness to transfer from German: V2 is not typically found in English interlanguage (not to speak of target English, where it is not found, either), apart from learners with V2 L1s, and only at relatively late phases of development (as the DMTH predicts, cf. evidence reported in Section 2.4.4). This is because V2 is not a simplifying feature (such as, e.g., pro-drop), but rather the opposite: its production deviates from the default, which is canonical word order, and in terms of processing it requires feature unification at the S-node. In other words, the use of V2 in an English sentence is a case of making a simple structure (default English V3 in sentences with a fronted ADJ) more complex. The opposite is the case with phenomena of universal learner language, which tend towards simplification.

The presence of V2, therefore, can be argued to be an instance of transfer from German even more convincingly than was argued for the structures presumably influenced by Turkish. This is because – although one methodological requisite is missing – this case is essentially qualitative in nature. The higher amount of V2 transfer in the trilingual group could be explained by the *talk foreign mode* (cf. De Angelis & Selinker, 2001) – in which case German could be considered L2 for the trilinguals, which is disputable (cf. Section 5.2). It could also be explained by a higher degree of willingness among the trilinguals to transfer German structures to English; this would also be

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<sup>18</sup> The POSS-construction is an exception, since it does not constitute a case of simplification.

compatible with the fact that V2 transfer was often found to be a case of conscious, declarative knowledge transfer (cf. Section 6.3).

### 7.3 Relation to Previous Studies in the Field

Considering together the results of the present thesis, one can clearly conclude that they contradict any radical version of the FDH/L3A as formulated by Marx and Hufeisen (2004, p. 142):

[T]here is not merely a **quantitative** difference between SLA and TLA [= L3A, my note], but also a **qualitative** one. This difference is so **fundamental** that it needs to be covered by a new and different theoretical framework [...] (highlighted by author).

As reported above some differences were found between ESL and ETL, but they were precisely quantitative in nature. No evidence of a different path of acquisition, as the FDH/L3A might assume exists, was found. At this point a clarification might be helpful. The present data analysis has been conducted within the framework of Processability Theory. Studies dedicated to testing the FDH/L3A usually adopt other frameworks. This means that even adherents of the FDH/L3A might not contradict the assumption (which has now also partly been confirmed empirically) that the path of acquisition is the same for a given language as L2 and L3 (cf. also Wirbatz & Buttkewitz forthc.). However, it has to be pointed out that from a processability perspective, only differences such as an alternative route of acquisition, or skippable stages, etc. would count as fundamental differences. From a processing perspective, thus, a formulation as global as the one by Marx and Hufeisen (2004) above must be rejected. The development in morphosyntax seems to be essentially the same in English as an L2 and as an L3.

Note that from a processability perspective, this finding is not surprising, since PT in general is more focused on showing universal similarities of all (sub-)types of language acquisition – even between L1 and L2 (cf., e.g., Pienemann, 1998; Wirbatz, 2013). It does not, however, disregard existing differences, both between L1A and L2A and between L2A and L3A. PT and its modular approach as well as the results of this thesis are therefore more compatible with a more differentiated claim, such as Cenoz (2013, p. 77), cited in Section 2.3.3 and repeated here for convenience:

Research studies that focus on overall L3 achievement and use a number of tests to measure different dimensions of proficiency report more advantages for bilinguals than studies that focus on a very specific aspect of language proficiency. **These findings are not surprising, since bilinguals do not necessarily have advantages across-the-board in every aspect of TLA [= L3A, my note],** so studies that select a narrow linguistic focus may not find any differences (highlighted by author).

However, it must still be stated that though PT is a modular approach and its focus is on development of morphosyntax, this focus is not a narrow aspect of language acquisition, but rather constitutes part of, if not all of, its core. To me no other aspect or domain of language acquisition seems equal to or more crucial than grammatical development. There may be differences between L2A and L3A (as also found here), but they do not touch the core – development –, and are quantitative in nature, affecting the other major dimension - variation.

Furthermore, the scope of PT was complemented by other analyses within the present thesis. These further analyses generally did not show any significant differences, but rather confirmed the results that were also obtained in the area exclusively covered by PT-based research. They thereby contradict other studies on the acquisition of English as an L3 that reported higher overall proficiency (Cenoz & Valencia, 1994; Cenoz 2001) or higher metalinguistic awareness (Jessner, 2006) among the trilinguals.

In contrast, the results found here are compatible with studies on English L3 involving immigrants (cf. studies described in Cenoz, 2013, p. 75, Section 2.3.3), which did not usually indicate any advantages for the trilinguals involved in the studies. Note, however, that – as mentioned in Section 5.2 – special care was taken with the present study to ensure an additive context, in other words, to avoid the possibility of explaining a lack of advantages for the bilinguals with a subtractive context.

## 7.4 Generalizing the Results: Implications for L3 Teaching and Learning

It may be best to repeat the research questions (cf. Section 4.5.2) at this time:

1. Is the acquisition of English as a Third Language (ETL) fundamentally different from the acquisition of English as a Second Language (ESL)
  - a. as far as the developmental path in morphosyntax is concerned?
  - b. as far as the pace of acquisition is concerned?
2. Do German-Turkish students acquiring L3 English have any advantages due to their knowledge of Turkish? In other words, do they make use of facilitative transfer from Turkish, as opposed to German students acquiring L2 English?
3. Is there any difference concerning transfer from German between the L2 and L3 acquirers of English?

After the thorough analysis and evaluation, the answers to these questions are as follows:

1. The acquisition of English as a Third Language (ETL) is fundamentally similar to the acquisition of English as a Second Language (ESL)
  - a. as far as the developmental path in morphosyntax is concerned.
  - b. likely also as far as pace of acquisition is concerned.
2. German-Turkish students acquiring L3 English do not have any advantages due to their knowledge of Turkish. In other words, they do not make use of facilitative transfer from Turkish that might gain them advantages over German students acquiring L2 English.
3. There are only minor quantitative differences concerning transfer from German between the L2 and L3 acquirers of English; Turkish-German L3learners of English make slightly more use of transfer from German than German L2 learners of English.

An answer to the question of how generalizable the particular findings of the present study are will be given here. The findings relate to the acquisition of English as L3 by German-Turks as opposed to the acquisition of English as L2 by Germans. As far as generalizability is concerned, three questions immediately arise from this: 1. Would the results be the same if the target language was one other than English? 2. Would the results be the same if the language combinations were different, in other words, if the constellation of typological closeness vs. distance were distributed differently? 3. Would the results be the same if one looked beyond L3 acquisition, e.g., comparing the acquisition of English as an L2 with the acquisition of the same language as, say, an L6. I will attempt to briefly answer each of these three questions.



As far as the first question is concerned, I assume that the results would be the same if the target language was one other than English. In other words, I believe that the lack of a qualitative difference between L2 and L3 English acquisition is not an inherent property of the English language, but rather due to universal similarities in language processing constraints and the process of gradually overcoming these. Any language can be described and formalized using LFG and PT, and it is predicted that the processability hierarchy for any language will be identical for L2- as well as further language acquisition.

As regards the second question, I also believe that the results would be the same if different language combinations were chosen. If one replaced Turkish by, say, Dutch in the present research design, in order to involve another closely related language, I believe that no fundamental differences would arise. However, in such a case it would be likely that the trilingual group would have some quantitative advantages, due to which the trilinguals' rate of acquisition could possibly be faster. As the DMTH predicts, if there are similar structures in the target and source languages, and they are processable by the learner, facilitative transfer in the sense of higher accuracy rates/ categorical acquisition will occur. The likeliness of this to happen is obviously higher with typologically closely related languages, since the number of similar, therefore transferable structures increases. Note that the opposite case, an L2 that reduces facilitative transfer from L1 in L3 acquisition (as opposed to unhindered transfer from L1 to the same target language as L2) has already been tested using the PT/DMTH framework, cf. Section 2.4.4.

With regard to the third question, my answer would be similar: no qualitative difference is predicted to be found. This means that the ESL hierarchy, although originally proposed for L2A, should also be valid for, say, L6-acquisition. However, with an increasing number of previously acquired languages, the possibility of facilitative transfer from typologically related languages also increases (if present). As mentioned at several points, this might result in higher accuracy rates/ categorical acquisition, that is, quantitative differences. However, proceeding through the respective stages is predicted to remain fundamentally similar, even if comparing L2A to the acquisition of the same language as L6. Note that, as mentioned in the answer to question 2, rate of acquisition could therefore be faster among the multilinguals. If all previously acquired languages of a given L6-acquirer are completely unrelated to the L6, however, not even quantitative advantages are predicted to obtain.

Summarizing the previous paragraphs, it should have become clear that I consider the results of the present research as partly generalizable to other contexts. In other words, it could be claimed, though with caution, that not only the acquisition of English as L3 by German-Turks and English as L2 by Germans is fundamentally similar, but that from a PT perspective, L2A in general seems to be fundamentally similar to L3A.

On the basis of this assumption, some implications for learning and teaching L3s can be outlined. Since no fundamental differences have been found between L2A and L3A, no different recommendations can be made as to how one should learn or teach an L3 compared to what has already been suggested for L2A. Instructors and educators should always keep in mind the staged development of any given target language, and try to teach structures that are one stage beyond the current level of a given learner (cf. teachability hypothesis, Pienemann, 1989). Recommendations for teaching a given target language from a processability viewpoint have been provided in detail elsewhere (cf., e.g., *ibid.*; Nicholas, 1985; Keßler, 2008, among others).

However, one should keep in mind that what has been said above concerns only the development of the target language grammar. I would like to stress that the myriads of proposals made from within other frameworks, including the FDH/L3A paradigm, should also be acknowledged in this context. The basic idea common to them all is to view previously acquired languages in the repertoire of bi- or multilinguals as productive capital (cf., e.g., EuroCom, Jessner, 2008, p. 36). If this happens in an instructed context, on a declarative/ metalinguistic level, nothing within this approach would be contradicted by PT. Note that PT is devoted to procedural knowledge in the form of processing procedures. In my view, it makes sense to occasionally direct the learner's attention to similar vocabulary and grammatical structures in previously acquired languages occasionally (cf., e.g., 'focus on form', Long & Robinson, 1998). The only caveat to be kept in mind is that, as has been hinted at in Section 2.5.3 concerning EuroCom, focusing too much on grammar rules, may produce students with the minds of linguists, in other words, students with much knowledge about a given language, or language in general. And nolinquist canshortcut around the stages of processability of any target language when it comes to speaking that language in real-time.

Another possibility that I feel deserves mentioning is in the case of learning a closely related language. Due to less effort with other tasks (e.g., vocabulary learning)

resources can be freed that advance the establishment of processing procedures. Still, it should be noted that even in the case of closely related vocabulary, diacritic features or the values of these might still differ considerably, as Pienemann (1998, pp. 80ff.) has pointed out for English and German. For processing the grammar of a given language, the correct annotation of lexemes in terms of Levelt (1989) is necessary, which implies that even in this domain the learner still has “some work to do”. Generally speaking, PT takes a less optimistic stance about multiple language acquisition enabling shortcuts to ultimate attainment. However, I find the predictable regularities of language acquisition equally fascinating as assuming shortcuts to be present within it.

## **7.5 Summary**

In this chapter, the results of the present study and its implications have been discussed. It has been shown that threats and caveats to their validity exist, but, in most cases, these caveats can be alleviated. The theoretical foundations for the interpretations of the results in terms of variation and transfer have been laid out.

A contextualization of the findings of the present thesis was done with regard to previous studies in the field. It was maintained that any radical formulation of the FDH/L3A is contradicted by the present findings, and even less strict interpretations of it are challenged. This thesis joins the many studies of immigrants in which no advantages for trilinguals have been found. However, it adds the processing perspective to those studies and avoids the subtractive context pitfall. It was claimed that the present results are partly generalizable to L2A and L3A as fundamentally similar, which implies that learning and teaching an L3 from a PT perspective can be done as with ‘regular’ L2A. Suggestions by other scholars were acknowledged, but the view was maintained that shortcuts due to multiple language acquisition cannot be seen as realistic.

## **8 Conclusion**

### **8.1 Recapitulation of Purpose and Findings**

The objective of this study was to evaluate the FDH/L3A, which predicts advantages for L3 learners as compared to L2 learners, from the perspective of language processing. Therefore, I adopted the PT framework to compare the acquisition of English as an L3 with its acquisition as L2. My PT-based hypotheses predicted no qualitative differences between the two types of acquisition, while at the same time allowing for quantitative differences. A cross-sectional design was chosen, comparing the current state of ETL and ESL development in a group of German-Turks with a group of Germans, respectively. Both groups were subdivided in three different age groups, corresponding to forms 5, 7 and Q1 of the respective schools.

I found that the trilingual group did not exhibit any advantages compared to the bilingual group. The highest stages of English acquisition were fundamentally the same for both trilinguals and bilinguals. Neither was counter-evidence found in the lower stages. No statistically significant difference regarding the medians of achieved stages with both groups obtained. Further analyses on transfer, metalinguistic knowledge and lexis showed no major differences between the two groups, suggesting that the similarities of L2A and L3A are not only within the domain of language processing.

### **8.2 Relationship to Previous Research**

These findings run counter to generally formulated statements within the FDH/L3A framework that make no differentiation between different domains of language acquisition, claiming L3A to be superior to L2A overall. Even milder versions of the FDH/L3A are challenged, since from a PT viewpoint the acquisition and online production of morphosyntax can reasonably be called the core of language acquisition. However, it should be noted that many studies within the field of L3A do not contradict the present findings directly since they adopt a different approach to L3A as well as other research designs.

The present research is consistent with previous studies of PT, which have always rather stressed common mechanisms of all types of language acquisition, and with L3A studies with immigrants that did not report any advantages for the trilinguals.

The contribution of the present thesis is to bridge the gap between L3A studies and PT studies, adopting a PT-approach for measuring and analyzing L3A. PT and the results from within its framework and PT-based (or at least compatible) derivations and predictions have a lot to say about L3A. The current research may be a first step into exploring the linguistically fascinating field of L3A from the point of view of language processing.

### **8.3 Limitations**

The strongest feature of the present data analysis is the implicational nature of the developmental structures within English morphosyntax among both trilinguals and bilinguals. Unfortunately, the nature of my data does not allow firm conclusions about the pace of acquisition to be drawn. For this, a longitudinal study and a considerably larger number of informants would be needed.

As has been stated above, only transitions between stages 4-6 could be evidenced. Though no counter-evidence to the existence and order of stages 1-4 was found, the present dataset cannot claim that the ESL stages as such have been confirmed for ETL. More research is needed to elicit stage transitions in ESL stages 1-4 among trilingual informants.

Due to the absence of statistical significance in some of the quantitative differences, one cannot be certain whether some tendencies found – such as the trilinguals' stronger inclination to omit pronouns and to use German words – are due to coincidence or to other factors. For instance, the results may have been influenced by individual cognitive differences or the different school backgrounds.

Though the use of declarative/ metalinguistic knowledge was reduced to a minimum, there is no guarantee that none of the remaining data exhibits the application of declarative grammar knowledge. The last task, designed to elicit INV and CANCEL INV, contained an inherent shortcoming, since it can be assumed that informants intended to produce main clauses in some and subclauses in other contexts.

A further limitation lies in the constellation of language typology investigated (German and Turkish as background languages). One must be aware that it can only be supposed that the findings would be similar if this constellation was to be changed.

In conclusion, though some findings are only tendencies and interpretations, it should be noted that the majority of them can be assumed to be established on a solid base of evidence (cf. Section 7.2).

## **8.4 Implications of Findings**

However limited some of the interpretations in this study may be, what can be said with certainty is that on the basis of the present data no qualitative difference between L2A and L3A was found. This means that learning and teaching an L3 could and should be guided by the same principles for L2A identified within the PT framework. This should be complemented by some of the specific L3 teaching methods, such as interlingual identifications, raising metalinguistic awareness, etc. One should be aware, however, that these latter – as with L2A – will not affect procedural skills, but only provide the learner with advantages on the metalinguistic level. For people interested in language, such as future linguists, this is certainly worth striving for.

Whereas excluding shortcuts in language acquisition might sound rather pessimistic, an optimistic aspect of the findings should be mentioned: predictability. In other words, especially in times in which DST is the dominant approach, where the rather unprincipled, chaotic nature of language acquisition is stressed, any teacher or researcher involved in teaching may be guided by the assertion that the universal principles of language acquisition hold equally true for L3A. Any differences found must be located outside the domain of staged development. Focusing, thus, more on the similarities of L2A and L3A than on the differences between them, eliminates the need of a costly, time-consuming elaboration of specific teaching principles for L3A.

## **8.5 Recommendations**

TOP 1 on the future research agenda of studying L3A within the PT framework is certainly to analyze the achieved stages of the informants in the present data set in German and Turkish and to compare them. Doing so will shed more light on the interdependence

of mastery of different languages and it should confirm or disconfirm the presence of an additive context as claimed in Section 5.2.

Secondly, the limitations of the present study should be overcome by a longitudinal study which uses tasks and data elicitation techniques that are unambiguous both in creating the need for certain linguistic contexts and for producing spontaneous, procedural grammar. Likewise, using a higher number of informants would likely yield statistical significance for the areas in which it could not be evidenced with the present dataset. Ideally, both the experimental as well as the control group (i.e. trilinguals and bilinguals) should differ only in terms of their linguistic repertoire. In other words, in an ideal research case all the other variables such as age, gender, intelligence, motivation, social background, etc., should be controlled for empirically reliable results.

Once this has been accomplished, informants with other languages in their linguistic repertoire should be compared, as well as multilinguals with a higher number of languages, e.g., L6-acquisition. This would move the focus from English to a more global linguistic level.

The present state of the field of L3A studies seems to me rather unprincipled and incoherent as a whole. This is probably due to its relatively recent emergence. A principled approach that is both psychologically and linguistically well-founded and backed-up empirically such as PT will surely be fruitful for the field. In other words, I would recommend L3A researchers to adopt or to at least consider processability aspects within their studies. In the same vein, the field of L3A research provides manifold interesting perspectives that promise to reveal more insights into human language and language acquisition as such. I would therefore invite PT-based researchers to consciously include and test contexts of third – and further language acquisition into their research designs. Especially the DMTH should be able to be tested in situations of multiple language acquisition, where transfer in many directions could theoretically be possible, thus increasing the quantitative testing grounds of the theory.

The thesis as a whole has shown that even in the 21<sup>st</sup> century, a modular approach still makes sense in the field of applied linguistics. Focusing on a narrow aspect such as the development of English morphosyntax, may exclude many other aspects and phenomena. However, this is precisely necessary if one aims to shed more light on the

mechanisms involved in a process as complex as L3A<sup>19</sup>. Distinguishing clearly between developmental and variational, as well as between qualitative and quantitative aspects of language acquisition has proven to be a successful strategy for disentangling different factors involved in L3A that otherwise might simply be perceived as unprincipled and chaotic. Thus, contrary to DST assumptions, any type of language acquisition remains what it has always been: systematic and principled.

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<sup>19</sup> Note that a further advantage of the modular approach of PT is that other, compatible modules can be added to and thus combined with it (cf., e.g., ongoing work that further extends the scope of PT as reported in Lenzing et al., *forthc.*).



## 9 References

- Aronin, L., & Hufeisen, B. (2009a). On the genesis and development of L3 research, multilingualism and multiple language acquisition. In L. Aronin & B. Hufeisen (Eds.), *The exploration of multilingualism. Development of research on L3, multilingualism and multiple language acquisition* (pp. 1-9). Amsterdam: Benjamins.
- Aronin, L., & Hufeisen, B. (2009b). Crossing the second threshold. In L. Aronin & B. Hufeisen (Eds.), *The exploration of multilingualism. Development of research on L3, multilingualism and multiple language acquisition* (pp. 155-160). Amsterdam: Benjamins.
- Baker, C. (2011). *Foundations of bilingual education and bilingualism* (Vol. 79). Bristol (et al.): Multilingual Matters.
- Baker, C., & Jones, S. P. (Eds.). (1998). *Encyclopedia of bilingualism and bilingual education*. Bristol (et al.): Multilingual Matters.
- Bardel, C., & Falk, Y. (2007). The role of the second language in third language acquisition: The case of Germanic syntax. *Second Language Research*, 23(4), 459–484.
- Bardel, C., & Falk, Y. (2012). Procedural distinction. *Third language acquisition in adulthood*, 46, 61.
- Bettoni, C., & Di Biase, B. (2013). Processability Theory: theoretical bases and universal schedules. In C. Bettoni & B. Di Biase (Eds.). *Grammatical development in second languages: Exploring the boundaries of Processability Theory* (pp. 13-59). EUROSLA Monographs: The European Second Language Association.
- Bohnacker, U. (2006). When Swedes begin to learn German: from V2 to V2. *Second Language Research*, 22(4), 443–486.
- Bresnan, J. (2001). *Lexical functional syntax*. Blackwell textbooks in linguistics: Vol. 16. Malden, Mass: Blackwell.
- Brown, R. (1973). *A first language: The early stages*. Harvard: Harvard Univ. Press.
- Buttkewitz, P. S. (2011). *Ist Drittspracherwerb ein Erwerbstyp eigener Art? [Is Third Language Acquisition a type of acquisition of its own kind?]*, Staatsexamensarbeit (unpublished final thesis), University of Paderborn.
- Buttkewitz, P. S. (forthc.). Case acquisition in Turkish: Determining stages of processability. In A. Lenzing, H. Nicholas & J. Roos (Eds.), *Widening contexts for Processability Theory: Theories and issues*. Amsterdam: Benjamins.

- Carvalho, A. M., & Bacelar da Silva, A. J. (2006). Cross-linguistic influence in Third Language Acquisition: The case of Spanish-English bilinguals' acquisition of Portuguese. *Foreign Language Annals*, 39(2), 185–202.
- Cenoz, J., & Jessner, U. (Eds.) (2000). *English in Europe. The acquisition of a Third Language*. Clevedon (et al.): Multilingual Matters.
- Cenoz, J., & Todeva, E. (2009). The well and the bucket: The emic and etic perspectives combined. In E. Todeva & J. Cenoz (Eds.), *The multiple realities of multilingualism* (pp. 265–292). Berlin: Mouton de Gruyter.
- Cenoz, J. (2001). The effect of linguistic distance, L2 Status and age on Cross-linguistic influence in Third Language Acquisition. In J. Cenoz, B. Hufeisen, & U. Jessner (Eds.), *Cross-linguistic influence in Third Language acquisition: Psycholinguistic perspectives* (pp. 8-20). Clevedon: Multilingual Matters.
- Cenoz, J. (2003). The additive effect of bilingualism on Third Language acquisition: A review. *The International Journal of Multilingualism*, 7/1, 71-87.
- Cenoz, J. (2013). The influence of bilingualism on Third Language acquisition: Focus on multilingualism. *Language Teaching*, 46(01), 71–86.
- Cenoz, J., & Valencia, J. F. (1994). Additive trilingualism: Evidence from the Basque Country. *Applied Psycholinguistics*, 15, 195–207.
- Cenoz, J., Hufeisen, B., & Jessner, U. (Eds.) (2001). *Cross-linguistic influence in Third Language acquisition: Psycholinguistic perspectives* (Vol. 31). Clevedon: Multilingual Matters.
- Clahsen, H. (1979). Syntax oder Produktionsstrategien: Zum natürlichen Zweitspracherwerb der ‘Gastarbeiter’ [Syntax or production strategies: On natural second language acquisition of the ‘guest workers’]. In R. Klopfer (Ed.), *Bildung und Ausbildung in der Romania* (pp. 343-354). W. Fink: München.
- Clahsen, H. (1984). The acquisition of German word order: A test case for cognitive approaches to second language acquisition. In R. Andersen (Ed.), *Second languages: A cross-linguistic perspective* (pp. 219–242). Rowley, MA: Newbury.
- Cummins, J. (1976). The influence of bilingualism on cognitive growth. *Working Papers on Bilingualism*, 9, 1– 43.
- Cummins, J. (1991). Interdependence of First- and Second-Language proficiency in bilingual children. In E. Bialystok (Ed.), *Language processing in bilingual children* (pp. 70–89). Cambridge [England], New York: Cambridge Univ. Press.
- Dalrymple, M. (2001). *Lexical functional grammar. Syntax and semantics*. Vol. 34. San Diego: Academic Press.

- De Angelis, J., & Selinker, L. (2001). Interlanguage transfer and competing linguistic systems in the multilingual mind. In J. Cenoz, B. Hufeisen, & U. Jessner (Eds.), *Cross-linguistic influence in Third Language acquisition: Psycholinguistic perspectives* (pp. 42-58). Clevedon: Multilingual Matters.
- de Bot, K. (1992). A bilingual production model: Levelt's 'Speaking' model adapted. *Applied Linguistics*, 13 (1), 1-24.
- de Bot, K. (2004). The multilingual lexicon: Modelling selection and control. *International Journal of Multilingualism*, 1(1), 17-32.
- DeCamp, D. (1971). Toward a generative analysis of a post-creole speech continuum. In D. Hymes (Ed.), *Pidginization and creolization of languages* (pp. 349-370). Cambridge: Cambridge Univ. Press.
- DeCamp, D. (1973). Implicational scales and sociolinguistic linearity. *Linguistics*, 73, 30-43.
- Dentler, S. (2000). Deutsch und Englisch – Das Gibt Immer Krieg! [German and English – This always ends in war!]. In S. Dentler, B. Hufeisen, & B. Lindemann (Eds.), *Tertiär- und Drittsprachen. Projekte und empirische Untersuchungen* (pp. 77-97). Tübingen: Stauffenburg-Verl.
- Dentler, S., Hufeisen, B., & Lindemann, B. (Eds.) (2000). *Tertiär-und Drittsprachen: Projekte und empirische Untersuchungen [Tertiary and Third Languages: Projects and empirical investigations]*. Tübingen: Stauffenburg.
- Di Biase, B. (2000). *Second language acquisition notes and exercises*. Sydney: Language Australia.
- Di Biase, B. (Ed.) (2002). Developing a second language: Acquisition, processing and pedagogy of Arabic, Chinese, English, Italian, Japanese, Swedish. *Australian studies in language acquisition*: no. 10. Melbourne: Language Australia.
- Di Biase, B., & Kawaguchi, S. (2002). Exploring the typological plausibility of Processability Theory: language development in Italian second language and Japanese second language. *Second Language Research*, 18(3), 274-302.
- Dörnyei, Z. (2007). *Research methods in applied linguistics: Quantitative, qualitative, and mixed methodologies*. Oxford (et al.): Oxford Univ. Press.
- Dulay, H., & Burt, M. (1974). Natural sequences in child second language acquisition. *Language Learning*, 24, 37-53.
- Dyson, B., & Håkansson, G. (2017). *Understanding second language processing: A focus on Processability Theory*. Amsterdam: Benjamins.
- Ellis, R. (1994). *The study of second language acquisition*. Oxford: Oxford Univ. Press.

- Falk, Y. (2001). *Lexical-functional grammar: An introduction to parallel constraint-based syntax*. CSLI lecture notes: Vol. 126. Stanford (et al.): CSLI.
- Falk, Y., Lindqvist, C., & Bardel, C. (2015). The role of L1 explicit metalinguistic knowledge in L3 oral production at the initial state. *Bilingualism: Language and Cognition*, 18(02), 227–235.
- Flynn, S., Foley, C., & Vinnitskaya, I. (2004). The cumulative-enhancement model for language acquisition: Comparing adults' and children's patterns of development in first, second and third language acquisition of relative clauses. *International Journal of Multilingualism*, 1(1), 3-16.
- Gibson, M., Hufeisen, B., & Libben, G. (2001): Learners of German as an L3 and their production of German prepositional verbs. In J. Cenoz, B. Hufeisen, & U. Jessner (Eds.), *Cross-linguistic influence in Third Language acquisition: Psycholinguistic perspectives* (pp. 219-234). Clevedon: Multilingual Matters.
- Green, B. F. (1956). A method of scalogram analysis using summary statistics. *Psychometrika*, 21(1), 79-88.
- Green, D. W. (1986): Control, activation and resource. *Brain and Language*, 27, 210-223.
- Green, D. W. (1998). Mental control of the bilingual lexico-semantic system. *Bilingualism: Language and cognition*, 1(02), 67-81.
- Grosjean, F. (1998). Studying bilinguals: Methodological and conceptual issues. *Bilingualism: Language and Cognition*, 1(02), 131-149.
- Grosjean, F. (2001). *Life with two languages: An introduction to bilingualism* ([11th pr.]). Cambridge Mass. (et al.): Harvard Univ. Press.
- Guttman, L. (1944). A basis for scaling qualitative data. *American Sociological Review*, 9(2), 139-150.
- Haberzettl, S. (2005). *Der Erwerb der Verbstellung in der Zweitsprache Deutsch durch Kinder mit typologisch verschiedenen Muttersprachen: Eine Auseinandersetzung mit Theorien zum Syntaxerwerb anhand von vier Fallstudien [The acquisition of the position of the verb in German as a Second Language by children from different L1s. A discussion of theories of the acquisition of syntax on the basis of four case studies]*. Tübingen: Niemeyer.
- Haenni Hoti, A. U., Heinzmann, S., Müller, M., Oliveira, M., Wicki, W., & Werlen, E. (2011): Introducing a second foreign language in Swiss primary schools: The effect of L2 listening and reading skills on L3 acquisition. *The International Journal of Multilingualism*, 8/2, 98-116.
- Håkansson, G. (1996). *Tvåspråkighet hos barn i Sverige [Bilingualism in children in Sweden]*. MS department of Linguistics, Lund University.

- Håkansson, G., & Norrby, C. (2006). Processability Theory applied to written and spoken L2 Swedish. *Second language acquisition research: theory-construction and testing*, 81-94.
- Håkansson, G., Pienemann, M., & Sayehli, S. (2002). Transfer and typological proximity in the context of second language processing. *Second Language Research*, 18.3, 250-73.
- Hatch, E. M., & Lazaraton, A. (1991). *The research manual: Design and statistics for applied linguistics*. New York, NY: Newbury House Publishers.
- Herdina, P., & Jessner, U. (2002). *A Dynamic Model of Multilingualism. Perspectives of Change in Psycholinguistics*. Clevedon: Multilingual Matters.
- Hufeisen, B. (2003): L1, L2, L3, L4, Lx – Alle gleich? Linguistische, lernerinterne und lernerexterne Faktoren in Modellen zum multiplen Spracherwerb [L1, L2, L3, L4, Lx – all the same? Linguistic, learner internal and – external factors in models of multiple language acquisition]. *Zeitschrift für Interkulturellen FSU*, 8, 2/3, 97-100.
- Hufeisen, B., & Marx, N. (2007). *EuroComGerm - die sieben Siebe: germanische Sprachen lesen lernen [EuroComGerm – the seven sieves: learning how to read Germanic languages]*. Editiones EuroCom: Vol. 1. Aachen: Shaker.
- Hymes, D. (Ed.) (1971). *Pidginization and creolization of languages*. Cambridge: Cambridge Univ. Press.
- Jackson, J. M. (1949). A simple and more rigorous technique for scale analysis. In *A manual of scale analysis*, Montreal, Mc Gill University.
- Jaensch, C. (2013). Third Language Acquisition: Where are we now? *Linguistic Approaches to Bilingualism*, 3(1), 73–93.
- Jarvis, S. (1998). *Conceptual transfer in the interlingual lexicon*. Indiana University Linguistics Club Publications.
- Jarvis, S. (2000). Methodological rigor in the study of transfer: Identifying L1 influence in the interlanguage lexicon. *Language Learning*, 50(2), 245-309.
- Jessner, U., & Herdina, P. (2000). The dynamics of third language acquisition. In P. Herdina, & U. Jessner (Eds.), *English in Europe: The acquisition of a third language* (pp. 84-98). Clevedon (et al.): Multilingual Matters.
- Jessner, U. (1997): Towards a dynamic view of multilingualism. In M. Pütz (Ed.), *Language choices: Conditions, constraints and consequences* (pp. 17-30). Amsterdam: Benjamins.

- Jessner, U. (1998): Dynamische Aspekte des Multilingualismus auf individueller Ebene [Dynamic aspects of multilingualism on the individual level]. In B. Hufeisen & B. Lindemann (Eds.), *Tertiärsprachen. Theorien, Modelle, Methoden* (pp.149-158). Tübingen: Stauffenburg.
- Jessner, U. (2006). *Linguistic awareness in multilinguals: English as a third language*. Edinburgh: Edinburgh Univ. Press.
- Jessner, U. (2008). Teaching third languages: Findings, trends and challenges. *Language Teaching*, 41(01), 15–56.
- Johnston, M. (1985). *Syntactic and morphological progressions in learner English: A research report*. Commonwealth Dept of Immigration and Ethnic Affairs: Canberra.
- Kawaguchi, S. (2005). Argument structure and syntactic development in Japanese as a second language. In M. Pienemann (Ed.), *Cross-linguistic aspects of Processability Theory* (pp. 253–298). Amsterdam: Benjamins.
- Kempen, G., & Hoenkamp, E. (1987). An incremental procedural grammar for sentence formulation. *Cognitive Science*, 11(2), 201-258.
- Keßler, J. U. (2006). *Englischerwerb im Anfangsunterricht diagnostizieren: Linguistische Profilanalysen am Übergang von der Primarstufe in die Sekundarstufe I* [Diagnosing the acquisition of English in beginners' lessons: Linguistic profile analyses at the transition from elementary school to secondary school]. Giessener Beiträge zur Fremdsprachendidaktik. Tübingen: Gunter Narr Verlag.
- Keßler, J. U. (2007). Assessing EFL-development online: A feasibility study of Rapid Profile. In F. Mansouri (Ed.), *Second language acquisition research: Theory-construction and testing* (pp. 119-144). Cambridge: Cambridge Scholars Publishing.
- Keßler, J. U. (2008). Communicative tasks and second language profiling: Linguistic and pedagogical implications. In O. Eckerth & S. Siekmann (Eds.), *Task-based language learning and teaching: Theoretical, methodological and pedagogical perspectives* (pp. 291-310). Frankfurt am Main (et al.): Peter Lang.
- Keßler, J. U., & Keatinge, D. (Eds.) (2009). *Research in second language acquisition: Empirical evidence across languages*. Cambridge: Cambridge Scholars Publishing.
- Keßler, J. U., Liebner, M., & Mansouri, F. (2011). Teaching. In: M. Pienemann & M. Liebner (Eds.), *Studying Processability Theory: An introductory textbook*. Processability approaches to language acquisition research & teaching: Vol. 1 (pp. 149-156). Amsterdam (et al.): Benjamins.
- Kjär, U. (2000). Deutsch als L3. Zur Interimsprache Schwedischer Deutschlerner (Unter Berücksichtigung des Einflusses des Englischen als L2) [German as L3. On the interlanguage of Swedish learners of German (also considering the influence of L2 English)]. In B. Hufeisen & B. Lindemann (Eds.), *Tertiärsprachen. Theorien, Modelle, Methoden* (pp.41-55). Tübingen: Stauffenburg.

- König, E., & Gastreich, V. (2012). *Understanding English-German contrasts* (3., neu bearb. und erw. Aufl.). ESV basics: Vol. 29. Berlin: Schmidt.
- Kunkel-Razum, K. (Ed.) (2006). *Der Duden in zwölf Bänden: das Standardwerk zur deutschen Sprache [The 'Duden' in twelve volumes: the standard reference work on the German language]*. Bd. 4. Mannheim: Dudenverlag.
- Lakatos, I. (1970). Falsification and the methodology of scientific research programs. In I. Lakatos & A. Musgrave (Eds.), *Criticism and the growth of knowledge* (pp. 91-96). Cambridge: Cambridge Univ. Press.
- Lambert, W. E. (1974). Culture and language as factors in learning and education. In F. E. Aboud & R. D. Meade (Eds.), *Cultural factors in learning and education* (pp. 91–122). Bellingham, Washington: 5th Western Washington Symposium on Learning.
- Larsen-Freeman, D., & Long, M. H. (2014). *An introduction to second language acquisition research*. London & New York: Routledge.
- Lenzing, A. (2013). *The development of the grammatical system in early second language acquisition: The multiple constraints hypothesis*. Processability approaches to language acquisition research & teaching: Vol. 3. Amsterdam: Benjamins.
- Lenzing, A., Nicholas, H., & Roos, J. (Eds.) (forthc.). *Widening contexts for Processability Theory: Theories and issues*. Amsterdam: Benjamins.
- Lenzing, A., Plessner, A., Hagenfeld, K., & Pienemann, M. (2013). Transfer at the initial state. *Zeitschrift für Anglistik und Amerikanistik (ZAA)*, 61(3), 265–287.
- Levelt, W. J. (1989). *Speaking: From intention to articulation*. Cambridge, Mass.: MIT Pr.
- Levelt, W. J., Roelofs, A., & Meyer, A. S. (1999). A theory of lexical access in speech production. *Behavioral and Brain Sciences*, 22(01), 1-38.
- Liebner, M., & Pienemann, M. (2011). Explaining learner variation. In: M. Pienemann & M. Liebner (Eds.), *Studying Processability Theory: An introductory textbook* (pp.64-74). Amsterdam: Benjamins.
- Lindemann, B. (2000). 'Da fällt mir immer zuerst ein englisches Wort ein'. Zum Einfluss der Ersten Fremdsprache beim Übersetzen ins Deutsche ['I always come up with an English word first'. On the influence of the first foreign language in translations to German]. In B. Hufeisen & B. Lindemann (Eds.), *Tertiärsprachen. Theorien, Modelle, Methoden* (pp.57-65). Tübingen: Stauffenburg.
- Long, M. H., & Robinson, P. (1998). Focus on form: Theory, research, and practice. In C. Doughty & J. Williams (Eds.), *Focus on form in classroom second language acquisition* (pp. 15-41). Cambridge: Cambridge Univ. Press.

- Lowie, W., & Verspoor, M. (2011). The dynamics of multilingualism: Levelt's Speaking model revisited. In K. de Bot, M. S. Schmid, & W. Lowie (Eds.), *Studies in bilingualism: Vol. 43. Modeling bilingualism from structure to chaos. In honor of Kees de Bot* (pp. 267–287), Philadelphia: Benjamins.
- Mac Laughlin, B., & Nayak, N. (1989). Processing a new language: Does knowing other languages make a difference?. In: H. W. Dechert & M. Raupach (Eds.), *Interlingual Processes* (pp. 5-16). Tübingen: Gunter Narr.
- Mansouri, F., & Duffy, L. (2005). The pedagogic effectiveness of developmental readiness in ESL grammar instruction. *Australian Review of Applied Linguistics*, 28(1), 81-99.
- Marx, N., & Hufeisen, B. (2004). A critical overview of research on Third Language acquisition and multilingualism published in the German language. *The International Journal of Multilingualism*, 1/2, 141-154.
- Mayer, M. (1969). *Frog, where are you?*. New York: Dial Press.
- Meindl, C. (2011). *Methodik für Linguisten: Eine Einführung in Statistik und Versuchsplanung [methodology for linguists: An introduction to statistics and planning experiments]*. Tübingen: Narr.
- Meisel, J. M. (1983). Strategies of second language acquisition: More than one kind of simplification. In R. W. Anderson (Ed.), *Pidginization and creolization as language acquisition* (pp.120-157). Rowley, Mass.: Newbury House.
- Meisel, J. M., Clahsen, H., & Pienemann, M. (1981). On determining developmental stages in natural second language acquisition. *Studies in second language acquisition*, 3(02), 109-135.
- Mißler, B. (1999). *Fremdsprachenlernerfahrungen und Lernstrategien: Eine Empirische Untersuchung [foreign language learning experiences and learning strategies: An empirical investigation]*. Tübingen: Stauffenburg.
- Möhle, D. (1989). Multilingual interaction in foreign language production. In: H. W. Dechert & M. Raupach (Eds.), *Interlingual Processes* (pp. 179-194). Tübingen: Gunter Narr.
- Müller-Lancé, J. (2003). A strategy model of multilingual learning. In J. Cenoz, B. Hufeisen, & U. Jessner (Eds.), *The Multilingual Lexicon* (pp. 117-132). Clevedon: Multilingual Matters.
- Nayak, N., Hansen, N., Krueger, N., & Mac Laughlin, B. (1987). *Language-learning strategies in monolingual and multilingual subjects*. Unpublished manuscript, University of California, Santa Cruz.



- Nicholas, H. (1985). Learner variation and the teachability hypothesis. In K. Hyltenstam & M. Pienemann (Eds.), *Modelling and assessing second language acquisition* (pp. 177-195). Clevedon: Multilingual matters.
- Nordlinger, R., & Bresnan, J. (2011). Lexical-Functional Grammar: interactions between morphology and syntax. *Non-Transformational Syntax: Formal and Explicit Models of Grammar*. Wiley-Blackwell, Chichester.
- Odlin, T. (2008). Cross-linguistic influence. In C. J. Doughty & M. H. Long (Eds.), *The Handbook of Second Language Acquisition* (pp.436-486). Malden: Blackwell.
- Ohser, E., & Plauen, E. (2016). *Vater und Sohn: Sämtliche Bildgeschichten [Father and son: complete cartoons]*. Norderstedt: Books on Demand.
- Pallotti, G. (2007). An operational definition of the emergence criterion. *Applied Linguistics*, 28(3), 361–382.
- Paradis, M. (1987). Neurolinguistic perspectives on bilingualism. In M. Paradis & G. Libben (Eds.), *The assessment of bilingual aphasia* (pp. 1-17). New York & London: Psychology Press.
- Paradis, M. (1994). Neurolinguistic aspects of implicit and explicit memory: Implications for bilingualism and SLA. In N. C. Ellis (Ed.), *Implicit and explicit learning of languages* (pp. 393-419). San Diego (et al.): Academic Press.
- Paradis, M. (2009). *Declarative and procedural determinants of second languages*. Amsterdam: Benjamins.
- Pavone, J. (1980). *Implicational scales and English dialectology*. Unpublished Ph.D. dissertation, Indiana University.
- Pienemann, M., & Liebner, M. (Eds.) (2011). *Studying Processability Theory: An introductory textbook*. Amsterdam: Benjamins.
- Pienemann, M. (1985). Learnability and syllabus construction. In K. Hyltenstam & M. Pienemann (Eds.), *Modelling and assessing second language acquisition* (pp. 23-75). Clevedon: Multilingual Matters.
- Pienemann, M. (1989). Is language teachable? Psycholinguistic experiments and hypotheses. *Applied linguistics*, 10(1), 52-79.
- Pienemann, M. (1998). *Language processing and second language development: Processability Theory*. Amsterdam: Benjamins.
- Pienemann, M. (2015). An outline of Processability Theory and its relationship to other approaches to SLA. *Language Learning*, 65(1), 123–151.
- Pienemann, M., & Håkansson, G. (2007). Response article: Full transfer vs. developmentally moderated transfer: A reply to Bohnacker. *Second Language Research*, 23(4), 485–493.

- Pienemann, M., & Mackey, A. (1993). An empirical study of children's ESL development. In P. McKay (Ed.), *ESL Development: Vol. 2. Language and literacy in schools* (pp. 115-259). Commonwealth of Australia and NLLIA.
- Pienemann, M., Di Biase, B., Kawaguchi, S., & Håkansson, G. (2005a). Processing constraints on L1 transfer. In J. F. Kroll & A. M. De Groot (Eds.), *Handbook of Bilingualism. Psycholinguistic Approaches* (pp. 128–153). Oxford: Oxford Univ. Press.
- Pienemann, M., Di Biase, B., & Kawaguchi, S. (2005b). Extending Processability Theory. In M. Pienemann (Ed.), *Cross-linguistic aspects of Processability Theory* (pp. 199–251). Amsterdam: Benjamins.
- Pienemann, M., Keßler, J. U., & Lenzing, A. (2013). Developmentally moderated transfer and the role of the L2 in L3 acquisition. In A. Flyman Mattsson & C. Norrby (Eds.), *Language Acquisition and Use in Multilingual Contexts* (pp.142-159). Travaux de l'Institut de Linguistique de Lund, 52.
- Psaltou-Joycey, A., & Kantaridou, Z. (2009). Plurilingualism, language learning strategy use and learning style preferences. *The International Journal of Multilingualism*, 6/4, 460-474.
- Richards, J. C., & Schmidt, R. W. (2013). *Longman dictionary of language teaching and applied linguistics*. London & New York: Routledge.
- Rickford, J. R. (2002). Implicational scales. In J. K. Chambers, P. Trudgill, & N. Schilling (Eds.), *The Handbook of Language Variation and Change* (pp. 142-167). Malden & Oxford: Blackwell.
- Ringbom, H. (2001). Lexical transfer in L3 production. In J. Cenoz, B. Hufeisen, & U. Jessner (Eds.), *Cross-linguistic influence in Third Language acquisition: Psycholinguistic perspectives* (pp. 59-68). Clevedon: Multilingual Matters.
- Rothman, J. (2010). L3 syntactic transfer selectivity and typological determinacy: The typological primacy model. *Second Language Research*, 27(1), 107–127.
- Rothman, J. (2013). Linguistic and cognitive motivations for the Typological Primacy Model (TPM) of third language (L3) transfer: Timing of acquisition and proficiency considered. *Bilingualism: Language and Cognition*, 1–12.
- Rothman, J., & Halloran, B. (2013). Formal linguistic approaches to L3/Ln acquisition: A focus on morphosyntactic transfer in adult multilingualism. *Annual Review of Applied Linguistics*, 33, 51–67.
- Safont Jordà, M. P. (2005). *L3 Learners: Pragmatic production and awareness*. Clevedon: Multilingual Matters.

- Sanchez, L. (2011). Against 'canonical word order': Evidence of basic word order transfer at the initial state of LnA. In A. Algryani & M. Krzek (Eds.), *Newcastle Working Papers in Linguistics* (vol. 17, pp. 220-236). Newcastle upon Tyne: CRiLLS.
- Sanders, M., & Meijers, G. (1995). English as L3 in the elementary school. *ITL: Review of Applied Linguistics*, 107-108, 59-78.
- Schoonen, R., van Gelderen, A., De Glopper, K., Hulstijn, J., Snellings, P., Simis, A., & Stevenson, M. (2002). Linguistic knowledge, metacognitive knowledge and retrieval speed in L1, L2 and EFL writing. In S. Ransdell & M. L. Barbier (Eds.), *New directions for research in L2 writing* (pp. 101-122). Ordrecht: Kluwer Academic Publishers.
- Schumann, J. H. (1982). Simplification, transfer, and relexification as aspects of pidginization and early second language acquisition. *Language Learning*, 32(2), 337-366.
- Schwartz, B. D., & Sprouse, R. A. (1996). L2 cognitive states and the full transfer/full access model. *Second Language Research*, 12(1), 40-72.
- Singleton, D., & Little, D. (1984). A first encounter with Dutch: Perceived language distance and language transfer as factors in comprehension. In L. Mac Mathúna & D. Singleton (Eds.): *Language Across Cultures* (pp. 259-270). Proceedings of a Symposium Held at St. Patrick's College, Drumcondra, Dublin, 8 - 9 July 1983.
- Thomas, J. (1992). Metalinguistic awareness in second- and third-language learning. *Advances in psychology*, 83, 531-545.
- Tremblay, M. C. (2006). Cross-linguistic influence in Third Language acquisition: The role of L2 proficiency and L2 exposure. *Ottawa Papers in Linguistics*, 34, 109-119.
- Tunmer, W., & Herriman, M. (1984). The development of metalinguistic awareness: A conceptual overview. In W. Tunmer, C. Pratt, & M. Herriman (Eds.), *Metalinguistic awareness in children: Theory, research and implications* (pp. 12-35). New York: Springer.
- Ur, P. (1988). *Grammar practice activities: A practical guide for teachers*. Cambridge: Cambridge Univ. Press.
- Vermeer, A. (2000). Coming to grips with lexical richness in spontaneous speech data. *Language Testing*, 17(1), 65-83.
- Williams, S., & Hammarberg, B. (1998). Language switches in L3 production: Implications for a polyglot speaking model. *Applied Linguistics*, 19/3, 295-333.

- Wimsatt, W. C. (1986). Developmental constraints, generative entrenchment and the innate-acquired distinction. In W. Bechtel (Ed.), *Integrating scientific disciplines* (pp. 185-208). Dordrecht: Martinus Nijhoff.
- Wimsatt, W. C. (1991). *Generative entrenchment in development and evolution*. MS Dept of Philosophy, University of Chicago.
- Wirbacz, K. (2013). *Investigating the fundamental difference between L1 and L2 acquisition based on syntax: A fresh look at the development of German L1 and L2*. Unpublished Ph.D. dissertation, University of Western Sydney.
- Wirbacz, K., & Buttkewitz, P. S. (forthc.). Transfer or no transfer; that is the question: The role of the L1 & L2 in L3 acquisition (Chapter 5). In A. Hahn & T. Angelovska (Eds.), *L3 syntactic transfer: Models, new developments and implications*, Amsterdam: Benjamins.
- Yule, G. (2006). *The study of language*. Cambridge: Cambridge Univ. Press.

## **Internet Sources**

[http://www.bezreg-arnsberg.nrw.de/presse/2011/10/193\\_11/index.php](http://www.bezreg-arnsberg.nrw.de/presse/2011/10/193_11/index.php) (visited July 14<sup>th</sup>, 2016)

<http://www.ethnologue.com> (visited July 17<sup>th</sup>, 2017)

## 10 Appendices

### A Informants' Biodata Survey Sheet

Universität Paderborn

Fakultät KW/ Institut f. Anglistik

Pascal Simon Buttkewitz

#### Forschung zum Thema Englisch als Drittsprache:

#### Fragebogen zur Person (bitte Zutreffendes ankreuzen und ausfüllen)



Vorname und Nachname: \_\_\_\_\_

Geschlecht: ☐ männlich ☐ weiblich

Alter und Geburtsjahr: zur Zeit \_\_\_\_ Jahre alt, Geburtsjahr: \_\_\_\_\_

geboren in: ☐ Deutschland ☐ Türkei ☐ anderes Land: \_\_\_\_\_

#### höchster Bildungsabschluss Vater:

☐ kein Schulabschluss ☐ Hauptschulabschluss ☐ Realschulabschluss ☐ Abitur ☐ Fachabitur ☐ Universitätsabschluss

#### höchster Bildungsabschluss Mutter:

☐ kein Schulabschluss ☐ Hauptschulabschluss ☐ Realschulabschluss ☐ Abitur ☐ Fachabitur ☐ Universitätsabschluss

(letzter) Beruf Vater: \_\_\_\_\_

(letzter) Beruf Mutter: \_\_\_\_\_

Erste gelernte Sprache (Muttersprache): ☐ Türkisch ☐ Deutsch ☐ sonstige: \_\_\_\_\_

#### Zweite gelernte Sprache (ab ca. wie viel Jahren angefangen zu lernen)?

☐ Türkisch ab ca. \_\_\_\_\_ Jahren ☐ Deutsch ab ca. \_\_\_\_\_ Jahren ☐ \_\_\_\_\_ ab ca. \_\_\_\_\_ Jahren

deutschen Kindergarten besucht: ☐ ja ☐ nein ☐ teilweise (= eine Zeit lang)

#### Verhältnis Deutschkenntnisse-Türkischkenntnisse

☐ Türkisch etwas besser ☐ Deutsch etwas besser ☐ Türkisch und Deutsch gleich gut

#### Kenntnis weiterer Sprachen

Englisch: ☐ sehr gute Kenntnisse ☐ gute Kenntnisse ☐ mittelmäßige Kenntnisse ☐ Grundkenntnisse

seit wann Englisch gelernt? ☐ vor Grundschule ☐ ab Grundschule ☐ ab 5. Klasse oder später

in der Oberstufe Englisch abgewählt? ☐ ja ☐ nein, mache Englisch GK ☐ nein, mache Englisch LK

Französisch: ☐ sehr gute Kenntnisse ☐ gute Kenntnisse ☐ mittelmäßige Kenntnisse ☐ Grundkenntnisse

Spanisch: ☐ sehr gute Kenntnisse ☐ gute Kenntnisse ☐ mittelmäßige Kenntnisse ☐ Grundkenntnisse


Sonstige: \_\_\_\_\_ ☐ sehr gute Kenntnisse ☐ gute Kenntnisse ☐ mittelmäßige Kenntnisse ☐ Grundkenntnisse

*Senin kooperasyonun için çok teşekkürler! 😊*

Pascal S. Buttkewitz, Tel. 0521-14548972, bpascal@mail.upb.de


## B Letter of Consent

German

**UNIVERSITÄT PADERBORN**  
*Die Universität der Informationsgesellschaft*

FAKULTÄT FÜR  
KULTURWISSEN-  
SCHAFTEN

UNIVERSITÄT PADERBORN | 33095 PADERBORN



PADERBORN, 16.02.2015

Sehr geehrte Eltern bzw. Erziehungsberechtigte,

mein Name ist Pascal Buttkewitz und ich bin Doktorand der englischen Sprachwissenschaft an der Universität Paderborn. Im Rahmen meiner Dissertation soll eine Datenerhebung in den Sprachen Türkisch, Deutsch und Englisch stattfinden. Die Forschung wird von Prof. Dr. Manfred Pienemann (Inhaber des Lehrstuhls für englische Sprachwissenschaft und englische Fachdidaktik der Universität Paderborn) betreut.

Ziel der Erhebungen ist, bei Schülern bestimmte sprachliche Strukturen in den genannten drei Sprachen zu identifizieren und zu analysieren. Um dies zu erreichen, ist es lediglich erforderlich, in ein bis zwei jeweils ca. 1 – 1,5 stündigen Terminen (ein Termin für einsprachig deutsche Englischlerner, zwei Termine für zweisprachig deutsch-türkische Englischlerner) mündliche Äußerungen in der jeweiligen Zielsprache aufzunehmen. Zu diesem Zweck wird eine kurze Umfrage verbunden mit sprechfördernden Aktivitäten (z.B. Bilder oder kurze Videoclips beschreiben) eingesetzt.

Ich versichere Ihnen hiermit, dass die persönlichen Daten (z.B. Namen) anonymisiert werden und die Sprachdaten ausschließlich für wissenschaftliche Zwecke verwendet werden. Über die Ergebnisse der Studie wird die jeweilige Schule informiert bzw. kann ich Sie auch auf Wunsch persönlich informieren.

Besten Dank für Ihre Kooperation in diesem sprachwissenschaftlichen Forschungsprojekt. Bei Fragen in Bezug auf das genannte Projekt zögern Sie bitte nicht, mich zu kontaktieren!

herzlichst  
Pascal Simon Buttkewitz  
Universität Paderborn  
Tel: 0521-14548972 (mobil: 01633151010)  
Email: bpascal@mail.uni-paderborn.de

---

*Geben Sie bitte folgenden Abschnitt ausgefüllt und unterschrieben Ihrem Kind mit in die Schule!*

A) Mein Kind ..... darf an dem genannten Projekt teilnehmen. Ich/ wir gebe/ geben hiermit Pascal Buttkewitz das Recht, im Rahmen des genannten Forschungsprojekts Sprachdaten von meinem/ unserem Kind zu erheben, aufzunehmen und zu analysieren.

Erziehungsberechtigter: \_\_\_\_\_ Unterschrift: \_\_\_\_\_

B) Mein Kind ..... darf nicht an dem genannten Projekt teilnehmen.

Erziehungsberechtigter: \_\_\_\_\_ Unterschrift: \_\_\_\_\_



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SCHAFTEN



PADERBORN, 16.02.2015

Sayın Veliler, Sevgili Anne-Babalar

Şu anda Paderborn Üniversitesi'nde İngilizce dil bilimi alanında doktora programında okumaktayım. Programın bir gereği olarak, bir araştırma planladım. Bu araştırmada Türk kökenli çocukların dil gelişimleri incelenecektir (Almancada, Türkçede ve İngilizce). Araştırma Paderborn Üniversitesi'nden Prof. Manfred Pienemann tarafından desteklenmektedir.

Araştırmanın temel amacı bu çocuklarda Türkçe'nin, Almanca'nın ve İngilizce'nin gelişmesini etkileyen faktörleri ortaya çıkarmaktır. Bu amacı gerçekleştirebilmek için sizin ekteki anketi doldurmanıza, çocuklarınızın da birkaç tane konuşma aktivitesine katılmalarına ihtiyaç duymaktayız.

Katılmasına izin verdiğiniz takdirde, çocuğunuz konuşma aktivitelerine okulda veya evde katılacaktır. Size zarf içerisinde gönderilen anketleri sizin doldurması gerekmektedir. Çocuğunuzun katılacağı aktivitelerin onun fiziksel ve psikolojik sağlığına veya okuldaki derslerine olumsuz bir etkisi olmayacağından emin olabilirsiniz. Sizden ve çocuğunuzdan elde edilen her türlü bilgi kesinlikle gizli tutulacak ve bu bilgiler sadece bilimsel araştırma amacıyla kullanılacaktır. Bu formu imzaladıktan sonra hem siz hem de çocuğunuz araştırmadan ayrılma hakkına sahipsiniz. Araştırma sonuçlarının özeti tarafımızdan okula ulaştırılacaktır.

Araştırma sonucunda elde edilen bilgiler, çocukların anadil olarak hem Türkçe'yi hem de Almanca'yi hem de İngilizce'yi öğrenmelerini etkileyen faktörlerin saptanmasına ve eğitim politikalarının daha iyi düzenlenmesine çok önemli katkılarda bulunacaktır. Araştırmayla ilgili sorunlarınızı ve görüşlerinizi aşağıdaki e-posta adresini veya telefon numaralarını kullanarak bize ulaştırabilirsiniz.

Bu araştırmaya göstermiş olduğunuz ilgi için çok teşekkür ederiz.

Saygılarımızla,  
Pascal Simon Buttkewitz  
Universität Paderborn  
Tel: 0521-14548972 (mobil: 01633151010)  
E-posta: bpascal@mail.uni-paderborn.de

Lütfen bu araştırmaya katılmak konusundaki tercihinizi aşağıdaki seçeneklerden size en uygun gelenin altına imzanızı atarak belirtiniz ve bu formu en kısa zamanda çocuğunuzla okula geri gönderiniz.

A) Bu araştırmaya tamamen gönüllü olarak katılıyorum ve çocuğum .....'nın da katılımcı olmasına izin veriyorum. Çalışmayı istediğim zaman yanda kesip bırakabileceğimi biliyorum ve verdiğim bilgilerin bilimsel amaçlı olarak kullanılmasını kabul ediyorum.

Baba Adı-Soyadı..... VEYA Anne Adı-Soyadı.....  
İmza ..... İmza .....

B) Bu çalışmaya katılmayı kabul etmiyorum ve çocuğumun .....'nın da katılımcı olmasına izin vermiyorum.

Baba Adı-Soyadı..... VEYA Anne Adı-Soyadı.....  
İmza ..... İmza .....



## C Transcription Conventions

(After Di Biase 2000:25-26)

1. Decide first the **speaker notation (or code)** for each participant in the conversation  
e.g.:

C = facilitator/researcher.

T = your informant (keep confidentiality by giving him/her a fictitious name/code)

Use upper case (capital letters) for the speaker codes which are UNLIKELY to appear in the actual production text e.g., avoid using 'I' as code for a speaker in an English text, as it will be confused with the first person pronoun. Avoid 'A' because it may be confused with articles etc.

2. After typing in the speaker code enter only a tab (i.e. press the <tab> key on the computer's keyboard) . No other characters (only a **tab** character) should be written between the speaker code and the beginning of turn for that speaker. This allows the computer to identify unambiguously each turn and speaker.

After the first speaker notation and tab are entered, start transcribing what you hear on the tape player. Continue writing on a linear basis from left to right until the end of **turn** of that speaker.

But what is a **turn**?

**Turn** here refers to a normally continuous (including pauses) utterance of a speaker, until the Interlocutor (i.e. the other participant in the interaction) either takes his/her turn where he/she judges to be the end of the first speaker's utterance or interrupts the first speaker's utterance in order to take his/her turn.

3. At the end of the turn press the **return key**. Then, again (new speaker) write **speaker notation, tab key**, write turn and hit the **return key** at the end of the turn.

E.g.:

C what did you say your name was? I did not hear what you said the first time

T it's difficult to spell

4. There should be **no punctuation marks except for question marks** when the speaker appears to indicate a question (e.g. by rising intonation) as in example above.

5. **No capital letters** except for **proper names** of people and places and the pronoun for the first person singular "I" and the expression OK. e.g.

C are you OK now?

(notice that there is no capital letter at the beginning of turns and no full stop at the end)

6. **Pauses** are indicated by one dot (corresponding roughly to a hesitation pause or a pause usually represented by a comma in ordinary writing) or two dots if it is a longish pause (corresponding roughly to a full stop pause in ordinary writing). If there is a pause longer than those two, just write (long pause) in brackets. e.g.

T um . he um want to buy a .. computer but he lost money and . um (long pause) I don't know

7. Standardize **discourse/feedback sounds marking** (i.e. assign the same string of characters to the same marking) e.g. hesitation (um, uh, er), confirmation and back channelling cues (mhm), clarification requests (mm?), mild surprise (oh). In general it is best to use strings of characters that are NOT likely to be part of the text, such as 'a'.

8. Write **numerals** in words (not figures).

9. Syllables which cannot be transcribed because the transcriber can not hear or understand them are placed inside round brackets with an (X) for the unclear syllable or word and three Xs for longer stretches (XXX).

Also any other **comment by the transcriber** or any element that does not belong to the text produced by the informant or the interviewer will be enclosed in brackets e.g.

T this one? (informant points to a picture on the wall)

10. Avoid any special formatting or special characters whatever (e.g. do not use diacritics, avoid accented vowels) in your transcript and make one copy of it (SAVE AS) Text Only (for analysis) and one with numbered turns [...].

N.B. It is a good idea to **make a backup copy** of all your research files in a different disk.

The following is a short example of a transcription

(T = Informant; C = Researcher)

...

C OK so er the first thing we'll do this morning is look at some pictures

T mhm

C and I'm going to ask you to tell me a story .. about the pictures here we have uh

some pictures from a store .. with

T a store ?

C a shopkeeper

T oh

C and we have some things that he does .. everyday and I'd like you to tell me the story of what he does.. in a day

T (long pause) first hes . he clean er . her shop his shop er before open .. mm. and then he . mm look (X) goods or things

C mhm

...

## D Exemplary Transcript

Below you find an extract of the first of two father-son-story retelling tasks, performed by P05.

C = Researcher

T = Informant (P05 in this case)

C OK alright OK (explains first father-son-story retelling task and gives some vocabulary advice)

T (asks which kind of sentences she is supposed to formulate)

C (tells her that she shouldn't think too much at all and just speak spontaneously) so yeah what do you see what happens there?

T OK in the first picture is a boy and a father from the boy I think and they are eating . uh but there . there is a bee or or of their eat and the boy uh try to . uh töten (GER)

C kill it

T kill it yes . in the second picture the father say that the uh kill not not so go- that the kill is not so good and he uh . uh bring the . teller (GER)

C mhm plate yeah

T plate weg (GER)

C away

T away yes and he .. uh go to the window and uh hold the teller (GER) the plate uh . raus (GER)

C out

T out and the been fly out

C away

T away yes . but in the next picture the been come .. back and uh sit on the head from the father . and he picked him

C mhm sting also uh stechen ist mhm (GER)

T yeah . and then the been . not lässt (GER) the plate on the . on the table . (sighs) and the kid uh and the (laughs) baby boy says to the father can I go and uh bring to you a . tuch (GER)

C uh towel

T yes and the father say no and then in the last picture the father kills the uh try to kills the bee

C mhm . yes right OK (explains the next task and gives some vocabulary aid)

## **E Full Transcripts and Elicitation Material (DVD)**