

Declension classes in a multilingual context

Inauguraldissertation
zur Erlangung des Doktorgrades der *Philosophie*
im Fachbereich A
Geistes- und Kulturwissenschaften der
Bergischen Universität Wuppertal

vorgelegt von
Laura D'Aurizio
aus Termoli

Wuppertal, im Dezember, 2024



Università
Ca' Foscari
Venezia

Corso di Dottorato di ricerca
in Scienze del Linguaggio
ciclo XXXVII°

Tesi di Ricerca
in cotutela con Bergische Universität Wuppertal

Declension classes in a multilingual context

Coordinatore del Dottorato
ch. prof. Anna Cardinaletti

Supervisore
ch. prof. Anna Cardinaletti

Supervisore cotutela
ch. prof. Natascha Müller

Dottorando
Laura D'Aurizio
Matricola
956737

Acknowledgments

To begin, my deepest gratitude goes to my supervisors, Prof. Dr. Natascha Müller and Prof. Dr. Anna Cardinaletti, for their invaluable support and guidance throughout this journey.

Dear Natascha, I am truly grateful for our insightful discussions and your candid feedback, which motivated me to constantly improve both my work and myself. Your patience, constructive criticism, and belief in my potential have significantly shaped my research.

To Anna, thank you for embracing my project with enthusiasm and for the opportunity to study in Venice. Your openness to my questions and your unwavering support have been instrumental to my growth and the development of this thesis.

Furthermore, I would like to thank Dr. Laia Arnaus and Dr. Johanna Stahnke. Laia, your discussions and fresh perspectives on the data have been invaluable. Thank you for your willingness to share your data with me! Johanna, working with you has been a rewarding experience, and I appreciate your thoughtful insights and reflections.

I am also thankful to the participants of the conferences where I presented my research, including the MultiGender event in Tønsberg (June 2022), the “Acquisition Advantages in Multilingual Learners” conference in Wuppertal (May 2024) as well as the doctoral seminars at the University of Wuppertal and the University of Venice. Your questions and discussions opened my eyes to new dimensions of my work. Special thanks to Dr. Raquel Fernandez-Fuertes—it was a pleasure getting to know you and your work.

A warm thank you to the doctoral students, researchers, and assistants at the Universities of Wuppertal and Venice. A special thanks goes to Luca Molinari, who has been a blessing and has supported me throughout this project, and to Pamela Goryczka, who has distracted me when needed and helped me concentrate when necessary. Our shared experiences have made this journey unforgettable!

A heartfelt thank you to my husband, Dima, whose unwavering support has been my anchor. Dein Mitgefühl und Deine Unterstützung haben eine bedeutende Rolle gespielt, ohne dich hätte ich mich auf diese Reise nicht einlassen können. To my family in Italy, your belief in me has been a source of strength. Cara mamma, grazie per aver creduto in me ed avermi motivata a fare il mio meglio. Cara Fabiola, grazie di esserci stata sempre, nei momenti buoni ed in quelli

meno buoni. Caro Claudio, credo tu sappia che se ho deciso di intraprendere questo percorso è anche merito tuo, grazie del supporto incondizionato e dei tanti consigli. Ho sempre saputo che non è solo l'affetto ad unirvi, ma anche tanta stima.

Lastly, my appreciation goes to the families and children who participated in this research. Your involvement has been essential to advancing the study of multilingual language acquisition in the last years. The data holds significant value for understanding the complexities and benefits of growing up with multiple languages.

Thank you all for contributing to this achievement.

Table of content

List of Abbreviations	IV
List of Tables	V
List of Figures	VI
1. Introduction	1
1.1 Summary of the results	2
1.2 Overview	4
2 Parametric variation and language acquisition	5
2.1 Parametric variation and language acquisition in the generative framework.....	5
2.1.1 The definition and evolution of parameters	6
2.1.2 From the Minimalist Program to modern approaches	11
2.1.3 The emergentist theory and parameter hierarchies	14
2.2 Language acquisition: parameters in multilingual first language acquisition ...	18
2.2.1 Key factors in monolingual and multilingual first language acquisition	19
2.2.2 Multilingual language acquisition in the emergentist theory.....	20
3 Features and syntactic aspects of Italian, German and French.....	25
3.1 The DP: features in Italian, German and French	25
3.1.1 Gender in Italian, German and French.....	28
3.1.2 Number in Italian, German and French	36
3.2 The TP: features in Italian, German and French	42
3.2.1 Verb inflection in Italian, German and French.....	43
3.3 Features in first language acquisition	48
3.3.1 Monolingual and bilingual acquisition of gender	49
3.3.2 Monolingual and bilingual acquisition of number	56
3.3.3 Monolingual and bilingual acquisition of TP's features	61

4	Inflectional class	67
4.1	The class feature	67
4.1.1	Morphological approaches to the class feature	67
4.1.2	Morpho-syntactic approaches: class in Distributed Morphology	70
4.1.3	Morpho-syntactic approaches: class in the Minimalist Program.....	73
4.1.4	The class feature: a definition	75
4.2	Diachronic aspects of the class feature: language variation.....	78
4.2.1	The class feature in Romance languages	79
4.2.2	The class feature in Germanic languages.....	85
4.3	Class in Italian, German and French	90
4.3.1	Class in Italian.....	92
4.3.2	Class in German.....	101
4.3.3	Class in French.....	114
4.4	Class within the language acquisition process.....	121
4.4.1	Monolingual and multilingual acquisition of class in the DP.....	123
4.4.2	Monolingual and multilingual acquisition of class in the TP	130
4.5	The class feature in the emergentist framework	134
5	The study.....	142
5.1	Research question and hypothesis	142
5.2	The corpora	143
5.2.1	Monolingual children.....	147
5.2.2	Bilingual children.....	148
5.3	Methodology	157
5.3.1	Comparison of MLU values.....	158
5.3.2	Methods.....	162

6	Results	169
6.1	Qualitative and quantitative analysis	169
6.1.1	Monolingual children.....	170
6.1.2	Bilingual children.....	196
6.2	Comparison of monolingual and bilingual groups.....	226
6.2.1	Italian	226
6.2.2	German.....	235
6.2.3	French	245
6.3	Comparison over time and MLU	254
6.3.1	The acquisition of inflectional classes in Italian over time.....	254
6.3.2	The acquisition of inflectional classes in German over time	258
6.3.3	The acquisition of inflectional classes in French over time.....	260
6.3.4	The acquisition of inflectional classes in Italian over MLU.....	261
6.3.5	The acquisition of inflectional classes in German over MLU	263
6.3.6	The acquisition of inflectional classes in French over MLU	265
6.4	Summary of results	266
7	Discussion.....	268
7.1	Acquisition of inflection in monolingual children	268
7.2	Acquisition of inflection in multilingual children	278
8	Conclusion.....	282
9	References	287
Erklärung	323

List of Abbreviations

The following list includes abbreviations used throughout this document. A portion of these abbreviations adheres to the Leipzig Glossing Rules for linguistic notation (Lehmann 1982).

AGR	Agreement
AgrP	Agreement Phrase
AoO	Age of Onset
CM	Class Marker
CP	Complementizer Phrase
D	Determiner
DM	Distributed Morphology
DP	Determiner Phrase
G&B	Government and Binding Theory
GenP	Gender Phrase
MLU	Mean Length of Utterance
MLUD	Difference in Mean Length of Utterance
MMM	Maximize Minimal Means
MP	Minimalist Program
N	Noun
NP	Noun Phrase
NumP	Number Phrase
P&P	Principles and Parameters Theory
PF	Phonological Form
RI	Root Infinitive
Spec	Specifier
TP	Tense Phrase
UG	Universal Grammar
VP	Verb Phrase

List of Tables

Table 1: Overview of the data	157
Table 2: Linear mixed-effect model for comparison of MLU values in Italian.....	159
Table 3: Linear mixed-effect model for comparison of MLU values in German	161
Table 4: Linear mixed-effect model for comparison of MLU values in French.....	162
Table 5: Overview of utterances included and excluded from the analysis.....	167
Table 6: Dataset for Statistical Analysis of Target-Deviant Utterances in Italian.....	228
Table 7: Dataset for Statistical Analysis of Target-Deviant Nouns in Italian.....	230
Table 8: Dataset for Statistical Analysis of Target-Deviant Adjectives in Italian.....	232
Table 9: Dataset for Statistical Analysis of Target-Deviant Verbs in Italian.....	234
Table 10: Dataset for Statistical Analysis of Target-Deviant Utterances in German	236
Table 11: Dataset for Statistical Analysis of Target-Deviant Nouns in German.....	238
Table 12: Dataset for Statistical Analysis of Target-Deviant Adjectives in German	241
Table 13: Realizations of adjectives in the four German-French and German-Spanish bilingual children.....	242
Table 14: Dataset for Statistical Analysis of Target-Deviant Verbs in German	244
Table 15: Dataset for Statistical Analysis of Target-Deviant Utterances in French	247
Table 16: Dataset for Statistical Analysis of Target-Deviant Nouns in French.....	249
Table 17: Dataset for Statistical Analysis of Target-Deviant Adjectives in French	250
Table 18: Dataset for Statistical Analysis of Target-Deviant Verbs in French.....	252
Table 19: Results from linear model for several predictors on realization of utterances in Italian	255

List of Figures

Figure 1: X-bar Schema, adapted from Chomsky (1970)	25
Figure 2: German verbal inflection for regular verbs, adapted from Wiese (1934:165).....	46
Figure 3: Inflection of the verb <i>manger</i> ‘to eat’, adapted from Ferdinand (1996:40).....	47
Figure 4: Locus and modus of class, adapted from Déchaine (2019: 19).....	72
Figure 5: Word Marker Phrase adapted from Bernstein (1993:124).....	73
Figure 6: Declension classes of Latin, from Kaiser (2014:119) and Aronoff (1994:81).....	80
Figure 7: Inflectional classes for Latin adjectives, adapted from Kaiser (2014:130) and Clackson (2011:109)	83
Figure 8: Inflectional classes of Latin verbs, adapted from Aronoff (1994: 45).....	84
Figure 9: Declension in Old German, adapted from Kürschner & Nübling (2011: 361)	86
Figure 10: Declension classes for nouns in Italian.....	93
Figure 11: Declension classes for adjectives in Italian	96
Figure 12: Inflectional classes for verbs in Italian	98
Figure 13: Declension classes for nouns in German,Alexiadou & Müller (2008: 23).....	102
Figure 14: Declension class IX and X for nouns in German.	103
Figure 15: Declension classes for adjectives in German.....	106
Figure 16: Declension classes of German determiners adapted from Sternefeld (2004) and Zwicky (1986).....	108
Figure 17: Syntactic structure for the German DP <i>einem mir fremden Mann</i> by Sternefeld (2004:16).....	110
Figure 18: Syntactic structure for the German DP <i>der kleine Hund</i> ‘the small dog’	111
Figure 19: Inflection of the adjective <i>petit</i> ‘small’ adapted from Valdman (1970: 613)	117
Figure 20: Development of Latin theme vowels in French adapted from Pomino & Remberger (2021: 7)	119
Figure 21: Parameter-hierarchy for ϕ -features from Roberts (2019:285).....	137

Figure 22: Parameter hierarchy for the class feature.....	137
Figure 23: MLUD in multilingualism adapted from Arencibia-Guerra 2008: 78.....	146
Figure 24: Au_di language development in age and MLU(D)	150
Figure 25: Ja_di language development in age and MLU(D).....	151
Figure 26: Ma_di language development in age and MLU(D).....	152
Figure 27: Di_fis language development in age and MLU	153
Figure 28: Ju_fi language development in age and MLU(D)	154
Figure 29: Si_fi language development in age and MLU(D).....	154
Figure 30: MLUD bilingual German-Italian children.....	155
Figure 31: MLUD bilingual French-Italian children.....	155
Figure 32: Comparison of MLU values in Italian	158
Figure 33: Comparison of MLU values in German	160
Figure 34: Comparison of MLU values in French	161
Figure 35: Distribution of nouns in declension classes in Camilla's data.	172
Figure 36: Distribution of nouns in declension classes in Elisa's data.....	175
Figure 37: Distribution of nouns in declension classes in Marco's data	177
Figure 38: Distribution of nouns in declension classes in Chantal's data	180
Figure 39: Distribution of nouns in declension classes in Kerstin's data	184
Figure 40: Distribution of nouns in declension classes in Simone's data.....	188
Figure 41: Distribution of nouns in declension classes in Au_di's Italian data.....	198
Figure 42: Distribution of nouns in declension classes in Au_di's German data.....	200
Figure 43: Distribution of nouns in declension classes in Ja_di's Italian data	204
Figure 44: Distribution of nouns in declension classes in Ja_di's German data.....	206
Figure 45: Distribution of nouns in declension classes in Ma_di's Italian data	209
Figure 46: Distribution of nouns in declension classes in Ma_di's German data	211

Figure 47: Distribution of nouns in declension classes in Di_fi's Italian data	214
Figure 48: Distribution of nouns in declension classes in Ju_fi's data.....	217
Figure 49: Distribution of nouns in declension classes in Si_fi's data in Italian.....	222
Figure 50: Ratio of target-deviant utterances in monolingual and bilingual Italian data.....	227
Figure 51: Ratio of target-deviant nouns in monolingual and bilingual Italian data	229
Figure 52: Ratio of target-deviant adjectives in monolingual and bilingual Italian data	231
Figure 53: Ratio of target-deviant verbs in monolingual and bilingual Italian data	233
Figure 54: Ratio of target-deviant utterances in monolingual and bilingual German data	235
Figure 55: Ratio of target-deviant utterances by group in monolingual and bilingual German data	237
Figure 56: Ratio of target-deviant nouns in monolingual and bilingual German data.....	238
Figure 57: Ratio of target-deviant adjectives in monolingual and bilingual German data	240
Figure 58: Ratio of target-deviant verbs in monolingual and bilingual German data.....	243
Figure 59: Ratio of target-deviant utterances in French.....	246
Figure 60: Ratio of target-deviant nouns in the data of monolingual and bilingual French group	248
Figure 61: Ratio of target-deviant adjectives in monolingual and bilingual French data	250
Figure 62: Ratio of target-deviant verbs in monolingual and bilingual French data	252
Figure 63: Target deviant utterances over time in Italian	256
Figure 64: Target-deviant utterances over time in German	258
Figure 65: Target-deviant utterances over time in French	260
Figure 66: Target-deviant utterances and MLU in Italian.....	262
Figure 67: Target-deviant utterances and MLU in German.....	264
Figure 68: Target-deviant utterances and MLU in French.....	265
Figure 69: Syntactic representation of the class feature.....	270

1. Introduction

Inflection represents a widely discussed phenomenon that has been considered in many studies by several researchers (cf. i.a. Scalise 1988, Aronoff 1994, Carstairs-McCarthy 1994, Corbett 2009, Stump 2017a) within different frameworks (i.a. Harris 1991, Bernstein 1993a, Alexiadou 2004, Piccalo 2008) with either a theoretical (i.a. Wurzel 1984, Acquaviva 2009, Lowenstamm 2012, Déchaine 2019), cognitive (i.a. Colombo, Fonti & Stracciari 2009, Opitz, Regel, Müller & Friederici 2013, Estivalet & Meunier 2015, Russo, Esposito, Laudanna, Mancuso, Di Salle, Elia & Martino 2021) or acquisitional orientation (i.a. Demuth 2003, Szagun, Stumper, Sondag & Franik 2007, Austin 2013, Rodina & Westergaard 2013). Additionally, various languages have been examined in relation to inflection, leading to the claim that inflection is a phonomorphological phenomenon employed across most linguistic systems to fulfil morphological, syntactic, and, in some cases, even semantic functions (cf. Kürschner 2009). This definition of inflection helps differentiate between linguistic phenomena that modify words through further morpho-phonological strategies, specifically distinguishing inflection from derivation (Scalise 1988).

With respect to the acquisition of inflection in various languages, a general distinction is drawn between languages that are acquired relatively early in terms of the expression of features such as gender, number, and person (e.g., Italian according to Belletti & Guasti 2015) and those that require a longer acquisition process, often characterized by a higher frequency of target-deviant utterances (e.g., German, as reported by Kauschke 2012). Furthermore, first language acquisition is influenced by multiple factors which are typically categorized as internal (e.g., individual or familial) and external (societal or environmental) (cf. N. Müller, Kupisch, Schmitz & Cantone 2011). Given the interplay of numerous aspects, it is to be expected that the monolingual and multilingual language acquisition processes exhibit differences, since monolingual children¹ are exposed to a singular language, whereas multilingual language acquisition is characterized by exposure to multiple languages. Despite these differences, similarities between the monolingual and multilingual acquisition process were also observed,

¹ In the present work, only children with a normal language development are considered. For further information about children with developmental language disorders, see Belletti & Guasti (2015) for Italian, Prévost (2009) for French and Hasselaar, Letts & McKean (2020) for German.

leading to the identification of phenomena that are generally acquired similarly across languages, e.g., simple tenses are generally acquired earlier than composed ones (cf. i.a. Belletti & Guasti 2015:5). Moreover, an interaction between linguistic systems in multilingual acquisition has been observed, resulting in the identification of phenomena specific to multilingual learners compared to monolinguals, such as the acceleration effect (cf. N. Müller 2017). The impact of multilingualism on beneficial outcomes in first language acquisition, including acceleration, is a critical topic, particularly in contemporary society. A discussion about factors influencing multilingual language acquisition is relevant across various sectors, from educational systems to a broader societal context.

1.1 Summary of the results

The existence and expression of inflectional classes, i.e., a classification system including all words of a category according to morpho-phonological patterns, depends on the specific target language. As discussed in the following chapters, languages can exhibit significant variation even among superficially similar systems. For example, Italian and French display clear differences despite belonging to the same group of Romance languages. Additionally, the role of inflectional classes is shaped by diachronic variation, often influenced by a 'simplification process' in which less marked structures are favoured over more marked ones (cf. Roberts 2007). In the present study, the inflectional systems of Italian, German, and French are investigated and cross-linguistically compared, as these systems are subject to varying degrees of influence from inflectional classes. Through the analysis and the distinction of several features, i.e., class, gender, number, and person, the morphological and syntactic roles of inflectional classes are delineated across the three languages, with particular focus on the role of parametric variation. This work is to be situated within the generative framework, especially within the emergentist approach proposed by Biberauer, Holmberg, Roberts & Sheehan 2014:106) according to which parametric variation represents “an emergent property of the interaction of the three factors”, as originally put forth by Chomsky (2005). Hence, Universal Grammar (UG), input, and additional cognitive abilities, which are also referred to as ‘non-language-specific innate capacities’, constitute the foundational elements from which parameters emerge. Parametric variation is determined on the basis of markedness, influencing the parametric settings for specific features in each language based on the range of variation

and resulting in the distinction of different types of parameters, i.e., macro-, meso-, micro-, and nano-parameters (Roberts 2019:75–76).

If class is explained through parametric variation, a heterogeneous schema emerges. Italian is characterized by a robust and transparent inflectional system that displays declension and inflectional classes for all inflectional categories (cf. Acquaviva 2009). A different, yet somewhat similar, expression of class can be observed in French: in this system, declension classes are only relevant for morphology, as they are in Italian. However, the morphological function of class in French has been significantly reduced compared to other Romance languages, with only a limited group of nouns still affected by declension classes, specifically the *-al/-aux* nouns (cf. Lowenstamm 2012). In contrast, the German language presents a parametrically distinct situation. While declension and inflectional classes influence the derivation processes of nouns and verbs only through a morphological expression, adjectives are inflected according to several features, including class (cf. Sternefeld 2004). In summary, Italian and French are macro-parametrically influenced by the class feature, although the morphological role of class differs between the two languages. In contrast, the expression of class in German can be described as meso-parametric, as only the Determiner (D) category is syntactically affected by class.

The observed differences are expected to characterize the acquisition process in monolingual and multilingual children acquiring Italian, German and/or French. Accordingly, the present study compares the data of monolingual and multilingual children to determine the morpho-syntactic role of inflectional classes in the target languages and in the language acquisition process. This study employs the approach proposed by N. Müller (2024a), which posits that, while monolingual children acquire the parametric settings of their language by applying linguistic knowledge gained across various domains, multilingual children can leverage the linguistic knowledge acquired in one language to facilitate the acquisition of the other first language, if they are parametrically different. Following this assumption, multilingual children acquiring Italian and German simultaneously should learn the inflectional system of German more rapidly than their monolingual German peers due to the differing parametric expressions of class in the two languages. In contrast, the French-Italian bilingual children are expected not to exhibit any differences in the acquisition process, as both languages are macro-parametrically influenced by the class feature. Crucially, the results of the quantitative analysis support this

hypothesis, leading to the conclusion that the acceleration effect observed in the German-Italian bilingual children is attributable to the differing parametric settings of the two languages. In contrast, the bilingual French-Italian children do not exhibit significant differences from their respective monolingual groups, supporting the assumption that French and Italian share a macro-parametric option for class. The findings enable the distinction between the acquisition of morphology and syntax, two domains that are frequently addressed together in the literature. The discovery of a feature and its acquisition for parametric setting represent two distinct steps in language acquisition that, while appearing to occur almost simultaneously, take place at different moments.

1.2 Overview

The following chapters offer a comprehensive outline of this study. Chapter 2 introduces the state of the art concerning the generative approach, focusing on studies about parametric variation and language acquisition. Chapter 3 reviews studies on the parametric expression of features closely related to class, such as gender and number in Italian, German, and French, followed by an overview of general trends identified in the state of the art on first monolingual and multilingual language acquisition. Chapter 4 provides a discussion of various approaches to the class feature within the context of the present analysis. Additionally, studies examining the function of the class feature in monolingual and multilingual first language acquisition are discussed, specifically concerning the expression of class in the Determiner-Phrase (DP) and Tense-Phrase (TP). The corpus is introduced in chapter 5, along with the research question, the hypotheses, and methods used for both qualitative and quantitative analyses. Furthermore, the children are compared in terms of Mean Length of Utterance (MLU) and age to offer an overview of the data development. Chapter 6 includes the data analysis and presents the results from both qualitative and quantitative studies. The findings are discussed in chapter 7, first in relation to the monolingual acquisition of inflectional classes and then with a focus on the multilingual process. Finally, chapter 8 provides an outlook on this study, including suggestions for further research and a discussion of the limitations of the present work.

2 Parametric variation and language acquisition

In recent decades, various approaches to variation have been proposed, enriching the understanding of grammatical and lexical differences across different language systems. Similarly, studies on the acquisition of grammatical and lexical features have outlined several distinct models of first language acquisition. Although the connection between linguistic variation and first language acquisition has been a central focus in numerous works, unresolved issues remain in this area. The purpose of the present study is to explore a specific approach to linguistic variation and language acquisition that has gained prominence in recent years, namely the emergentist approach within the generative framework (see i.a. Biberauer et al. 2014).

This work examines the morphological and syntactic aspects of inflected nouns, adjectives, and verbs in Italian, German, and French, focussing on a relatively understudied morphosyntactic feature: the (inflectional) class feature. The aim is to investigate how the presence or absence of inflectional classes within a language system influences the language acquisition process. The present chapter provides an overview of current theories on parametric variation and language acquisition, while situating the proposed model of language acquisition within the generative framework.

2.1 Parametric variation and language acquisition in the generative framework

Language variation is a matter of divergent 'choices' regarding phonological, morphological, and syntactic features. Although similarities can be found among different systems (e.g., the verb occupies the same position in Romance languages and in Chinese), languages tend to differ typologically, i.e., concerning grammatical and lexical features. In the generative framework, each syntactic expression of a feature in a language corresponds to a specific parametric setting. As reported in Bittner, Dressler & Kilani-Schoch (2003) for verb inflection as well as Corbett (1991) for the gender feature among many other works, variation in the system is directly linked to variation in acquisition. Monolingual children acquiring verb inflection in, for instance, Italian and Lithuanian differ in the strategies employed, as well as in the time required to complete the acquisition process due to several phonological, morphological, and syntactic aspects that differently affect the structure of the target system. Thus, from a generative point

of view, parametric variation and language acquisition are directly intertwined. The following sections outline the state of the art regarding these two topics, providing an overview of the origins and development of current linguistic theories, and finally leading to a description of the emergentist approach, which is the framework adopted in the present study.

2.1.1 The definition and evolution of parameters

In the 1960s, Noam Chomsky's work on syntax and grammar gained prominence, and theories of UG became increasingly relevant. UG was conceptualised as an 'innate device' that facilitates the rapid acquisition of the grammatical system of a language. Further on, a key distinction was introduced between linguistic *competence*, defined as "the speaker-hearer's knowledge of his language", and *performance*, i.e., "the actual use of language in concrete situations" (Chomsky 1965:4). This distinction shifted the focus from the study of performance to the analysis of linguistic competence, since understanding performance depends on understanding the underlying competence. Chomsky argued that the task of the linguist is to deduce the system of rules that govern language performance by analysing linguistic competence, in a similar way to the process that a child goes through in acquiring a first language. This perspective emphasised the importance of studying language acquisition for theoretical and practical linguistic research.

2.1.1.1 The Government and Binding Theory

Within this framework, several studies have focused on the investigation of the structure of language, in particular of linguistic competence. The Government and Binding Theory (G&B Theory, Chomsky 1965, 1981, 1982) was one of the first approaches to propose a richly structured UG composed of movement and combination features. This approach, incorporating subsystems such as the X-Bar Theory, Case-Theory, and Theta-Theory among others (for an overview, see Chomsky 1982), assumed that "the grammar of a language can be regarded as a particular set of values for these parameters, while the overall system of rules, principles, and parameters is UG, which we may take to be one element of human biological endowment, namely, the 'language faculty' " (Chomsky 1982:7). A key assumption is that certain aspects of the grammatical system are common to all languages, defined as principles.

The role and extent of parameters in first language acquisition has been extensively studied and reassessed in recent years. The acquisition process was initially explained through an 'innate

linguistic ability' that allows children to use primary linguistic data as an empirical basis for language learning (Chomsky 1965:32). Thus, acquisition is based on input that is inherently shaped by language variation. However, the G&B theory faced challenges in accounting for the architecture of language and its acquisition process. An example is the 'logic problem of language acquisition' (see i.a. Pinker 1995), which highlights the mismatch between the learner's language knowledge and the often incomplete or inaccurate input received, suggesting that language variation depends significantly on the learner's language experience. G&B theory was unable to take this issue into account.

2.1.1.2 Principles and Parameters Theory

Building on the premise that principles and parameters are inherent in the UG, subsequent theories have been proposed. For the present work, one of the most relevant is represented by the Principles and Parameters (P&P) theory (Chomsky 1981). In contrast to earlier approaches to language variation and acquisition, P&P introduced a novel, gradual perspective on these processes that quickly gained acceptance within the field. Prior to the emergence of the P&P theory, UG was conceptualised as a system with a fixed structure that was assumed to be identical for all humans, in line with traditional and structuralist grammars (Chomsky 1965). However, this description of UG did not take into account language variation and, most importantly, how the language acquisition process takes place in languages with different parametric settings. The first relevant claim of P&P was that UG consists of principles, i.e., general linguistic universals that are common to all languages. Some of these principles are parameterised, giving rise to the concept of parametric variation. Within this framework, “a particular grammar was conceived as a UG with parameters set at specific values, and language acquisition as an operation of parameter setting based on the child's linguistic experience and environmental stimuli” (Picallo 2014:2). The P&P was therefore welcomed as a major improvement on existing theories, as it allowed the description of the language acquisition process without excluding considerations of linguistic variation.

According to P&P, the grammar of a language can be seen as a specific configuration or set of parameters contained in UG, which represents the broader framework that includes not only parameters but also rules and principles. In essence, UG is a component of innate human

biological characteristics, i.e., the 'language faculty' (Chomsky 1982:7). As for language variation, the P&P proposed that “language differences and typology should be reducible to choice of values of parameters” (Chomsky 1995:6). Defining parameters as "choices" implicitly implies a binary structure, where each language system selects either a positive or a negative value. A similar binary pattern is assumed in the language acquisition process, where learners set parameters based on the input received, assigning them either a positive or a negative value. This approach marks a fundamental refinement from the prior understanding of the innate linguistic ability, which, through the consideration of the input, sets parameters in a target-like manner. According to the initial version of P&P, learning could only occur from positive input, that is, evidence indicating the presence rather than the absence of a linguistic feature (White 1992). However, theoretical and psycholinguistic approaches have since demonstrated that negative input, i.e., the absence of a feature, influences language acquisition as well (see i.a. N. Müller 2024a).

A wide-accepted proposal within the P&P framework was put forth by Hyams (1986) who, as one of the first researcher, attempted to merge linguistic theory and language acquisition (see also Yang 2010). According to the author, parameter's acquisition can be explained through the *switch metaphor* initially proposed by Chomsky (1988), according to which “each parameter typically takes one of two values” (Valian 1990b:106), describing parameters as having either a positive or a negative value. The language acquisition process was believed to progress due to the input and UG, enabling the child to determine whether the target language makes use of a grammatical feature. Various proposals have been put forth regarding the initial value of the parameter setting. Hyams (1986) initially claimed that all children are born with the parameter set for one of the two available options, irrespective of the parameter setting of the language. This claim was motivated by the acquisitional data of children acquiring languages with different parametric settings. The comparison of the two groups of children acquiring show that children in one group realize a substantial number of target-deviant utterances in comparison to children from the other group, leading to the assumption that children in both groups start the acquisition process with the parameter set for the same option. While children acquiring a language with the corresponding parametric set realize target-like utterances from the very beginning, the children in the other group have to switch the parametric setting to the other

available value (see i.a. Hyams 2011). This approach relies on the Superset-Subset principle, which states that in case of two competing grammars where one of them is a part of the other grammar, the child's learning strategy is to choose the less comprehensive one (Hyams 2011).

A further, well-studied example is proposed by the 'Pendulum Problem' (see i.a. Clahsen 1990) which claims that the acquisition process follows the fluctuations of a pendulum, changing its value between the two available options according to the input. Within this framework, the acquisition data are expected to show different parameter settings according to the input received. Building upon these recent proposals, Valian (1990b) introduced the problem of positive evidence, i.e., the presence of a phenomenon in the language acquired. According to Hyams (1986), an innate parametric setting allows the child to identify whether or not the parameter is appropriately set in the target system. However, Valian (1990b) suggested that this approach does not work for two main reasons: first, the interpretation of the input is influenced by the innate, given parametric setting; second, the child's input also consists of non-target sentences (see i.a. Sudartinah 2016 for further details on the use of motherese). Furthermore, if the child is born with the parameter preset for one of the two values, the other parametric setting would be unavailable to the language learner. These problems could not be solved if the parametric setting was given at birth. Thus, Valian proposed not to assume a given parametric setting for the children, but to recognise the possibility that the parametric setting for the target language is determined by the interaction of UG with the input. A similar approach is proposed by Yang (2002), who, however, considers not only two but three parametric settings. Although Yang's proposal is able to explain a wider range of research findings compared to Valian's work, it cannot fully account for phenomena that appear in acquisitional data. For instance, the absence of subject omissions with modal verbs in English in Valian's data (1990b:116) cannot be explained by Yang's model (see also Hyams 2011 for further discussion about this topic).

2.1.1.3 Some issues with the Principles and Parameters theory

Whether the parameter is set for one of the two possible values, or both, or even more options are available without explicit specification, the theories of the late 90s struggled to account for the breadth of linguistic variation recognized today both in theoretical and acquisition studies. In this regard, the available approaches could only explain the acquisition of some well-studied systems. Among other questions, the investigation into how grammatical and lexical elements

could be acquired at an early age in some languages but significantly later in others remained to be specifically explored. While the existence of a genetic endowment for language acquisition was widely acknowledged in the generative framework, different perspectives emerged regarding the role of UG. First, the child's task was described as "one of selection from a narrow range of options (e.g., parameter values, constraint rankings) that are realized in her linguistic environment" (Yang 2010:1161), leading to the assumption that the input and the UG could explain the acquisitional pattern that monolingual and multilingual children go through. A closer look at the function of both factors, however, led to the assumption that further cognitive abilities need to be considered. Moreover, first language acquisition data displayed a complex situation as concerning the enhancement and use of lexical and grammatical features. For instance, children can exhibit target-like agreement between subject and verb with finite verbs at a very early age. However, they continue to produce target-deviant utterances until a much later stage of development (see i.a. Ferdinand 1996).

To account for this data, along with other phono-morphological and syntactic phenomena observed in children's data, various theories have been put forward within the P&P framework. A well-known debate consists in the dispute between the Maturation and the Continuity Hypothesis (Paradis & Genesee 1997). The former theory posits that functional categories and grammatical knowledge of the acquired language "mature" within the child and are absent at early stages of language acquisition (Tsimpli 1992). In contrast, the latter theory suggests that there is continuity between the adult grammar and the child's grammar, implying that functional categories are not absent but not yet fully developed in early stages of language acquisition. As for the Continuity-Hypothesis, Paradis & Genesee (1997) distinguish between a "strong" and a "weak version". Crucially, this theory was designed following the claims of the P&P framework, assuming that children are born with an innate set of grammatical principles and parameters that remain constant throughout development. Presently, the Continuity Hypothesis is widely supported by most studies, which base their claims on various phenomena within the acquisition data, as for instance the fact that children do not always miss the grammatical information generally coded in functional categories (see i.a. Lust 1999, Crain, Goro & Thornton 2006).

Concluding, the P&P theory gained widespread acceptance, but various issues emerged early in its application. A significant problem arose as studies began applying the P&P theory to theoretical and acquisitional data, resulting in the postulation of an excessive number of parameters. This highlighted a major weakness of the P&P model: the same parameter received different definitions in the literature, and no consensus or official guidelines have been established to date (Sheehan 2021:185). Since the acquisition process was outlined as consisting of principles with some of them being parametrized, doubts about the necessity of many stipulated parameters were raised. Critics have focused on the speed of processing, as language acquisition typically occurs in a short period of time, and the presence of numerous parameters could potentially delay language acquisition and speech production. Additionally, the tasks of descriptive and explanatory adequacy (Chomsky 2000:90) – i.e., verifying that the model fits the observed data of a language and explaining the underlying cognitive mechanisms essential for language acquisition and use – were difficult to meet in a model based on a large system with no recognisable patterns. To address these issues, a new, minimalist approach to the modus and locus of parametric variation was proposed at the beginning of the 21st century, aiming to resolve the primary problems associated with the P&P.

2.1.2 From the Minimalist Program to modern approaches

The Minimalist Program (MP, Chomsky 1995, 2000) was proposed at a time when the P&P approach faced various challenges. The central objective was to reduce the number of parameters, aligning with the observation that the process of language acquisition relies on the economy of features to function effectively. While the fundamental question of the P&P consisted in defining the range of ‘allowable variation’ for every functional category (Baker 2015:7), the MP aimed to enhance the role and significance of UG within the realms of linguistic variation and language acquisition. Consequently, UG was restructured to include principles but not parameters (Martin & Uriagereka 2000:20). According to the MP, a child is presumed to base the entire acquisition process on UG, which consists of inviolable principles, while parameters are described as the source of linguistic variation (see i.a. Willim 2000:340). This gave rise to the development of the "Borer-Chomsky Conjecture" (Baker 2008b), stating that "all parameters of variation are attributable to the differences in the features of particular lexical items (e.g., the functional heads) in the lexicon" (Baker 2008a:353). The main aim of

the Borer-Chomsky Conjecture was to define the locus of variation as concerning the expression of grammatical features. According to several authors within the MP framework, variation is to be situated in the lexicon, including morphosyntactic properties and the Phonological Form (PF) of every system. In essence, there is no syntactic variation per se; rather, the variation is rooted in the morphosyntactic properties of lexical elements and their representation in the PF. Hence, the new aspect of the MP lied in the claim that parameter setting and linguistic variation are formally confined to the lexicon. Since this approach primarily focused on lexical elements rather than syntactic ones, it is often labelled a 'lexicocentric' approach (cf. Bazalgette 2015).

A crucial proposal that enabled the progress of the MP was put forward by Chomsky (2005) in the so-called “three factors of language design” hypothesis, which is still to be interpreted within the minimalist framework but with the introduction of, up to then, unconsidered aspects. In line with this, the language acquisition process relies on three factors: UG, the input, and extra-linguistic principles. First, various theories have sought to describe UG, considering factors such as the presence or absence of functional features (see i.a. Wiltschko 2014). Currently, the debate is still open as concerning the locus of variation and, hence, the locus of features ‘storage’. On the one hand, several studies in the minimalist framework sustain the claim that features are innate (Kayne 1994, Pesetsky 1996, Rizzi 1997). On the other hand, the process of language acquisition has led to the hypothesis that features are not available in UG, they rather ‘emerge’ through the interaction of UG with input and cognitive principles (i.a. Wiltschko 2014). Second, the role of input in language acquisition has been taken into consideration in a large number of studies and it is generally accepted as an extremely relevant aspect of language acquisition (see i.a. La Morgia 2011, Paradis & Grüter 2014, Cantone 2022). Finally, the third factor is described as including cognitive abilities that are fundamental for language processing as well as for further extra-linguistic capacities (Chomsky 2005:6). With this regard, Chomsky mentions principles of cognitive abilities such as “principles of data analysis” and “of structural architecture and developmental constraints”. However, the interpretation of the third factor is still perceived in the generative research field as emblematic (see Trotzke, Bader & Frazier 2013, Westergaard 2014).

The inclusion of extra-linguistic cognitive factors in the language acquisition process within the MP facilitates the integration of empirical studies in neuro- and psycholinguistics with

theoretical investigations. As reported in Boeckx (2011:444), “one of the most revolutionary aspects of minimalism is the consideration of the language faculty in a broad cognitive and perceptual system”. A relevant assumption formulated within the MP framework regarded the variation possibilities in language acquisition: children’s grammar is supposed to vary from the adult grammar in the first stages of language acquisition, but the range of variation does not differ from the variation of adults’ grammars. In essence, the target-deviant utterances realized by the children throughout the language acquisition process mirror the linguistic variation found in different languages of the world with regard to a specific parametric setting.

However, the role of parameters and their necessity in the acquisition process has been challenged by various psycholinguistic and theoretical approaches, contributing to the weakening of the generative framework. A number of proposals has been made by Longobardi (2006), Uriagereka (2007) and Newmeyer (2017), among others, aiming to address the parameter issue by focusing on various aspects of linguistic variation within the language acquisition process. An analysis of these proposals leads to the conclusion that the interpretation of the three factors proposed by Chomsky (2005) varies significantly when it comes to linguistic variation. According to Longobardi (2006), the outlined Modularized Global Parametrization model is based on Chomsky’s claim that parameters can be interpreted as a switch box with either a positive or negative value, depending on the syntactic structure of the language (Chomsky 1988). In this context, variation is elucidated as residing within the third factor, which, according to Longobardi, can be explicated through a diachronic analysis of the language structure. Hence, “variation is innately given” (Longobardi 2006:409) and its borders are set by the UG. As for Uriagereka (2007), whose proposal is known as the Core – Subcase - Peripheral Model, linguistic variation concerns the first factor, i.e., UG. The author considers variation as affecting the part of the innate grammar which is set in parameters throughout the language acquisition process. Finally, Newmeyer (2017) proposes that the interaction of UG and extra-linguistic cognitive constraints is the key to explain linguistic variation among languages. In particular, this approach considers variation as concerning the expression of linguistic traits. These theories diverge significantly from Chomsky’s (2005: 6) consideration of linguistic variation, which, in contrast, places variation in the input and, consequently,

outside of the syntax. According to Chomsky, the linguistic experience of a language learner differs and varies based on various aspects, with the most crucial being the input.

Not only UG and input but also additional sociolinguistic and input-related factors for first language acquisition have gained a relevant role within the framework of the MP. Initially focusing on cultural and societal aspects of linguistic variation in monolingual speakers, several studies have supported the claim that sociolinguistic factors influence different linguistic areas, e.g., the pronunciation of sounds and, hence, phonology (see i.a. Bauer 1985). As soon as the role of sociolinguistic factors in the development of phonological, lexical, and grammatical features in monolingual speakers was recognized, there started to be an interest in the effect of these aspects on the first language acquisition process (see i.a. Johnson & White 2020). Kerswill & Shockey (2006), among many others, considered the acquisition of language variation in perception and production data from a sociolinguistic point of view. The authors emphasize that language variation throughout the lifespan can be influenced by various factors, among which the quality and quantity of input (cf. 2.2).

In conclusion, several works have analysed the “three factors of language design”, as proposed by Chomsky (2005), considering different aspects of language variation and acquisition and suggesting changes as well as a reconsideration of the whole language acquisition model. Taking into account UG as a complex system of structures that provides the language learner with a finite number of possibilities when acquiring a language system, UG alone cannot be considered the 'locus' of linguistic variation in a theoretical model, compared to the proposal within the P&P framework. Reasonably, UG is responsible for the breadth of variation, while the interaction of the second and the third factors controls the parametric setting for each language (see also Roberts 2019:18).

2.1.3 The emergentist theory and parameter hierarchies

In the past decade, the concept of 'rethinking' parameters has garnered substantial support within the discipline of linguistics. Among the various proposals, Newmeyer's (2004) approach has received extensive consideration. He proposes a "rule setting" theory, presenting arguments that advocate for the preference of the concept of "rule" over "parameter". Essentially, Newmeyer's approach seeks to shift from a parameter-based view to a "rule-based model"

(Newmeyer 2004:182). Despite the criticisms directed at the rule-based model, such as the response by Roberts & Holmberg (2006) which underscores that this approach merely substitutes the term ‘parameter’ with the one of ‘rule’ without any significant enhancement, the pertinent aspect of Newmeyer's work lies in its aim to facilitate the conceptualization of linguistic variation within the literature. This constitutes the primary objective for the MP (Chomsky 2023).

Notwithstanding the ongoing debate about the advantages of a rule-based approach rather than a parameter-based approach or vice-versa, several works have argued about the necessity of improving the MP as concerning the manner in which principles and parameters interact (see i.a. Roberts 2019). A recent model outlined first in Biberauer et al. 2014 and then developed in further works combines the advantages of the MP to a new approach to parameters and, hence, to linguistic variation and language acquisition. The proposal is based on the idea that parameters are organized in hierarchies which are built upon the observation and comparison of markedness’ expression in the organization of functional features in different language systems. The hierarchies are based on the concept that parameters can be categorized according to varying degrees of markedness. This allows for their classification on a scale ranging from less marked, known as macro-parameters, to progressively more marked parametric settings in the target language, labelled as meso-, micro-, and nano-parameters (Biberauer et al. 2014:105). According to this theory, linguistic variation arises due to the expression of functional and lexical categories in each language. The distinction between different types of parameters is conducted by examining the number of categories affected by the parameter (Roberts 2019:56). The schema in (1) illustrates the formal definition of the different types of parameters in the emergentist program (Biberauer et al. 2014:109):

- (1) For a given value v_i of a parametrically variant feature F.
 - a. Macroparameters: all (functional) heads share v_i ;
 - b. Mesoparameters: all functional heads of a given naturally definable class, e.g. [+V], share v_i ;
 - c. Microparameters: a small subclass of functional heads (e.g. modal auxiliaries, pronouns) shows v_i ;
 - d. Nanoparameters: one or more individual lexical items is/are specified for v_i .

Hence, parameters can be represented on a hierarchy, with macroparameters on the top, affecting all functional heads of the system, and nanoparameters on the bottom, conditioning only one or few lexical items. According to this classification, the parameter hierarchy illustrates a NO > ALL > SOME features' hierarchy. This means that either no or all functional heads can be affected by a feature for macroparameters, while the feature is expressed on only some categories, or even a group of lexemes in one category, for meso-, micro-, and nanoparameters (Biberauer et al. 2014:113). This approach offers several advantages. First, general cognitive constraints for language variation are considered within the emergentist framework. Linguistic variation arises from biases driven by the third factor interacting with UG and input, leading to parameter interaction and emergence of functional features (Roberts 2019:7). Second, the parameter hierarchy includes the expression and range of features, supporting the determination of syntactic aspects. An example is constituted by the hierarchy for the phi-features (ϕ) which directly correlate with the expression of the null-subject parameter in the target-language (Roberts 2019:285). Furthermore, the model considers language variation on synchronic and diachronic levels. Diachronically, the variation in the expression of features depends on historical and socio-cultural factors linked to linguistic markedness. Synchronically, it depends on the parameter setting of the system (Roberts 2018).

With regard to language acquisition, Biberauer et al. (2014) propose that the parameter hierarchies represent not only the syntactic variation in terms of expression of functional features, but also the stages that children go through when acquiring their first language. Hence, this approach allows the formulation of explicit hypothesis and expectations as concerning language acquisition. Learners are supposed to “start at the highest position of the hierarchy and keep testing down if the primary linguistic data is incompatible with a given option” (Piccolo 2014:7). During the initial stages, it is posited that a child begins to analyse the linguistic input, actively seeking features. As soon as a feature is identified in the target language, the child is claimed to initially inflect all functional heads in accordance with that feature, implying the application of a macro-parametric option to the target system. Therefore, if the target language has a macroparametric value for the acquired feature, then it is assumed to be learned earlier than languages with meso-, micro- or nano-parametric options. The position of the language on the hierarchy as concerning the number of affected functional

categories is related to the concept of markedness even in the acquisition process. Languages displaying macroparametric options for a feature are less marked, or less complex, than languages that are represented lower on the hierarchy and, thus, expressing the feature only on a smaller number of functional heads (Biberauer et al. 2014:115). Thus, variations in markedness among languages contribute to differences in the language acquisition process. Crucially, studies which compare children acquiring languages with different parametric values for a given parameter appear to support this claim (see i.a. N. Müller 2024a).

At this point, a question arises concerning the observation of a specific pattern in the first language acquisition process of monolingual children. As discussed in the preceding section, the emergentist approach assumes that parameters are the result of the interaction of UG, the input, and the extralinguistic cognitive constraints (Roberts 2019:7). UG delineates the principles and outlines the limited possibilities within the system. Simultaneously, language experience functions to reveal information on the expression of the feature under consideration for acquisition. In this context, Biberauer et al. (2014:108) contend that “parametric variation emerges where UG doesn’t mind”. A parallel process is postulated to occur in the acquisition phase, in which the third factor assumes significant functions. Specifically, extra-linguistic capacities prove highly advantageous, enabling the language acquirer to leverage general cognitive abilities in support of the acquisition process. Feature Economy is formulated as follows: “postulate as few formal features as possible to account for the input (=intake)” (Biberauer 2019b:59). Input Generalization suggests to “maximise already-postulated features” (Biberauer 2019b:60). Thus, the language learner encounters input, striving to minimize features in the acquired linguistic data. Once the learner has acquired a linguistic constraint, an attempt is made to generalize the acquired input across all domains of the target language. Both aspects are regarded as foundational to the third factor, as they can be extended to broader domains of human learning, transcending the scope of language acquisition (Chomsky 2005).

In recent years, various approaches have been proposed which investigate the nature and functions of cognitive abilities. Biberauer (2019a) proposes the Maximise Minimal Means (MMM) theory, claiming that the properties of Feature Economy and Input Generalization can be merged into a single feature, namely the MMM. According to the author, the adult grammar system relies on parameters that emerge thanks to the interaction between UG, the input, and

the MMM feature. Starting with the idea that functional features are not unborn or given, it is not realizable for the learner to make a one-time-selection from a “pool of Functional Features”, ideally represented in UG (Biberauer 2019b). Consequently, the role of UG is to direct the learners to carefully analyse the features that are present in the input. Moreover, Biberauer (2019a:214) makes a fundamental distinction between “input”, defined as the whole input the learner receives, and “intake” which is described as what the learners actually apply to their own grammars.

In conclusion, the concept of parameters has gained considerable attention in the literature. From the G&B Theory through the P&P model to the MP, numerous studies have investigated locus, modus, and role of parameters. Currently, many issues pertaining to the initial version of the parameter approach have been addressed through the examination of lexical and grammatical phenomena in various language systems. However, there remain research gaps that need to be considered. Concerning the two primary topics of this chapter, i.e., linguistic variation and language acquisition, their interaction is evident and thoroughly examined within the emergentist framework. In the preceding sections, the definition and development of parameters have been considered with particular focus on variation and monolingual language acquisition. The following sections focus on the notion of parameters in the literature, specifically addressing multilingual language acquisition and summarizing to a certain extent the most relevant theories on this topic.

2.2 Language acquisition: parameters in multilingual first language acquisition

Although there is currently consensus that the monolingual and multilingual language acquisition processes share similarities, there is still no unanimity regarding the conceptualization of the multilingual mind. On the one hand, several studies have demonstrated that multilingual children acquire their first languages separately, suggesting that they develop autonomous and distinct language systems and that parameters are set separate for both languages (see i.a. Hulk & Müller 2000; Müller & Hulk 2001; cf. Volterra & Taeschner 1978). On the other hand, questions concerning the nature of parameters in multilingual language acquisition and the sharing of features between the two or more systems are still under debate. Furthermore, sociolinguistic factors affecting the status of the societal and/or heritage language

are commonly reported to influence the acquisition process, potentially resulting in notable differences between the monolingual and multilingual groups in the development of one of the two languages (see i.a. Unsworth 2016). Not only during the initial stages of language acquisition but also from the preschool period onward, various factors can influence the language development process (Mueller Gathercole 2016).

2.2.1 Key factors in monolingual and multilingual first language acquisition

A critical factor in both monolingual and multilingual language acquisition is the quality and quantity of input. As for quantity of input, it serves as a significant differential aspect for monolingual and multilingual children since the input for each language is divided according to the number of languages being acquired in multilingual contexts. Behrens (2006) conducts a detailed analysis of verbal input and output in a German monolingual child, revealing a strong correlation between both variables, as expected. Valian (1990a) investigates the "input constraint", which arises because the input received by children is often deviant from the target system in terms of phonology, morphology, or syntax. In spite of the considerable amount of incorrect input encountered, children demonstrate the ability to produce target-like expressions at an early stage. Consequently, the frequency of target-like or deviant input does not consistently affect the language acquisition process (cf. Nicoladis, Palmer & Marentette 2007, Austin 2013). Concerning the quality of input, numerous studies have examined both positive and negative evidence. It is widely recognized that positive evidence, denoting the presence of a specific linguistic phenomenon within the input, aids children in orienting the language acquisition process towards the realization of target-like utterances. Conversely, various functions have been assigned in the literature to negative evidence, which relates to the absence of the form to be acquired in the input. Hyams (1986) posits that the absence of evidence for a specific structure, such as missing subjects in the input, assists the child in configuring the parameter to align with the target system. In contrast, Valian (1990a) attributes a secondary role to negative evidence, viewing it as one of the cues the child receives from the input while attempting to set the parameter target-like. Currently, studies could prove that both positive and negative evidence fulfil fundamental roles in language acquisition and their implementation throughout the acquisition process is considered as part of the extra-linguistic cognitive

functions adopted by the children (N. Müller 2022), with negative evidence being particularly relevant in multilingual first language acquisition.

Children acquiring two or more languages are commonly compared based on the Age of Onset (AoO) and other factors that are typically noted to impact the development of the heritage or societal language (Montrul 2016). As for the present work, the focus is on 'simultaneous' bilinguals, i.e., children acquiring two languages simultaneously from birth. The aim is to analyse the influence that one language, the less marked, has on the other language, which, in comparison, is more marked concerning the expression of the feature analysed within the present study. The advantage of considering multilingual language acquisition and comparing it with data from monolingual children is multifaceted. Not only the interaction of the two languages in the child's grammar as concerning the class feature represents a consistent research gap in the acquisitional research, but also the chance of explaining the monolingual and multilingual acquisition process through the observation of related but contrasting phenomena is one to take. To explain how the two systems interact, the notions of parameters, UG, input, and extra-linguistic cognitive capacities fulfil a significant role.

2.2.2 Multilingual language acquisition in the emergentist theory

Starting from the assumption that a multilingual child is not “two [or more] monolinguals in one person” (Grosjean 1989) but that aspects such as the societal language and the community as well as the linguistic behaviour of the child's family affect the development of one or even more languages, several studies report unexpected results as concerning the acquisition of grammatical features in multilingual children in comparison to monolinguals. Specifically, the data from multilingual children in various contexts reveal phenomena of both delay and acceleration effects in first language acquisition in comparison to monolingual children². Delay is generally defined as the developing of a language “at a slightly slower rate compared to a monolingual's single language” (Hoff, Core, Place, Rumiche & Senor, Melissa, Parra, Marisol 2012) in studies on transfer – which is often used as a ‘parachute’ term to cover phenomena

² With regard to this topic, de Houwer (2023) criticises the comparison of the two groups and defined it as the “monolingual bias”, since monolingual first language acquisition is still considered ‘the norm’ in the literature, although this does not represent the reality of most countries (cf. Soehl (2016) and Adler (2019) among many others).

found within language production data that cannot be explained elsewhere – as well as further effects that, however, rely on the idea that the languages acquired by the children are completely separated, with single features interacting in several ways (for an overview cf. N. Müller 2017). Studies following this approach claim that the correction process and the acquisition of target-like structures take gradually place thanks to the input and the overt corrections from the parents, although this process generally needs some time to be completely internalized by the child. Crucially, acceleration effects as well as several phenomena observed in multilingual acquisition can only be partially accounted for. Acceleration is defined as “the earlier emergence and (full) acquisition of a linguistic property in multilinguals than monolinguals” (N. Müller 2024a:4). This kind of effects can be explained through the consideration of ‘shared structures’, as reported by N. Müller (2024a), who highlights the consideration of differences as well as similarities among the systems acquired by the children in order to account for different phenomena in multilingual language acquisition.

In the emergentist theory, the proposed parameter hierarchies are based on markedness. In a nutshell, the interaction of different parametric settings in the mind of the multilingual child leads to the accelerated acquisition of parameters. For this purpose, the child applies the acquired linguistic knowledge in one language to fasten the acquisition process of the other language in the same linguistic domain (N. Müller 2022). Arguably, the child makes use of the information present within the input, but also the information that is missing – i.e., the negative input – is exploited by the child (Silva Colaço, Hoffmann, D’Aurizio & Müller 2024). In this regard, the multilingual child has to implement extra-linguistic factors that, as for the monolingual children, consist of Feature Economy and Input Generalization. Near to these factors, the Aim-All (A_{AIMLL}) strategy guides the multilingual child to choose the typological structure of the language that is being learned on the basis of the linguistic knowledge acquired in the other(s) language(s). According to N. Müller (2024a), monolingual and multilingual language acquisition follow a similar pattern, since all children tend to use a Cognitive Optimization Strategy to facilitate and possibly accelerate the acquisition process of the first language(s). This strategy ‘guides’ the child through the parameter hierarchy (N. Müller 2024a:8).

A further strategy, however, benefits the accelerated acquisition process for multilingual children: based on the assumption that parameter hierarchies pertain to the non-duplicated component of language, i.e., to the cognitive elements interdependent on each other (see MacSwan 2000 for further details), multilingual children make use of the linguistic knowledge gained in the less marked language to accelerate the acquisition of the more marked language. In particular, this strategy enables the children to reconsider the rejected alternatives for one language and to apply them to the acquisition of the other language. Crucially, this strategy can only be used by the multilingual child if the two – or more – systems present different parameter settings (N. Müller 2024a:8). If this requirement is met, the parametric choice for both language takes place almost simultaneously. This approach allows to explain tendencies found in the data of monolingual and multilingual children as concerning acceleration effects for the acquisition of grammatical features (i.a. Serratrice, Sorace & Sandri 2004, Eichler, Jansen & Müller 2013, Hager 2014, Kupisch, Geiss, Mitrofanova & Westergaard 2022, N. Müller 2024a). Whether delay, acceleration or not comparable effects arise, it depends on the system that is being acquired by the child: the more a language is marked as concerning the expression of the functional feature, the more time the child needs to acquire and, in case of multilingual acquisition, the more probable it is that the less marked language influences positively the more marked one.

Accordingly, multilingual children can either be accelerated (see i.a. Silva Colaço et al. 2024), delayed (see i.a. Paradis 2007) or develop both languages at a rate comparable to monolingual children (see i.a. Mykhaylyk 2013). Crucially, studies with conflicting results often centre on different aspects of the acquired language. Although bilingual children are typically reported to display enhanced inhibitory control compared to their monolingual peers (Bialystok 2001), several studies assert that multilingual children generally require more time to commence word production in both or even just one of the two languages (Grosjean 1989). In summary, monolinguals and bilinguals share similarities as well as contrasting characteristics within the acquisition process.

In addressing this issue, a question arises regarding the most effective way to compare languages within the child and among monolingual and bilingual children for one of the languages, prompting the suggestion of various methods. A commonly used strategy involves

comparing children based on age (see i.a. Nelson 1981). However, as noted in Brown (1973:53), "children acquire language at widely varying rates," meaning that assessing children's language abilities according to age may not yield fully reliable results. Consequently, measures such as the Upper Bound, the Mean Length of Utterance (MLU), and other language production-related units were considered (see chapter 5 for further details), giving rise to studies analysing language development in children that can be compared based on the produced utterances. Moreover, depending on the adopted method, multilingual children can be divided into different groups based on the development of both languages, i.e., on language dominance (Cantone, Kupisch & Müller 2008). Multilingual children can be either dominant in one of the acquired languages and described as unbalanced bi- or multilinguals, or they can develop all systems at a similar rate, representing a balanced language development. Treffers-Daller (2019) reports that various extra-linguistic and sociolinguistic factors affect language dominance in multilingual children, e.g. socio-economic status and the political situation of the birth country, among others. Accordingly, these aspects need to be considered when examining bi-, tri-, and multilingual children.

Does this mean that monolingual and multilingual children are not comparable as concerning language development? Several studies including both groups with regard to the acquisition of different grammatical and lexical features report clear results: monolingual and multilingual data can be compared. Although multilingual children can develop one of the two languages, often the non-environmental one, as the "weak" language, the linguistic and cognitive functions related to multilingualism are present (see i.a. Kupisch 2001, G. Müller 2004, Bonnesen 2009). Crucially, balanced and unbalanced multilinguals present differences not only at the level of language competence but also at the level of neuroanatomical features, such as cortical thickness (Archila-Suerte, Woods, Chiarello & Hernandez 2018). Hence, the acquisition of a language, e.g. Italian, in a bilingual German-Italian child is comparable to the acquisition of Italian in a monolingual child (cf. Tedeschi 2017), even though cultural and sociolinguistic aspects still need to be taken into consideration (Arnaus Gil, Müller, Sette & Hüppop 2021).

In summary, parameters are acquired similarly in monolingual and multilingual children. The latter group, however, possesses the ability to utilize linguistic knowledge acquired in one language to accelerate the parametric setting in the other language(s). Further on, the

emergentist framework posits that the grammars of the languages acquired from birth interact within a multilingual child. Starting from the assertion that, although the systems are distinct from the outset in the mind of the multilingual child, certain elements must be interdependent and, therefore, shared between the two systems (MacSwan 2000), N. Müller (2024a) contends that linguistic knowledge acquired in one language is co-activated during the acquisition of analogous grammatical structures in the other language. Within the emergentist framework, she advocates for syntactic and phonological components of language, specifically the parameter hierarchies, to be singularly present in the language faculty of the multilingual child. This perspective can elucidate both acceleration and delay processes without, however, having to delineate the constraints and potentialities of additional phenomena occurring throughout multilingual language acquisition, such as code-switching. To the best of the author's knowledge, there are no studies examining the language acquisition process in monolingual children within the emergentist framework. Consequently, the acquisition of different parameters should be investigated in both monolingual and multilingual language acquisition studies to evaluate the hypothesis of the emergentist approach against current data.

3 Features and syntactic aspects of Italian, German and French

The investigation of syntactic structures within the DP and TP is a multifaceted topic extensively explored in several studies. Key debates include the dominant layer within the DP and Noun Phrase (NP), as discussed by Salzmann (2020), and the distinctive features of the DP and TP, as proposed by Danon (2011). However, it is crucial to examine further dimensions of the DP and TP to establish the foundation for the present research. Abney's (1987) proposal of the DP hypothesis suggests a superordinate structure above the NP that contains a functional element, the determiner. This hypothesis aligns with Chomsky's (1986) 'C-I-V hierarchy', which posits that the Verb Phrase (VP) is dominated by functional projections such as Inflectional-Phrase (IP) and the Complementizer Phrase (CP). The following sections focus on theories concerning the features of the DP, followed by an examination of the TP and its inherent features. This chapter aims to provide a comprehensive overview of studies on the syntactic structures and functional features of DP and TP while focusing on studies about the first language acquisition process.

3.1 The DP: features in Italian, German and French

The generative theory assumes that syntactic structures conform to the principles outlined in the 'X-bar theory,' displaying lexical categories such as nouns, adjectives, verbs, etc., within layered structures (cf. i.a. Chomsky 1970). The hierarchical position of each layer within the structure reveals important grammatical information about the sentence, such as the occurrence of specific elements in the Specifier (Spec) position (e.g., Spec VP, Spec TP). These elements are often positioned higher than others within the phrase due to spell-out phenomena and to the inherent hierarchical organization of the phrase. The following figure illustrates the underlying structure of a phrase represented through the X-bar schema:

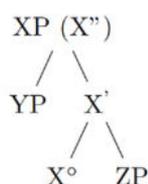


Figure 1: X-bar Schema, adapted from Chomsky (1970)

As displayed in Figure 1, XP and ZP fulfil the functions of Spec and Complement respectively, along with the layered projections of the head, symbolized by \circ as in 'X \circ '. Concerning the syntactic structure of the DP, the head is represented by D \circ , while the Spec position can be occupied by either another phrase (YP in Figure 1) or by an element that precedes the head at spell out. Furthermore, the NP – hence the noun (ZP in Figure 1) – takes the place of the complement of D. The main claim of the X-bar theory is that every phrase in every sentence adheres to the same structural organization across languages (Chomsky 1970). The primary requirement of X-bar theory is headedness, as also assumed in the 'headedness principle' which establishes that every phrase must have a head. Furthermore, the headedness principle assumes that the head determines the function of the phrase, leading to a syntactic analysis of sentences as consisting of several phrases. According to the headedness principle, the main difference between phrases and sentences lies in the different syntactic functions they fulfil and the load of syntactic material they bear.

Building upon the assumption that each phrase within a sentence accomplishes a syntactic and semantic function in the discourse, Abney (1987:25) focuses on the differentiation between sentences and NPs, highlighting them as "the two categories which contain subjects". The NP has its origin in the very early distinction between different parts of speech: since nouns fulfil a lexical function, i.e., carry a proper meaning, they are the head of their own phrases. However, a question arises concerning whether the NP can host all the functional and lexical elements typically found within the noun phrase such as articles, demonstratives, etc. The DP hypothesis, as suggested by Abney, provides an answer to this question. Focusing on the agreement within the DP and especially on the locus (or loci) of different functional elements such as Agreement (AGR) and, eventually, Possessor (POSR), Abney (1987:19) proposes a "nominal inflection category", initially named 'x'. He posits that 'x' cannot be learned and is thus innate, supplied from UG to the learner and including lexical as well as grammatical material. Considering the elements of the NP such as articles, adjectives, etc., Abney concludes that none of them carries the grammatical and lexical information that are required to be the head of a functional projection. Hence, the proposal is to consider the determiner as the inflectional head of the NP. In his words, "if we assume that x = Determiner, we kill two birds with one stone: we provide category 'x' with lexical instantiations, and we provide determiners with specifiers (the possessor) and complements (a projection of N)" (Abney 1987:25). Therefore, the DP-

hypothesis allows ‘to kill two birds with one stone’, offering determiners the capacity to instantiate both lexical and grammatical material while providing specifier and complement positions for lexical and functional elements. Moreover, the DP hypothesis is supported by at least two different aspects. First, the distributional properties of determiners demonstrate that they fulfil relevant syntactic functions. Second, arguments in favour of a functional projection above the NP are derived from observations about the possibilities of noun movement within different languages (Alexiadou, Haegeman & Stauru-Sēphakē 2007:4).

At present, the DP-hypothesis has evolved beyond a mere hypothesis and is now a well-established theory in the generative framework. In alignment with this perspective, the current work assumes that the DP fulfils the role of a functional projection above the NP, including various features that may – or may not – be spelled out, depending on the linguistic system. Nonetheless, there are conflicting theories regarding the specific functional categories housed within the DP. With regard to this issue, Abney (1987) suggests that there are five properties that grammatical elements need to fulfil in order to be defined functional categories. According to the author, the functional elements are required (1) to belong to closed lexical classes, (2) to be phonologically and morphologically dependent on other elements, e.g. they cannot be stressed, (3) to have only one complement from which (4) they cannot be separated and (5) not to have a semantic content but rather a grammatical one. Determiners appear to fulfil all these requirements (Haspelmath 1994:5), although there have been several discussions related to this matter within the last decades (see i.a. Alexiadou et al. 2007).

Concerning the role of features, their realization within the DP can take various forms. Firstly, features can be either valued or unvalued, depending on the specific features' structure in the system. Some studies argue that lexical elements enter the derivation process unvalued and are then valued through agreement (Danon 2010:164). According to this perspective, features have a binary configuration, altered through agreement (see i.a. Halle 1957). This is in contrast to Chomsky (2000)'s theory, which posits that features enter derivation complete, with agreement subsequently deleting unnecessary values (Danon 2010). The characterization of features as binary elements with only two possibilities—valued and unvalued—raises questions about their morphological and semantic relevance and on how to explain the different values a feature can

exhibit (e.g., languages allowing singular, plural, dual, or paucal). These considerations fall within the broader discussion about the internal configuration of features (Corbett 2010).

A further notion that is particularly relevant for features in the DP and TP is interpretability: features can be either interpretable or uninterpretable in the syntax, leading to either spell-out in the former case or syntactic operations in the latter case (see i.a. Svenonius 2006). Accordingly, interpretable features can be spelled out, while uninterpretable features need to be either deleted or reanalysed before spell-out. In essence, features trigger several operations, e.g. movement, to enable the formation of target-like structures in a language (Svenonius 2019:15). Within the DP, several features fulfil this role, although their expression varies in the languages investigated within the present work. On a general level, the functional head of the DP, hence D, encodes information about definiteness, specificity, referentiality, i.e., the ability to refer to specific entities or individuals in the world, and deixis, namely the function of situating the referent of the DP within a specific context, among others (Bernstein 2001:544). The expression of features such as gender and number in Italian, German and French is particularly relevant for the analysis presented in chapters 5 and 6, since the investigation of these features allows to set the boundaries between them and class, the main topic of this work. In the following sections, several studies are presented that consider the gender and number features in the three target languages within a morpho-syntactic framework.

3.1.1 Gender in Italian, German and French

Gender has been the focal point of numerous studies that, whether operating within theoretical or acquisitional frameworks, delve into the role of this feature from both syntactic and morphological perspectives. Given the central focus of the present work on the class feature within DP and TP, and considering the direct correlation between class and gender in the languages under examination, a comprehensive overview of studies about the gender feature is essential.

3.1.1.1 Definition of gender

Corbett (1991:1) defines the term *gender* by reporting that “(it) derives etymologically from the Latin *genus*, via Old French *gendre*, and originally meant ‘kind’ or ‘sort’ ”. According to the author, while the term has evolved to carry semantic connotations related to the differentiation

of sexes in the tangible, biological realm, its initial usage was a classification of nouns based on grammatical properties of the noun. This becomes evident when considering the gender of abstract or common nouns in languages featuring a gender system. In essence, one might question the rationale behind the masculine gender of the German noun *der Stuhl* ‘the chair’, compared to its feminine gender counterpart in Italian, *la sedia*. In addressing this matter, gender systems are typically categorized into two main types based on whether they employ formal assignment criteria, such as morphological and/or phonological constraints, or rely on semantic criteria, where gender information can be derived through the value of biological sex of the referent (Corbett 1991:8). As for Italian, German and French, they are generally described as assigning gender applying both formal and semantic criteria. The following sentences provide an example for the semantic (2) and formal (3) gender assignment rules in French and German:

- (2) *la fille, le garçon*
‘the_{fem.sing.} girl’, ‘the_{masc.sing.} boy’
(3) *die Einsamkeit, das Kätzchen*
‘the_{fem.sing.} solitude’, ‘the_{neut.sing.} kitty’

While the nouns *fille* ‘girl’ and *garçon* ‘boy’ in French as well as in many other languages have a gender value assigned according to the biological sex of the reference, abstract nouns such as *Einsamkeit* ‘solitude’ and common nouns like *Kätzchen* ‘kitty’ receive a gender according to their morphological form, e.g. the suffix *-keit* is feminine, while *-chen* is neuter in German. Hence, the gender system of a language allows nouns to be classified according to specific values which can be either formally or semantically set.

3.1.1.2 Morpho-syntactic aspects of the gender feature

It is generally accepted that gender represents a morphosyntactic feature, namely a feature that “operates across at least two components: morphology and syntax” (Kibort 2010: 64). At the morphological level, the expression of the gender value on the noun or another element of the DP modifies the morphological unit chosen for inflection, e.g., a feminine noun often inflects in *-a* in the singular form of Italian or Spanish. At the syntactic level, different operations are involved when a morphosyntactic feature undergoes the derivation process, first and foremost agreement, which operates among the lexical and grammatical elements in the phrase (see i.a.

Corbett 2006a). Within the DP domain, agreement is often governed by the noun, the element which carries grammatical information about, for instance, gender and number. According to Corbett (2006a:4), the element that determines the agreement terms is the *controller*. Nominal modifiers such as adjectives and determiners receive a syntactic value through agreement and are accordingly labelled as the *target* of the agreement process (Corbett 2006a:4)³.

The involvement of two or more elements within the DP in the agreement processes regarding the gender value of the controller enables the definition of grammatical gender as a morpho-syntactic feature (Fuchs 2019:8). Accordingly, gender represents a grammatical feature that operates on the syntactic level. While the function of the gender feature within morphology and syntax has been extensively examined in numerous studies (see i.a. Kramer 2015), there remains considerable debate in the literature regarding both the locus of gender within the DP and its distinction from another feature, namely, number. These two issues are intricately connected. As reported in Fuchs, Polinsky & Scontras (2015), the debate was originally split into two different approaches: on the one hand, Ritter (1993), among many others, proposes that gender is expressed on the Number-Phrase (NumP) for pronouns, i.e., as a feature on the head of the number category which, differently from gender, is not inherently lexical but rather contextual (cf. Déchaine & Wiltschko 2002 for a similar proposal); on the other hand, Picallo (1991) advocates for the necessity of a functional projection for the gender feature, the Gender-Phrase (GenP), which is dominated by the NumP. While the former theory suggests a ‘bundling’ of features for the nominal domain, the latter ‘splits’ them into two separate projections which are represented on different stages within the feature hierarchy. Crucially, both theories are tested on different gender systems: while the ‘split hypothesis’ by Picallo proves to be efficient on Romance languages (see Picallo 2008, 2017 and Valois 1991), the ‘bundle hypothesis’ has been tested on languages with a different gender system than the Romance languages, such as Hebrew (Harley & Ritter 1993).

³ To the term of agreement, Giusti (2008) opposes the one of *concord* as initially proposed by Chomsky, distinguishing the two operations on the basis of the features that are transferred from the functional head to the first open position. According to Giusti, agreement targets the person feature which, as a result of the fulfilled morphological and syntactic functions, triggers syntactic operations such as movement; contrarily, concord is found within the DP with features such as gender, class and number.

Regarding this matter, Kramer (2016) demonstrates that neither the approach concerning the GenP nor the one involving a collection of features on the NumP can adequately explain the locus of the gender feature within the syntax of different languages. Kramer posits that the gender feature is located either on the head of the NP or on the nominalizing head, known as little *n*. Conversely, Harris (1991) and Bernstein (1993a), among others, propose an analysis of gender's syntactic functions based on word markers, which are closely tied to the morphological system of the target language. These authors argue that word markers (also known as class, cf. chapter 4.1), rather than the gender feature, facilitate syntactic agreement. Similarly, D'Aurizio, Stahnke & Müller (2024) assert that gender cannot project its functional projection, advocating for an analysis that excludes the gender feature from the functional head of the NP. This conclusion is derived from acquisition data involving a bilingual German-Italian child, which shows a distinct preference for inflection over gender information.

Not only the locus of the gender feature but, from a typological perspective, even the presence of gender in various, sometimes markedly divergent, morpho-syntactic systems remains a subject of debate. Since gender does not invariably carry a masculine, feminine, or neuter value as in Indo-European systems, but can also depend on factors such as animacy as observed in Tamil (Corbett 2006b), further aspects intertwined with gender need to be further considered. For instance, English displays an overt gender system at the pronominal level for entities with a biological sex value, such as human beings and animals. According to this definition, the English gender system relies on natural gender, where biologically female living beings are referred to through the feminine pronoun, while male persons and animals are referred to as masculine (McConnell Ginnet 2013). Consequently, unlike speakers of gender systems such as German and French, who are reported to associate abstract and common nouns, such as *der Mond* and *la lune* 'the moon,' with masculine or feminine characteristics depending on the gender value of the noun in the target language, English speakers are expected not to make such classifications for common nouns (McConnell Ginnet 2013:5). However, this expectation is contradicted by several studies that examine stereotypical aspects related to common nouns in the cultural domain (see Kotthoff & Nübling 2018 for an overview). A key conclusion from these studies is that the psycholinguistic role of gender is not always directly aligned with its morpho-syntactic function in the nominal domain of the target language. A second relevant distinction with the class feature can be delineated: being predominantly morphologically

evident unlike gender, it is relatively straightforward to determine whether a language possesses inflectional classes in the nominal or verbal domain.

Corbett (2009) and Corbett & Fedden (2016) propose a “canonical” model for both inflectional classes and gender, aiming to facilitate the classification of gender languages based on a canonical, 'perfect' model. Based on the assumption that the framework of canonical typology allows to facilitate the description of different morphological and morpho-syntactic issues, Corbett & Fedden (2016) argue for the classification of gender systems depending on canonical agreement, i.e., a redundant and syntactically simple process that uses inflectional morphology to express gender. According to the authors, inflectional morphology can be considered canonical if each inflectional element, such as an affix, serves only one function in the agreement process. However, the question of whether canonical gender systems exist is met with a rather negative answer. In the following sections, the Italian, German, and French gender systems are briefly outlined. These three systems exhibit noticeable differences in morphology, and, according to the canonical approach presented in Corbett (2005), they also display different degrees of canonicity. Section 3.3.1 further discusses the observation that these languages are reported to be acquired at different rates in monolingual and multilingual first language acquisition.

3.1.1.3 Gender in Italian

The Italian gender system is composed of two gender values, feminine and masculine⁴. Nouns are equally divided in the two genders with approximately 47% of the nouns displaying masculine gender and 46% feminine (Thornton, Iacobini & Burani 1998:27). The remaining nouns can take both genders, with the value depending on the context and the referent. Although it is still controversial, masculine is generally defined as the default gender in Italian (Loporcaro 2018:37) with a ‘default’ value being chosen on the basis of the less marked value as proposed in Corbett & Fraser (1999). Zamparelli (2000:30) defines the Italian gender system as displaying a “clear ... agreement on nouns and adjectives”. Comparably, Vigliocco & Zilli (1999) describe the Italian gender system as “morphologically marked” or “transparent” due to

⁴ Loporcaro et al. (2014) propose a third, neuter gender for nouns of the type *braccio – braccia* ‘arm – arms’, i.e., nouns that have a different gender in the singular and the plural. In the present work and according to Chini (1995) these nouns are considered as belonging to declension class VI in Italian.

the direct relation between the ending of the noun and the gender value: nouns ending in *-o* in Italian are often masculine, while nouns in *-a* are frequently feminine.

Thornton et al. (1998) report that almost 70% of the Italian vocabulary can be described according to this rule. To these nouns, however, a further group of “morphologically ambiguous” lexemes (Vigliocco & Zilli 1999:625) needs to be added. The relationship between declension class and gender in the Italian DP is, indeed, direct for almost $\frac{3}{4}$ of the Italian vocabulary. Starting from this observation, Ferrari-Bridgers (2008) proposes that class and gender represents one and the same feature in a language like Italian. While it is true that class and gender exhibit a one-to-one relationship for many Italian nouns, the subsequent chapter will underscore that there is a clear distinction between class and gender for all nouns in Italian. Regarding gender assignment rules in Italian, nouns ‘inherit’ the gender value from the Latin lexemes, as many Italian nouns originally derive from Latin (cf. Loporcaro 2018). However, gender assignment rules for common, inanimate nouns in Italian are generally defined as arbitrary, since it is often not possible to motivate the reason for the gender value of these nouns (see i.a. Thornton 2009).

3.1.1.4 Gender in German

German is generally described as having a tripartite gender system, displaying a feminine, masculine and neuter gender. Similar to what is established for Italian, the gender value is generally displayed through suffixes, i.e., on the ending of the noun, adjective and determiner. Differently from Italian, however, the relationship between class and gender is not direct for most nouns. While a noun such as *die Kirche* ‘the church’ is feminine in the singular and ends in *-e* which is a suffix generally related to the feminine value (Köpcke & Zubin 1996:482), the reason according to which the noun *der Tisch* ‘the table’ is masculine should be analysed diachronically. Otherwise, in Modern German, there are no morphological cues giving a hint about the reason for the gender of this noun⁵. Köpcke & Zubin (1996) report a detailed description of gender assignment rules in German, defining it as either following diachronic –

⁵ See Köpcke for a detailed analysis about gender assignment rules for German monosyllabic masculine nouns.

and at present rather vague – principles or being arbitrary. Hence, the ‘-o = masculine’ and ‘-a = feminine’ rule, valid for a great part of nouns in Italian, cannot be applied to German.

With regard to this topic, Hickey (2011) proposes an analysis of gender assignment rules based on phonology. The author argues that, since no semantic relationship can be found for the gender value of most common, inanimate nouns, phonology plays a fundamental role not only for nouns with a predictable gender value but mostly for the ‘arbitrary’ ones. The analysis suggested by Hickey, however, applies to some but not all nouns of a previously identified class of nouns, for example monosyllabic vs. disyllabic lexemes. In the present work, gender assignment rules are not discussed any further since the focus should be rather directed to the declension class system. The present discussion should however make evident the morphological complexity of German, in order to open the view for a further feature, i.e., class, as being relevant for nominal inflection.

A further glance at the literature and at the German vocabulary reveals another significant difference from Italian: German nouns are not equally divided into the three genders. According to studies reported in Opitz & Pechmann (2016:237), German nouns are approximately 40% feminine, 40% masculine, and only the remaining 20% display a neuter gender. Using information about frequency and markedness in German, the authors designed a psycholinguistic study with the aim of defining the default gender, which, according to the results, is the feminine gender. This conclusion is based on the underspecification of the feminine gender in comparison to masculine and neuter morphology in German (Opitz & Pechmann 2016, see also Bittner 1994).

3.1.1.5 Gender in French

Following the same methodology proposed by Opitz & Pechmann (2016), Brinkmann, Fünter, D'Aurizio & Müller (2023) report the results of a psycholinguistic study which investigates the value of the default gender in French. Like Italian, French is a Romance language and presents a bipartite gender system, including a feminine and a masculine value. Unlike Italian but similar to German, nouns are not equally divided into the different gender classes: Tucker, Lambert & Rigault (1977) report that about 61% of French nouns are masculine, with feminine nouns representing about 39% of the overall French vocabulary. With regard to gender assignment,

Corbett (1991:57) describes French as “having one of the most opaque gender systems”. The author reports the results about the detailed study of Tucker et al. (1977) who, through an elaborate analysis of the *Petite Larousse*, offer a morphological and phonological investigation of French nouns and their gender classes.

The most evident difficulty with French consists in the difference between the orthographic and the spoken standard system: while written French still includes morphological cues about the gender value of nouns, many of these cues are not spelled out in the spoken form (Corbett 1991:58). It is the spoken variety of French that is considered in the present work, since first language acquisition takes place orally. With regard to spoken French, Tucker et al. report a considerably long list of formal rules, mostly relying on phonological cues such as suffixes, which are included in almost 80% of the French nominal vocabulary. Almost every formal rule, however, comprises a variable number of exceptions. For instance, nouns ending in /m/ in French have a masculine gender value in 92% of the cases (Tucker et al. 1977:41). The remaining 8%, however, is feminine. Moreover, semantic gender assignment only accounts for approximately 10.5% of French nouns (Séguin 1969). A similar result is achieved by Lyster (2006) in his detailed analysis of suffixes in *Le Robert Junior Illustré* as well as by Surridge (1989, 1993) in her investigation of the acquisitional sequence of phonological and morphological rules in French. In conclusion, formal rules for gender assignment can be found in French grammar textbooks. However, it is important to note that most rules based on morphological cues do not apply to more than 80% of French nouns.

This finding significantly impacts the determination of a default gender value in French, a topic that remains highly debated and critically depends on the definition of "default" itself. On the one hand, Boloh & Ibernou (2010) suggest a ‘masculine is the default’ tactic, basing this claim on the overgeneralized gender rule found in the data of French monolingual children from 4 to 10 years old; on the other hand, Brinkmann et al. (2023) show that the feminine gender is processed faster by adult monolingual French speaker and accordingly propose that the feminine should be considered the default gender. Notwithstanding the ongoing debate about the definition of default (cf. i.a. Corbett & Fraser 1999), the question remains open concerning the relevance of the reaction time and the ratio of errors in psycholinguistic studies considering gender processing.

Concluding, the three languages consistently differ with regard to gender assignment and morpho-syntactic rules. Following the definition of a canonical gender system as reported in Corbett & Fredden (2016), Italian represents the most canonical system due to the morphological transparency (see also Kupisch et al. 2022:3). German has many nouns which, from a formal standpoint, can only be distinguished with regard to gender on the basis of the determiner, as in *der Leiter* ‘the leader’ and *die Leiter* ‘the ladder’ (Hickey 2011: 624). Although both Italian and German present ‘non canonical nouns’, i.e., nouns that can take different gender values, Italian includes a morphologically (un)marked suffix system, while German does not display a comparable system. As for French, the spoken standard variety presents a rather opaque gender system. Although the gender value is morphologically expressed on all elements involved in the agreement process, phonological phenomena affect its overt realization in the spoken form.

3.1.2 Number in Italian, German and French

A second relevant feature is represented by number and its expression in the DP. Numerous studies have concentrated on the number feature, examining this aspect from both syntactic and morphological angles within theoretical and acquisitional contexts. Crucially, number accomplishes fundamental tasks not only on the DP but also in the TP of Italian, German and French.

3.1.2.1 Definition of number

Kibort & Corbett (2008) define number as “a grammatical category which encodes quantification over entities or events denoted by nouns or nominal elements”. Number, unlike gender, is not inherent to the noun itself but is expressed by the speaker with regard to the reference and the context. Hence, the number feature holds an inherent semantic value from which it cannot be separated (Corbett 2006c:726). Although there are nouns that can be only used in the singular form, *singularia tantum* such as *Wasser* ‘water’ in German, as well as nouns that occur only in the plural form, *pluralia tantum* e.g. *Kosten* ‘costs’, most nouns present both a singular and a plural inflectional form in Italian, German and French. The first group of nouns, i.e., nouns occurring only in the singular or plural form, are generally referred to as *mass nouns*, while the latter group is described as consisting of *count nouns* (Kibort & Corbett 2008).

Furthermore, it is possible to find not only bipartite systems with a singular and plural value but also dual, paucal as well as further number expressions in the languages of the world (Corbett 2000). Since the present work focuses on three Indo-European languages that use only two values for number, i.e., singular and plural, the present section takes the bipartite number system into further consideration.

As observed for gender, also number is a morpho-syntactic feature (Corbett 2006c:724). This feature is expressed mostly through morphological cues and, hence, through inflection, involving either morphological augmentation and / or morphological alternation in Italian, German and French. The following examples presents both morphological possibilities to express number in Italian (4) and German (5):

(4) *libro – libri*
‘book – books’

(5) *Auto – Autos*
‘car – cars’

While (4) displays morphological alternation, the noun in (5) adds the morpheme *-s* to indicate the plurality of the reference, i.e., more than one car. A similar pattern is also observed in English, although only a small group of name still reports morphological alternation. Kürschner (2009) describes examples of the type *mouse – mice* and *child – children* as evidence of the reduction of the old declension class system in English which currently consists mostly of *-s* plural nouns of the type represented in (4) for German. In summary, the number feature is expressed through morphology in the languages considered in the present work.

3.1.2.2 Morpho-syntactic aspects of the number feature

Several studies have considered the location of the number feature in the nominal domain. While Ritter (1991) proposed an analysis that includes the NumP, which is a functional projection that hosts information about number dominated by the DP and dominating the NP, further studies have suggested that number, along with gender and further ϕ -features, is hosted in D (cf. Koehn 1989). As for the syntactic function fulfilled by the number feature, it is generally assumed to generate agreement in the nominal and also in the verbal domain, for instance in cases where the DP represents the subject of the sentence (Corbett 2006c:728). In

the nominal domain, the Italian, German and French systems inflect the noun as well as adjectives and determiners according to number through agreement. Hence, differently from a language like English, the three systems analysed here present a DP that undergoes agreement for number and, as already discussed in 3.1.1, gender.

The syntactic value of number is generally described as directly related to its semantic value (cf. Arsenijević & Borik 2020:15). With regard to this matter, different proposals have been put forth. N. Müller (1994:57) defines the number feature as dominated by the value of the number-related feature *countable*. She reports that “the grammatical feature "number" ... depends on a semantic feature of N, namely [α -countable] which has to be listed for every N in the lexicon”. Differently, Harbour (2014) supports the syntactic theory concerning the existence of a NumP in the nominal domain and accordingly suggests that features such as *additive*, *minimal* and *atomical* are hosted in the head position of the NumP, although not all of them find expression in every language. His proposal is based on the assumption that different number values are “subject to Greenberg-style implications” (Harbour 2014:186), in that every number value can only be interpreted in relation to another value, e.g. the plural value represents more than one, singular entity. Also arguing in favour of the NumP, Stark (2008a) proposes arguments in favour of an additional plural (‘PI’) projection in the domain of Romance languages that carries the semantic value already suggested in Heycock & Zamparelli (2005) [+LATT], i.e., “having a joint semilattice structure” since the pluralized elements can be grouped together (cf. Stark 2008: 65). However, questions concerning the manner in which a functional projection such as the “PI” should be acquired as well as the role of the proposed projections in further languages have not been considered yet. N. Müller (1994:57) states that “the source of the grammatical feature "number" is far from being clear”. Almost thirty years later, Müller's statement remains relevant in the current state of the art.

3.1.2.3 Number in Italian

Italian marks number on all elements of the nominal domain, with the exception of a few categories, such as the adverbs. Hence, determiners, adjectives, pronouns, etc. are inflected for a number value. Cyrino & Espinal (2020) divides Romance languages into two groups: a first group consists of languages that express the number value on all elements of the DP like Italian; a second group, instead, marks number only on some elements of the DP, as in spoken French,

where the number value is only spelled-out on the determiners with exception of some nouns still inflecting according to the old declension class system (cf. section 4.3.3.1).

With regard to the morphological expression of the number value, the number feature is directly related to gender and declension class and it is overtly marked on nouns inflecting for number, since they present morphological alternation as shown in the example in (4). Faust & Lampitelli (2009), among many others, propose that the interaction of features is expressed in Italian through theme vowels⁶ which are vowels that carry one or more grammatical information (see i.a. Bermúdez-Otero 2013). The theme vowel *-e*, for instance, reveals information about class and number of the noun. Crucially, values about gender, number and class can be contrasting for one and the same theme vowel: in *cameriere* ‘waiter / waitress’ the noun can be either masculine or feminine and, according to the gender of the noun, the number value can be either singular or plural. If masculine, then *cameriere* has a singular reference; if feminine, the noun has a plural value. Faust & Lampitelli (2009) posit that theme vowels not always carry grammatical information: according to their proposal, the *-e* suffix should carry no information as concerning class, gender and number. How a child acquiring the language understands and further uses theme vowels when they carry no thematic information is a question that was not considered in Faust & Lampitelli’s work. Although the theme vowels’ approach has been adopted in several works as well as criticized in many others, it is generally accepted that the Italian number system consists of two values, singular and plural, that are manifested in the nominal domain through morphological cues.

3.1.2.4 Number in German

A different pattern is observed in German, another language with a bipartite number system. Although morphological alternation occurs, the plural is often marked on nouns and adjectives through augmentation, in that a suffix is added to the singular root. Wiese (2009) divides German nouns into two groups as concerning number inflection: while the first group presents morphological augmentation, as in *Frau – Frauen* ‘woman – women’, the second group also has morphological alternation which in German is generally realized through umlaut, as in *Kuh*

⁶ In the literature, the terms of “theme vowel” and “thematic vowel” occur as synonyms.

– *Kühe* ‘cow – cows’. Nouns presenting only morphological alternation, as in *Mutter – Mütter* ‘mother – mothers’, are described by Wiese as carrying a zero suffix, i.e., a not overtly phonological suffix that in German generally occurs after stressless syllables. According to the author, German can be described as realizing nine declension classes on the basis of the plural morphology (cf. Wiese 2009:139).

In an earlier work, Köpcke (1994) researches the reasons for the diachronic change of the inflection system in German and comes to the conclusion that semantic, phonological and morphological aspects fulfil fundamental roles in the expression of the plural value on nouns in modern German. Moreover, plurifunctional marking can be found in the German number inflectional system, as reported in N. Müller (1994:54) “one example of this is -e which may function as a plural allomorph, e.g. in *tiere* 'animals', and as an integrated part of the lexical item, e.g. in *tasche* 'bag' “. A relevant aspect of the German number morphology is its relation to the gender feature: while in the singular, three gender classes find morphological and syntactic expressions (cf. 3.1.1), the plural does not present gender distinction – at least not anymore (Köpcke 1988). The loss of gender distinction in the plural is generally attributed to a trend toward less morphological marking (Bittner 2000:5). Crucially, the interaction of the three features number, gender, and class can be described in a hierarchical relation in German. First, gender, unlike in Italian, is only visible in the singular⁷. Second, the singular and plural nominal declension as well as the gender value are established on the basis of the declension class (Bittner 2006). Concluding, the German number system is directly related to gender and class, as already seen for Italian. A further feature plays a fundamental role in the nominal inflection of German, i.e., case. For the sake of space, however, the case feature is not considered in the present work⁸.

⁷ Bittner (2000) shows that there is a trend toward the expression of gender in the plural, e.g. feminine nouns generally take the *-(e)n* inflection in the plural. There are, however, many exceptions to this generalization (cf. 4.3.3.1).

⁸ For a detailed analysis of the case feature, see among others Baker (2015).

3.1.2.5 Number in French

French presents another bipartite number system, comparable to the Italian and German one. From a morphological standpoint, mostly morphological augmentation is found in French, although one group of nouns also present morphological alternation, i.e., nouns ending in *-al* in the singular and *-aux* [o] in the plural as in *animal – animaux* ‘animal – animals’ (Schpak-Dolt 2016:45). Apart from the last group of nouns which is analysed in 4.3.3.1, French generally makes use of the suffix *-s* as well as a zero suffix to mark the plural value in the nominal domain. There is, however, a substantial difference in the number marking between the spoken and the written form of Standard French. According to Corbett (2000:179) “as a result of attrition, number marking on verbs and on nouns is largely lost in the spoken language”. Thus, diachronic variation is generally held accountable for the reduced number and gender system in spoken French. Moreover, the author further reports that “the clearest marker of nominal number is the article” since the masculine and feminine form in the singular, i.e., *le* and *la* ‘the’, are pronounced differently from the only genderless plural form *les*.

As already reported for German, also in French the plural does not make distinctions for gender values, with exception of a restricted number of adjectives such as *blanc* ‘white’ in *les livre blancs* ‘the white books’ and *les chaises blanches* ‘the white chairs’. Corbett (1991) defines this kind of languages as displaying a convergent gender system in relation to number. Kramer (2019) analyses them in the framework of Distributed Morphology (DM) and suggests that phonological gender assignment takes place in these systems due to the relationship between the gender and number feature. Following Kramer, French is subject to underspecification in the representation of plural number. This means that the plural specification is incorporated into the derivation process without necessarily requiring an explicit expression of the gender feature in all contexts⁹. Hence, number, gender and – still for a small group of nouns – class interact in the singular and in the plural as well, although these features not always find an overt expression.

⁹ This proposal contrasts to the one made by Lowenstamm (2012) who claims that French is affected by morphological rather than phonological gender assignment. Lowenstamm proposes an analysis of gender as not located in the root of the noun but rather in D. This proposal is further discussed in section 4.3.3 for French.

In conclusion, all the three languages analysed in the present work present a bipartite number system with a singular and plural value. In Italian, number and gender are expressed on all inflectional elements of the DP with a few exceptions, e.g. invariable nouns as reported in Figure 10. Differently, German does not present a gender distinction in the plural, even though it displays a tripartite gender system in the singular. As for French, the value of gender is only partially expressed in the singular of some adjectives. Furthermore, the interaction between the two features is only overtly expressed in the singular. As for German, the class feature plays a fundamental morphological and syntactic role in the expression of the plural value on all inflectional elements in the DP. Differently, French only has one allomorphic suffix for the plural.

3.2 The TP: features in Italian, German and French

In most languages, verbal inflection is influenced by functional features. Although there are some similarities with the nominal domain, Italian, German and French only share the number feature between the nominal and verbal domain and, in some cases, gender as well¹⁰ (Baker 2003). With regard to the gender feature, there is a relevant difference between the nominal and the verbal domain as concerning the gender value. For nouns, gender is generally reported to be inherent to the lexical properties of this word class (Kramer 2014, cf. D’Aurizio et al. 2024), while on verbs it is only expressed through agreement (Baker 2008b:13). As for number, the distinction between a singular and a plural value as reported in the preceding section is also present within the verbal inflection, although a further feature, i.e., person, plays a fundamental role as well.

Apart from gender, number and person which are generally classified as “subject agreement features” (Panagiotidis, Spyroupolus & Revithiadou 2017:31) or ϕ -features (Adger & Harbour 2008:2), also tense, aspect, voice, mood as well as further features are part of the verbal domain in most languages. The location of these features is generally described outside of the domain of the VP, which hosts the head of the phrase, i.e., the verb. The locus of these features is in the functional projections associated with the VP, namely the Inflectional-Phrase (IP), which is split

¹⁰ With reference to the inflection of the past participle form in Italian and French depending on the gender of the subject or direct object, as in *ho mangiato la mela* ‘I ate the apple’ → *l’ho mangiata* ‘I ate it’.

into a Tense-Phrase (TP) and an Agreement-Phrase (AgrP, Pollock 1989)¹¹. A different view as concerning the location of functional features in the syntax of verbs is reported in Sigurðsson (2004)¹². Working within the framework of Minimal Feature Syntax, the claim put forth by Sigurðsson reflects the assumption that functional categories such as TP and AgrP are not required to host functional features. Moreover, individual features such as person, number, and gender, are described as independent syntactic elements which are hosted in the functional phrase IP and *v*P.

With regard to both approaches, the present work does not place itself in the Strong Minimalist Framework as supported by Cinque (1999) and Sigurðsson (2004) among many others. For this reason, functional features such as the afore mentioned ϕ -features will be assumed to be located within the functional categories TP and AgrP. Moreover, for the sake of space, the following section will only consider the ϕ -features, i.e., person, number and gender, since “‘phi’ is a cover for at least person, number and gender, and possibly also animacy and definiteness or specificity” (den Dikken 2011:857). The reason for this choice lies in the assumption that class, the main topic of the present work, interacts with these features in the nominal as well as in the verbal domain.

3.2.1 Verb inflection in Italian, German and French

Φ -features are expressed differently in the verbal domains of Italian, German, and French. In the Romance languages, gender plays a role in agreement between the verb and either the subject or the object—depending on the tense—for certain verbal forms, particularly the past participle. In contrast, number and person features are crucial across most tenses and moods.

3.2.1.1 Morpho-syntactic aspects of verb inflection

The most relevant function fulfilled by ϕ -features is the establishment of an agreement relationship between the subject and the finite verb. Zamparelli (2008) describes agreement

¹¹ It is still debated whether further functional projections need to be taken into consideration and whether it is necessary to divide the IP into TP and AgrP. Moreover, the location of the lexical head of the VP, i.e., the verb, has been subject of many debates, as summarized in D'Alessandro, Franco & Gallego (2017).

¹² Sigurðsson (2004) works in the framework of Minimal Feature Syntax, which is related to the theory proposed by Cinque (1999).

among ϕ -features in the verbal domain within two types: while gender, number and case but not person establish internal agreement within the DP with elements such as nouns, adjectives, determiners, and quantifiers, the TP is affected by external agreement, in that the verb fulfils the function of the target and the subject – or object – represents the controller (cf. 3.1.1.1). Although the three languages topic of the present work belong to two different groups, with German belonging to the group of Germanic languages and French and Italian representing two of the five most spoken Romance systems (cf. Gabriel & Meisenburg 2017), inflection involves the same ϕ -features for all three languages.

From a morphological perspective, inflection varies according to the target-system. Infinitive and finite tenses can be generally distinguished in Italian and French through the consideration of suffixes on the verb as well as the syntactic context, e.g., the occurrence with a modal verb which, in all languages, require the lexical verb in the infinitive form. In German, the infinitive form is syncretic with the inflection of the verb in the first- and third-person plural, as in *wir / sie machen* ‘we / they do’ and *machen* ‘to do’, entangling the distinction of finite forms from infinitive ones. For this reason, syntactic and semantic context play a relevant role for the recognition of finiteness. With regard to verbal inflection, Alexiadou et al. (2007:24) propose that “the inflectional morphemes constitute functional heads in the extended projection of the lexical head” since inflection is determined for every verb by agreement of ϕ -features with the subject and / or object as well as by further features that determine verbal inflection.

From a syntactic perspective, ϕ -features lead to movement of the functional head of the VP in order to check the features generally hosted in T (cf. i.a. Lightfoot & Hornstein 2011) or I (Belletti & Guasti 2015:11). Furthermore, there is a strong intertwinement between person and number features in the verbal inflection, leading to an ‘asymmetrical’ bond, defined as such since person must always carry a number value, i.e., singular or plural, while number does not always carry a value for the person feature (cf. McGinnis 2005), especially in German. For pronouns, Harley & Ritter (2002) propose a hierarchy of features that posits the person feature above number and, lastly, gender. The authors argue for the presence of a valued person feature only for the first and second person, reporting studies that contributed to the assumption that “so-called 3rd person is in fact not a true personal form” (Harley & Ritter 2002:488). This applies to the ‘inclusive’ plural number as well as to the ‘exclusive’ singular forms. Although

the hierarchy is proposed for pronouns on the basis of several languages, verbs are interested by the same features and, accordingly, these features could be defined in a hierarchical relationship as well.

3.2.1.2 Verb inflection in Italian

In Italian, verbs agree with the subject on the basis of number and person concord, with few exceptions (Vigliocco, Butterworth & Semenza 1995:189). Noccetti (2003:353) discusses that, even though only person, number, and tense find morphological expression on the verbal forms, information concerning mood, voice and non-finite tenses are present in the Italian verbal inflection. In particular, mood can be either regular or imperative, voice can be active or passive and the non-finite forms are represented by the infinitive as well as the present and past participle forms. As for the person feature, the values are distinguished in Italian through different inflectional endings in most tenses. With exception of the subjunctive form in the present tense, the endings for every person in most finite tenses are reported in the following verb forms:

(6) *io parlo, tu parli, lui/lei parla, noi parliamo, voi parlate, loro parlano*

The example in (6) includes the inflection of the verb *parlare* ‘to speak’ in Italian in the present tense for the six persons, three in the singular and three in the plural. The 1st person singular inflects by adding *-o* to the stem of the verb, in this example *parl-*. For the 2nd person singular the inflectional ending is *-i*. The inflection of the 1st person plural is the suffix *-amo*. These three endings are used for most verbs in Italian, with exception of irregular verbs which present also suppletion, such as *essere* ‘to be’. With regard to this last type of verbs and the inflectional endings, Montermini & Bonami (2013) propose a model for Romance languages that considers the inflection as carrying morphological information in the ‘stem space’ hypothesis, rather than mirroring semantic or phonological values.

The 3rd person singular and plural as well as the 2nd person plural are inflected differently based on the group of verbs the form belongs to (cf. section 4.3.1.3). As for the inflection in tenses, Noccetti (2003) reports that paradigms of the present tenses are ‘morphotactically more transparent’ than past tenses, due to the morphological inflection. In general, tenses are

distinguished on the basis of inflection, e.g., the past form *imperfetto* is formed by adding the *-v* (Calabrese 2020:219). While finite tenses are marked by infixes rather than suffixes, i.e., by morphemes which are placed between the stem and further inflectional elements, non-finite tenses such as the infinitive and the present and past participle forms present inflectional endings, such as *-to* for the past participle form, *-re* for the infinitive and *-nte* for the present participle inflection. In general, inflection in Italian is morphologically unmarked in the nominal as well as in the verbal domain.

3.2.1.3 Verb inflection in German

In German, inflection on the verbs marks similar features to the ones observed for Italian, i.e., person, number, tense for grammar as well as mood, non-finite tenses, voice and, debatably, aspect (cf.i.a. Goedsche 1934 and Tsimpli 1992). Agreement is established between the subject and the finite verb through movement and feature checking. Inflection is expressed through suffixes and infixes, depending on the feature marked on the verb. Agreement between subject and verb—or the person value—is expressed through the following inflectional endings, as reported by Wiese (1994:165):

Tense	Singular			Plural	
	1 st Person	3 rd Person	2 nd Person	1 st & 3 rd Person	2 nd Person
Present indicative	-(e)	-(e)t	-(e)st	-(e)n	-(e)t
Simple Past/ Subjunctive	1 st & 3 rd Person		2 nd Person		
	-(e)		-(e)st		
Imperative	2 nd Person				
	-(e)				

Figure 2: German verbal inflection for regular verbs, adapted from Wiese (1934:165)

Crucially, German presents syncretism in the singular and plural number, depending on the tense, as well as for different person values. Wiese (1994) discusses the use of inflectional endings in German as displayed in Figure 2 according to the *Schwa-haltiges* and *Schwa-loses* approach, i.e., the occurrence or the missing of a schwa as last element. Furthermore, endings are categorized into three different groups depending (i) on the absence of the consonant, as for the ending of the 1st person singular, (ii) on the presence of one final consonant, as for the 3rd person singular as well as all plural values, and (iii) according to the occurrence of a consonant cluster, represented through the *-st* suffix of the 2nd person singular. However, these inflectional

endings can only be found in ‘regular’ verbs, since irregular inflected verbs, e.g., the verb *sein* ‘to be’, generally present suppletion.

Inflection of tense is generally manifested morphologically through different types of affixes. Past participle tense, for instance, is inflected through the *ge-* and *-t* circumfix which is placed around the stem, as in *gesagt* ‘said’ from the verb *sagen* ‘to say’. Crucially, the past participle inflection represents a relevant information for the classification of verbs into classes (cf. 4.3.2). Two crucial differences can be found in comparison to the Italian and the French system: first, agreement is never established between verb and object in German; second, the verb position consistently differ from the one generally observed in Romance languages.

3.2.1.4 Verb inflection in French

Inflection in the French verbal domain includes ϕ -features such as person, number, and in some cases even gender. The agreement with finite tenses involves subject and verb, while for the non-finite participle form agreement is established between the direct object and the lexical verb form of the sentence if the auxiliary is *être* ‘to be’, resembling the Italian system (Negro, Bonnotte & Lété 2014:1259). Inflectional endings for person and number in French are interested by syncretism, especially in the oral form, as reported in the following example taken by Ferdinand (1996):

Person	Pronoun	Verb	Phonological realization
1 st Singular	<i>je</i>	<i>mang – e</i>	[mãʒ]
2 nd Singular	<i>tu</i>	<i>mang – es</i>	[mãʒ]
3 rd Singular	<i>il / elle</i>	<i>mang – e</i>	[mãʒ]
1 st Plural	<i>on</i>	<i>mang – e</i>	[mãʒ]
2 nd Plural	<i>vous</i>	<i>mang – ez</i>	[mãʒe]
3 rd Plural	<i>ils / elles</i>	<i>mang – ent</i>	[mãʒ(t)]

Figure 3: Inflection of the verb *manger* ‘to eat’, adapted from Ferdinand (1996:40).

In the example, the second column represents the written form of the verb, while the square brackets include its phonetic transcription, i.e., the manner in which the verb is orally realized. As it becomes clear, the three persons in the singular number do not present phonological differences. Moreover, in Figure 3 the 1st person plural is reported as the impersonal form *on*

which is comparable to the use of the English form ‘one’ in a sentence like *on mange* ‘one eats’. Standard French includes a further form for the 1st person singular, in which the subject is *nous* ‘we’ and the verb takes the suffix *-ons* as in *nous mangeons* ‘we eat’. However, this form is rarely used in spoken French in comparison to the impersonal one (cf. Coveney 2000). Tense inflection is represented by affixes, as in the past tense *imparfait* which is expressed through several suffixes, e.g., *-ais* in *je mangeais* ‘I ate’. Although French represents a Romance system and is thus comparable to Italian, verbal inflection is not generally defined as unmarked since it is characterized by many syncretic forms as well as by alternation between consonant and null forms depending on the following phoneme, as in *il fait partie* and *il fait encore partie* ‘he is (still) a part’.

In conclusion, the markedness constraints in the verbal domain resemble the ones observed in the nominal domain. Italian represents a rather unmarked system, while German and French are comparably more complex. In particular, the two languages present an elevated number of syncretic forms for the expression of ϕ -features, especially number and person. In the next section, the acquisition process of the Italian, French, and German systems are presented on the basis of studies on monolingual and bilingual children to determine whether markedness as well as morpho-syntactic complexity affect the acquisition of the target-language.

3.3 Features in first language acquisition

The acquisition of features in the nominal and verbal domains has been the subject of several studies. There is a broad consensus regarding the differences in the acquisition phases that children undergo when acquiring grammatical features of their first language(s). Crucially, inflection in morphologically less marked languages, e.g. Polish, is generally acquired earlier than in more complex ones, for instance Russian, as reported by Corbett (1991:83). Several studies have sought to find an explanation for the consistent differences among children in age and MLU of acquisition observed throughout the development process. An evident aspect that needs further consideration is the markedness of the features' expression in the target language. Additional factors, including phonological, morphological, and syntactic aspects, as well as the quality and quantity of input, are generally believed to impact the acquisition process (see i.a.

de Houwer 2011). The following sections focus on studies that consider the acquisition stages of the outlined features, namely gender and number in the nominal and verbal domains.

3.3.1 Monolingual and bilingual acquisition of gender

Gender is one of the most studied features in language acquisition research. Notably, studies on both monolingual and multilingual first language acquisition reveal similar results concerning the stages of gender acquisition. However, significant differences emerge between monolingual and multilingual gender acquisition when considering factors such as MLU and the age of the children. Furthermore, consistent differences can be observed among monolingual individuals acquiring different languages.

3.3.1.1 Acquisition of gender in Italian monolingual children

The Italian gender system is generally reported to be acquired very early, at the age of 2;5 or even earlier. Belletti & Guasti (2015) report that the monolingual Italian children acquire the Italian gender morphology “quickly and without many problems”. According to the authors, target-like agreement in the nominal and verbal phrase concerning nouns, adjectives, determiners and verbs is found in almost all sentences realized by the children already at an age of 2;0. These results about monolingual Italian children are supported by the studies of Pizzuto & Caselli (1992), Bottari, Cipriani & Chilosi (1993), Leonard, Caselli & Devescovi (2002) and De Marco (2005) among many others. Velnić (2020) reports that also gender agreement on adjectives, i.e., a word class that does not often appear in the data of children, is already acquired at an age of 2;6¹³.

With regards to the interpretation of these results, different proposals have been made in the literature. Noccetti (2003) analyses the longitudinal data of two monolingual Italian children Camillo and Rosa whose data were collected from the age of 2;0 to 3;6 and from 1;7 to 3;3 years old respectively. The author divides the data of the two children according to three phases: a pre- and a protomorphology phase which is further split into a first and a second period.

¹³ Although most works agree on the age of acquisition of the Italian gender system in children, Moscati & Tedeschi (2009) report contrasting results as concerning the acquisition of gender agreement between object clitic and past participle form.

Working within the framework of Natural Morphology, as proposed by Tonelli & Dressler (1992) among others, Noccetti proves that gender agreement and, hence, gender marking is acquired within the first period of promorphology. This period, according to the author, is reached at the age of 2;3 for Camillo and 1;11 for Rosa. During the premorphology phase, children are expected to realize mostly rote-learned forms as well as lexemes inflected for only one form of the paradigm. However, since Italian does not allow to realize roots without inflectional markings and consequently this kind of data does not occur in the input, Italian children behave according to the adult language, realizing inflected forms from the very beginning. Grammatical features, among which there is gender, are acquired after inflection. According to Noccetti (2003:356), inflection is acquired before gender. Kupisch, Müller & Cantone (2002) report similar results as concerning gender agreement in a monolingual child, Martina, whose data were analysed from an age of 1;7 to 2;7 years old. The authors claim that the acquisition of the gender feature overlap the period in which reduced forms – or protosyntactic forms (cf. Bottari et al. 1993) – are used: when proto-forms disappear, the gender feature should be acquired (Kupisch et al. 2002b:130).

Acquisitional studies on the gender system often emphasize the significance of formal cues, particularly evident in Italian inflectional morphology, which is believed to facilitate a faster acquisition process (Pizzuto & Caselli 1992). The morphology of the gender system of Italian provides learners with substantial information, enabling a relatively swift acquisition compared to more morphologically complex languages. However, it is worth noting that most studies tend to overlook the class feature, a crucial aspect of Italian nominal and verbal morphology, with a few exceptions represented by the works of Chini (1995), Noccetti (2003) and De Marco (2005). Furthermore, the frequent omission of determiners in child's speech represents a crucial aspect that is generally not considered.

3.3.1.2 Acquisition of gender in German monolingual children

As described in the preceding sections, the German gender system is tripartite and accordingly more complex in comparison to Italian. Not only from the phonological and morphological perspective, also the syntactic agreement process for the gender feature in German strongly interacts with the case feature not only in the singular but also in the plural. For this reason, German monolingual children are expected to acquire the gender feature comparably later than

the Italian monolingual children. Since “gender cannot be distinguished by case” in German (Mills 1986:64), the task of monolingual children is sensibly more complex than in languages without an overt case system, like Italian. While determiners and adjectives present different inflectional paradigms according to different gender and case values, nouns behave differently since they do not carry information about gender or case¹⁴. For this reason, most studies concerning gender acquisition consider the target-like agreement pattern between noun and determiner or adjective as proof of the complete gender acquisition.

Following this pattern, Szagun et al. (2007) analyse longitudinal data of six German monolingual children starting from the age of 1;5 years old. The striking result is that these children realize target-like sentences as concerning gender agreement already at the age of 3;0. The authors argue that phonological regularities are responsible for the fast acquisition of the German gender system which, however, is composed of many exceptions as well. Bittner (2000:13) summarize the results of several studies stating that “at least for German ... it can be countered that in language acquisition the gender of nouns is learned and controlled before their inflectional properties are”. Also the results by Walter, Fritzsche & Höhle (2021) of an experiment including a repetition task with children aged 3;5 years old confirm that, at an early age, German monolingual children have acquired the gender system target-like. Considering this issue, Bittner (2006) proposes an analysis of the acquisition of gender and case as being part of a hierarchy in the framework of the Natural Morphology. The author posits that first case and then gender are acquired in German. As for the acquisition of the different gender values, the data display a higher accuracy with the feminine gender than with masculine and neuter nouns. According to Bittner (2006: 130) “the feminine gender turn out to be the less marked one”, providing an additional supporting aspect for the work of Opitz & Pechmann (2016) about default gender strategies in German. Crucially, Bittner suggests that unmarked categories are acquired earlier in comparison to marked ones, leading to the assumption that a hierarchy of features in language acquisition depends on the morphological and syntactic expression of the features.

¹⁴ With few exceptions, e.g. form of the dative in plural in German.

Not only the feature constellations but also the gender assignment patterns are believed to have a relevant role in the acquisition process. Since German displays a grammar system that follows semantic and formal gender assignment rules (Corbett 1991:83), a first attempt has been made at outlining the accuracy distinction in first language acquisition data of German on the basis of nouns that display a sex value for the reference that corresponds to the grammatical gender, as in *der Junge* ‘the boy’ which is both masculine and has a male reference¹⁵, opposed to common nouns referring to inanimate items. With regard to this issue, Mills (1986) reports the results from a longitudinal study analysis on three monolingual German children who were recorded between the age of 1;8 and 2;6 and the experimental data of 55 children between the age of 3;2 and 6;2. Although less target-deviant pronominal forms for gender are produced in the longitudinal and experimental data in German than in English – a system that, according to Corbett (1991), represents a ‘simpler task’ than German -, Mills (1986) cannot find any significant difference between semantic and formal assignment rules in German. Concluding, studies about gender acquisition in German monolingual children focus on agreement rather than on morphology. A similar pattern is observed in studies concerning the acquisition of the case feature in German. This does not apply to studies concerning the number feature, as it is reported in 3.3.2.

3.3.1.3 Acquisition of gender in French monolingual children

Monolingual children's acquisition of gender in French has been explored in numerous studies, yielding divergent outcomes. A first group of investigations focuses on the types of cues children consider, i.e., whether they rely on formal cues such as suffixes, or whether they rather consider agreement within the DP with articles or adjectives in order to establish the gender of the noun. Boloh, Escudier, Royer & Ibernou (2012) carried out an elicited production test in French. The participants were French monolingual children between the age of four and eleven years old. Two tests were performed: the first aimed to determine whether external elements, like determiners, or formal morphological cues inherent to lexical elements, such as suffixes, are considered indicators of gender. This was prompted by the results of a prior study by Karmiloff-Smith (1979), which indicated that children rely on word-internal cues rather than

¹⁵ Cf. Kotthoff & Nübling (2018) for information about nouns with a semantic reference in German.

word-external elements like determiners. Moreover, Boloh et al. (2012) consider the hypothesis according to which the masculine value represents the default gender in French and is thus chosen whenever no further reliable cues occur in the sentence. The results suggest that determiners are consistently employed to predict the gender of a noun, even when the suffix of the noun is a reliable predictor of its gender value. In a second test, Boloh et al. investigated whether these results applied to suffixes beyond the masculine ones. Once again, the results confirm the hypothesis that word-external cues are preferred over word-internal ones for the prediction of gender. Accordingly, the results are considered within a language acquisition frame that suggests the avoidance of the masculine default gender assignment as soon as feminine determiners appear in the input. With regard to the possibility of gender value prediction in French, Paradis & Crago (2004:101) state that “the gender of a noun is more reliably predicted by the phonological form of the determiner or possessive pronoun accompanying it in the singular form”. Monolingual French children in the study of Boloh et al. appear to have embraced this assumption in the process acquisition. However, a study by Karmiloff-Smith (1979) presents contrasting results to the ones just mentioned, leading to the assumption that children initially rely on word-internal cues to predict the gender value of a noun. According to the author, neither determiners nor further elements preceding or succeeding the noun but rather word-internal elements such as suffixes are considered by monolingual French children to predict the gender value of the noun. By the age of 9, however, word-external cues such as generally used as predictors more often than suffixes.

The findings by Boloh et al. are comparable to the ones achieved by Mills for German, confirming the minor role of semantic features in comparison to formal cues. Similar results were already achieved in a study by Seigneuric, Zagar, Meunier & Spinelli (2007) as well as Boloh & Ibernou (2010). There is, however, dissent as concerning the age at which monolingual French children complete the acquisition process of the gender feature. The study by Boloh & Ibernou (2010) reveals that gender agreement is acquired target-like not any earlier than at 7;0 years old. Differently, works by Heinen & Kadow (1990) as well as Nicoladis & Marchak (2011) report that children at the age of 4;0 already master gender agreement. These findings are supported by the studies by Bassano (2000) and Bassano, Korecky-Kröll, Maillochon & Dressler (2013), who focused on the development of determiners in monolingual French children aged 1;0 to 3;0 years old. Crucially, no study claims that the gender acquisition is

already achieved at a comparable age to monolingual Italian or German children. This leads to the conclusion that morphological cues in French are not as reliable as in other languages where gender is acquired significantly earlier and that, for this reason, French children necessitate longer time to acquire the gender agreement pattern in their first language.

3.3.1.4 Acquisition of gender in multilingual children

Multilingual gender acquisition introduces additional complexities compared to monolingual acquisition, as the typology of the languages being acquired can either facilitate or hinder the process. It is generally assumed that children acquiring two or more typologically divergent languages face more challenges than those acquiring languages with typological similarities (Serratrice 2013:661). Several studies on bilingual and trilingual children confirmed this claim (see i.a. Schwartz, Minkov, Dieser, Protassova, Moin & Polinsky 2015, Janssen 2016). Eichler et al. (2013) carry out an analysis of gender acquisition on bilingual French-Italian, German-Italian, French-German and German-Spanish longitudinal data. Crucially, the authors observe that typologically less complex languages, such as Italian and Spanish, are acquired more rapidly by both monolinguals and bilinguals than more opaque gender systems like French and German. This holds true regardless of language dominance and the presumed disadvantages associated with bilingual education (cf. section 2.2.1). A comparable result is achieved by Hager (2014), who analyses gender acquisition in bilingual and trilingual children acquiring typologically different languages, such as German in combination with a Romance language. While monolingual and bilingual children acquiring French, Italian and Spanish behave similarly, the bilingual French-German group realizes significantly more target-deviant DPs in comparison to monolinguals and bilinguals acquiring one of the two languages simultaneously to another Romance language. Hager argues that German has a negative influence on French, although this does not appear to be the fact for the German-Italian and German-Spanish bilinguals. The most relevant finding of Hager's and Eichler's works is the comparability of results between bi- and trilingual on one side and monolingual children on the other. Eichler et al. as well as Hager confirm that monolingual and multilingual acquisition follow a similar path, although interaction between the acquired systems can lead to the development of delay or acceleration effect for the acquisition of grammatical features.

Focusing on Italian, children acquiring it simultaneously to another typologically similar or different language appear to have no difficulties in the acquisition process. Hence, no delay effects are found in the data of bilingual Italian children (see i.a. Tedeschi 2017). The bilingual French-German children analysed in N. Müller (2000) follow the same acquisitional pattern as monolingual children in both languages: target-deviant gender agreement is found in the data of bilinguals until the age of 4;0. Crucially, Rodina & Westergaard (2017) add a further relevant aspect to the analysis of multilingual language acquisition: the quantity and quality of input. Children in their study acquire Russian and Norwegian from birth on displaying, however, a main difference in their education, i.e., the language spoken by their parents. Although all children grow up in Norway, they are divided into two groups, with one group of children having both parents speaking Russian at home and the other group having a parent speaking Norwegian and the other Russian, i.e., languages with respectively an opaque and a transparent gender system. The results of the bilingual children are compared to those of monolinguals in the same age range with regard to accuracy. As for the accuracy in Norwegian, monolingual and bilingual scored similar results with an accuracy of approximately 70% target-like sentence realizations for gender agreement (Rodina & Westergaard 2017:206). In contrast to the results in Norwegian, the accuracy in Russian exhibited variations: children whose parents spoke only Russian at home performed significantly better than those with parents speaking both languages. The authors discuss the results in light of a model that considers the quantity and quality of input in first language acquisition. In addition to input, the literature has examined other elements deemed fundamental in the bilingual gender acquisition process. Prentza, Kaltsa, Tsimpli & Papadopoulou (2019) concentrate on Albanian-Greek children and aspects like vocabulary knowledge, literacy, and socioeconomic status to analyse gender accuracy in children aged 8 to 12 years old. The principal discovery in Prentza et al.'s study is that literacy in Albanian, the non-environmental language, may contribute to lower accuracy in Greek.

In a recent study, Kupisch et al. (2022) explore the role of formal cues in gender assignment for monolingual and bilingual individuals acquiring German and Russian, languages typically seen as typologically distinct in terms of gender feature expression. As anticipated, formal cues play a crucial role for both groups. Examining differences between monolinguals and bilinguals, the authors observe that bilingual children exhibited accelerated acquisition of German, likely attributable to the simultaneous acquisition of the transparent Russian gender system.

In conclusion, the acquisition of the gender feature is influenced by the expression of morpho-syntactic factors in both monolingual and multilingual first language acquisition. Morphologically transparent systems like Italian are typically acquired effortlessly by children, often by the age of 2;6 years old or even earlier. Conversely, morphologically opaque gender systems such as German and French are reported to be acquired later by both monolingual and bilingual children. In addition to morphological markedness, various sociolinguistic and input-related factors contribute to the multilingual acquisition of gender in languages, whether typologically similar or different.

3.3.2 Monolingual and bilingual acquisition of number

The acquisition of the number feature in both monolingual and multilingual children is a thoroughly investigated topic. Similar to findings about gender acquisition, the literature reports that aspects such as morpho-syntactic markedness of the language play crucial roles in this process.

3.3.2.1 Acquisition of number in Italian monolingual children

Number, class and gender interact in the Italian nominal system. Several studies suggest that, while number inflection appears early in the data of Italian monolingual children, the full acquisition process is dated later (Pizzuto & Caselli 1992, Cipriani, Chilosi, Bottari & Pfanner 1993). Noccetti (2009) supports this by analysing the acquisition of gender inflection in Italian, observing child speech throughout a premorphology and a protomorphology phase. In her longitudinal analysis of two monolingual Italian children, Noccetti considers the number feature acquired when morphological and referential agreement are achieved. She assumes that "bare roots of nominal forms do not occur in the input" (Noccetti 2009:335) leading children to produce inflected forms from an early age.

Crucially, the debate arises concerning the acquisition of plural with respect to gender. The semantic-bootstrapping theory proposed by Pinker (1995) posits that features with a semantic reference such as number are acquired before features without a semantic transparency. In contrast, N. Müller (2000) shows that gender and number are detected simultaneously by children and accordingly acquired at once. The analysis carried out by Noccetti (2009), however, is based on the assumption that number is acquired later than gender due to the

referential complexity of this feature that leads to a longer acquisition process. For a language like Italian in which number and gender directly interact with each other and with a third feature, namely class, the question arises about the possible morpho-syntactic distinction between the two features. The data reported by Belletti & Guasti (2015), among many others, show that number is acquired fast by Italian monolingual children with a comparable pace of acquisition as the one detected for the gender feature¹⁶, leading to the assumption that gender and number are acquired simultaneously as initially observed by N. Müller (2000). Although this claim may not hold for every system, it appears to be valid for a language with morphemes that can carry more than one grammatical feature.

3.3.2.2 Acquisition of number in German monolingual children

The German number system makes use of a complex inflectional paradigm that represents a challenge for children in the first phases of language development. Several studies during the last thirty years have investigated this topic and developed different theories related to the outcome of the data analysis. Szagun (2001) argues that, although plural forms occur already at the age of 1;4 with an MLU of 1.25 in the monolingual German children of her study, target-deviant forms are found in the data until the age of 3;8 years old with an average rate of 16%. Crucially, the children in Szagun's data realize some plural forms target-like and more frequently than others: the *-n* plural morpheme often used for the plural inflection of feminine nouns occurs significantly more often than the *-er* plural form of masculine and neuter nouns. Szagun argues that this happens due to the morphological markedness of some forms in respect to others. Complex plural forms which, for instance, involve the quality change of a vowel through umlaut and, hence, vowel alternation, represent a more marked possibility in comparison to the augmentation of the stem through monomorphemic units (Szagun 2001:136). In sum, children are believed to acquire the plural system by looking first at phonological and morphological regularities.

¹⁶ Belletti & Guasti (2015) suggest that number is acquired later than gender, although both features are not problematic for Italian monolingual children. They base this claim on the observation that plural forms rarely occur in the acquisition data and that singular forms are used even for plural references in the first phases. The authors, however, do not consider the possible difficulties with declension classes rather than number: although declension classes are generally taken into consideration, the relationship among the features is not further analysed.

Similar results are reported by Laaha, Ravid, Korecky-Kröll, Laaha & Dressler (2006) and by Kauschke, Kurth & Domahs (2011) through means of elicitation tasks designed to observe the development of the formal marking of plurals in monolingual German children. Target-deviant forms are found consistently until the age of 4;0 in both studies. However, less marked forms are acquired earlier than more marked ones. Laaha & Dressler (2012) carry out an elicitation study on 140 monolingual German children from the age 3;0 to 9;0 to investigate which factors lead to the overgeneralization of plural forms, focusing in particular on suffix predictability and stem transparency. The authors show that predictable suffixes are used target-like in over 90% of plural forms in all age groups, less transparent forms represent a challenge for younger children aged 3;0 with which they score less than 40% target-like sentences. As expected, the older the children, the less errors they commit.

With regard to overgeneralization of plural forms, Marcus, Brinkmann, Clahsen, Wiese & Pinker (1995) among many others show that this phenomenon occurs soon and often in the data of monolingual German children, occasionally even displaying double plural forms (Corbett 2000:295). With regard to phonological markedness of suffixes, Spreng (2004) suggests an analysis that, unlike the ones just mentioned, takes the gender feature into consideration. She claims that “gender as an abstract category aids the child’s acquisition of the plural” (Spreng 2004:170), since it is used as a “disambiguating factor” as soon as the morphological transparency of the noun does not disclose the plural forms. Summarizing, the morphological complexity of the German number system leads children to realize target-deviant forms at least until the age of 4;0. Hence, German children acquire the number system in their first language significantly later than Italian monolingual children.

3.3.2.3 Acquisition of number in French monolingual children

The French number system is systematically different from the Italian one, even though it displays two values like in many other Indo-European languages. First language acquisition for French is influenced by several morphological aspects, as for instance the observation that “the articles are the primary source of information about gender and number” (Clark 1985:691, see also 3.1.2). In a non-transparent morphological system, the acquisition of the number feature can only be analysed by looking at the realization of the determiners, elements that carries grammatical information and that are generally acquired later than nouns. Moreover, several

phonological phenomena affect the expression of number in French, such as the *liaison*, leading to the delineation of a systematically more complex system.

Kilani-Schoch (2009) proposes an analysis of the longitudinal data of two monolingual French children from approximately 1;5 to 3;0 years old based on the assumption that the inflectional morphology for number on French verbs is stronger than in nouns, leading to the hypothesis that the number feature is acquired earlier with verbs than nouns. As for the development of number on nouns, the author observes that determiners are consistently used in the inflected form starting from the age of 1;11, although generalizations and errors are generally found in the acquisition data. As soon as determiners are used, however, a target-like inflection of the plural form is used by the children in most cases, leading to the claim that number is acquired relatively early in French. On a similar note, Prévost (2009:257) reports the findings of different studies which claim that number is acquired before gender in French. The child facing the French number system is challenged by different aspects that, unlike Italian, could speed up the process: the number system does not present a gender distinction in the plural form and it is (often) phonologically overtly marked in comparison to the singular. Hence, the acquisition of number in monolingual French children takes place before the gender feature is acquired, at a very early age. Comparing these findings to the ones about Italian and German, French has to be placed somewhere in the middle between these two systems. On the one side, Italian number and gender values are acquired early and without difficulties. On the other side, German presents a complex morphological system that requires longer to be acquired. Between them, French represents a morphologically transparent system which is, however, affected by phonological phenomena that partially hinder its acquisition.

3.3.2.4 Acquisition of number in multilingual children

At this point, attention should be directed towards studies examining multilingual language acquisition of the number feature. Similarly to the results outlined for bilinguals with regard to the acquisition of gender in 3.3.1, multilingual children acquiring the Italian number system simultaneously to a typological similar or different language do not present consistent differences to monolinguals (Belletti & Guasti 2015: 71). According to the detailed summary of studies reported by Belletti & Guasti (2015), the number feature is acquired later than gender in bilinguals possibly due to its strong semantic value. As for German-Italian bilinguals, Chini

(1995) and Bernardini (2003) suggest an acceleration effect as concerning the use of articles in German in the singular and in the plural form, leading to the assumption that the semantic relationship between the formal expression of the number value and its reference might be acquired earlier than monolinguals.

Koehn (1989) analyses the acquisition of number in one French-German bilingual child from the age of 1;9 to 3;5. Crucially, the author considers not only the strict morphological and syntactic expression of the number feature in the production data, but she also focuses on further extra-morphological elements as well as on the reference of every singular and plural expression realized by the child. She argues that, although numerals are already produced at the age of 2;1, a first acquisition pattern for the number feature can be observed in both languages starting at the age of 2;6. Koehn claims that the number feature in French can be defined as acquired as soon as singular and plural determiner forms are observed and target-like used by the child. The reason lies in the covert phonological expression of number in French. The German number system, in contrast, uses morphological alternation and augmentation which is overtly phonologically and morphologically marked on nouns. For this reason, Koehn argues that noun inflection needs to be target-like to allow the definition of the German number system as acquired. Through the consideration of determiners in French and of nouns' inflection in German, the number feature can be considered as acquired at the age of approximately 2;10 in both languages. The findings suggest that the acquisition of the number feature in the nominal domain is strictly related to the verbal domain: as soon as number is acquired for nouns, contrastive use of singular and plural forms are also found in the verbal domain (Koehn 1989:181). With regard to the acquisition of number in two French-German children, N. Müller (1994) suggests that during a first phase, i.e. until the age of 2;6, all nouns are realised as inherently singular by the children. After this stage, children go through an item-by-item phase in which nouns are linked to the reference in the real world and, accordingly, assigned to a [-singular] value.

Concluding, the process of acquisition of the number feature in a system like Italian, which primarily functions through morphological alternation, is generally concluded before the age of 2;6 years old in both monolingual and bilingual children acquiring Italian together with another

Indo-European language¹⁷. Similar results are observed in French, since children start realizing target-like DPs for the number feature already at the age of 2;0. In contrast, German children need significantly longer to inflect nouns target-like. Considering Koehn's and N. Müller's findings for bilingual French-German children, they appear to acquire the number feature earlier than monolinguals. However, individual variation is found within the data by N. Müller (2000). The findings of these studies suggest that phonological and morphological cues as well as the semantic value between inflection and reference fulfil a fundamental role in language acquisition.

3.3.3 Monolingual and bilingual acquisition of TP's features

In this concluding section, studies on the acquisition of TP features other than class are discussed. Notably, during the initial stages of language acquisition, children tend to produce more nouns than verbs (Guasti 2002:82), and the onset of inflected verb forms varies across languages and is influenced by factors such as age and MLU.

3.3.3.1 Acquisition of TP's features in Italian monolingual children

Regarding Italian verb acquisition, Belletti & Guasti (2015:5) suggest that "Italian-speaking children already master some verb inflections by the age of 2;6", with the present tense emerging before other tenses. The rapid acquisition of Italian verb morphology is attributed to the overt phonological and morphological marking of different features. In the present indicative tense, each inflectional ending corresponds to a specific person and number value, facilitating subject omission in most cases. Early distinctions between finite and infinite forms are made thanks to the different expression of these forms, preventing the occurrence of Root Infinitives (RI), a phenomenon observed in other languages like French (Ferdinand 1996). The quality and quantity of input play a crucial role in this early differentiation, as infinitive forms are infrequently used in adult speech (Guasti 1993). Belletti & Guasti (2015: 44), however, suggest that imperative forms represent the "Italian analogues of RIs". Crucially, imperative forms are inflected for person and number.

¹⁷ Since no studies have come to the attention of the author which consider, e.g., the acquisition of Asian languages and Italian as well as further typological opposed languages, it is not possible to draw general conclusions about this topic.

Italian monolingual children generally acquired the verbal inflection system with ease at the age of 2;5 to 2;6 years old (see i.a. Pizzuto & Caselli 1992 and Guasti 1993), comparably to the inflection system in the nominal domain. Target-deviant inflected forms are reported in the speech production data including the target-deviant realization of imperative forms as well as the omission of auxiliaries and copula verbs in complex past tense forms (Caprin & Guasti 2006). However, by the age of 2;6 and an MLU of 2.0, the frequency of target-deviant realization of verbs in present forms remains below the 10% threshold (Belletti & Guasti 2015:7). Similarly, subject-verb agreement is typically acquired concurrently with other verbal features and does not pose a significant challenge for Italian monolingual children.

3.3.3.2 Acquisition of TP's features in German monolingual children

In German, verbal inflection is comparably more complex than Italian and grammatical features find different morphological expression. In particular, German presents a “comparably rich verbal morphology” (Bittner 2003:53) that renders the acquisition process “not particularly complex” (Mills 1985:147), although some forms are phonologically and morphologically syncretic, as shown in 3.2.1.3 for the infinitive and the first- and third-person plural in the present tense. For this reason, the acquisition process is comparably more complex than in languages like Italian, in which inflectional endings corresponds to one person and number value, at least in the present (Nocchetti 2003:353). The expected outcome is, thus, that children acquire the German verbal inflection comparably later than Italian children.

Studies investigating the acquisition phases of the verbal morphology in monolingual German children were able to confirm this hypothesis. Mills (1985) considers the longitudinal data of preceding studies about monolingual children and reports the different stages that children go through when acquiring the morphology and syntax of verbs in German. She shows that during the one-word-phase (MLU until 1.0), children realize infinitive forms instead of finite verbs in most cases. With respect to this issue, Mills (1985:153) argues that the reason lies in the “frequent use in adult speech of modals and auxiliaries which send the main verb in infinitive form to the end of the clause, infinitival imperatives, and syntactic baby talk in which no modal or auxiliary is used but the main verb is final in infinitive form”. Once again, the role of input's frequency is argued to fulfil extremely relevant functions. Crucially, no consistent changes are found in the realizations of verbal morphology during the two-word-stage, until an MLU value

of 2.0. Mills (1985: 154) reports that verbs occur mostly in the infinitive forms and, when they are occasionally inflected, they are realized in the third singular person of the present tense, e.g. **ich spielt* 'I plays'. At the age of 3;0, however, with the start of the three-word-stage, children begin realizing the verbs in the target-like position, i.e., not in the final position in the main sentence, and accordingly realize the target-like inflection on the verb. Collings (1990:32) shows similar results as concerning the acquisition of verbal morphology in one monolingual child from the age of 1;0 until about 4;0 years old, starting from an MLU of 1.0 until a value over 4.0. Collings, however, does not offer an input-based explanation for the occurrence of RIs and target-deviant inflected forms during the initial stages of language acquisition. Instead, the author leans towards a semantic approach, as proposed by Clahsen (1990), suggesting that children systematically acquire information about the semantic and syntactic role of verbs, such as transitivity.

A further study by Bittner (2003) explores the longitudinal acquisition of verbal morphology in two monolingual German children, Anna and Caroline, aged 1;8 to 2;1 and 1;6 to 2;2, respectively. In comparison to Mills' results, which show that verb inflection is acquired at age 3;0, Bittner argues that the children analysed are on the right path of acquisition without yet mastering it. The findings by Bittner confirm this hypothesis. The children initially go through a phase where rote-learned forms are used in all contexts, even if some inflected forms occur. After this stage, the children overgeneralize inflectional endings found frequently in the input, such as *-e* for the first-person singular, *-en* for the infinitive and the first and third-plural forms, etc., to all verbs. Reportedly, once the children receive enough input to establish a connection between person, number, and tense grammatical categories and their reference in the real world, they can inflect verbs correctly in most contexts.

Another significant study on this topic is conducted by Brandt-Kobele & Höhle (2010), examining the eye behaviour of 28 monolingual German children 3;0 to 4;1 in a decisional task assessing the relevance of the inflectional suffix on the verb. In the task, children listened to sentences with the pronoun *sie* 'she/they' as the subject, which can be used ambiguously until the verbal inflection is specified, e.g., *sie spielt* 'she plays', *sie spielen* 'they play'. The eye gaze analysis revealed that children had acquired the inflection of the number feature on the verb, although the findings do not definitively prove that inflectional morphology was the only cue

they used to infer correct information about number. In conclusion, various studies have delved into the acquisition of verbal morphology in German, and their collective findings delineate a clear pattern regarding the age and MLU of acquisition. Crucially, Kauschke (2012:83) reports that while subject-verb agreement is acquired at the age of 3;0, instances of target-deviant number and case DPs persist throughout the preschool years.

3.3.3.3 Acquisition of TP's features in French monolingual children

A third and final system is represented by French verbal inflection. Silva Colaço et al. (2024), relying on Marty (2001), assert that in spoken French, nearly all verbs share the same form for the 1st, 2nd, and 3rd person singular in the present tense, while over 90% of verbs have a common form for most person values in the present tense. Differentiation between the 3rd person singular and plural occurs for only 9.66% of all French verbs in the *Le Robert* dictionary. This syncretism of forms is expected to impact the acquisition process from a morphological standpoint.

Heinen & Kadow (1990) focus on the acquisition of various grammatical categories in a substantial number of monolingual children, as reported in multiple preceding studies. Notably, the acquisition of inflection regarding number, person, tense, mood, etc., is categorized differently. The tense feature, for example, is documented as being acquired at variable ages in every child (cf. Heinen & Kadow 1990:54). An observation shared across all studies on monolingual French acquisition of verbal morphology is the consistent occurrence of RIs in children's language. Until the age of 2;0 and, for some children, even later, most verbs appear in the infinitive forms. Sentences like *papa écrire* 'dad (to) write' are frequent in the data. Kilani-Schoch (2003:285) explains the occurrence of root infinitives in French as being "more of a syntactic than a morphological type of production...: among other factors, they may be attributed to the saliency of the infinitive in syntactic structures such as modal structures... and to the ambiguity of the preverbal position."

Following the RIs phase and the use of elsewhere-forms, i.e., forms that could be used 'elsewhere' due to the lack of morphological inflection (cf. (Ferdinand 1996)), inflected verbs begin to occur between the ages of 2;1 and 2;8 with significant variation among children (Heinen & Kadow 1990:59), although target-deviant forms such as RIs are still realized. As

reported by Prévost (2009), the 90% threshold of target-like realization of inflected forms is achieved at a relatively early age by monolingual French children, although plural forms rarely occur in a child's speech, and the analysis of many verbs is not completely feasible due to the target-like production of elsewhere forms. In a longitudinal study on two monolingual French children, Kilani-Schoch (2003) observes that these findings apply to one child from the very beginning, while for the other, a consistent amount of time passes before the same linguistic phenomenon takes place. The author accordingly argues that "individual differences hence go beyond typological adequacy" (Kilani-Schoch 2003: 288). In conclusion, French represents a morphologically less rich language than Italian and German in the domain of verbal inflection. On the one hand, this might expedite the acquisition process for some children who can detect similarities in the morphological expression of features very early. However, for other children, the acquisition of the verbal inflection system poses a challenge that takes comparably longer to master.

3.3.3.4 Acquisition of TP's features in multilingual children

Comparing monolingual and multilingual children in the acquisition of verbal inflection in Italian, German, and French, the findings indicate that both groups generally go through similar phases, although crucial differences exist. In a study by Serratrice (1999) on English-Italian bilingual children, the observation is made that the children "behave as the sum of two monolinguals," particularly in the initial phases of language acquisition. However, this behaviour is noted mainly in the early stages. Regarding morphosyntactic verbal inflection, bilingual children learning Italian alongside a typologically different language tend to use different verbs, which, nevertheless, occur almost exclusively in one form concerning number, person, and tense values. Serratrice terms this morphosyntactic development "piecemeal learning," a process also found in the data of Italian monolingual children. This suggests that the development of inflectional morphology in children acquiring Italian alongside a typologically different language, e.g., English, does not significantly differ from Italian monolingual children.

Koehn (1989) investigates the acquisition of verbal inflection and verb movement in a French-German bilingual child, Ivar. The study focuses on the acquisition of the number feature in both the nominal and verbal domains, revealing a distinct pattern in the bilingual child's acquisition

of the number feature in the two languages. Ivar systematically uses the number feature for nouns and subsequently for verbs, showing a progressive use of singular and plural forms in a target-like manner in German from the age of 2;8 years old. The contrastive use of singular and plural forms for verbs in French is observed later, at the age of 3;1, while pronouns and subjects with plural morphology are found at the age of 2;10. Koehn argues that the data present a clear pattern in the development of grammatical categories in the bilingual child, where the discovery of a feature in one domain leads to its overgeneralization to other domains.

Meisel (1994) reports results on the development of inflectional morphology in Ivar, extending the analysis to two additional children acquiring the same language combination. The study finds that the children simultaneously develop finiteness and subject-verb agreement in French and German, with variations among children. When French is acquired in combination with other languages besides German, different results are reported. Paradis & Genesee (1997) demonstrate that in English-French bilingual children, finiteness on verbs is generally acquired earlier in French than in English, even though English has a less inflectionally rich system. Prévost (2009) reports findings on bilingual French children, indicating that they generally acquire verbal inflection in French similarly to monolingual children, with person agreement acquired earlier than number agreement.

In conclusion, acquisition of inflectional morphology in the verbal domain of Italian, German and French seems to follow a similar developmental process in monolingual and bilingual children. However, this topic has been explored by only a limited number of studies and further research is needed to both thoroughly investigate the acquisition of inflectional morphology in multilingual children and to detect possible differences with monolingual children. In the context of the present study, these findings hint at an interesting trend, leading to the assumption that class play a crucial role within the language acquisition process.

4 Inflectional class

Class represents a frequently overlooked feature in both morphosyntactic analyses and language acquisition studies. Despite its significant role in morphological and syntactic processes of various language systems, few authors have explored inflectional classes as originating from a morpho-syntactic feature, namely class. This is particularly evident in systems like Italian and Spanish, where the nominal and verbal systems inflect according to inflectional classes, influencing their morphological system. Less evident is the expression of class in the French nominal and verbal domains. As for German, this feature appears to overtake different functions depending on the target category. The following sections present an overview of studies that have explored the class feature either from a purely morphological perspective or through a morpho-syntactic analysis. Building on this literature, a comprehensive definition of inflectional class is then provided, which serves as the foundation for the present study.

4.1 The class feature

Parts of speech are generally categorized into two groups based on their capacity for inflection. The former group, which includes nouns, adjectives, determiners, and verbs – at least in Indo-European languages –, can undergo inflection according to various features, including inflectional classes. This means that these elements can be modified following morpho-phonological patterns inherent in the language system, potentially affecting the syntax of these languages. In contrast, elements such as adverbs, prepositions, particles, and interjections are typically not inflected in many languages. For the former group, inflection involves different features that can be classified as either only morphologically or also morpho-syntactically active. Regarding the class feature, approaches have either proposed a solely morphological function or also suggested a syntactic role, analysing the class feature within different theoretical frameworks.

4.1.1 Morphological approaches to the class feature

From a morphology-focused perspective, several analyses of inflectional classes across languages have been proposed, aiming to assign a purely morphological task to class within the linguistic systems. Harris (1991) proposes a morphological analysis through Class Markers

(CMs), namely elements that assign the items of a category to the different inflectional classes in a language. In particular, class markers are described as “markers of pure form” which “share no attribute other than membership in that class” (Harris 1991:59). Taking Spanish into consideration, i.e., a language with a morphologically transparent inflectional system, Harris posits that CMs are relevant for morphological derivation. In Spanish, for example, the suffix *-o* fulfils the functions of a CM. Accordingly, the CM organizes nouns selecting the suffix *-o* into one class which also represents the ‘default’ option in the target-system and, hence, is not specified in the lexicon. The author argues that nouns – as well as adjectives, adverbs, and determiners among other – do not need to bear information as concerning class (or gender) if the value of class is the default one, in this case represented by the suffix *-o*. Harris claims that the presence of CMs supports the classification of nouns in gender classes, although neither gender can be entirely predicted on the basis of class, nor class on the basis of gender. For this reason, Harris (1991:59) argues that CMs “have no meaning or function; they obey no higher semantic or syntactic authority. They are simply pieces of form that must be at the right place at the right time, by their own rule”. While Harris’ approach addresses the morphological role of inflectional classes, subsequent research has extended it to include syntactic analysis.

An equivalent morphological analysis is proposed by Aronoff (1994), who defines class as a morphological marker applied to either a lexeme or a group of lexemes, i.e., a category. According to Aronoff, an inflectional class consists of an inflectional realization that is selected by the root for the inflection process. The specific expression of class depends on the morphological patterns of the target language. In essence, morphology represents a relevant aspect for the definition of class, while syntax is supposed not to serve any function. This approach to class is framed within a theory that considers morphology and syntax as separate language units, including both of them as a part of the target grammar, but precluding syntax from the process of word formation and inflection (cf. Aronoff 1994:3-5). Along similar lines, Carstairs-McCarthy (1994:737) argues for an interpretation of inflectional classes that also includes the concept of paradigm. This represents a crucial turn in Carstairs-McCarthy’s theory, since paradigm enables both the consideration of morphological aspects linked to the notion inflectional class and the limitation of class only to affixal inflection. This excludes all kind of non-affixal inflection from the consideration of inflectional class patterns, e.g., morpho-phonological phenomena such as suppletion, reduplication, and vowel or consonant change.

Within the Canonical Typology Framework (see i.a. Corbett 2005), inflectional classes are considered a property of the stem. Corbett (2009), adopting Wurzel's (1984) characterization of class, suggests that an inflectional class should be defined through the expression of the inflection within the target-system, thereby introducing the concept of canonical inflection. In particular, canonical inflection is described as a paradigm in which it is possible to find a "unique mapping from form to function and from function to form" (Corbett 2009:1). The identification of morphological patterns within a language, which enables the delineation of inflectional classes, can be accomplished by establishing recurring morphological patterns across lexemes. However, Corbett recognizes that it is extremely hard to find canonical systems in the languages of the world and that inflectional systems often consist of canonical classes as well as of less canonical ones. As for definition, an inflectional class must adhere to a paradigm which includes several principles and criteria in order to be appropriately characterized as such. An inflectional class is considered more canonical to the extent that it satisfies a greater number of principles and criteria.

A further morphological approach is put forth by Kürschner (2009), who defines (declension) class as a dynamic phenomenon that involves inflectional systems. Kürschner analyses the works by Aronoff, Carstairs-McCarty and Wurzel among many others and concludes that not only the definitions provided in earlier studies are too rigid, but they also hinder a practical consideration of the complete inflectional system in most languages (Kürschner 2009:23). To clarify the restrictive nature of earlier definitions of declension classes and expand them to include additional morpho-phonological phenomena that mark class distinctions in various languages, Kürschner presents examples such as portmanteau morphs and syncretic forms. For instance, the German *-en* ending, which occurs in numerous declension classes (e.g., class IV, V, and VI, as shown in Figure 13 in section 4.3.2.1), expresses the value of plural on nouns and verbs, among other functions. This underscores the difficulty of delineating a distinct separation between declension classes, raising questions regarding the degree of differentiation among classes to prevent the integration of different inflectional patterns into a singular class. Despite the variety of expression of class in Germanic languages, Kürschner considers declension classes only for morphological analysis, proposing a similar approach to the one found in other studies and, hence, excluding a syntactic role for the class feature.

4.1.2 Morpho-syntactic approaches: class in Distributed Morphology

Various approaches have been proposed to explore the potential of roots, stems, or other functional categories as the potential locus of the class feature. Within the framework of DM, the approach initially presented by Halle & Marantz (1993) underscores the importance of lexical elements in determining the locus of features. Considering all parts of speech as belonging to the same category, thus eliminating distinctions between, for instance, nouns and verbs, DM posits all words as lexemes, i.e., as abstract roots that do not inherently carry specific grammatical information (cf. i.a. Bobaljik 2017). The function of these lexemes within the discourse is initially determined by syntax and consequently inflected through morpho-phonological elements before Spell-Out (Alexiadou 2001). Agreement is regulated by two different nodes, which inherently characterize the type of agreement relation: Agreement 1 (AGR1) and Agreement 2 (AGR2) are considered to determine whether features like Person and Number (AGR1) for verbs, or Gender and Number (AGR2) for nouns, adjectives, and determiners are involved in the syntactic process (Alexiadou 2001:61). Within the framework of the DM, several studies have considered the functions served by different types of features and their role in morphology and syntax. Marantz' (1997) approach highlights the distinction between features that are "syntactically relevant (i.e., determined by Syntax)" and features inherent to the stem or root that are irrelevant to syntax. Halle (2000:125) suggests that morphological units like tense on verbs and number and case on nouns have the status of independent syntactic elements requiring separate nodes in the terminal string, supporting the claim that syntactically active features need distinct consideration from non-syntactically active ones. Thus, the question arises with regard to the class feature: is it syntactically active, or does it solely affect morphology?

In line with the framework of DM, Alexiadou (2004) distinguishes between syntactically active features, like number, and features that cannot be syntactically active by definition, such as class and gender. She argues against approaches suggesting that the class feature represents a separate functional head and contends that class, along with gender, cannot be considered syntactically active as it lacks a clear semantic function. Class is an inherent feature of the stem and is not employable for agreement or other syntactic operations. In essence, class affects only morphology. Aligning with this perspective, Alexiadou & Müller (2008) suggest that the class feature serves as a probe in morphology, searching for a goal. Specifically, they argue that class

"acts as probes on noun stems that trigger a morphological Agree operation with an inflection marker, which acts as a goal before syntax is reached". As generally assumed in DM, the class feature is not syntactically but rather morphologically active through a probe-goal relationship prior to the syntactic component.

Similarly, G. Müller (2005), through an analysis of class and case inflection in Icelandic, proposes that class, being a binary and impoverished feature, can be decomposed into primitive features. The author suggests that inflectional markers, as analysed by Harris (1991), do not inherently belong to the lexeme's stem. Instead, they emerge as "combinations of more abstract, binary features", namely gender, and a "pure class feature" (G. Müller 2005:242). Müller's analysis considers gender and inflectional classes as distinct features that, while occasionally interacting, do not inherently determine each other. A further proposition regarding the necessity for every class to be specified according to six different criteria that are binary specified, among which gender and the type of inflection, i.e., whether strong or weak inflected (cf. G. Müller 2005:244), raises questions concerning languages such as German in which a third, mixed inflectional class has to be considered.

Lowenstamm (2008) proposes a morphosyntactic approach that posits gender and class in a strict relationship from a morphological, syntactic and semantic standpoint. In particular, the author investigates the locus and modus of integration of the class feature within the nominal spine and proposes that class merges with the root of the lexeme and then selects a gender for the noun. Class – or, to follow Lowenstamm's terminology, profile – is integrated within the root. Crucially, this differs from gender which, other than the profile, is not associated with the root or with any inflectional marker. The notion of profile relates to how a noun is composed and organized in terms of its internal structure. This includes the arrangement of functional elements (such as *n*) and the core meaning-bearing element, i.e., the root – or, in the DM framework, $\sqrt{\quad}$. While Lowenstamm develops his approach focusing especially on languages such as French and Yiddish, Kučerová (2019) suggests a similar approach, basing her observation on the inflectional system of Italian. The focus of her approach lies on the 'dissociation' of gender and class, i.e., on the separation of the two features from the root. Kučerová posits that, although numerous studies advocate for a morphosyntactic perspective on class and gender involving the separation of these features, previous approaches have

overlooked the idiosyncratic nature of class, an inherent attribute of the root, whereas gender may either be associated with class or emerge contextually.

Déchaine (2019) proposes a similar model for several languages, considering morphological and syntactic aspects of class. Through a detailed analysis of different languages, Déchaine suggests that the class feature is either a functional category, as claimed by Picallo (1991) and Bernstein (1993a) in the Minimalist framework (cf. 4.1.3), or a feature on a functional category, as in Lowenstamm (2008, 2012) for French. The location and expression of the feature is determined by the target system. Within this framework, the locus of the feature is distinguished within three possibilities for both proposals, i.e., class as a functional category and a feature on ‘another’ functional category, namely D, Number (Num) or *n*.

Locus of the feature	Class is a feature on a functional category	Class is a functional category
D	(1) Class on D	(2) Class selects D
Num	(3) Class on Num	(4) Class selects Num
<i>n</i>	(5) Class on <i>n</i>	(6) Class selects <i>n</i>

Figure 4: Locus and modus of class, adapted from Déchaine (2019: 19).

According to Déchaine (2019), (1) the class feature can fuse with D, as in Proto-Indo-European, leading to the blending of class and D as well as to the organization of arguments on the basis of syntactic and semantic properties, or (2) it can select D without fusing with it, as in Plains Cree in which agreement is selected by the class inherent to the noun. Class can also (3) merge with the number feature (Num) and, thus, represent a feature on Num as displayed by the different plural marking affixes in Shona as well as the morphological distinction between count and mass nouns among other strategies, or (4) it can select Num, as showed for instance by the relationship between the expression of number and evidentiality in Kiowa-Tanoan (cf. Aikhenvald 2004). The last possibility that can be found in Déchaine’s proposal is that class (5) merges with the root, also called ‘little *n*’ or *n*, as already proposed by Lowenstamm for French, or (6) it can select *n* as in Yiddish, since in this system “nouns [can] change their class allegiance“ (Lowenstamm 2008:125). Within this framework, *n* is defined as a functional category responsible for nominalizing roots which provides the structure necessary for nouns to appear in a sentence and determines their syntactic properties. The root, on the other hand,

carries the core meaning of the noun and contributes to its interpretation. In essence, the locus of the class feature is variable in Déchaine’s proposal, and its modus of association to a functional category depends on the target system. However, the author does not consider the possibility that, in one system, the locus and modus of association might be variable depending on the category.

4.1.3 Morpho-syntactic approaches: class in the Minimalist Program

Within the MP, features can be inserted in the derivation as syntactically active elements requiring valuation by the highest functional head, or they may already be valued in the root and, hence, excluded from derivation. Bernstein (1993b) adapted Harris' (1991) approach within the MP framework, but with a key terminological difference: instead of "class markers," Bernstein refers to "Word Markers" (WM), as shown in Figure 5. Unlike Harris, Bernstein also assigns WMs a syntactic function. The author argues that WMs are syntactically significant in Indo-European languages, using Romance languages as key examples for morpho-syntactic analysis, as reported in the example below:

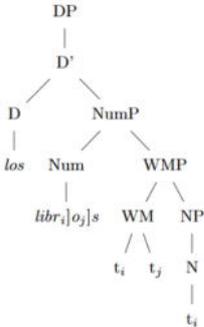


Figure 5: Word Marker Phrase adapted from Bernstein (1993:124).

According to Bernstein, WMs occupy independent positions within the DP and should be regarded as the heads of their own functional projections. The author associates the presence of the Word Marker Phrase (WMP) with the head movement, in which the noun moves from the head position of the NP to the head position of the WMP, aiming to check the WM feature hosted in the WMP (for a more in-depth understanding of head movement in NPs, refer to works by Rizzi 1982, Cinque 1996a, 2010 Giusti 2008, Cardinaletti & Giusti 2016 among others). By linking the NP's head movement to the WMP's presence, Bernstein classifies languages into two categories: those with a functional layer featuring WMs, including inflectional classes at

least in the nominal domain, e.g., Spanish and Italian; and those without inflectional classes, for instance English. Syntactic evidence is provided by head movement which leads to the postposition of the adjective as well as null nominal constructions in Italian and Spanish among other languages, i.e., elliptical structures that “consists of an element resembling the indefinite article plus an adjective” (Bernstein 1993a:5). Thus, the class feature is syntactically active for several categories in languages that present a WMP. A critic to this approach, however, is put forth by Alexiadou & Müller (2008) concerning, for instance, the possibility of null nominal constructions in French despite the missing of – at least overt – inflectional markers.

A related proposal by Picallo (1991, 2008) claims that the class feature as well as gender and number necessitate to be considered as heads of their own functional projections, similar to the proposal put forth by Bernstein (1993a, 1993b). According to Picallo, inflectional classes can be distinguished on the basis of theme vowels, operating as derivational elements between the root and the inflectional affix. Furthermore, Picallo (1991:280) posits that “inflectional elements head their own projections in the same way that lexical elements do”, considering mainly gender and number and, hence, developing a theory that includes a GenP and a NumP (cf. sections 3.1.1.2 and 3.1.2.2) for the nominal system. The author (2008) posits the existence of a formal exponent called [CLASS] that determines the type of noun within a structure. Accordingly, [CLASS] represents a categorization process in a language, manifested as formal gender in some languages and inflectional classes or even classifiers in others. It enables the classification of nouns based on factors such as “perceptual distinctions (physical or functional), (in)animacy hierarchies, natural divisions, or ranking of objects within scales determined by various non-linguistic factors” (Picallo 2008:50). It also incorporates morphological constraints to help identify a noun's class more easily. In order to define class, Picallo suggests the following generally applicable rules:

(7) Inflectional classes

- a. occupy a fixed position in nominal constituents.
- b. form a closed system within the language.
- c. are not subject to variation.

The author treats the class feature as a formal feature, which operates in relation to gender and number, though its interpretability varies across languages depending on its expression (cf. Piccalo 2008). Hence, while for some languages class is interpretable due to its semantic content, e.g., in languages that characterize nouns on animacy, in other languages it only represents a formal, morphological aspect of nouns.

4.1.4 The class feature: a definition

Summarizing, the class feature has been proposed to have a variable locus and modus of association (Déchaine 2019) as well as to be hosted in the functional element of the nominal domain, *n* (Lowenstamm 2008), or to be the head of its own functional projection (Piccalo 1991). Moreover, approaches have been put forth discussing whether class only fulfils a role in morphology (Aronoff 1994) or whether it also has a function in the syntax of some systems, as for the Romance languages according to Bernstein (1993). While the locus of the class feature is still debated, its morpho-syntactic role in Italian, German and French becomes clear in the following sections. First, it is crucial to propose a characterization of inflectional class that serves as the operational definition for the present study:

- (8) An inflectional class is a set of morphemes that provides a language system with morpho-phonological and/or syntactic tools to express the belonging of a lexeme to an inflectional pattern.

The present work considers the class feature as being inherent to the root of nouns, adjectives and verbs¹⁸ for Italian, French, and nouns and verbs in German (see D’Aurizio et al. 2024 for a discussion about inherent features in Italian), since it is arbitrarily pre-determined for these categories and, hence, idiosyncratic. However, this does not apply to all categories in the three languages analysed, a topic that is thoroughly discussed in 4.3.2. As reported by Chomsky (1995:18), the root is included in the lexicon with “its idiosyncratic properties of sound, meaning, and form specified”. Hence, class is idiosyncratic, leading to a similar definition of class as the one suggested by Kučerová (2019) for Italian and Lowenstamm (2008) for French. However, differently from Kučerová and Lowenstamm, the class feature is not considered as

¹⁸ Possibly, class is also inherent in further categories that are not analysed within this work, e.g., determiners, and pronouns (cf. Acquaviva 2009, Zwicky 1986).

being hosted in *n* but rather in the root. This distinction is particularly relevant for further implications. In the DM framework, the type of lexical category depends on the functional category that is inserted in the derivation process, e.g., *n* leads to nominalization while *v* to verbalization. In contrast, in more traditionalist minimalist approaches, lexical categories are distinguished on the basis of formal features and phonological elements (Collins & Kayne 2023:3). Hence, according to the latter definition of class, the value of the class feature can be idiosyncratic to the root of the lexical category, as assumed in the present work. Moreover, if class is not valued in the root, then it is valued by the higher functional category with an uninterpretable class feature. For German adjectives, the higher functional category is represented by D (cf 4.3.2.2).

At this point, it is crucial to delineate class from additional features of the DP and TP, with the aim of confirming the operational definition of class proposed in (8). In the nominal domain, gender and class can be in a one-to-one relationship if one class includes only nouns from one gender, as class I or II in Italian (Figure 10). Additionally, the two features can also have a tangled relation in that, for instance, one declension class corresponds to two grammatical genders in a tripartite gender system, as for nouns from class I in German which can be either masculine or neuter (Figure 13). Hence, the question arises concerning the way to disentangle one feature from the other. Loporcaro (2018:10) suggests to consider different grammatical genders as “paradigmatic classes of nouns, established on syntagmatic evidence”. In this framework, inflectional classes represent paradigmatic classes of nouns which are determined based on paradigmatic evidence, leading to the claim that the class of a noun is morpho-phonologically justified, not syntactically. This distinction allows for the consideration of various factors that affect the class feature. According to Loporcaro, gender and class differ in that the gender feature is syntactically active, leading to agreement operations in the nominal domain, while the class feature does not fulfil any function in syntax. Although this consideration appears to be valid for most of the Romance languages, considering the data in 4.3.2 about German as well as the work of Déchaine (2019) among others, this does not apply to every language or inflectional pattern: German adjectives do not have an inherent class feature, as it is the case for, e.g., Italian adjectives, since adjectives in German inflect on the basis of the value of class licensed by D. Accordingly, the class feature cannot be considered as

an inactive feature *a priori*, since its expression clearly varies depending on the category and on the target system.

As for the verbal domain, the distinction of class from features such as number and person has been investigated in a few studies. In the framework of DM, Harley (1994) proposes a hierarchy of features that includes on a first, higher level Person, followed by Number, Gender, and, on the last layer, Class. The reason for this features ordering lies in the expression of the inflectional markings and in the sequence of involvement of each feature in the derivation process. Hence, features mapping on the inflected category depends on the ordering of morpho-syntactic features. Although the rigidity of the features' hierarchy has been criticized and challenged with more flexible approaches in several works (i.a. Harley & Ritter 2002, Adger & Harbour 2008), the general claim is that the morphological expression of inflectional classes interacts with syntax either pre-syntactically or during the derivation process (Alexiadou & Müller 2008), in the nominal as well as in the verbal domain. To sum up, the debate about the nature and the expression of class in several systems is composed, on the one hand, of studies such as the work by Alexiadou & Müller (2008:140), who state that the class feature is “not visible in syntax, neither as heads of functional projections, nor as features on other heads”. On the other hand, this claim evidently contrasts with Déchaine's (2019) theory about the interaction of class with further features and, more importantly, the location of class.

From the observation of DP and TP features in chapter 3 and the comparison to the class feature as observed in the present section, the following aspects can be outlined as highlighting the main differences which allow the distinction of class from gender and number in Italian, German, and French:

- (9) Class is – mostly – not semantically motivated;
- (10) Class is – mostly – morphologically evident through affixes;
- (11) Class is either inherent to the root of the inflected category, or the value for class is provided by the highest functional category;
- (12) If the class feature is present for a target category, then it fulfils either morphological or morpho-syntactic functions.

Concluding, the present study considers the class feature as being inherently valued in the root, enabling inflection in Italian, French, and partially, German. This element can be idiosyncratic to the root of every category, such as adjectives, nouns, verbs or even determiners, quantifiers,

etc., or even only on certain categories, depending on the target system. In turn, diachronic and synchronic variation affect expression of class in several languages. As for the morphological role of class, declension and inflectional classes determine the inflection of the target category in interaction with further features. In a system like Italian displaying seven declension classes for nouns but only four for adjectives (cf. 4.3.1), the lexemes are incorporated into the derivation with an inherently valued class feature. With regard to syntax, the feature can be active or not depending on the category, e.g., for German adjectives the class value is not inherently set but rather assigned by another valued lexical item, namely D (cf. Pesetsky & Torrego 2007:263). Crucially, the class feature can be defined as standing on either the lexical category itself or an associated functional category, such as D (Déchaine 2019), without changing the nature of class or its function (for a discussion about the locus of features see Corbett 2006a and Baker 2008b). Alexiadou & Müller (2008:132) argue that “there are two ways in which class features might figure in syntax: as features on lexical items, or as separate functional heads“, not considering a third relevant option, namely that the feature is on a functional category, without however constituting a separate functional head.

Baerman, Brown & Corbett (2017:29) state that inflectional classes “... are not necessary for transmitting information, they are not necessary for the smooth running of the sound system. Indeed, they are simply not necessary (many languages have limited morphology)”. In contrast, the present work contends that inflectional classes are necessary, first and foremost for language acquisition. Not only they fulfil relevant functions in organizing ϕ -features in the nominal and verbal domain, they are also crucial for the acquisition process, determining a system as less or more marked. In the following section, diachronic aspects of the class feature in Romance and Germanic languages are taken into consideration, in order to report the most important morpho-syntactic changes that has affected the Italian, German, and French inflectional systems.

4.2 Diachronic aspects of the class feature: language variation

The expression of class is affected by linguistic variation, a crucial aspect that requires further consideration. In particular, it is essential not only to examine synchronic and cross-linguistic aspects but also to analyse linguistic change from a diachronic perspective, leading to the integration of the proposed model of language acquisition into the generative framework,

especially in the emergentist approach proposed by Biberauer et al. (2014). As reported in Roberts (2019:406), parameter hierarchies enable the consideration of “how systems may become gradually more marked over time, in the sense of requiring more specific triggers for operations, ‘moving down’ a parameter hierarchy from meso- [...] to nano- and eventually disappearing altogether”. With regard to the class feature, the analysis of the development of the inflectional system in Italian, German, and French over the last centuries is expected to provide relevant information about the stage at which these languages are at the present time.

Along these lines, Nübling (2008:282) argues that the existence of declension classes can only be explained if the analysis includes the diachronic axis, tracing the emergence and development of declension classes in the target system. A diachronic analysis with respect to inflectional classes in Atlantic languages is proposed by Creissels (2019), who shows that the nouns’ classification system has been reorganized in Atlantic languages with the aim of implementing a morphologically less marked system that includes a smaller number of classes. From a diachronic perspective, the evolution from Latin to modern Italian and French as well as from Proto-Germanic to contemporary German through High, Middle and Low German reveals that class served and still serves crucial functions in these systems.

4.2.1 The class feature in Romance languages

Romance languages, including French, Italian, Portuguese, and Spanish, among others, underwent a transformation from Latin that began after the fall of the Western Roman Empire in the 5th century After Christ (cf. Harris 1988:2). This gradual process resulted in the development of the widely spoken languages in Western Europe, nowadays known as the Romance languages (see i.a. Kaiser 2014:86). The current number of Romance languages spoken is a matter of controversy, with estimates ranging from nine to twenty standard recognised languages, or many more if dialects are considered (cf. i.a. Maiden 1957, Kaiser 2014, Gabriel & Meisenburg 2017, Loporcaro 2018). Concerning inflectional classes, Latin exhibits a clearly defined system in both the nominal and verbal domains, characterized by theme vowels, some of which persist in certain Romance languages such as Italian and Spanish. However, the situation is distinct in French, since alongside Romanian, it stands out as a Romance language that has significantly diverged from its Latin roots, primarily due to substantial phonetic changes (Gabriel & Meisenburg 2017:54).

4.2.1.1 Nouns

The Latin nominal domain is commonly described as displaying a declension class system. The specific count of these classes varies depending on the linguistic variety under examination (Dressler 2002:92) and the analytical approach adopted (cf. e.g. Dressler 2002, Stump & Finkel 2015). Traditionally, the Latin declension system is classified within five declension classes (see among others Aronoff 1994:99):

Number	Case	I (f)	II (m), (n)	III (m), (n)	IV (m), (n)	V (f)
Singular	Nominative	<i>capra</i>	<i>lupus</i> <i>regnum</i>	<i>canis</i> <i>mare</i>	<i>currus</i> <i>cornu</i>	<i>res</i>
	Genitive	<i>caprae</i>	<i>lupi</i> <i>regni</i>	<i>canis</i> <i>maris</i>	<i>currus</i> <i>cornus</i>	<i>rei</i>
	Dative	<i>caprae</i>	<i>lupo</i> <i>regno</i>	<i>cani</i> <i>mari</i>	<i>curru</i> <i>cornu</i>	<i>rei</i>
	Accusative	<i>capram</i>	<i>lupum</i> <i>regnum</i>	<i>canem</i> <i>mare</i>	<i>currum</i> <i>cornum</i>	<i>rem</i>
	Ablative	<i>capra</i>	<i>lupo</i> <i>regno</i>	<i>cane</i> <i>mari</i>	<i>curru</i> <i>cornu</i>	<i>re</i>
Plural	Nominative	<i>caprae</i>	<i>lupi</i> <i>regna</i>	<i>canes</i> <i>maria</i>	<i>currus</i> <i>cornua</i>	<i>res</i>
	Genitive	<i>caprarum</i>	<i>luporum</i> <i>regnorum</i>	<i>canum</i> <i>marium</i>	<i>curruum</i> <i>cornuum</i>	<i>rerum</i>
	Dative	<i>capris</i>	<i>lupis</i> <i>regnis</i>	<i>canibus</i> <i>maribus</i>	<i>curribus</i> <i>cornibus</i>	<i>rebus</i>
	Accusative	<i>capras</i>	<i>lupos</i> <i>regna</i>	<i>canes</i> <i>maria</i>	<i>currus</i> <i>cornua</i>	<i>res</i>
	Ablative	<i>capris</i>	<i>lupis</i> <i>regnis</i>	<i>canibus</i> <i>maribus</i>	<i>curribus</i> <i>cornibus</i>	<i>rebus</i>

Figure 6: Declension classes of Latin, adapted from Kaiser (2014:119) and Aronoff (1994:81)

Each declension class is related to one or more grammatical gender in Latin. Unlike most modern Romance languages (with exception of Romanian as well as some Italian dialects, for details see Loporcaro 2018), Latin had a tripartite gender system consisting of a masculine, feminine and neuter gender values. However, the two Romance languages considered here, i.e., Italian and French, presents nowadays a bipartite gender system¹⁹. Since the present study does not consider the gender system, it does not pursue any longer the reason that brought the

¹⁹ Brinkmann et al. (2023) provide psycholinguistic evidence for the existence of a third, neutral gender in French, cf. 3.1.1.5. Loporcaro et al. (2013) discuss the option of a third neutral gender Italian.

Romance systems to reduce the number of gender classes from a tripartite to a binary system (Brinkmann et al. 2023, Kaiser 2014). However, it is crucial to notice that the reduction of the gender system led to the modification of the inflectional system, with two declension classes slowly disappearing, namely IV and V, with most nouns of class IV shifting to the inflection of class II and nouns of class V being inflected according to class I (Kaiser 2014:122). An example for class change is represented by the noun *facies* ‘face’, which developed in *facia* and accordingly inflected according to the rules of class I after the shift took place. Not only the values for gender and class underwent a variation process, also morphological case was influenced from reductions and changes (Kaiser 2014:124).

In Italian, the gradual transformation from a tripartite to a binary gender system has left traces throughout the different stages. Old Italian and, according to several studies, even Modern Italian is reported to be composed of three genders (Paciaroni, Nolè & Loporcaro 2013, Loporcaro, Faraoni & Gardani 2014 about nouns changing grammatical gender in the plural like *il braccio* ‘arm’_{masc.sing.}, *le braccia* ‘arms’_{fem.plur.}²⁰). In the present work, the Italian system is assumed to consist of two genders, as discussed in section 3.1.1.3. Concerning the inflectional system, Latin was generally considered to be composed of five declension classes as reported in Figure 6, whereas modern Italian is assumed to be composed of six to seven declension classes, depending on the analysis (cf. Figure 10). Accordingly, Italian consists of a larger number of inflectional classes than Latin. A reason for this difference is caused by the considerable number of foreign words which are present in Italian and that are generally not inflected, causing the emergence of a declension class that embraces nouns that do not change from the singular to the plural form (class IV in Figure 10 in section 4.3.1.1). Furthermore, loan words from Ancient Greek developed into a further class, namely class V, Although the number of declension classes changed from Latin to modern Italian, it is relevant to highlight that the two inflectional systems present similarities. They both include classes that are either in a one-to-one relationship with one grammatical gender or ambiguous, in that nouns associated to different gender values belong to one and the same declension class. Moreover, whether a noun is included in one class is established through the observation and comparison of the singular

²⁰ This group of nouns is defined by Loporcaro et al. (2014) as affected by *genus alternans*, since they alternate gender agreement in the singular and the plural. According to the authors, the declension class that includes these nouns, i.e., class V (cf. Figure 7 in 4.3.1), is derived from the neuter Latin and Old Italian nouns.

and plural inflection. To sum up, both the Italian and the Latin declension systems are morphologically clear-structured – or transparent – systems that cover the totality of the nouns in the respective language (Chini 1995:95 for Italian, Loporcaro 2018:17 for Latin).

Unlike Italian, the French declension system is generally described as either displaying one declension class (Dressler, Kilani-Schoch, Gagarina, Pestal & Pöchtrager 2006:54) or not to inflect according to a declension system (i.a. Stark 2008b:51). The shift from a rich inflectional system like the Latin one to a very poor or even absent declension system can be displayed by analysing the different phases from the Late Latin system to the modern French one. Polinsky & van Everbroeck (2003) report that, after the reduction of the declension system in Late Latin through the incorporation of nouns belonging to class IV, e.g., the masculine noun *currus*, and V, e.g., the feminine noun *res*, into the first three classes (Kaiser 2014:122), nouns absorbed in the newly developed Old French system shifted from three to two declension classes. Considering the plural inflection of nouns belonging to class III (Figure 6), this group of nouns was assimilated to the plural inflection of nouns in class II (Polinsky & van Everbroeck 2003:363), e.g., the noun *corpus – corporis* ‘body’ which in Old Latin belongs to class III, is reanalysed as a noun of class II, becoming *corpus – corporis*, in Late Latin. In Old French, this noun finally becomes *cors*, signalling that, as reported by Kibler (1984:25), already during the 12th century the declension system of Old French started to “break down” and the two remaining classes eventually merged into one, leading also to phonological variation. In Modern French, the noun has become *corps*. This result is confirmed in a study by Déchaine, Dufresne & Tremblay (2018). Focusing on the role of ϕ -features in Old French, Déchaine et al. analyse two 12th-century Anglo-Norman texts and document the existence of two declension classes which have nearly disappeared in modern French. In the state of the art, it is possible to find different explanations for the reanalysis of the declension system and, hence, for the disappearing of the class feature. Stark (2008b), for instance, suggests to consider the function fulfilled by the indefinite determiner in French in comparison to its Old French variant and accordingly claims that “the rise of indefinite determination in the Romance languages can be related to the loss of the complex Latin nominal morphology which indicated [...] the conceptually fundamental difference between a contoured and shaped individual and diffuse substances/masses and collectives”.

4.2.1.2 Adjectives

The expression of inflectional classes for Latin adjectives reveals crucial tendencies as concerning the direction of language variation from the old inflection system to the current one. According to Kaiser (2014:119) among others (see also e.g. Loporcaro 2018:16), the Latin declension system consists of two inflectional classes for the adjectives:

Number	Case	I (m)	I (f)	I (n)	II
Singular	Nominative	<i>magnus</i>	<i>magna</i>	<i>magnum</i>	<i>grandis</i>
	Genitive	<i>magni</i>	<i>magne</i>	<i>magni</i>	<i>grandis</i>
	Dative	<i>magno</i>	<i>magnae</i>	<i>magno</i>	<i>grandi</i>
	Accusative	<i>magnum</i>	<i>magnam</i>	<i>magnum</i>	<i>grandem</i>
	Ablative	<i>magno</i>	<i>magna</i>	<i>magno</i>	<i>grandi</i>
Plural	Nominative	<i>magni</i>	<i>magnae</i>	<i>nova</i>	<i>grandes</i>
	Genitive	<i>magnorum</i>	<i>magnarum</i>	<i>novorum</i>	<i>grandium</i>
	Dative	<i>magni</i>	<i>magnis</i>	<i>novis</i>	<i>grandibus</i>
	Accusative	<i>magnis</i>	<i>magnas</i>	<i>nova</i>	<i>grandes</i>
	Ablative	<i>magnis</i>	<i>magnis</i>	<i>novis</i>	<i>grandibus</i>

Figure 7: Inflectional classes for Latin adjectives, adapted from Kaiser (2014:130) and Clackson (2011:109)

The relevant grammatical features for the inflection of adjectives are, as displayed in Figure 7, gender, case and number. There is, however, a fourth feature that, as for nouns, is inherent to the adjective, namely class. While the adjective *magnus* ‘big’ is inflected according to gender, number, and case, becoming *magnus*, *magna* and *magnum* in the singular form, the adjective *grandis* ‘big’ cannot be inflected according to gender, since its form remain the same in the singular. In this case, the class feature is evidently inherent to the root and overrules the inflection according to the value of gender.

Considering the inflection of adjectives in Italian which consists of four inflection classes, the intrinsic structure of the class feature remains the same. While the adjective ‘tall’, which is declined as *alto* or *alta* in Italian, marks the value of gender and number through the inflection, adjectives like *grande* ‘big’ do not to agree with the grammatical gender of the noun since they cannot be inflected for gender but only for number. The fourth Italian adjectival class, i.e., the invariants, like *blu* ‘blue’, does not only prevent agreement with the gender of the referent but also the number feature is not considered for inflection (Chini 1995). However, an inflectional class like this is not observed in Latin according to Figure 8. Concluding, the Italian adjectival

inflection system resembles the Latin system, since they both present a class feature in the adjectival system that “overrules” the agreement for gender and, in Italian, number as well.

As already observed for nouns, French adjectives evolved differently from the Italian ones and, consequently, they display less similarities to the Latin inflectional system than Italian (Gabriel & Meisenburg 2017). In particular, French does not present inflectional classes for adjectives. Grammatical features such as gender and number affect the inflection, mostly in the written standard variety. Class, however, is not present in the inflectional system of modern French adjectives (cf. i.a. Kibler 1984 and 4.3.3.2).

4.2.1.3 Verbs

The verbal Latin system consists of four inflectional classes that are phonologically identifiable through the presence of the theme vowels *a* for the first inflectional class, *ē* for the second, *ĕ* for the third, and *i* for the fourth class (Aronoff 1994:45):

	I	II	III	IV
Infinitive form	<i>amare</i>	<i>delēre</i>	<i>legĕre</i>	<i>audire</i>

Figure 8: Inflectional classes of Latin verbs, adapted from Aronoff (1994: 45)

Following Aronoff (1994:46), a theme – or ‘thematic’ – vowel serves as a distinctive feature of the verb category. Considered alone, the theme vowel holds no inherent meaning and is essentially ‘empty’ but purposeful, since it serves a specific role in the morpho-phonology systems of target language, i.e., it allows to determine the conjugation of the verb. Furthermore, it appears between the root of a verb and the inflectional affixes, indicating grammatical properties of the verb. Summarizing, the theme vowel fulfils the function of an inflectional affix and, returning to the definition of inflectional class by Aronoff (1994:64), cf. 4.1.14.1), it serves as a diacritic which is selected from a set of lexemes, in this case, the verbal stems.

As for the Latin verbal system, it consists of four inflectional – or conjugational – classes that can be nowadays still partially found in Italian, although it is generally assumed that Italian is composed of three inflectional classes in the verbal domain (see among others Maiden 1957 and Loporcaro 2018). In Italian, the inflectional class system of Latin as illustrated in Figure 8 remains intact with only a few changes, such as the merging of class two and three within a single class for Italian (cf. Figure 12 in section 4.3.1.3). More importantly, the original theme

vowels of the Latin verbal system are preserved (Chini 1995), allowing a one-to-one comparison between the two language systems.

As for French, it is highly controversial whether verbs can still be classified as belonging to inflectional classes or not (see Hinzelin 2017 and section 4.3.3.3 for an overview of different approaches to this topic). Kibler (1984) reports that Old French presented four inflectional classes in the verbal domain which interact with person and number features. Of these four classes, one has disappeared in Modern French and the remaining three do not present the crucial phonological and morphological differences that allows a clear identification. Hence, unlike Italian, the French verbal system was consistently affected from language change. For this reason, the modern verbal French system is described as consisting of four conjugational classes relying partially on the same theme vowels that were already found in Latin – although many exceptions need to be taken into consideration (Figure 20). For instance, verbs belonging to class I and, thus, ending in *-are* in the infinitive form in Latin were phonologically reanalysed, in that the quality of the theme vowel *-a* shifted to *-e*, leading the verb *amare* ‘to love’ to be realized as *aimer*. As for the diachronic perspective, French displays a verbal system that, either with or without inflectional classes, evidently diverges from Latin (cf. Dressler et al. 2006).

4.2.2 The class feature in Germanic languages

Not only Romance languages originate from a system characterized by inflectional and declension classes, also Germanic languages have their roots in a morphologically complex system that predominantly developed in the present European territory (Kürschner & Nübling 2011). Both language families as well as further modern systems are believed to be descendants of a common ancestor, the Proto-Indo-European language, which was spoken around the 4th to 3rd millennium Before Christ. However, the existence of this language remains a topic of debate.

With regard to modern German, it originates from the Proto-Germanic language which then evolved into the *Frühhochdeutsch* (Old High German), *Mittelhochdeutsch* (Middle High German) and *Neuhochdeutsch* (New High German) from the 8th century after Christ until the present time (Schmid 2017). However, a glance at the literature about Proto-Indo-European and Proto-Germanic languages reveals a complex situation. On the one hand, “there is much uncertainty surrounding the origin and nature of the speakers of Proto-Germanic, and even more

uncertainty about the speakers of Proto-Indo-European” (Hawkins 2011:53), leading to a rather uncertain linguistic situation. On the other hand, there is a general consensus about the distinction of Germanic languages into three groups, i.e., the West, North (such as Danish, Faroese, Icelandic, Norwegian, and Swedish) and – although not anymore present – East Germanic languages, e.g. Burgundians, Gothic, and Vandalic among others, based on the fact that all languages belonging to the three groups have their origins in Proto-Germanic (see among others Nübling 2008, Kürschner 2009, Kürschner & Nübling 2011, Hawkins 2011).

German is generally considered to belong to the group of West Germanic languages together with Afrikaans, Dutch, English, Frisian and West Flemish, including all the varieties spoken outside of the main community, as for example Pennsylvania German (Wurmbrand 2004). Modern German emerges as a consequence of several historical and cultural phenomena that let the language develop through a long period of time. One relevant fact about the Proto-Germanic language that still affects the morphology and syntax of Germanic languages is that “declension of nouns and adjectives, and conjugation of verbs, shows Indo-European coinage in [...] respect [of] grammatical categories: Number and case in nouns, comparative in adjectives, person, numerus, mode, tense in verbs” (Schmid 2017:5).

4.2.2.1 Nouns

Proto-Germanic as well as later stages of High German shows a clear tendency in the nominal system: as reported in Kürschner (2009:71), Indo-European nouns always carry morphological suffixes. Categorical features that are expressed through suffixes in Indo-European are case, number and gender. However, the declension of nouns is affected from the involvement of a stem-forming suffix, namely a suffix that characterize the stem as a noun (cf. Kürschner 2009: 72).

Number	Case	Root (lexeme)	D (class)	Suffix
Singular	nominative / accusative	<i>lamb</i>	<i>iz</i>	∅
	genitive	<i>lamb</i>	<i>iz</i>	<i>-aza</i>
	dative	<i>lamb</i>	<i>iz</i>	<i>-ai</i>
Plural	nominative / accusative	<i>lamb</i>	<i>iz</i>	<i>-o</i>
	genitive	<i>lamb</i>	<i>iz</i>	<i>-om</i>
	dative	<i>lamb</i>	<i>Iz</i>	<i>-omoz</i>

Figure 9: Declension in Old German, adapted from Kürschner & Nübling (2011: 361)

As illustrated in Figure 9, the declension marker D *-iz-* is added to the root before further suffixes for case and number are added. According to Kürschner & Nübling (2011), the nominal declension system was expressed through the addition of an overt declension marker *-iz-* which in later stages developed into a covert class marker, leading to a morphologically inherent class feature in the nominal domain, since the value for class is inherent to the root rather than inserted through an affix. Moreover, Kürschner (2009:72) reports that the declension classes of Proto-Indo-European are semantically transparent and the classification in inflectional classes is not arbitrary, but motivated by a function. As an example, Kürschner mentions different kinds of animals, such as mammals, birds, etc., that were classified in the declension classes for neuter nouns. Notwithstanding the many exceptions related to this type of classification, Kürschner's approach considers Indo-European declensional classes as morphologically and semantically motivated.

However, several differences emerge from the comparison of the Proto-Indo-European declension system to the modern ones. First, the nominal domain of Germanic languages is still affected by declension classes, although they are not further semantically motivated in the sense of Kürschner. Following this approach, declension classes remain stable throughout diachronic variation within the nominal system of – some – Germanic languages, even enriching the morphological system through the addition of suffixes (Kürschner 2009:77). Considering the development of the German language into the Old, Middle and New High German phases, the declension system slowly but consistently developed into the current morphological system. As for the nominal inflection, Old High German is generally characterised by a classification of nouns into two classes, a weak and a strong one (Kürschner 2009:81). The strong class is reported to be richly inflected, while the weak declension class consists of *-n* suffixes for all case and number endings, as reported in Figure 13 in section 4.3.2.1 for nouns of class V. This differentiation is still current in the modern system, although it underwent several changes. An example is provided by the fact that only masculine nouns belong to the weak class, while in Old High German also feminine and neuter nouns could inflect according to the inflectional pattern of this class. Notwithstanding the variation that affected the High German declension system, nominal inflection as present in Old High German remains until the present time.

4.2.2.2 Adjectives

With regard to the inflection of adjectives, two to three declension classes are distinguished. According to the categorization proposed by Schmid (2017:177), adjectives can be classified since the Proto-Germanic era into two major classes, a strong and a weak one. The distinction into these two classes is still present in Modern German, although the literature generally reports three classes, adding a mixed class to the strong and weak ones (i.a. Zwicky 1986, Clahsen, Eisenbeiss, Hadler & Sonnenstuhl 2001). Despite the addition of an inflection class, the morphological expression of the adjective inflection has not been affected by significant change. In comparison to the Indo-European inflectional classes for adjectives, however, the class feature appears to have undergone consistent changes as concerning the function fulfilled in the derivation process.

In this regard, Petrova (2024) points out that adjectives of weak classes were “used to derive nouns with a special function, namely to refer to persons by assigning them a characteristic property expressed by the respective base word”. Hence, adjectives of the weak inflectional class were semantically motivated. However, unlike nouns, adjectives need to agree with further elements within the DP such as (in)definite articles and nouns. Thus, adjectives have undergone massive change that led the class feature transform from an inherently morphological to an unvalued feature (cf. Zwicky 1986). Baermann et al. (2017: 26) explain the shift of a morphological to a syntactic feature in the following way: “morphological patterns whose origins lie in a chance association of disparate elements can nevertheless be propagated across generations and serve as a driver of morphological change, drawing new items into their sphere of influence”. Accordingly, the class feature in the adjectives has been affected from several phenomena that have let the feature attract new items and caused the shift from a morphological to a syntactic feature.

4.2.2.3 Verbs

As for the verbal system, several studies have considered the development of inflectional classes in Proto-Germanic as well as in later stages of High German. In particular, Pijpops, Beuls & van de Velde (2015) among others consider the development of the inflectional classes in English, Dutch and German through the analysis of the diffusion of a weak inflection as opposed to the strong and mixed classes for verbs. The authors argue against a classification of

the strong and weak inflection in regular and irregular classes as generally proposed in the literature for Old Germanic languages, since the broader distribution of the weak system incrementally let the strong inflection system develop from regular to irregular. For example, in Old High German, verbs such as *heffen* ‘to lift’ followed a strong inflection as in *houf*, *houbun*, *gihouban*, whereas in Modern German, the same verb has shifted to a strong inflectional pattern: *hängen*, *hing*, *gehängt*.

Fundamental is the distinction of the verbal system in different classes, as concerning modern German, called the weak, strong and mixed verb classes (see i.a. Marcus et al. 1995). According to Schmid (2017), these three verbal classes already existed in Proto-Germanic and, crucially, each of them consisted of further classes. For instance, Schmid proposes a classification of strong verbs into seven classes according to the phonological structure of the verbal stem, such as class I *reiten*, *ritt*, *geritten*, and class IV *nehmen*, *nahm*, *genommen*. Weak verbs, as mentioned earlier, constitute a “younger” group since they are first attested in Proto-Germanic but not in Indo-European and are generally classified into three classes according to the infinitive form. Even in the modern system, the three classes are typically identified based on the infinitive form as well as the verbal inflection for the *Präteritum* and the part participle tenses, leading to the classification of a weak *machen*, *machte*, *gemacht*, ‘to do’, a mixed *lernen*, *lernte*, *gelernt*, ‘to learn’, and a strong class *bringen*, *brachte*, *gebracht* ‘to bring’.

Comparing the Proto-Germanic verbal system to the modern German inflection classes, the once rich inflectional system displays a weakening in the inflectional system, leading to the loss of verbs’ distinctions into sub-classes, as it was the case in Old and Middle High German for strong and weak verbs. For instance, in Old High German, strong verbs like *gēban* ‘to give’ followed the ablaut pattern of the type *gab*, *gēbum*, *gigēban*, while in Modern German, verbs like *geben* ‘to give’ still display the strong inflection but show some simplification in sub-class distinctions as in *gab*, *gegeben*. Similarly, many weak verbs in Old High German, e.g., *machen* ‘to do’, follow the same basic weak inflectional pattern seen in Modern German, inflecting as in the weak paradigm *machen*, *machte*, *gemacht*.

Concluding, the modern German system emerges from several changes that took place during the last centuries. Crucially, the morphology of the nominal and verbal system varies in an opposite manner without, however, enabling the loss of inflectional classes. As for the

adjectives, the class feature underwent a switch from a morphological to a syntactic feature, enabling the development of the current morpho-syntactic functions, discussed in 4.3.2.2. A comparison with the Romance systems reveals a crucial tendency. While Italian only changed in the phonological expression of the class feature, French almost eliminated the feature from the morphological system with a few exceptions. In contrast, diachronic variation systematically affected the German language.

4.3 Class in Italian, German and French

The definition of class, as proposed in (8), provides a framework for examining inflectional classes in Italian, German and French. As previously argued, an inflectional system serves as a mediator between form and meaning, with no direct bearing on meaning itself (Parker & Sims 2016:215), thereby attributing a strictly morphological sense to the class feature. Conversely, Déchaine (2019:39) acknowledges that "class can be a feature on an F[unctional]-head, or a distinct F[unctional]-head [... or] can combine with any one of the F[unctional]-cat[egorie]s" thereby recognizing a syntactic role for the class feature. The following sections explore the expression of the class feature in Italian and French, demonstrating how, in these languages, Aronoff's (1994) morphological approach to the class feature aligns with the expression of class in these systems. However, a more intricate scenario emerges in German, a system in which the class feature interacts with both morphological and syntactic elements. Before undertaking an analysis of the inflectional systems in Italian, German, and French, it is essential to consider aspects common to all three languages that further influence the expression of class.

The interaction between class and other grammatical features is evident in both nominal and verbal domains. Especially within the DP, the association between gender and class has been extensively examined in various studies. Most perspectives propose that both gender and class represent inherent features of the lexeme, or noun. Examining the relationship between these two features, Enger (2004) suggests that gender and class can be predicted from one another in what he terms "GenderFirst" and "DeclensionFirst" languages. Building upon Corbett's (1991) assertion that the gender feature can be predicted through the inflectional system and observing that this is not universally true, Enger (2004) categorizes languages into two main groups. In languages belonging to the 'DeclensionFirst' category, declension classes allow the prediction

of the gender value for nouns, while for languages in the ‘GenderFirst’ category, gender enables to predict the declension class. Enger conducts a detailed analysis of the inflectional system in different languages and concludes that neither ‘GenderFirst’ nor ‘DeclensionFirst’ approaches adequately capture an inflectional system. In the case of Norwegian, gender determines the declension class, but conversely, the declension class can also influence the gender of the lexeme, contingent on the inflectional class. An example for the GenderFirst strategy is put forth through a diachronic analysis of Old Norse, in which the masculine noun *bekk* – *bekker* ‘brook’ adopted first the feminine gender and then changed the inflection of the plural form into *bekkar*, leading to the shift of the gender value to the masculine. Differently, the noun *bær* – *bæra* ‘berry’ is generally used in the plural form and, therefore, the gender value is generally predicted on the basis of its declension. This leads to the conclusion that despite the close relationship between gender and class, the dominance direction of these features remains unclear. In this context, Ralli, Gkiouleka & Makri (2015), through an analysis of two Greek dialects and of loan words from Turkish and Romance languages, propose that "the direction of dominance between the two [i.e., gender and class] is language-dependent or even case-dependent". The following sections delve into the analysis of the relationship between gender and class in Italian, German, and French and show that Ralli’s prediction is indeed correct.

Not only gender but also case represents a significant feature in the linguistic structure. While Italian and French lack nominal inflection for case, German inflects adjectives, determiners, nouns, and other word classes according to this feature (Wurzel 1984). Case in German as well as gender and number in Italian, German, and French contributes to the development of syncretism within the inflectional system. Syncretism, as defined by Harley (2008), occurs when "different combinations of morphosyntactic feature values are represented by the same form". In the three languages analysed, two types of syncretism are identified. One example of syncretism in German nominal inflection is illustrated below:

(13) *Der Löwe, der Frau, der Löwen, der Frauen, der Häuser*

The lion nom.masc.sing, the woman dat.fem.sing, the lion gen.masc.pl, the women gen.fem.pl, the houses gen.neut.pl

In (13), *der* ‘the’ occurs in singular and plural for feminine, masculine, and for neuter nouns only in the plural number. G. Müller (2002) classifies this as transparadigmatic syncretism,

wherein determiners are inflected based on gender, case, and number sensitive markers that 'ignore' inflectional classes. Another type of syncretism affecting inflectional classes is illustrated in (14):

(14) *der Löwe, den Löwen, dem Löwen, des Löwen, die Löwen.*

The lion_{nom.masc.sg}, the lion_{acc.masc.sg}, the lion_{dat.masc.sg}, the lion_{gen.masc.sg}, the lions_{nom.masc.pl}.

(15) *tavolo grande, case belle, case grandi, tavoli belli*

Big_{sg} table_{masc.sg}, beautiful_{fem.pl} houses_{fem.pl}, big_{pl} houses_{fem.pl}, beautiful_{pl} houses_{masc.pl}.

This type is defined as metasyncretism by Harley (2008). In metasyncretism, nouns are inflected according to metaparadigms, i.e., affixes that are overgeneralized throughout the entire inflectional system, regardless of the lexeme's morpho-phonological features within the paradigm. This can also be extended to adjectives, as reported in (14) for *bello* 'beautiful' and *grande* 'big' in Italian.

In conclusion, syncretism characterizes most inflectional systems, including the ones analysed in the present work. Furthermore, syncretism plays a significant role in the language acquisition process, potentially accelerating– or delaying – the acquisition of inflectional morphology.

4.3.1 Class in Italian

All inflectional categories in Italian, namely categories – or word classes – that can be modified according to grammatical features, follow specific patterns determined by inflectional and declension classes. In section 3.1, the expression of gender and number in Italian has been taken into consideration. Here, the focus shifts to the declension and inflectional classes for nouns, adjectives, and verbs.

4.3.1.1 Nouns

Italian exhibits seven declension classes for nouns (Chini 1995:81).

Declension class	Singular	Plural	Example
I	-o	-i	<i>libro, libri</i> (m)
II	-a	-e	<i>carta, carte</i> (f)
III	-e	-i	<i>cane, cani</i> (m) <i>ape, api</i> (f)
IV	<i>variable</i>	= singular	<i>re</i> (m), <i>città</i> (f)
V	-a	-i	<i>problema, problemi</i> (m) <i>arma, armi</i> (f)
VI	-o	-a / -i	<i>uovo, uova</i> (f) <i>muro, muri</i> (m) / <i>mura</i> (f)
VII	-o	-i	<i>mano, mani</i> (f)

Figure 10: Declension classes for nouns in Italian

This classification lays the foundation for further exploration of the intricate interplay between grammatical features within the Italian nominal morphology. In the literature, the debate continues over whether the number of declension classes should be reassessed. Acquaviva (2009) acknowledges six declension classes which include all classes reported in Figure 10 with the exception of nouns of class VII, which in Acquaviva's analysis are included in class I. Kučerová (2018) considers only three classes, namely class I, II, and III, although further classes are assumed but not explicitly outlined in her work. Thornton et al. (1998) posit the existence of twelve declension classes which, however, include also adjectives. In their classification, the following differences can be found with regard to the class system reported in the table above: class I and II nouns are included in one class; class VI nouns are divided into two different classes, depending on the gender in the singular and plural and, consequently, *uovo* and *muro* belong to two different classes. Furthermore, four additional classes are considered, one for *pluralia tantum* and one for *singularia tantum*²¹, e.g. *nozze* 'wedding' and *buongusto* 'tastefulness' respectively, one for irregular nouns, e.g. *bue – buoi* 'ox – oxen', and one for compounds that inflects irregularly in Italian, e.g. *caporeparto – capireparto* 'department head'. The classification of the other classes remains the same as shown in Figure

²¹ *Pluralia tantum* are nouns that occur only in the plural, while *singularia tantum* are nouns that occur only in the singular form.

10, while only the labels differ. The present study adopts the declension class system delineated by Chini (1995). The seven declension classes delineated in Figure 10 encompass the entirety of Italian nominal vocabulary, with the exception of loanwords which are inflected based on the language of origin²² or are not inflected and consequently categorized in class IV.

Nouns falling within class I and II inflect in the plural by ‘substitution’ –or alternation–since the final vowel is substituted from *-o* to *-i* (class I) and from *-a* to *-e* (class II) (cf. Scalise 1984:73). For instance, the noun *libro* ‘book’ transforms into *libri* ‘books’ in the plural form, while *carta* ‘paper’ becomes *carte* ‘papers’ in the plural. The suffix introduces various grammatical information, and nearly every class undergoes morpheme alternation. Class I and II hold particular significance in Italian, as they exhibit high productivity, collectively accounting for 71.5% of the entire Italian vocabulary (Thornton et al. 1998:38). Moreover, these two classes are commonly associated with a one-to-one relationship with the gender feature. Specifically, all nouns in class I are masculine and all nouns in class II are feminine. This gender-class correlation highlights the systematic nature of Italian noun morphology within these productive declension classes.

A notable portion, specifically 20.6%, of Italian nouns, adheres to the declension rules of class III, a class characterized by morphological and phonological opacity with regard to gender (Pizzuto & Caselli 1992). For example, the noun *l'insegnante* ‘the teacher’ can exhibit either masculine or feminine gender, depending on the sex of the referent. The gender distinction is often evident through the inflection of the adjective, as illustrated by *la brava insegnante* ‘the fem.sing. good fem.sing. teacher’ and *il bravo insegnante* ‘the masc.sing. good masc.sing. teacher’, *la bella nave* ‘the fem.sing. beautiful fem.sing. boat’ and *il cane malato* ‘the masc.sing. sickmasc.sing.dog’. As of the current understanding, there exists no analysis of nouns belonging to class III that identifies discernible phonological or morphological patterns for gender assignment. D’Aurizio et al. (2024:footnote 3) provide additional insights into this category through a phonological analysis of Italian nouns. The initial dataset comprise 1.341 types from the VoLIP Corpus²³. The authors

²² Chini (1995:82) notes that compounds in Italian should be treated separately due to their distinctive behaviour. However, the author does not provide a deeper analysis of compounds, as they occur infrequently in both language acquisition input and language production.

²³ Available online at <https://www.volip.it/>.

initially explore the influence of suffixes on gender assignment, such as *-ore*, *-trice*, *-nte*, *-ere*, etc., as discussed by Gudmundson (2010). Subsequently, they analyse a subset of 232 nouns from the corpus that lacks any affix, examining the potential correlation between various phonological features and the gender of these nouns. Parameters such as the quality of the penultimate vowel (i.e., the vowel before the final *-e*), the stressed vowel of each word, vowel height, frontedness, syllable weight, and the quality of the consonants preceding the final *-e* are considered. For instance, the nouns *abate* ‘abbot’, *abete* ‘spruce tree’ and *abside* ‘apsis’, which represent two masculine and one feminine nouns in Italian respectively, are analysed according to the quality of the penultimate vowel, i.e., *a*, *e*, and *i*, as well as further phonological aspects. While the penultimate vowels present phonological differences, e.g., *a* in *abate* is a central, low vowel, *e* in *abete* is a fronted, mid high vowel, and *i* in *abside* is a fronted, high vowel, the results reveal no significant correlation between phonological features and gender assignment. However, a diachronic analysis of the gender of the 232 nouns demonstrates a clear correlation between the gender assigned in Italian and the former Latin gender value assigned to the noun. This highlights the enduring impact of Latin on the gender assignment of nouns within standard Italian.

The fourth declension class includes invariable nouns, i.e., nouns that remain uninflected for both gender and number, as in *il re – i re* ‘the king – the kings’ which does not inflect for number. Typically considered opaque, approximately 5.4% of Italian nouns are classified within this fourth inflectional class (Thornton et al. 1998:38). Moving on to the fifth declension class, it primarily comprises nouns derived from Ancient Greek, commonly terminating with the suffix *-ma*, as in *teorema* ‘theorem’ (Chini 1995:82). Nouns in this class are often ambiguous²⁴ in gender, being either masculine, as the noun *il poeta – i poeti* ‘the poet’, or feminine, e.g., *l’arma – le armi* ‘the weapon’ Additionally, the *-a* ending shared with class II nouns can represent a hinder for Italian language learners, especially for the acquisition of feminine nouns, since they inflect similarly in the singular form but differently in the plural.

²⁴ In this context, ‘ambiguous’ refers to the absence of phonological or morphological evidence with regard to the gender of the noun. For instance, *arma* does not provide information on the gender of the noun.

The sixth class can be further categorized into two subclasses. In a first subclass, there are nouns such as *il piccolo uovo* ‘the_{masc.sg.} small_{masc.sg.} egg’, *le piccole uova* ‘the_{fem.pl.} small_{fem.pl.} eggs’, which change gender from singular to plural, being masculine in the singular and feminine in the plural. The second subclass includes nouns that can be inflected according to either the first or sixth class, as exemplified by *il muro* ‘the_{masc.sg.} wall’ *i muri / le mura* ‘the_{masc.pl.} walls / the_{fem.pl.} walls’, suggesting remnants of the Latin neuter declension (Chini 1995, Loporcaro et al. 2014). The seventh class comprises nouns inflecting with the same suffixes as the first class, i.e., *-o* in the singular and *-i* in the plural. However, the key distinction lies in the gender value correlation: while class I nouns are masculine, class VII exclusively consists of feminine nouns, illustrated by *la mano – le mani* ‘the hand’²⁵. Similar to classes V and VI, this class constitutes less than 1% of the Italian nominal vocabulary (Thornton et al. 1998:38).

4.3.1.2 Adjectives

The following table illustrates the declension classes available in Italian for adjectives:

Inflectional class	Singular	Plural	Example
I	<i>-o</i>	<i>-i</i>	<i>il libro piccolo – i libri piccoli</i> ‘the small book’ – ‘the small books’
II	<i>-a</i>	<i>-e</i>	<i>la carta piccola – le carte piccole</i> ‘the small paper’ – ‘the small papers’
III	<i>-e</i>	<i>-i</i>	<i>il libro grande – i libri grandi</i> ‘the big book’ – ‘the big books’ <i>la carta grande – le carte grandi</i> ‘the big paper’ – ‘the big papers’
IV	variable	= singular	<i>il libro rosa / blu – i libri rosa / blu</i> ‘the pink / blue book’ – ‘the pink / blue books’ <i>la carta rosa / blu – le carte rosa / blu</i> ‘the pink / blue paper’ – ‘the pink / blue papers’

Figure 11: Declension classes for adjectives in Italian

As reported in Figure 11, adjectives inflect according to four inflectional classes in Italian. Acquaviva (2009:52) reports that adjectives ending in the suffix *-ota* (*cipriota* ‘Cypriot’), *-ista* (*femminista* ‘feminist’) and *-ita* (*vietnamita* ‘Vietnamese’) should be classified into a separate

²⁵ Lampitelli (2008:203) reports two further examples such as *virago* and *sinodo*. It is still debated which gender value is to be attributed to these two nouns.

group, i.e., class V. However, the author doubts and accordingly asks “but are these really adjectives? They can always have the syntax of nouns, with the meaning of a human having the corresponding property”. Acquaviva’s approach leads to the conclusion that, although occurring and being used as adjectives in Italian, this group of lexemes should be considered separately, in view of the syntactic and morphological processes that take place when merge and agreement are triggered. Since adjectives belonging to this inflectional class occur seldom in children’s language production data, this topic is not pursued any further. For the sake of clarity, the present approach suggests the presence of four inflectional classes for adjectives in Italian, although the existence of a fifth class is not completely excluded.

Class I and class II consist of adjectives that are inflected according to gender and number. The examples in Figure 11 provide an overview of the inflection for the adjective *piccolo* ‘small’ in Italian: if the adjective agrees with a masculine noun like *libro* ‘book’, then it takes the *-o* suffix in the singular and the *-i* in the plural; if *piccolo* agrees with a feminine noun like *carta* ‘paper’, then it inflects according to the suffixes of the II class for adjectives, i.e. *-a* in the singular and *-e* in the plural.

Class III, as also reported for the Italian declension classes, does not inflect for gender but only for number. The examples in Figure 11 illustrate how the suffix *-e* in the singular and *-i* in the plural do not change for masculine or feminine nouns. This also applies to members of class IV, the invariable, which do not inflect for number as well. Many colour adjectives in Italian inflect according to the rules of class IV, e.g. *blu, viola, rosa* ‘blue, violet, rose’ (Acquaviva 2009:52).

Unlike the gender feature, the class feature does not trigger agreement in Italian. Therefore, nouns belonging to class I can be used with adjectives from all inflectional classes²⁶. For instance, an adjective belonging to class III like *grande* ‘big’ can be used with nouns from class I *il grande libro* ‘the big book’, class II *la carta grande* ‘the big paper’, class III like in the example column in Figure 11, class IV *il re grande* ‘the big king’, class V *la grande arma* ‘the big weapon’ and VII as well *la mano grande* ‘the big hand’.

²⁶ The distribution of determiners is generally defined as determined by the phonological context. Davis (1990) carries out an onset analysis of masculine nouns using the definite article *lo* and *il* in the singular form and *gli* and *i* in the plural form, respectively, as well as the indefinite article *uno* and *un*. The author reports that it is possible to explain the determiners’ distribution through a phonological analysis of the target system, i.e., the Italian DP.

4.3.1.3 Verbs

With regard to Italian verbs, it is generally assumed that they can be classified within three inflectional classes that can be detected on the basis of theme vowels in the infinitive form (Traficante & Burani 2003):

Conjugation class	Inflectional marking	Infinitive ending	Example
I	-a	-are	<i>mangiare</i> 'to eat'
II	-e	-ere	<i>leggere</i> 'to read'
III	-i	-ire	<i>dormire</i> 'to sleep'

Figure 12: Inflectional classes for verbs in Italian

Figure 12 presents the three Italian conjugation classes. In most verbs, the theme vowels are present not only on the infinite ending but also on the inflection of the second person plural as in the following examples: *mangiate* 'you eat', *leggete* 'you read', *dormite* 'you sleep', among other tenses. The first inflectional class is easier to distinguish from the remaining two due to the recurring occurrence of the theme vowel *-a*. For instance, the third person singular in the present indicative form for verbs belonging to class I takes the *-a* ending (*mangia* 'he/she/it eats', *canta* 'he/she/it sings', *balla* 'he/she/it dances', etc.) while nouns belonging to class II and III show the same *-e* ending (*legge* 'he/she/it reads', *dorme* 'he/she/it sleeps', etc.). This also applies to the third person plural inflection in the present indicative form, since verbs belonging to class I take the *-ano* inflection (*mangiano* 'they eat', *cantano* 'they sing', *ballano* 'they dance', etc.), while class II and III verbs inflect by adding the *-ono* suffix (*leggono* 'they read', *dormono* 'they sleep', etc.). Being the present indicative form the most used form with children in their first years of life (Belletti & Guasti 2015:7), (ir)regularities in the inflection of further verbal tenses is not pursued.

While all verbs can be categorized into conjugation classes based on their infinitive endings, only verbs belonging to class I consistently follow the same morphological patterns for inflection (Napoli & Vogel 1990). In contrast, verbs falling within class II and III are often characterized as irregular verbs, deviating from the expected morphological pattern of their respective classes. As for class II, most verbs realize the past participle form by adding *-uto* to the root as in *bevuto* 'drunk'. While focusing on the role of regularities in language acquisition,

Say & Clahsen (2002) propose that class I verbs and, accordingly, its inflectional morphology represent the default value in Italian. The reasons for this proposal are several: first, class I verbs are mostly regular²⁷; second, almost 70% of Italian verbs (Thornton et al. 1998) belongs to class I; third, neologisms as well as borrowings from other languages mostly take the *-are* ending in the infinitive, e.g. *computerizzare* ‘to computerize’, leading to the assumption that class I is productive.

In summary, class I verbs in Italian generally adhere to a consistent inflectional pattern. In contrast, class II and III verbs are frequently characterized by irregularities, involving various phonological and morphological patterns (Say & Clahsen 2002). The classification of Italian verbs into conjugation, or inflectional classes, has prompted different proposals, particularly in considering the number of classes. Napoli & Vogel (1990) discuss various approaches exploring the classification of Italian verbs based on diverse phonological and morphological patterns. Class II verbs often exhibit the main stress on the infinitive ending, as seen in examples like *avére* ‘to have’, *potére* ‘to can’, *cadére*²⁸ ‘to fall’ etc. Many of these verbs are irregular, warranting separate consideration from regular classes like class I and III. Additionally, modal verbs are reported to belong to class II in Italian, further emphasizing their distinct status from other class II verbs (Orsolini, Fanari & Bowles 1998). Napoli & Vogel (1990) conduct a phonological analysis of class II verbs, revealing "regularities among irregularities," such as vowel change in verb roots, as exemplified by *comprimere* – *compresso* ‘to squeeze – squeezed’. Finally, as reported in 4.2.1, class II in Italian includes Latin infinitive forms of class II and III, most of which end in *-ere*.

Concerning class III verbs, different categorizations have been proposed. On the one hand, verbs ending in *-ire* are categorized into two subclasses based on phonological and morphological regularities. Around 70% of class III verbs ending in *-ire* incorporate the *-isc-* infix across four persons in the present indicative inflection, with the exception of the first and

²⁷ Eddington (2002:292) reports that „there are only three irregular verbs in this class”. However, no examples are given within the paper. Verbs such as *fare* ‘to do’ may be included as irregular in Eddington’s work. The reason for the irregular inflection of the verb *fare* can be explained diachronically, since the Latin infinitive form is *facere*.

²⁸ The main stress is graphically reported in order to show the stress pattern on these verbs.

second-person plural (cf. Schwarze 1999.) This pattern is illustrated by the verb *pulire* ‘to clean’ in the following example:

(16) *io pulisco, tu pulisci, lui / lei pulisce, noi puliamo, voi pulite, loro puliscono*
I, you, he/she/it, we, you, they clean(s)

In contrast, Napoli & Vogel (1990:493) contend that the *-isc-* infix is only present “in a few places in the verbal paradigm and never affects the form of the verbal root, the tense/aspect/mood/morphemes, or the p/ n ending”. Accordingly, the *-isc-* infix can be broadly characterized as a root extension and, consequently, may not be considered a distinctive feature of the inflectional class.

Crucially, the classification of verbs into one or more inflectional classes relies on the specific definition of inflectional class. A further example is provided by Pirrelli & Battista’s (2000) work which presents a model of inflectional classes based on the number of stem alternations for Italian verbs. According to the authors, Italian verbs can be classified based on an overall distributional schema of stems across different aspects and tenses, with inflectional class analysed in terms of stem alternation. While stem alternation affects verbs in Italian, it is not considered to classify verbs into inflectional classes for Italian within the present work.

In conclusion, determining the class to which a root belongs in Italian is a challenging task, often requiring further investigation through features such as gender, number, and syntactic context. Even when the lexeme is inflected, its class membership may not be immediately apparent. For example, the noun *arma* ‘weapon’ could be mistakenly perceived as belonging to class II, potentially leading to the target-deviant inflection, as in **le arme*. Crucially, the number inflection is fundamental to identify the class value. Therefore, number inflection serves as essential information for the class feature in Italian. From a language acquisition perspective, predicting the declension or inflectional class of a word becomes practically impossible without knowledge of how the inflection is marked. Similarly, the same holds true for the number feature, as target-like inflection cannot be achieved if the class of the inflected element remains undetermined. Moreover, the category must be known to the acquirer in order to realize a target-like inflection. Nevertheless, once the class is ascertained, the declension follows a straightforward pattern according to the specific class to which the noun belongs.

A glance at the inflectional paradigm reveals that only morphological functions are fulfilled from inflectional classes in Italian. From a syntactic point of view, the feature is inherent to the lexeme and does not trigger agreement with any other element. Moreover, it is uninterpretable – but valued – in the lexical entry of each category, since it does not carry any semantic information (Nanousi, Masterson, Druks & Atkinson 2006). Thus, Aronoff’s (1994) definition of an inflectional class complies with the description of the Italian inflectional system. In conclusion, the present work categorizes the Italian inflectional system into seven classes for nouns, four classes for adjectives, and three classes for verbs. As for further categories like determiners and pronouns, the number of inflectional classes is generally restricted to two or three, depending on the analysis applied to the data²⁹. While there are exceptions among categories, the overall system exhibits a notable regularity. Additionally, the class feature does not seem to play a syntactically active role, neither in the DP nor in the TP, since it does not involve agreement with further elements and its value is inherent to the root. This observation suggests that inflectional classes in Italian primarily serve morphological functions within the lexicon, contributing to the overall structure of the language.

4.3.2 Class in German

German is influenced by the presence of inflectional classes and, as demonstrated in the following sections, class serves distinct roles depending on the target category. Considering the tripartite gender system in German and the variability of inflection according to the values of gender, number, and case, the focus is on declension and inflectional classes for nouns, adjectives, and verbs.

4.3.2.1 Nouns

Nominal inflection in German is generally described as morphologically marked in comparison to other European languages. As reported by Cahill & Gazdar (1999:12) “the inflectional behaviour of German nouns ... is significantly more complex than the noun inflection systems

²⁹ For example, definite and indefinite articles as well as other kinds of determiners and the demonstratives *questo* ‘this’ and *quello* ‘that’ are inflected according to class I and II. For further details, see Acquaviva 2008.

of many European languages”. The following table includes the German inflectional classes as proposed by Alexiadou & Müller (2008):

Number	Case	I (m), (n)	II (m)	III (m), (n)	IV (m), (n)	V (m)
Singular	Nominative	<i>Hund</i> ‘dog’ <i>Schaf</i> ‘sheep’	<i>Baum</i> ‘tree’	<i>Mann</i> ‘man’ <i>Buch</i> ‘book’	<i>Strahl</i> ‘ray’ <i>Auge</i> ‘eye’	<i>Planet</i> ‘planet’
	Accusative	<i>Hund</i> <i>Schaf</i>	<i>Baum</i>	<i>Mann</i> <i>Buch</i>	<i>Strahl</i> <i>Auge</i>	<i>Planeten</i>
	Dative	<i>Hund</i> <i>Schaf</i>	<i>Baum</i>	<i>Mann</i> <i>Buch</i>	<i>Strahl</i> <i>Auge</i>	<i>Planeten</i>
	Genitive	<i>Hundes</i> <i>Schafes</i>	<i>Baumes</i>	<i>Mannes</i> <i>Buches</i>	<i>Strahls</i> <i>Auges</i>	<i>Planeten</i>
Plural	Nominative	<i>Hunde</i> <i>Schafe</i>	<i>Bäume</i>	<i>Männer</i> <i>Bücher</i>	<i>Strahlen</i> <i>Augen</i>	<i>Planeten</i>
	Accusative	<i>Hunde</i> <i>Schafe</i>	<i>Bäume</i>	<i>Männer</i> <i>Bücher</i>	<i>Strahlen</i> <i>Augen</i>	<i>Planeten</i>
	Dative	<i>Hunden</i> <i>Schafen</i>	<i>Bäumen</i>	<i>Männern</i> <i>Büchern</i>	<i>Strahlen</i> <i>Augen</i>	<i>Planeten</i>
	Genitive	<i>Hunde</i> <i>Schafe</i>	<i>Bäume</i>	<i>Männer</i> <i>Bücher</i>	<i>Strahlen</i> <i>Augen</i>	<i>Planeten</i>
Number	Case	VI (f)	VII (f)	III (f)		
Singular	Nominative	<i>Ziege</i> ‘goat’	<i>Maus</i> ‘mouse’	<i>Drangsal</i> ‘distress’		
	Accusative	<i>Ziege</i>	<i>Maus</i>	<i>Drangsal</i>		
	Dative	<i>Ziege</i>	<i>Maus</i>	<i>Drangsal</i>		
	Genitive	<i>Ziege</i>	<i>Maus</i>	<i>Drangsal</i>		
Plural	Nominative	<i>Ziegen</i>	<i>Mäuse</i>	<i>Drangsale</i>		
	Accusative	<i>Ziegen</i>	<i>Mäuse</i>	<i>Drangsale</i>		
	Dative	<i>Ziegen</i>	<i>Mäuse</i>	<i>Drangsale</i>		
	Genitive	<i>Ziegen</i>	<i>Mäuse</i>	<i>Drangsale</i>		

Figure 13: Declension classes for nouns in German, adapted from Alexiadou & Müller (2008: 23).

Although Figure 13 comprises eight declension classes, it does not include all German nouns. To present an inclusive inflectional model that considers the majority of German nouns, two additional declension classes must be incorporated. Class IX comprises nouns that do not vary according to number, such as *Becher* ‘cup’ or *Messer* ‘knife’. Class X includes nouns that add an *-s* in the plural as in *Auto* – *Autos* ‘car – cars’ and *Park* – *Parks* ‘park – parks’. The two classes include mostly masculine and neuter nouns, with a few feminine exceptions that are represented by borrowings from other languages. For instance, the nouns *Ananas* ‘pineapple’ and *Paprika* ‘pepper’ are feminine and generally used in the same form for the singular and the

plural³⁰, hence following the rule of class IX. Similarly, abbreviations can also be inflected as belonging to class X, as for the feminine noun *Mutti* - *Muttis* ‘mom’ from *Mutter* ‘mother’. The number of nouns inflecting according to the two classes has increased within the last years, representing productive declension classes in German (cf. Köpcke 1987). For the sake of clarity, the following table reports the “additional” declension classes as considered for this analysis:

Number	Case	IX (m), (n)	X (m), (n)
Singular	Nominative	<i>Becher, Messer</i>	<i>Auto, Park</i>
	Accusative	<i>Becher, Messer</i>	<i>Auto, Park</i>
	Dative	<i>Becher, Messer</i>	<i>Auto, Park</i>
	Genitive	<i>Bechers, Messers</i>	<i>Autos, Parks</i>
Plural	Nominative	<i>Becher, Messer</i>	<i>Autos, Parks</i>
	Accusative	<i>Becher, Messer</i>	<i>Autos, Parks</i>
	Dative	<i>Bechern, Messer</i>	<i>Autos, Parks</i>
	Genitive	<i>Becher, Messer</i>	<i>Autos, Parks</i>

Figure 14: Declension class IX and X for nouns in German.

As displayed in the two figures, German nouns are inflected according to number and case. Furthermore, the declension class fulfils relevant functions as concerning the nominal inflection. For instance, a masculine noun belonging to class I, e.g., *Hund* ‘dog’, inflects differently from a masculine noun belonging to class II, e.g., *Baum* ‘tree’. Several declension classes are opaque for gender (in the sense of Pizzuto & Caselli 1992) since they include nouns with different gender values. Class I nouns can be masculine or neuter, inflecting according to the same inflectional pattern. An identical trend is found in class III, IV, IX and X. Nouns belonging to class II and V can only be masculine, while nouns belonging to class VI, VII and VIII can only be feminine. Consequently, neuter nouns (which represent only 20% of the overall German nouns) are inflected like masculine nouns of either class I, III, IV, IX or X.

The question arises as to whether phonological or morphological regularities are able to support the language learner, or even the speaker, to learn and notice the declension class of each noun (Clahsen et al. 2001). In this regard, Cahill & Gazdar (1999) propose an analysis of the German declension system based on the observation of frequent associable affixes and, thus, focusing on the frequency of every declension class. The authors include a hierarchy of eleven groups,

³⁰ The noun *Ananas* can also be *Ananasse* in the plural form, cf. www.duden.de

starting from the default declension class and descending to the less frequent inflectional pattern found in German. Following the assumption that the default declension class can be established through the observation of the inflection in loan words, neologisms as well as proper names, Cahill & Gazdar claim that the *-s* suffix, i.e., nouns belonging to class X as reported in Figure 14, represent the German default declension class. Moreover, the authors propose a declension system based on the assumption that some classes represent subclasses of bigger, more frequent declension classes, e.g., class II can be considered as a subclass of class I.

A different approach is proposed by Bittner (1994), who considers the declension system in the German nominal domain hierarchically structured. In particular, Bittner claims that masculine and neuter nouns generally inflect according to a similar pattern, while feminine nouns follow a different paradigm. Masculine and neuter show case inflection in the genitive singular inflection as well as a similar morphological behaviour in the plural. Except for masculine nouns of class V that take the *-en* inflection in all cases in the singular and the plural (also defined as “weak inflected nouns”, Alexiadou & Müller 2008: 23), masculine and neuter nouns often add either only the *-e* suffix in the plural form (class I) or additionally change the quality of the vowel in the stem through the use of umlaut (class II). In order to explain the exceptions to this rule, Bittner (1992) relies on the Elsewhere-Condition arguing that a morphological rule must apply whenever its structural description is met, except in cases where another rule with a higher-ranked priority applies. According to Bittner, this is valid for masculine, neuter and feminine nouns which inflect most frequently according to the morphological pattern defined from the gender class, i.e., class I and II for masculine and neuter nouns, class VI for feminine nouns.

A further classification system is presented by Wurzel (1984). Working in the theoretical framework of Natural Morphology, Wurzel considers words – and not morphemes – the smallest unit stored in the lexicon, consequently assuming that some inflectional classes are more “authentic” than other ones. Relying on the diachronic analysis of inflectional classes in the nominal and verbal domain in Old and Modern German, the author shows that (i) iconicity, i.e., a direct relationship between the form and its function, (ii) adequacy to the system and (iii) productivity are relevant for the classification into inflectional classes. For instance, class VI which includes only feminine nouns is ‘maximally iconic’, since nouns belonging to this class

always add *-(e)n* in the plural form, and it is also productive, e.g. the newly introduced feminine form of masculine nouns of class IX, as in *Arbeiterin* ‘female worker’, inflect according to this class (cf. Kotthoff & Nübling 2018). This analysis leads to an inflectional class system for nouns and verbs that, although similar to the one of Alexiadou & Müller (2008), takes factors such as productivity and iconicity into account.

Through the morphological analysis, it becomes evident that German displays a complex inflectional system in the nominal domain. The reason for the complexity of the German system is the interaction of different features, i.e., class, gender, case, and number. By considering the allomorphy in plural forms within ten Germanic languages, Dammel, Kürschner & Nübling (2010) propose an analysis of the German declension classes that depends on the observation of further features such as the values of gender and number. Following the same approach, Kürschner & Nübling (2011:356) observes that, in German, “the only markers of declension are number markers, most often only plural markers”. Once again, the interaction of number and class is evident. As already seen for Italian, the singular marker – if present – does not suffice in order to establish the declension class to which a noun belongs. Further features, namely gender and number, need to be taken into consideration for the definition of an inflectional system. Summarizing, nouns are inflected according to declension classes in German. The value for class is inherent to the nouns and is not influenced by other features, with exception of case for the dative plural and for nouns of class V.

4.3.2.2 Adjectives

Turning to adjectives, a first relevant specification is needed since the present section considers only adjectives that occur within the DP. Hence, adjectives in predicative position are not further pursued since they are not inflected in German, as illustrated in the following example:

(17) *Das Haus ist groß*
The_{neutr.sing.} house is big

In contrast, adjectives within the DP are generally divided into three classes depending on the presence – or absence – of a definite or indefinite determiner. In particular, adjectives are inflected according to the strong declension if they are not preceded by any determiners or by invariable determiners of the type *zwei* ‘two’, *viel* ‘much’, *allerlei* ‘all’, etc. If a definite article

or *jener* ‘every’, *dieser* ‘this’, *solcher* ‘such’, etc. occurs before the adjective, then it is inflected according to the weak class; if an indefinite determiner *ein* ‘one / a’ or *kein* ‘no one’ or a possessive article like *mein*, *dein*, etc. ‘my, your’ is realized, then the adjective undergoes a mixed inflection (Zwicky 1986). The following table illustrates the three declension classes for adjectives according to number, gender, case, and class:

Case / Number	Strong			Weak			Mixed		
	m	f	n	m	f	n	m	f	n
Nom.sg.	<i>großer Tisch</i>	<i>große Tasche</i>	<i>großes Haus</i>	<i>der große Tisch</i>	<i>die große Tasche</i>	<i>Das große Haus</i>	<i>ein großer Tisch</i>	<i>eine große Tasche</i>	<i>ein großes Haus</i>
Acc.sg.	<i>großen Tisch</i>	<i>große Tasche</i>	<i>großes Haus</i>	<i>den großen Tisch</i>	<i>die große Tasche</i>	<i>das große Haus</i>	<i>einen großen Tisch</i>	<i>eine große Tasche</i>	<i>ein großes Haus</i>
Dat.sg.	<i>großem Tisch</i>	<i>großer Tasche</i>	<i>großem Haus</i>	<i>dem großen Tisch</i>	<i>der große Tasche</i>	<i>dem großen Haus</i>	<i>einem großen Tisch</i>	<i>einer großen Tasche</i>	<i>einem großen Haus</i>
Gen.sg.	<i>großes Tisches</i>	<i>großer Tasche</i>	<i>großes Hauses</i>	<i>des großen Tisches</i>	<i>der großen Tasche</i>	<i>des großen Hauses</i>	<i>eines großen Tisches</i>	<i>einer großen Tasche</i>	<i>eines großen Hauses</i>
Nom.pl.	<i>große Tische</i>	<i>große Taschen</i>	<i>große Häuser</i>	<i>die großen Tische</i>	<i>die großen Taschen</i>	<i>die großen Häuser</i>	<i>einige großen Tische</i>	<i>einige großen Taschen</i>	<i>einige großen Häuser</i>
Acc.pl.	<i>große Tische</i>	<i>große Taschen</i>	<i>große Häuser</i>	<i>die großen Tische</i>	<i>die großen Taschen</i>	<i>die großen Häuser</i>	<i>einige großen Tische</i>	<i>einige großen Taschen</i>	<i>einige großen Häuser</i>
Dat.pl.	<i>großen Tischen</i>	<i>großen Taschen</i>	<i>großen Häusern</i>	<i>den großen Tischen</i>	<i>den großen Taschen</i>	<i>den großen Häusern</i>	<i>einigen großen Tischen</i>	<i>einigen großen Taschen</i>	<i>einigen großen Häusern</i>
Gen.pl.	<i>großer Tische</i>	<i>großer Taschen</i>	<i>großer Häuser</i>	<i>der großen Tische</i>	<i>der großen Taschen</i>	<i>der großen Häuser</i>	<i>einiger großen Tische</i>	<i>einiger großen Taschen</i>	<i>einiger großen Häuser</i>

Figure 15: Declension classes for adjectives in German

As reported in Figure 15, the inflection of adjectives depends on the presence and type of determiner. While nouns carry a valued class feature inherent to the stem, adjectives are unvalued for class in German. Since adjectives do not come from the lexicon with a value for class, they need to receive a value from the lexical category that governs them, hence D. Thus, agreement is established between D and the adjective, i.e., the category that is not specified for class. Moreover, the type of determiner defines the inflection: if a definite article or a similar kind of determiner precedes the adjective, then the inflection is weak; otherwise, the inflection is mixed. A further possibility can also occur, i.e., no determiner precedes the adjective. In this

case, the inflection is still licensed by the determiner, although this is phonologically absent. At this point, the question concerning the syntactic strategy employed for class, namely a feature that is not inherently valued for German adjectives, needs to be addressed.

A first proposal concerns the possibility of agreement according to the class feature between determiner and adjective (cf. Zwicky 1986). Following Corbett (2006a) as well as Baker (2008b), agreement is a matter of morphology and syntax. Morphology for the lexical element as well as syntax for the relationship among the agreeing elements, they both fulfil fundamental roles. According to Baker (2008b) and, partially, Chomsky (2000), agreement takes place if (and only if) the following conditions are met: a) the functional head c-commands³¹ the maximal projection of, in this case, the determiner; b) no other elements with ϕ -features occur between, in this case, the determiner and the adjective; c) the functional head and the adjective phrase occur in the same phrase, hence a DP, and d) the features on the maximal projection of the DP are active for agreement. In order to admit agreement between determiners and adjectives as concerning the class feature in German, the role of determiners as well as their inflection needs to be further considered.

Within the framework of Generalised Phrase-Structure Grammar, Zwicky (1986) puts forth a model that involves agreement in the German DP. The author considers the inflection of adjectives as ‘governed’ by the determiner’s class. In Zwicky’s work, syntactic government is defined as “the selection of the morphosyntactic shape of one constituent ... by virtue of its combining with another” (Zwicky 1986:968). Thus, government includes all relationship between the head and its arguments. For instance, elements such as the verb or the preposition govern the case assignment to the noun. According to Zwicky, not only adjectives, but also determiners can be grouped into three classes: the strong class includes absent determiners as well as invariable determiners of the type *zwei* ‘two’, *viel* ‘many’, *etwas* ‘some’, etc; the weak class is composed of definite articles as well as other forms of determiners that inflect in a similar way, as for instance *dieser* ‘this’, *aller* ‘all’, *mancher* ‘some’, etc.; finally, the mixed

³¹ C-selection is described as “a system of strict subcategorization ... whereby a head specifies categorial features on its complements” (Svenonius (1994:134)) and differ from s-selection since the latter fulfils a semantic role and covers the subject-verb agreement which, in the analysed systems, does not involve the class feature. A formal definition of c-selection is also provided by Cinque (1996b:450,fn 8) “X commands Y iff X and Y are categories and X excludes Y and every segment that dominates X dominates Y”.

class comprises indefinite articles and ‘mixed’ forms of the same kind (Zwicky 1986:958). Declension classes for determiners are reported in the following figure:

Number	Case	Strong	Weak	Mixed
Singular	Nom.sg.	Invariable of the type <i>zwei, viel, etwas, ...</i>	<i>der, dieser, ...</i>	<i>ein, kein, ...</i>
	Acc.sg.		<i>den, diesen, ..,</i>	<i>einen, keinen, ...</i>
	Dat.sg.		<i>dem, diesem, ..,</i>	<i>einem, keinem,</i>
	Gen.sg.		<i>des, dieses, ..,</i>	<i>eines, keines, ...</i>
Plural	Nom.pl.		<i>die, diese, ..,</i>	<i>keine, ...</i>
	Acc.pl.		<i>die, diese, ..,</i>	<i>keine, ...</i>
	Dat.pl.		<i>den, diesen, ..,</i>	<i>keinen, ...</i>
	Gen.pl.		<i>der, dieser, ..,</i>	<i>keiner, ...</i>

Figure 16: Declension classes of German determiners adapted from Sternfeld (2004) and Zwicky (1986)

Hence, weak adjectives are governed by weak determiners, strong adjectives by invariable or absent determiners of the strong class and, finally, mixed adjectives by mixed class determiners. According to Zwicky, government within the German DP is driven by two properties: i) Declension Inheritance, which posits a relationship between determiner and adjective that can be compared to an agreement relationship between the two categories since they “must have identical values” for class, and ii) Declension Government, which posits that the type of determiner must correspond to a given declension class for adjectives. These two properties are comparable to the definition of agreement as formulated by Baker (2008) and Chomsky (2000) and reported in the previous paragraph. Hence, Zwicky claims that agreement according to class takes place within the German DP. The question, however, arises as concerning the relationship between noun and determiner as well as noun and adjective within the target language.

Alexiadou & Müller (2008:40) propose that adjective inflection in German is driven by gender and number which, differently from the class feature, are uninterpretable in the syntax. The class feature acts as a ‘parasite’ on gender and number, allowing a classification in inflectional classes. The authors base their approach on Chomsky’s (2000) Legibility Conditions, which establishes within the framework of the Strong Minimalist Program that only interpretable features can be present within the syntactic environment. Moreover, they must be interpretable at every stage of the derivation process. If an uninterpretable feature is present at one stage, then it must be deleted, otherwise it would lead to crash at the Conceptual-Intentional (C-I) interface due to ungrammaticality. Crucially, the deletion can occur through morphological agree (Alexiadou & Müller 2008:138). While this proposal is put forth within the framework

of DM, i.e., a theory which is not adopted in the present work, the issue concerning the role of uninterpretable and unvalued features in the derivation process is still discussed.

A solution is proposed by Carstens (2010, 2011) with particular regard to gender. The author proposes that uninterpretable features do not need to be deleted through ‘goal deactivation’, as assumed by the Strong Activity Condition which posits that “probe and goal in a licit Agree relation have matching u[ninterpretable]F[eature]s, one of which can value the other” (Carstens 2010:50). According to Carstens, the uninterpretable feature does not need to be deleted, since the C-I interface is able to ‘ignore’ it. This is demonstrated by the Activity condition, which stipulates that “a licit goal in Agree has an unchecked unvalued feature” (Carstens 2010:50). Based on this proposal, Carstens (2011) argues that gender in Bantu languages fulfils the Activity Condition throughout multiple stages of derivation, acting as an uninterpretable feature that remains active even after valuation. In these languages, gender features are ‘reused’ in subsequent stages of derivation through feature checking, instead of being removed once uninterpretable (Carstens 2011:739). This phenomenon can be observed in structures like interrogative sentences involving wh-movement and subject-auxiliary inversion, where features remain available for checking and valuation beyond the initial domain. As for class, the proposal can be put forth that, in languages like Italian, French, or in the German nominal and verbal system, the feature is valued in the root and, consequently, does not need to be inserted in the derivation process. Differently, the feature is uninterpretable and unvalued throughout the derivation process of German adjectives. Hence, the claim is that, following the approach by Carstens, the class feature is unvalued and uninterpretable for German adjectives and needs to be valued by the determiner, i.e., the element that selects class.

A further proposal that considers agreement in the DP according to class is put forth by Sternefeld (2004), who proposes that class is mediated by a functional projection which hosts the feature for the adjective. Sternefeld’s proposal is illustrated in the following figure:

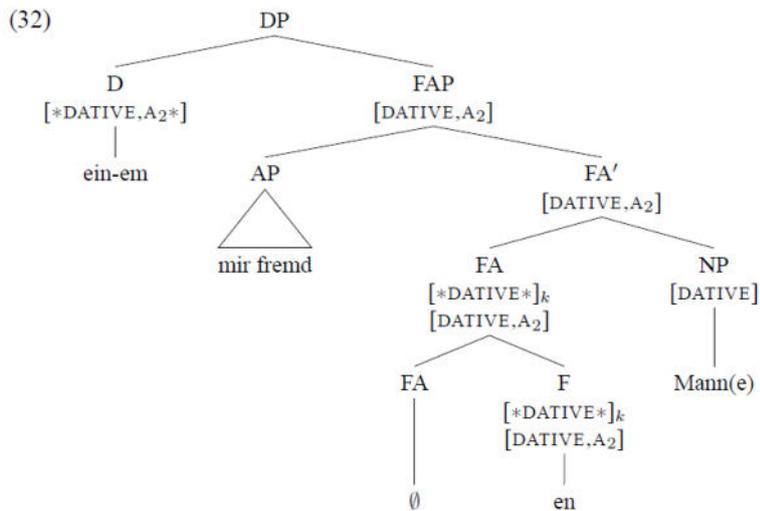


Figure 17: Syntactic structure for the German DP *einem mir fremden Mann* by Sternefeld (2004:16)

Sternefeld claims that the ϕ -features, selected by D, are to be found in the functional projection of the noun, labelled FPA namely the Functional Adjective Phrase in Figure 17. The class feature is labelled *A2* in the figure and it includes the value for the mixed class as given by the mixed determiner *einem*. Within this proposal, D represents the head of the structure and can accordingly project its features to the phrasal level. Differently, the features of the noun cannot project to the phrasal level. Sternefeld argues for an “additional agreement phrase” with the adjective phrase in the specifier position. Crucially, agreement is established within the FAP between the adjective in the specifier position and the head of the FAP which includes class. Within this approach, class is mediated by the “complement agreement rule” which states that if a functional head and its complement, in this case the adjective, are specified for one feature, then the head must hold the complement feature as well.

Abstracting from Sternefeld’s proposal, it is possible to assume that class in German is selected by D. Crucially, D does not determine the inflection for the noun since the noun is inserted in the derivation with a valued, uninterpretable class feature. As for the relationship between the determiner and the noun, Carstens (2016) proposes ‘delayed valuation’, i.e., a syntactic mechanism that expect features, such as the ϕ -features, not to be valued as soon as they are inserted in the derivation, but rather to remain unvalued until an appropriate goal is found, i.e., the unvalued category of adjectives. Since adjectives represent the only unvalued category for class, this category needs to be valued by the head of the DP, namely D, which has an inherent class value. In essence, the determiner selects the features, i.e., gender, number, and case, as

well as the type of category which must host them, namely an adjective of the weak, mixed or strong class. Through insertion in the derivation, the adjective instantiates a functional projection that includes an adjective in the specifier position (cf. Cinque 1999) with an unvalued class feature, which is consequently valued by D. According to this proposal, determiners are responsible for specifying the type of adjective that can occur with them (cf. i.a. Newman 2022). This means that the determiner establishes what features or categories the adjective must match or align with, such as gender, case, number, and class.

Summarizing, German adjectives agree for gender, number and case with the features in the maximal projection of the noun or on D, depending on their locus. Class is unvalued and uninterpretable when the adjective is inserted in the derivation process and is then valued by D, as represented in the following figure:

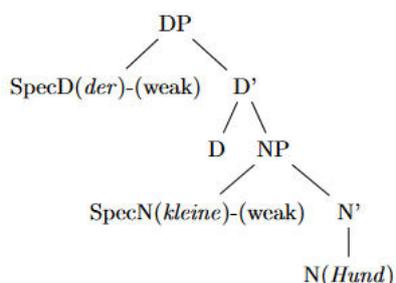


Figure 18: Syntactic structure for the German DP *der kleine Hund* 'the small dog'

As reported in Figure 18, the determiner's class, e.g., the weak determiner *der* 'the', directly correlates with the adjective's class, in this case the weak inflected adjective *kleine* 'small', leading to agreement between D and the adjective. The adjective is inserted in the derivation process with an unvalued, uninterpretable class feature that is then valued by the determiner. In this case, *klein* is the goal of the class feature, which acts as a probe and searches for an unvalued element, represented by the adjective. The consequence of a similar analysis is that the higher functional head, D, governates all unvalued elements (Cinque 1996). Hence, one would expect, as it is also the case, that if, for instance, a strong determiner occurs, then all adjectives occurring before the noun are inflected according to the strong declension classes. A sentence such as *der kleine schöne gefährliche dünne ... Hund* 'the small, beautiful, dangerous, skinny ... dog' demonstrates that a theory including the class feature as responsible for the adjective inflection in German is able to explain several aspects of this category.

4.3.2.3 Verbs

German verbs inflect according to various features such as Person, Number, Tense, Aspect, and Mood. Another noteworthy feature playing a significant morphological role is the class feature. The literature presents a considerable debate on the existence and categorization of inflectional classes for German verbs. One prevalent perspective posits three distinct classes for verbs, namely, the strong, weak, and mixed inflectional classes (refer to Smet & van de Velde 2019 for discussions). Whether a verb belongs to the strong, weak, or mixed inflectional class is determined by the verbal inflection across two different aspects and tenses, namely the *Präteritum* and the past participle (a similar approach is also employed for English verbal classes, see Wurmbrand 2004), which are compared to the infinitive form. Regular verbs typically add the *-t* infix in the *Präteritum* form before the ending for person and number, along with the prefix *ge-* and the suffix *-t* in the past participle form. For instance, *lieben – liebte – geliebt* represents the paradigm of the verb ‘to love’ in the infinitive, past simple and past participle form, respectively. Following Wiese (1994), the verb *lieben* belongs to the weak inflectional class which generally include regular verbs. In contrast, strong verbs undergo stem alternation in the past and past participle forms, as exemplified by *riechen – roch – gerochen*, the paradigm of the verb ‘to smell’. The vowel change in the stem represents a morphological stem alternation phenomenon. Lastly, mixed verb inflection encompasses verbs that exhibit stem alternation in the *präteritum* but no vowel change in the past participle form, as illustrated by *essen – aß – gegessen* ‘to eat, ate, eaten’.

A different approach with similar results is proposed by Dressler et al. (2006), within the framework of Natural Morphology. The authors assume that inflecting fusional types of languages like Indo-European languages and, hence, German, share several characteristics that allow the consideration of the verbal and nominal domain as consisting of macro-, micro-classes and sub-classes. Accordingly, Dressler et al. suggest that German verbal inflection consists primarily of two macro-classes, a strong and a weak one, which include additional classes and subclasses. According to this approach, the German verbal system consists of two macroclasses, five classes and a total of 23 subclasses (Dressler et al. 2006:60). Crucially, Dressler et al.’s system covers the inflection in the overall German verbal domain system without taking into account the existence of a mixed class. On the one hand, such an approach allows to consider

every phonological and morphological inflectional rule in German on its own, without including different types of inflection into one class, e.g. the mixed inflectional class, as also discussed in Henkel (1972) among others. On the other hand, Dressler et al. (2006) design an inflectional system that lets several questions arise with regard to language acquisition, since their study does not consider the learning process and, hence, the strategies that should be adopted by monolingual and multilingual children for the acquisition of an increased number of classes and macroclasses, etc. For this reason, the approach proposed by Dressler et al. is not pursued any further in this work.

A different analysis is proposed by Marcus et al. (1995), who develop a psycholinguistic study to test the Type Frequency Hypothesis (TPH). According to the TPH, if a form applies to the majority of verbal and nominal types in a language, then it represents a regular rule. The authors first show that, for example, the *-ed* rule in English applies to the majority of verbs which form the past and past participle tense by adding *-ed* suffix to the stem, as in ‘dance – danced’. Through the observation of several contexts in which the most occurring rule for past verbs in English is generally applied, e.g., neologisms, derivations as well as in overgeneralizations found in first language acquisition data, Marcus et al. delineate a model in which verbal inflection in English acts as following a default rule. The authors then attempt to apply this model to the German verbal inflection, leading to the conclusion that German, differently from English, does not behave according to the Type Frequency Hypothesis. Although most German verbs belong to the strong inflectional class, the form which is mostly generalized in the language acquisition data is the one of weak verbs. Furthermore, the strong and the weak inflectional classes are productive in the target language. This leads to a definition of the German inflectional morphology as “the exception that proves the rule” (Marcus et al. 1995: 246). The reason lies in the observation that, although a relatively small number of verbs inflect according to the weak inflectional class in German, it is generally overused in the derivation of neologisms as well as language acquisition. However, it is relevant to notice that the main difference between the English and German verbal domain is to be led back to the many loan words and borrowings from Latin which are present in the English system (cf. i.a. Grant 2009). In conclusion, the German inflectional system exhibits several differences from Italian, impacting the morphology and syntax of the target language. In terms of morphology, an

additional feature must be considered for nominal and adjectival inflection, namely the case feature. As for syntax, German adjectives agree not only in terms of gender, number, and case but also for class, aligning with the functional head of the DP. Conversely, nouns and verbs come from the lexicon with an already value class feature, a characteristic shared with Italian.

4.3.3 Class in French

The French inflectional system exhibits both similarities and differences to the Italian and German systems. Despite its Latin roots, French morphology and syntax have undergone significant changes in recent centuries, leading to substantial modifications in the inflectional system. Unlike Italian and other Romance languages such as Spanish and Portuguese, French presents a restricted inflectional system in the nominal domain. As for the verbal domain, it is still debated whether inflectional classes can be detected (cf. e.g. Dressler et al. 2006 and Hinzelin 2017). In the following sections, the nominal, adjectival and verbal French system are discussed according to the assumption that the class feature only assumes a partial role in French due to language change (see among many others Becker, Clemens & Nevins 2017). Kürschner (2009:354) asserts that language change predominantly results in a simplification process, specifically characterized by a reduction of existing complexity. In the current study, complexity is interpreted in accordance with Wurzel's (1984) definition concerning morphology, i.e., directly related to the number of features present within inflection. Furthermore, it aligns with Biberauer et al. (2014:120) regarding syntax and parametric variation, wherein complexity pertains to the probability of occurrence of a particular feature within the linguistic system. Following this definition, the class feature in French has evolved into a complex phonological and morphological system due to its reduced use in nominal and verbal domains, appearing only for a few lexemes today (see Maiden 2005). Moreover, the feature does not find a parametric expression in French.

4.3.3.1 Nouns

French nouns do not display an inflectional system like the Latin one. Nouns corresponding to entities possessing a biological gender are the only ones which inflect for grammatical gender., e.g., *ami* 'friend' with masculine reference and *amie* with a feminine one. However, it is still controversial whether these nouns inflect for gender or whether they actually follow different

derivation rules and, thus, they do not represent two forms of the same noun, but rather two different nouns (Schpak-Dolt 2016:44). As for the expression of number, the inflection follows different rules depending on the stem in the singular form. Most nouns add *-s*, *-x*, or a null morpheme to the singular stem to form the plural, irrespectively of the gender feature, as reported in the following examples:

- (18) *la table, les tables – le chien, les chiens – le cheveu, les cheveux – le nez, les nez*
 ‘the_{fem.sg.} table, the_{pl.} tables’ – ‘the_{masc.sg.} dog, the_{pl.} dogs’ – ‘the_{masc.sg.} hair, the_{pl.} hairs’ –
 the_{masc.sg.} nose, the_{pl.} noses’

While most nouns inflect according to this pattern, there is a group of nouns that is generally considered to inflect according to the rule of a declension class, i.e., the *-al / -aux* class³². Dressler et al. (2006:53) report that “the French noun system has only fossile synthetic morphology in terms of rare stem-alternating plural formations of the type *chev-al* ‘horse’, Pl. *chev-aux* [ʃə'vo]”. Nouns ending in *-al* in the singular form often present the *-aux* ending in the plural. However, this does not apply to all nouns ending in *-al*. An analysis of 79 nouns ending in *-al* in the singular from *Le Petit Robert* dictionary reports that 39 nouns take the *-aux* inflection in the plural while 40 nouns add the *-s* suffix, i.e. roughly 49% inflects in *-aux* and 51% use the *-s* plural form³³:

- (19) *le bal, les bals – l’animal, les animaux*
 ‘the dance, the dances – the animal, the animals’

This leads to the conclusion that even the last resisting declension class in French is disappearing. This hypothesis is supported by the observation that certain nouns may be inflected following this particular declension class or alternatively by adding the *-s* plural suffix, e.g. *val, vals / vaux*, ‘the valley, the valleys’. Becker et al. (2017) carry out a study on the *-al / -aux* class and report that mostly monosyllabic nouns inflect according to the paradigmatic

³² From a diachronic perspective, the development of this class is generally explained through the consideration of the “l-vocalization” phenomenon that led to the pluralization in *-aux* for the plural of nouns ending in *-al* in the singular (Becker et al. 2017:301).

³³ The research was carried out in 2022, while working with Miriam Brinkmann, Antonia Fünter and Natascha Müller on a psycholinguistics study to analyse the reaction time of French speakers in the consideration of the gender value. For further reference, see Brinkmann et al. (2023).

behaviour of this class, while polysyllabic nouns are mostly affected from variation and, accordingly, often add the suffix *-s* in the plural. Furthermore, the authors carry out a psycholinguistics study with French speakers analysing the use of inflectional class for nonce words ending in *-al* in the singular. The findings support the hypothesis that French speakers still rely on the grammatical feature of class, as in this case the *-al/-aux* class, for nominal inflection of monosyllabic nouns. Differently, they prefer either the *-s/-x* plural or the invariable form for polysyllabic nouns. Comparable results are reported in Bassano (2000) who motivates it through the claim that “noun grammaticalization in spoken French ... has no perceivable inflectional marking on nouns”.

As argued by Alexiadou & Müller (2008:41), a system includes inflectional classes even if there is only one inflectional pattern left. Assuming that the *-al / -aux* nouns represent a declension class in the French nominal system, the class feature is still morphologically present for (some) nouns in French. Further declension classes cannot be detected in contemporary French. Several studies attempted to find regularities by observing the use of suffixes in the singular form and the relation to the gender value (see among others Matthews 2005, Lyster 2006), leading to the conclusion that, although a limited group of nouns allow for predictability as concerning French gender assignment, (e.g. 94% of nouns ending in /z/ such as *phrase* ‘sentence’ or *framboise* ‘strawberry’ are feminine, cf. Matthews 2005:274), many items still are perceived and classified as ambiguous. In conclusion, the present work argues for the presence of a single, still well-represented declension class in French, namely the *-al/-aux* class.

4.3.3.2 Adjectives

French adjectives, on the other hand, do not present an inflectional class system comparable to those illustrated for Italian or German. Inherently, they do not appear to have a class feature that determines the adjective inflection. Moreover, there is no external element (like the determiner for German adjective) that search agreement within the DP structure. However, contrasting approaches were proposed in several studies. In line with Valdman (1970) and Séguin (1973), adjectives can be categorized into inflectional classes according to formal morpho-phonological features, i.e., whether the adjective is variable or invariable. French adjectival stems agree with the grammatical gender and number of the noun in approximately 33% of instances in oral communication and 58% in written expression, despite all adjectives

being inflected to include features such as gender and number in the inflection (Séguin 1973:54). As for variable adjectives, approaches suggesting a classification of adjectives in masculine and feminine stems can be found in the literature, with the latter representing the “base allomorph” (Schpak-Dolt 2016:50), while the masculine stem is derived from the feminine:

(20) *le petit livre*

The_{masc.sing.} small_{masc.sing.} book_{masc.sing.}

(21) *la petite table*

The_{fem.sing.} small_{fem.sing.} table_{fem.sing.}

The examples in (20) and (21) belong to the class of adjectives that can be inflected according to the gender of the noun and show an inflected ending in the written form. Differently from Italian and German, however, the division of French adjectives into two inflectional classes is directly related to the consideration of further phonological, morphological and syntactic aspects of the adjectives, such as the adjective’s position as well as the phonological environment. The following example illustrates the phonological variation for the adjective *petit* ‘small’:

Gender	Pre-Nominal Position				Post-Nominal Position
	Singular		Plural		
	Before Vowel	Before Consonant	Before Vowel	Before Consonant	
Masculine	/ptit/	/pti/	/ptiz/	=singular	/pti/
Feminine	/ptit/	/ptit/	/ptitz/	=singular	/ptit/

Figure 19: Inflection of the adjective *petit* ‘small’ adapted from Valdman (1970: 613)

As illustrated in Figure 19, the ending differs according to the phonological context and the pronunciation of the adjective is dictated by phonological constraints, e.g., whether the adjective occurs pre- or post-nominally. Although this is only true for the spoken and not for the written form, the consideration of a system based solely on the written variety would not allow to understand how first language acquisition takes place. Moreover, linguistic variation and language change occurs mostly due to oral use. Summarizing, the classification of adjectives in two inflection classes according to the stem is not sufficient, since otherwise many aspects need to be considered or excluded. French adjectives vary evidently from the inflection

system of Italian and German, mainly due to the ongoing debate about the possible presence of inflectional classes (see among others Valdman 1970, Séguin 1973, Surridge 1993, Dewaele & Véronique 2001, Matthews 2005). The presence of a class feature for this category cannot be assumed, considering the definition of inflectional class in (8) and the analysis of the phonological and morphological aspects of French adjectives in the present section.

4.3.3.3 Verbs

Finally, French verbs represent a complex, still debated topic. While several studies support the claim that verbs can be inflected according to inflectional classes (cf. i.a. Estivalet & Meunier 2016), there is a large number of studies advocating for an absence of the class feature in the French verbal domain (cf. Hinzelin 2017). In the realm of studies addressing the presence of classes within the verbal domain, various theories regarding the appropriate methodology for categorizing verbs into distinct classes are present. On the one hand, several studies propose that French verbs can be sorted into inflectional classes by considering the transformation of Latin verbs into contemporary Romance languages such as Italian and Spanish, thereby categorizing verbs through the theme vowel of the infinitive form (cf. Schwarze 2009, Estivalet & Meunier 2016, Stump 2017b). On the other hand, several works focus on the variation of stems, and, consequently, the quantity of stems for each verb. For instance, the French verb *pouvoir* ‘to can’ has six different stems *peu-*, *pouv-*, *peuv-*, *puiss-*, *pour-* and *p(u)-* depending on the tense, person, and mood of the verb (see i.a. Estivalet & Meunier 2015, Schpak-Dolt 2016:56). An additional classification method is proposed by Ferdinand (1996), who suggests to categorize verbs into three classes on the basis of their phonological realization, focusing on the spoken form rather than on the written one.

Classifying verbs according to the theme vowel in the infinitive form leads to a first issue: differently from Italian verbs, which directly allow one to identify three inflectional classes through the inflectional paradigm, French represents a complex case due to the interplay with the phonological system. According to several studies, the theme vowels used in the Latin system are still present in modern French, forming two, three, or even four inflectional classes (see i.a. Paradis & El Fenne 1995, Schwarze 2009):

Latin	French	Phonological rule
<i>amare</i>	<i>aimer</i> ‘to love’	-a developed to -e-
<i>sentire</i>	<i>sentir</i> ‘to feel’	no vowel change
<i>valere</i>	<i>valoir</i> ‘to be worth’	-e develops in the diphthong /wa/
<i>scribere</i>	<i>écrire</i> ‘to write’	-e is lost

Figure 20: Development of Latin theme vowels in French adapted from Pomino & Remberger (2021: 7)

As reported in Figure 20, not only vowels but also consonants are considered within this approach. In verbs such as *aimer* ‘to love’, *sentir* ‘to feel’ and *valoir* ‘to have the value of’, the final *-r* represents the infinitive ending, while the vowel preceding the infinitive suffix represent the theme vowel. In verbs such as *écrire* ‘to write,’ it is crucial to consider not only the vowel that precedes the infinitive suffix but also the vowel that follows it, in order to accurately classify the verb into an inflectional class, despite the fact that the vowel that precedes and/or follows the infinitive suffix is not phonologically realized in the spoken form. Hence, the notion of theme vowel needs to be expanded “by including also theme consonants and/or theme diphthongs” (Pomino & Remberger 2021:9), e.g., *d* in *coudre* ‘to sew’. Estivalet & Meunier (2016) argue that, even though further phonemes are taken into consideration such as consonants and diphthongs, every French inflectional classes present morpho-phonological and phonological-orthographical irregularities, e.g. *placer* / *nous plaçons* ‘to place / we place’, *manger* / *nous mangeons* ‘to eat / we eat’. In conclusion, there is no morphological rule comprising the consideration of theme vowels in modern French which provides an exhaustive paradigm for verbal inflection.

In this regard, Hinzelin (2017) further points out that the Latin theme vowels only survived in stressed position in the French verbal system and, therefore, inflectional classes cannot be solely identified through theme vowel. Moreover, Hinzelin claims that not the infinitive ending but rather the stem space, i.e., the number of stems for each verb, needs to be considered when attempting a classification into verbal classes for French. Within this frame, Bonami & Boyé (2003) suggest a verbal inflectional system consisting of 15 inflectional classes based on the number of morphological and phonological stems realized for every verb. The number of classes increases in the proposal of Parker & Sims (2016) who argue for the existence of 72 inflectional classes in French. Clearly, the number of inflectional classes within such an

approach is still debated and the implications for the first language acquisition process need to be further discussed.

A different approach is proposed by Ferdinand (1996) for the analysis of elsewhere forms in French monolingual children, i.e., verbal forms that are phonologically underspecified for the value of person and, for some verbs, number. An example is represented by the inflected form *mange* [mãz] ‘eat’ of the verb *manger* ‘to eat’, which can refer to different subjects in absence of an overtly realized subject. Ferdinand classifies the verbs into three classes: a first group includes those verbs that are realised phonetically alike in the first-, second- and third-person singular, as well as in the third person plural, i.e., they show homophony (e.g. *manger*); a second group comprises verb forms that do not differ phonetically in the first three persons of the singular, but do differ in the third person singular and the third person plural (e.g. *boire*); as for the last group, it includes verb forms that can also occur as auxiliary or modal verbs and, hence, frequently used verbs (e.g. *être*, *avoir*). Ferdinand argues that this classification reflects the acquisition path of monolingual French children, since in the first stages children generally realize forms that can be defined as elsewhere- or default-verbs due to the lack of morpho-phonological inflection.

After the consideration of these three approaches, a question arises about the best model to describe the inflectional system in French. While the theme vowel analysis yields results in Latin and some Romance systems, it fails for French. As for stem spaces, their consideration does not allow a fully description of the verbal system, leading to the development of a complex model. Furthermore, they both lack testing in first language acquisition. Differently, the approach proposed by Ferdinand (1996) focuses mostly on the acquisition process, even though it models the French verbal domain into a system that differs from the written form of the standard variety. The findings by Estivalet & Meunier (2015, 2016) show that verb morphology affects cognitive processing in adult speaker, indicating the need to study the French verbal system in language acquisition for a complete picture of the inflectional system.

Concluding, the French inflectional system presents clear differences from Italian and German. As for nouns, the *-al/-aux* class represents the last example of inflectional class that is inherent to the root of the lexemes belonging to this class and, as seen for Italian and German nouns, allows to inflect the lexical item before derivation. However, diachronic data reveal that even

the last instance of inflectional class is slowly disappearing in the French nominal domain. As for adjectives, there is no plausible inflectional class in French that can be considered as such. Finally, verbs need to be considered in light of first language acquisition data in order to take a position about the ongoing debate on the verbal inflectional system.

4.4 Class within the language acquisition process

The acquisition process of the class feature has only been partially considered within the literature. However, several studies focusing on structural regularities within different languages proposed models that allow predictions for language acquisition.

G. Müller (2004, 2005) investigates the Germanic inflectional system and syncretism within the frame of DM. The author (2004:198) argues that the Syncretism Principle, i.e., “identity of form implies identity of function”, represents the first and foremost relevant hypothesis that a child formulates when acquiring a first language. According to G. Müller, children go through different stages when learning the inflectional system. First, being the distinction between singular and plural universal, the child needs to recognize and distinguish the different number values expressed through morpho-syntax. In a second phase, features such as class, case and gender are evaluated in light of the evidence received through the input. Finally, the Syncretism Principle is applied to the stimuli received, driving the language acquisition process until the different functions of every syncretic form are recognized and acquired. Along similar lines but in a different framework, Picallo (2017) suggests that children are aware of the different conceptual configurations related to different inflectional classes, even though a feature is not overtly expressed in the acquired language. According to Picallo (2017) and G. Müller (2004; 2005), children are aware of the presence of a feature despite its covert manifestation within the language system. Carstairs-McCarthy's (1994) work explores a theory with a comparable outcome, centring on the Principle of Contrast which posits that "every two forms contrast in meaning" to elucidate the acquisition of inflectional classes, clearly differing from the Syncretism Principle proposed by G. Müller. In the Carstairs-McCarthy approach, semantic and phono-morphological aspects are analysed simultaneously in first language acquisition. Although inflectional classes have no semantic value, every form is generally reported to

correspond to a “meaning” that can be interpreted in either semantics or phonology and morphology.

Focusing on the acquisition of inflectional classes, Marcus et al. (1995) propose a psycholinguistic model based on default, i.e., a form whose “regular feature can be inferred by virtue of its oncological type” (Corbett & Fraser 1999:57). According to Marcus et al., the analysis of default allows to explain both language processing and first language acquisition. Their model relies on the application of regular patterns to all possible cases, with exceptions handled through cognitive mechanisms such as memory. By comparing nominal and verbal inflection in English and German, Marcus et al. argue that first language acquisition is one of several circumstances in which this pattern of associating form with meaning applies, as evident by the frequent overgeneralization of regular endings to irregular forms in the data of English- and German-speaking children. Further examples are represented by speech patterns in Alzheimer patients as well as aphasia (Marcus et al. 1995:197). Furthermore, the authors assert that “children’s unconscious language acquisition mechanisms naturally seek examples of rules” (Marcus et al. 1995:245). Children are expected to learn regular inflection rules by abstracting them from the input, while irregular forms are often involved in target-deviant utterances and finally acquired when memorization of these forms takes place.

However, findings from several studies indicate that overgeneralizations are not consistently applied to the data. Say and Clahsen (2002) adopt a psycholinguistic perspective, suggesting that the processing of inflectional information involves three operations: in the verbal domain, regular and irregular forms can be either listed, or derived, or both listed and derived, depending on the characteristics of the verbal class in the target language. Hence, while Marcus et al. propose that regular classes are derived by rule and irregular classes are listed or memorized, Say & Clahsen argue for a language acquisition model that develops on morphological and syntactic aspects in cooperation with cognitive aspects and that accounts for the acquisition of verbal inflection in Italian as well as in further languages.

Thus, the question concerning the manner of acquisition of the class feature is still to be addressed. Focusing on gender, Kupisch et al. (2002) report that one of the first morphosyntactic feature that appears in monolingual and bilingual children data is the gender feature. This hypothesis is supported by the analysis of determiners’ realizations and omissions

in the longitudinal data of bilingual Italian-French children, concluding that gender is inherently manifested in the determiner once it is realized. Differently, Rodina & Westergaard (2013) show that declension classes are acquired before gender (agreement) in Norwegian, suggesting that class is acquired before gender. In their study, data from Norwegian children between the age of 2 and 7 years old were elicited to test whether gender and declension are acquired simultaneously and whether children committing errors with gender at the age of 5 or even older, as often reported in the literature, also produce errors with declension classes in Norwegian. Their results show that, while children commit gender errors, declension classes are generally used target-like. The present study assumes Rodina and Westergaard' (2013) results to represent the standard process of acquisition of inflectional classes, at least for languages in which the class feature is morphologically transparent. This assumption can be elucidated by considering the nature of the gender feature in contrast to the class feature. Unlike class, gender is not only grammatical but also biological and, therefore, semantically assigned to nouns. Crucially, inflection classes enable the child to acquire inflection without considering the “extra-linguistic” world.

The following sections report a summary of the literature on monolingual and multilingual first language acquisition on Italian, German and French divided into two groups: in 4.4.1, studies that consider the class feature in the DP, and in 4.4.2 in the TP. The reason for this distinction lies in the nature of the existing studies, since most works only focused on the nominal or verbal system without taking other areas into consideration.

4.4.1 Monolingual and multilingual acquisition of class in the DP

Studies on the acquisition of the class feature in the DP in monolingual and bilingual children generally focus on the morphosyntactic function and, subsequently, on the role of declension or inflectional classes. Granlund, Kolak, Vihman, Engelmann, Lieven, Pine, Theakston & Ambridge (2019) present the state of the art about studies on the acquisition of nominal morphosyntactic features on a continuum: on the one end, the generative, rule-based approach to the acquisition of functional features which, according to the authors, is “insensitive to surface form frequency and phonological similarities”; on the other end, analogy-based theory which states that acquisition consists of the memorization of exemplar pairs of lexemes which allow the learner to abstract the rule. Between these two opposing approaches, different theories

are illustrated on Grandlund et al.'s continuum, each of them relying on a different aspect, e.g. the Tolerance Principle approach (Schuler, Yang & Newport 2016) which explains acquisition through the frequency of every morphosyntactic rule in the input.

Penke (2012) suggests that universal results were reached in different studies on the acquisition of grammatical features. Children go through several phases when acquiring a first language and every phase reflects a particular step in the grammar and lexical development. In the one-word phase, the lexemes realised by the children can be either inflected or not, according to the language acquired. In the following phases, forms inflected target-like and target-deviant are consistently realized, with strong variation depending on the language.

4.4.1.1 Monolingual acquisition of class in the DP in Italian

As for Italian, Belletti & Guasti (2015:74) report that the first three classes of nouns occur most frequently in children's language production data from the age of 1;3 until 2;8 years old. In the data, Italian monolingual children realize nearly no target-deviant declension classes, with few examples such as **pettino* instead of *pettine* 'comb', i.e., a noun of class III in the target system is inflected according to class I. Moreover, they report that "nominal features are acquired easily; gender is mastered slightly earlier than number and errors are rare in child speech" (Belletti & Guasti 2015:77). The few target-deviant DPs report some gender mismatches which "generally involve changes of class ending toward the most common classes (I and II)", referring to both nouns and adjectives. Belletti & Guasti describe the results as an attempt to "avoid non-transparent endings" without taking the class feature into consideration.

Similar results in Italian monolingual children are also reported in Bottari et al. (1993), Chini (1995) and Velnić (2020) among others. According to Penke (2012), children acquiring Italian realize features such as class, number and gender from the very beginning, i.e., from the one-word phase, since the omission of these features lead to the realization of "naked" roots that are target-deviant in Italian. According to the findings, Italian children produce lexemes containing information about the involved features from the very beginning, even though the grammatical features involved have not been completely acquired. An example is represented by the target-deviant inflection of verbs as concerning, for instance, the person feature, in which the child

realizes a verb inflected for the third-person singular value, although the reference is in the first-person singular, leading to sentences such as **io entra* 'I enter' instead of *io entro*.

4.4.1.2 Monolingual acquisition of class in the DP in German

The literature still debates whether an utterance like *Kugel geht nicht*³⁴ 'ball does not go' realized by a monolingual German child reflects the complete acquisition of inflectional features, such as class, or whether it demonstrates the imitation of features that have been perceived but not yet fully acquired. As for the acquisition of the class feature in monolingual German children, the literature reports diverging results. While Enger (2004:68) affirms that “German children learn gender before they learn declension”, Urbanczik (2023) claims that although the large number of determiner omissions does not allow to make assumptions about the acquisition of gender, nouns are inflected according to the inflectional system of German from the very beginning, reporting almost no inflectional errors. Szagun (2001) considers the acquisition of plural marking in German first language acquisition and shows that the most frequent classes in the input, i.e., class I, II, VI, IX and X (cf. 4.3.2.1), are generally acquired before the less frequent classes. Kauschke (2012) reports that class X, i.e., the *-s* plural class, is generally overgeneralized in children data, leading to a similar interpretation as in Marcus et al. (1995). Finally, Szagun et al. (2007) realize a phonological analysis of the overgeneralization rules for German plural nouns found in several studies and come to the conclusion that the class X is generally applied to trochaic, disyllabic forms that in the target language are inflected according to class IX, i.e., invariable nouns. In addition, the plural form of class I nouns, namely masculine and neuter nouns that take the *-e* in the plural inflection, is applied to monosyllabic ones. Hence, the authors show that German children are sensitive to phonological aspects.

As for adjectives, monolingual first language acquisition of German inflectional classes is generally reported to be acquired later than in other languages in which the class feature does not have a syntactic role, like Italian. Accordingly, Clahsen & Richman (1991) report that the strong inflectional class, i.e., adjectives without determiner, is the first class realized. Determiner-adjective agreement, as necessary for a target-like inflection of the weak and the

³⁴ This sentence was realized by a German monolingual child at the age of 1;10 years old (Penke (2012:2)).

mixed inflectional classes, is acquired later, starting at the age of 3 to 4 years (Collings 1990:37). As concerning the differences in the acquisition of morphology in comparison to syntactic phenomena, different approaches were proposed. Whilst Sorace & Filiaci (2006) suggest that the acquisition of phenomena pertaining to the morphology/syntax interface are generally more complex and, hence, acquired later, White (2011) argues that all interfaces behave similarly in language acquisition and therefore are comparably complex for the language learner. However, it is generally accepted that the acquisition of inflectional patterns differs from language to language (i.a. Clark 2017, Ravid 2019) and that morphological phenomena that also involve syntax are acquired later (Unsworth, Parodi, Sorace & Young-Scholten 2006).

4.4.1.3 Monolingual acquisition of class in the DP in French

Last, French acquisition of the still available declension class has only been considered in a few studies. Focusing on the role of the gender feature, Karmiloff-Smith (1979) reports that children generally use the ending of nouns to predict the gender value already at the age of 3 years old. Although these results are in contradiction to those of later studies (see among many others Boloh & Ibernou 2010, Nicoladis & Marchak 2011, Boloh et al. 2012), they confirm the claim of previous works about the acquisition of inflection in French, which is generally described as a complex process that is acquired through phonological and morphological features (Corbett 1991). A study by Parisse & Le Normand (2000) about the development of morpho-syntactic aspects in French monolingual children reveals that only a small number of errors can be found in the realization of nouns as well as of further categories. The authors argue that this is attributable to the target-like input received by the children from their parents. Additionally, Parisse (2023) compares the acquisition of inflection in several Romance languages and, as concerning French, reports that only few errors occur in the first stages of language acquisition, concluding that nominal inflection is generally acquired early in monolingual French children.

Considering adjectives, Valdman (1970:611) reports (some) rules that French speakers need to acquire during first language acquisition in order to inflect adjectives target-like. Starting from the assumption that gender, but not declension, appears on French adjectives, the two agreement patterns as concerning the masculine and the feminine gender are acquired relatively early by monolingual French children. This result is confirmed by Kilani-Schoch & Xanthos (2013),

who analyse the acquisition of the adjective *petit* ‘small’ by two monolingual children aged 1;6 to 2;11. The findings show that, even though *petit* represents a complex form due to several pragmatic reasons, the two children commit only a small number of inflectional errors. However, the number of adjectives is low in the corpus analysed. Kilani-Schoch & Xanthos argue for a distinction of the two forms, i.e., the masculine *petit* /*peti*/ and the feminine *petite* /*petit*/ one (cf. Figure 19 in 4.3.3.2), starting from the age of 1;9 for one of the two children and 2;2 for the other. Similarly, Kilani-Schoch (2015) reports that the two children analysed in her study overgeneralize the masculine form of several adjectives, i.e., *petit*, *gros* ‘big’, *grand* ‘tall’, *vert* ‘green’ among others, to feminine references. Nonetheless, this kind of errors is found in a small number of utterances and until the age of 2;3 and 2;4 for both children. The findings are further supported by a study by Royle & Valois (2010) on the acquisition of French in Quebec, Canada, in children aged 3 to 5 years old. Crucially, Kilani-Schoch (2010:117) finds a contrasting type of errors with adjective occurring in predicative position, which occur in the target-deviant feminine form. Since the inflectional system of French is rather complex with regard to gender and number distinction, the results support the assumption that is gender and number that guide the acquisition of inflection in the nominal system in French, rather than class.

4.4.1.4 Multilingual acquisition of class in the DP

On the one hand, monolingual first language acquisition is influenced by different aspects which partially depend on the target language. On the other hand, comparable phenomena can be observed in bilingual language acquisition. To the best of the author’s knowledge, only Rodina & Westergaard (2013) overtly compared the acquisition of declension classes in monolingual and bilingual children, leading to the result that the inflectional system is acquired earlier than the gender agreement patterns in Norwegian. Moreover, the comparison of the data of Norwegian monolingual to Norwegian-English bilingual children does not display significant differences between both groups, leading to the assumption that the acquisition of the inflectional system in bilingual and monolingual children follow a similar pattern. A comparable result about monolingual and bilingual children with different language combinations is outlined in Hager (2014) with regard to gender (cf. section 3.3.1.4). However, Hager’s study considers gender agreement and, hence, the gender feature which is active in all

languages and does not present structural differences in the considered languages. This is however not the case for the class feature.

Whilst the acquisition of inflectional classes in multilingual children has received only little attention, at least for the investigated language combinations, TP and DP features have been considered in several works. Therefore, the present section reports observations outlined in preceding studies about the multilingual acquisition of gender, number, case, and person. Even though class is not considered in these studies, the findings are discussed with particular reference to the acquisition of class, the main topic of the present work.

Volterra & Taeschner (1978) investigates the acquisition phases of two German-Italian and one English-German bilingual child and reports that the two German-Italian bilinguals acquire Italian adjectives' inflection earlier than German monolingual children. For Italian, no target-deviant adjectives are reported; in German, the children realize target-deviant adjectives at least until the age of 3;0. Moreover, adjectives without determiners, i.e., the strong adjective class, are realized target-like, while weak and mixed adjectives present either none or target-deviant inflection. Tedeschi (2017) compares lexicon development in one bilingual Italian-Norwegian child to 8 monolingual Italian children and reports no differences between the two groups as concerning the target-like realizations of DPs. Similar results are reported by Kupisch et al. (2002) and Eichler et al. (2013). They investigate the acquisition of grammatical gender in bilingual children acquiring a Romance language simultaneously to German and compare it with monolingual German children. Although almost no information about nominal or adjectival inflection is reported, the study suggests that monolinguals and bilinguals do not present differences in the acquisition of grammatical gender and, supposedly, of class. Hence, monolinguals and bilinguals behave alike. This result was found in most studies considering the acquisition of Italian morphology in bilingual children (see among others Bernardini 2003).

As for the acquisition of German and French in bilingual children, the results generally vary. N. Müller (1990, 1994) considers grammatical gender acquisition while also analysing the syntactic representation of the DP in French and German. The author suggests that weak and mixed adjectives agree with D rather than N, while strong adjectives occupy the SpecDP position and agree with N since the position would otherwise be empty. Although the class feature is not overtly considered, the proposed syntactic structure presents several similarities

with the analysis suggested in Figure 18 in section 4.3.2.2. By comparing the German and French gender system and the frequency of every gender in both languages, N. Müller formulates the hypothesis that bilingual French-German children are expected to overgeneralize the rules for the masculine gender in French and for the masculine and neutral gender in German, since masculine in French and masculine and neuter in German represent the gender values that occur most frequently in the input. The results suggest that the inflection rules in the DP are acquired faster in French than in German and that, however, the child uses the linguistic knowledge acquired in one language to support the acquisition of the other.

Koehn (1989, 1994) analyses number inflection within the DP in one bilingual French-German child and shows that the number feature is not acquired until an age of 2;6 years in German. The reason for this assumption is represented by the lack of inflectional suffixes and the overgeneralization of the plural endings of class I and X, i.e. *-e* and *-s*. Considering the findings with regard to the class feature, not only number but also class represents a feature that has not yet been acquired in German by the bilingual child. The French number inflection in Koehn's study appears to be increasingly used target-like by the bilingual child starting from the age of 2;5 years. As for the *-al / -aux* class, Koehn (1989:154) reports that only one noun belonging to this class, i.e., *animal/animaux* 'animal / animals', occurs frequently and, starting from 2;5 years old, target-like in both the singular and the plural form. Following the author's data, the one French declension class is acquired at age of 2;5 by the bilingual French-German child.

In conclusion, studies investigating the acquisition of the class feature in the DP by monolingual and bilingual children report contrasting results as well as evident similarities. On the one hand, the inflectional system of Italian is acquired with ease in monolinguals and bilinguals, irrespective of the (Indo-European) language that is acquired simultaneously to Italian. On the other hand, the data of German and French children lead to different conclusions. German children need comparatively longer than both Italian and French monolinguals as concerning the acquisition of gender agreement. As for bilinguals, they present results comparable to monolinguals if German is acquired simultaneously to Italian or French. However, the class feature has not yet been explored in the multilingual group, suggesting that the findings presented in this section may require reassessment once attention is directed toward class.

4.4.2 Monolingual and multilingual acquisition of class in the TP

The acquisition of verbal features by monolingual children is a well-studied topic. As reported in the preceding section, studies frequently outline similar results, even though their interpretation is carried out within different frameworks. In the following sections, the focus lies first on the acquisition of inflectional classes in monolingual acquiring Italian, German and French and on the aspect that influence the first language acquisition process. Subsequently, the focus is shifted toward studies that considered the acquisition of verbal inflection in multilingual children.

4.4.2.1 Monolingual acquisition of class in the TP in Italian

Guasti (1993) considers the distinction of finite and non-finite verbs in three Italian monolingual children. Through the analysis of the occurrence of verbal inflection features, the author comes to the conclusion that inflectional features, e.g., person and number, are acquired from the very beginning of speech production in Italian. Although inflectional classes are not overtly analysed, Guasti (1993) reports all target-deviant verbs realized by one of the three children and a glance at the data reveals that monolingual Italian children realize almost no target-deviant inflected verbs for class. Furthermore, the acquisition of class appears to be strongly related to the one of person and number features in Italian (see also Noccetti 2003:366). Leonard et al. (2002) report the results of a cross-sectional study in which the production of singular and plural verbs for 60 children aged between 2 and 5 years was analysed. Even in this study, the authors show that children realize nearly only target-like verbs.

Comparable findings with regard to the acquisition of subject-verb agreement are documented by Moscati & Rizzi (2014). The study compares the results from previous works by Moscati & Tedeschi (2009) and Pizzuto & Caselli (1992), focusing on agreement patterns in noun-determiner, subject-verb, and clitic-past-participle constructions. The data by 55 Italian monolingual children between the age of 2 and 5 reveal that noun-determiner agreement is mastered already at an age of 2, while they need longer to acquire the subject-verb and the clitic-past-participle agreement, respectively. Moscati & Rizzi (2014) suggest that Italian monolingual children acquire morpho-syntactic features differently, with the noun-determiner agreement features being acquired significantly faster than the clitic past-participle agreement. The reason lies in the different involvement of the analysed features, i.e., gender, number, and

person, in the agreement process. For instance, noun-determiner agreement does not include the person feature, whereas clitic-past-participle agreement involves different features from both the subject and the object. A study on the acquisition of class feature is carried out by Noccetti (2003), who conducts a longitudinal analysis of verb forms in a monolingual Italian child from the age of 2;0 to 2;7. Noccetti focuses on the acquisition of three grammatical features, i.e., number, person, and class, finding a prevalence of verbs from class I and III (-*are* and -*ire* verbs) over class II verbs in the initial stages of language development.

In summary, the findings on the acquisition of TP features in Italian monolingual children support the hypothesis formulated by Hyams (1986), Pierce (1989), Weissenborn (1990) and Guasti (1993) among others, indicating the early presence of verbal functional categories in children's grammar.

4.4.2.2 Monolingual acquisition of class in the TP in German

The acquisition of verbal features in German monolingual children represent the main topic of several studies. Bittner (2003) analyses the longitudinal data of two monolingual German children from the age of 1;6 until 2;2. The results of Bittner's observations indicate that, as already suggested by Marcus et al. (1995), children overgeneralize the weak inflectional class to strong or mixed verbs. Most target-deviant verb forms in Bittner's study display: i) an overgeneralization of the -*en* ending for singular verbs, as in **ich essen* 'I eat', ii) the lack of vowel change in strong verbs and iii) overgeneralization of the -*t* ending for the past-participle form of strong verbs.

While Wurzel (1984:73) argues that the overgeneralization of suffixes from weak verbs to strong ones is a "proper characteristic of children's language", Bittner's (2003) findings reveal that monolingual German children go through different stages when acquiring their first language. A first stage consists in the realization of rote-ruled forms in which children simply imitate the input. Clahsen et al. (2001) report comparable results from cross-sectional studies. According to the authors, the findings show that German monolingual children dispose of lexical mental representations for verbs that are underspecified, leading to the overgeneralization of weak forms.

In conclusion, children acquiring verbal inflection paradigms in German tend to overgeneralize the weak inflectional pattern to strong verbs up until around the age of 3;0, after which monolingual children increasingly realize target-like verbs from all inflectional classes.

4.4.2.3 Monolingual acquisition of class in the TP in French

With regard to French, monolingual children are reported to acquire IP features relatively early, at an age comparable to the first language acquisition process of Italian. Bassano (2000:553) reports that, after an initial period in which verbs are mostly realized in the infinitive form until the age of 2, verbs are generally produced target-like. The author argues that this is “due to the relative morphological simplicity of infinitive and past participle markings in French” that leads to a rather fast acquisition of finite and non-finite forms. Kilani-Schoch (2003) analyses the verb realizations in the longitudinal data of two monolingual French children, assuming the existence of four inflectional classes for verbs. Although the author claims that “there is no apparent selectivity with regard to inflectional classes” (Kilani-Schoch 2003:277), verbs ending in *-er* in the infinitive are the most frequent in child speech. This class is generally considered productive and frequent in the French data. However, there are many exceptions in the target system with regard to the inflection of verbs pertaining to this class as concerning the inflectional rule(s).

Royle, Beritognolo & Bergeron (2012) discuss whether the acquisition of verbs’ inflection can be explained through a dual-route model, i.e., a model taking into consideration morphologically based word construction rules as well as item based learning methods, or a single-route pattern-based model that is driven by the rules’ frequency in the input. Royle et al. assume that the French verbal system consists of three inflectional classes, a first class including verbs ending in *-er* in the infinitive form, a second containing regular verbs ending in *-ir* and a third one consisting of irregular verbs in *-ir* as well as further endings. These three classes differ consistently in the number of types and tokens in the adult and child’s speech: for instance, the class with *-er* verbs covers almost 85% of all French verb types in adult’s speech and 75% in the children’s data. However, as for the number of tokens, children only realize about 36% of tokens pertaining to this class. According to Royle et al., most tokens belong to the third inflectional class. The findings of this study indicate that, as already proposed for German, children overgeneralize regular inflectional patterns on irregular verbs, realizing forms of the

kind **gegeht* instead of the target-like form *gegangen* ‘gone’. On a similar note, studies classifying French verbs into regular and irregular inflectional classes find that monolingual French children realize regular verbs most frequently than irregular verbs (cf. e.g. Nicoladis et al. 2007).

To sum up, several studies report that French monolingual children are sensitive to inflectional rules. However, whether the class feature is responsible for the rules and, accordingly, for the sensitivity of the language learners toward frequency and productivity is still debated.

4.4.2.4 Multilingual acquisition of class in the TP

As reported for the acquisition of the DP’s features, even the acquisition of the TP’s features in multilingual children is reported to present differences in comparison to the monolingual data. However, the language combination is supposed to influence the acquisition process. Nicoladis et al. (2007) consider the data of bilingual English-French children, focusing on the role of input frequency for the acquisition of verbal inflection. This study is driven by the assumption that simultaneous bilingual children generally receive less input than monolingual children and, hence, should be delayed in comparison to monolinguals in the target-language. Nicoladis et al. report that bilingual children realize more target-deviant irregular verbs in French than monolingual children. Reportedly, irregular verbs occur significantly more in the input of the bilingual children group in comparison to the monolingual group (Nicoladis et al. 2007:249).

Tedeschi (2017) compares the data by a bilingual Italian-Norwegian child to eight monolingual Italian children and confirms that the target language is generally acquired early, reporting present no significant differences between bilinguals and monolinguals as considering the acquisition of grammatic features in Italian. A comparable result is outlined by Sallustri (2001), who analyses the acquisition of the verb position in four bilingual German-Italian children acquiring the two languages either simultaneously or sequentially. The findings show that most realized verbs in the two languages are inflected target-like. Sallustri reports that the three simultaneous German-Italian bilingual children display a language acquisition process that follows the same acquisition pattern as in monolingual children.

The acquisition of the verb inflection in French-German bilingual children has only been considered in a few studies, while Italian-French children were not taken into consideration so far in any study with regard to the acquisition of inflectional classes in the verbal domain. Meisel (2003) investigates the morphosyntactic development of two bilingual French-German children from the age of 1 to 4 years and reports that verb inflection is acquired early and the children realize only a small number of target-deviant inflected verbs in the two languages. A contrasting result is outlined by Koehn (1989), whose data display no number distinction for verbal inflection before the age of 2;8 years old in German and French.

In conclusion, the acquisition patterns of the class feature in the verbal domain exhibit differences between monolingual and bilingual children. Additionally, factors such as age and MLU vary in correlation with the markedness of the system: languages with a more complex, marked system tend to be acquired later than less marked ones. Nevertheless, there is a lack of studies comparing acquisition across the two groups, and none systematically investigate the role of the class feature.

4.5 The class feature in the emergentist framework

Italian, German and French present three morphological and syntactically different inflectional systems and the detailed analysis presented in the preceding sections leads to one conclusion: the class feature is present and (differently) active in all the three languages.

In Italian, nouns, adjectives and verbs among other categories are affected by inflectional classes. In this regard, the feature is inherently valued and, hence, the noun is inserted in the derivation with a valued class feature. For instance, nouns belonging to class I in Italian are inserted in the derivation process with a valued class I feature, e.g. *libro*, while the value for gender (masculine) and number (singular) is defined through agreement with the determiner and / or the adjective. A similar process is assumed for French, at least for a small portion of nouns. For instance, the noun *cheval* is inserted in the derivation process with a valued class feature and unvalued gender (masculine) and number (singular) features. Hence, the two systems present a class feature that fulfils morphological functions, rather than syntactic ones, since the lexemes carry an inherent value for class. Despite the similarities with respect to the morphological role of class, evident differences can be found between Italian and French. The

first concerns the distribution of the feature within each domain, as well as across different domains. While in Italian all nouns, adjectives, and verbs inflect according to class, there is only a (small) group of nouns and, depending on the approach, verbs in French for which inflectional classes are relevant. Further differences include, i.a., the slow elimination of the class feature from the nominal system in French in contrast to Italian, as observed diachronically in 4.2, and the variation as concerning the general acquisition process of both systems, as reported in 4.4.

The German inflectional system displays a different pattern. While nouns and verbs in German have an inherently valued class feature as just observed for Italian and French, adjectives receive the value for class from the determiner, leading to the conclusion that the feature fulfils a syntactic role for this category. This possibility has already been discussed in previous studies by Déchaine (2019), Sternefeld (2004), Zwicky (1986) as well as in 4.3.2.2. Nonetheless, the feature still requires a description within a parametric approach that relies on interpretability for syntactic derivation. In the framework of the Minimalist Program put forth by Chomsky (1995), a feature can be either valued or unvalued as well as interpretable or uninterpretable, leading to deletion or to agreement throughout the derivation process. While an unvalued feature is generally involved in the derivation process since it needs to be valued (D'Alessandro 2017:15), a valued category does not need to be derived. If the feature is interpretable, then it carries semantic content (Adger 2004:19). However, if it is uninterpretable, it is checked and deleted before spell-out after agreement and movement mechanisms have taken place. For a feature to be interpretable, it must be licensed by the Conceptual-Intentional (C-I) interface and, thus, assume a semantic value (Kučerová 2018:816). Oppositely, uninterpretable features fulfil no semantic functions and are accordingly not necessary in the derivation process after agreement.

Applying these observations to the class feature, class is expected to represent a rather complex case in German, where it fulfils both morphological and syntactic functions. In Italian and French, however, it is expected not to take part in any derivation process. Up to this point, this claim has only been supported by theoretical approaches. The observation of language acquisition data might yield different results. When linking this approach to the acquisition of inflection in a first language, it is to be expected that Italian and French are acquired earlier than

German due to the greater morpho-syntactic complexity of the latter system. Moreover, the class feature in the inflection of German adjectives can be included in a model that considers language acquisition as directly related to the acquisition of features. With regard to this matter, the class feature serves functions that are comparable to the ones generally ascribed to φ -features in the model presented by Roberts (2019:56), even though not for all languages.

In particular, Roberts lists four aspects that characterize the φ -features for parametric setting in most languages, namely features' universality, the number of functional heads they generally affect, the salience in the input and the stability throughout language change. Considering the claims of the studies reported in the present chapter, the expression of class appears to include most of these aspects, at least in the three systems analysed in the present study, and, thus, can be categorized in the φ -parameter in the sense of Roberts, which include the variation across categories and languages for the expression of φ -features. The categorization of the class feature within the realm of φ -features allows to a) grant it a pre-syntactic position for languages like French and Italian and b) include it universally in further systems with the possibility of being phonologically, morphologically and / or syntactically active for each system, as it was already observed for gender (Kramer 2015). If class is a φ -feature, then one might expect that the its expression can include all, some or only one functional category in each analysed target-system. Crucially, if class is a φ -feature, then parametric variation partially depends on its expression within the analysed system, as for instance the null-subject parameter (cf. N. Müller 2024a).

In the emergentist framework, incorporating the class feature among φ -features enables the analysis of syntactic category expression and the formulation of a parameter hierarchy based on markedness. The figure below illustrates the φ -hierarchy, which, according to Roberts, defines the relationship between φ -feature expression and the possibility of subject omission:

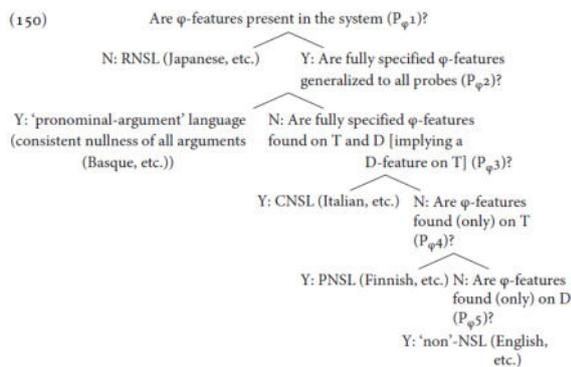


Figure 21: Parameter-hierarchy for ϕ -features from Roberts (2019:285)

In Figure 21, languages are classified as Consistent-Null-Subject-Languages, Partial-Null-Subject Languages, etc. depending on the expression of the ϕ -features. Class is not considered in Roberts' approach and, since the main topic of the present work does not include subject expression, this parameter hierarchy is not pursued any further. However, it is relevant to note that the features' expression is directly related to parametric variation. Further examples are represented by the expression of the Person-Feature for D incorporation (Roberts 2019:237) or of Tense-Event feature for Verb-Movement. As reported in chapter 2, language variation and acquisition can be explained through hierarchies which are built upon features. A similar claim can be proposed for the class feature. Figure 22 represents the syntactic expression of class if considered within the general group of ϕ -features:

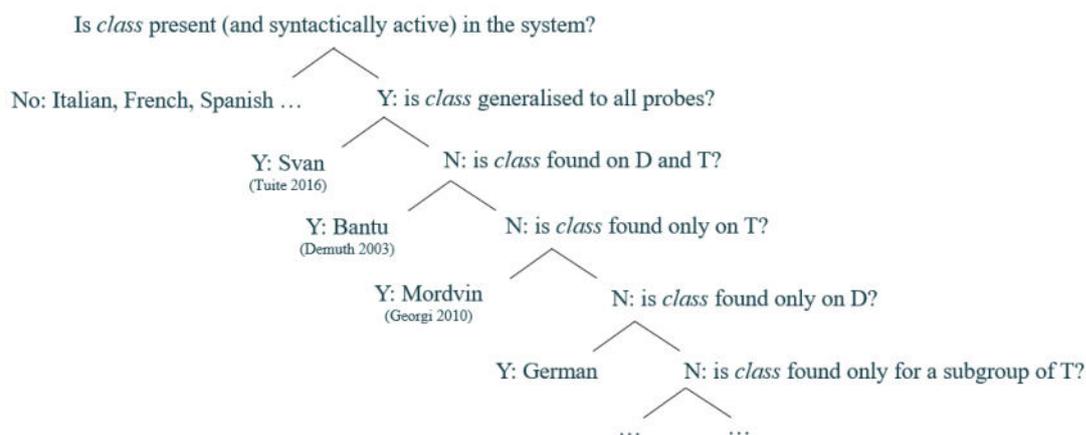


Figure 22: Parameter hierarchy for the class feature

The hierarchy in Figure 22 includes information about the presence and distribution of class as predicted by the parameter hierarchies proposed by Roberts (2019:414). Additionally, parameter hierarchies typically provide insights into the grammaticalization of features,

reflecting how diachronic variation influences the current synchronic stage of each language. Moreover, the interaction between the presence of a feature and its distribution is essential in defining markedness. Typically, unmarked languages exhibit either a syntactically active feature across all categories or no expression of the feature, whereas the restriction of a feature to a single category is generally associated with marked systems (Biberauer et al. 2014:116).

The three languages analysed in the present work, i.e., Italian, German, and French are represented on the hierarchy on different levels. As discussed in previous sections, Italian and French do not present a syntactically active class feature. For this reason, they lie on the macroparametric level. German has a class feature that is syntactically active only in D, as discussed in Déchaine (2019) for Yiddish. Thus, German is represented on the meso-parametric domain, i.e., the domain that includes “all heads of a given natural class ... or a core functional category”, namely D (Roberts 2019:75). For the other languages reported on the hierarchy, the class feature is syntactically active in at least one domain. Tuite (2016, 2023) describes Svan, i.e., a language spoken mainly in the territory of Georgia which belongs to the Kartvelian family, as a system in which all categories inflect according to class. Crucially, there is no gender in Svan, but rather agreement according to class.

Another system that is generally described as having noun classes that are persuasive, i.e., they are included in the inflection of D and T, is represented by several Bantu languages (cf. i.a. Carstens 2010, 2011). In particular, the following languages have been categorized by Demuth (2003), among many others, as including the class feature: Chewa, Sangu, Swati, Sotho, Tswana, Xhosa, and Zulu. These systems present typological similarities in the inflection as well as in the specification of several features comparably to the group of Romance languages, as discussed in 4.2.1. Crucially, they are macro-parametrically affected by the class feature for the NO>ALL>SOME hierarchy in the same manner in which languages such as Italian, French, etc. are – or are not. Bantu languages are reported on the parameter hierarchy even though there is an ongoing debate in the literature as concerning the nature of gender and class in these systems.

Inflection and agreement within the TP in Mordvin are influenced by class (cf. Fournet 2011). Mordvin represents a Uralic language that is generally restricted in use to one area in Russia, namely the Mordva Republic. It consists of two dialects, Erza and Moksha. Georgi (2010:126)

reports that “all the generalizations which the analysis is based on also hold for the Moksha dialect”. In the verbal system of Mordvin, inflection takes place following two conjugation classes, the definite and the indefinite one. First, the class feature is morphologically active for the TP since verbs inflect according to one of the two classes. Second, class interacts syntactically with subject and object agreement, fulfilling the function of an active feature in the syntax of the verbal domain. Also in this case, class is present only for verbs and, hence, represents a meso-parametric setting.

Still on the meso-parametric level, German represents one of the systems in which the class feature is present only in D. As discussed above, class represents an inherent feature for German nouns and verbs, but it is unvalued for adjectives. Further languages on the meso-parametric level can be found in the study by Déchaine (2019). A relevant example is Plains Cree, a dialect of the Cree language, which belongs to the Algonquian language family (see Wolvengrey 2011 for further details). As displayed in Figure 4, Cree represents a language in which the class feature selects D (Déchaine 2019:19), with further categories inflecting according to the two classes of Plains Cree. As for other systems displaying a syntactically active class feature for subcategories as well as for a selected number of items of a category, they should be represented on the lower levels of the hierarchy, which do not appear in Figure 22 due to space limitations.

This approach enables the formulation of various predictions regarding language acquisition, which can be confirmed or refuted by studies examining the acquisition processes in the nominal or verbal domains of the languages reported on the class hierarchy. Considering that systems positioned higher on the hierarchy are typically acquired earlier than those at lower levels (cf. Picallo 2014:7), languages operating at the macroparametric level are anticipated to be acquired before those at the meso-parametric level. In turn, languages on the meso-parametric level should be set before microparameteric languages, etc. Starting from the higher positions on the hierarchy, i.e., the ‘NO’ position, the inflectional system of Italian is generally acquired with ease, as reported by Belletti & Guasti (2015) among many others. French has not yet been investigated with regard to the inflectional class.

As for languages on the ‘all’ parametric level, there are only a few studies on the acquisition of Svan – to the best of the author’s knowledge –, while the Bantu languages have been investigated within several works. Imedazde & Tuite (1985) analyse the acquisition of Georgian

in monolingual children and show that, generally, children commit some errors of inflection until 5 years old. Although Georgian and Svan are two separated languages, the inflectional system is reportedly similar (Imedazde & Tuite 1985:104). The analysis, however, is qualitatively based rather than quantitatively. The target-deviant utterances used by the Georgian children can be attributed to inflectional errors, in that the children categorize verbs not according to the target class. Whether target-deviant utterances occur often or whether they rarely occur in the children's data is not discussed. As for the age of acquisition, Imedazde & Tuite (1985:57) report that "toward the end of the second year or during the first half of the third Georgian children enter an important phase of morphological and syntactic development". Inflectional classes as such, however, are not specifically mentioned.

Demuth (2003) provides for the Bantu languages an overview of studies that considered the acquisition of the nominal and verbal inflection and agreement in different systems. Demuth reports that nominal inflection and agreement as concerning noun classes takes place early in all systems analysed and is generally acquired before the age of 3;0. Although differences can be found among the children acquiring different languages, e.g., noun classes prefixes are target-like in Sotho and Swati at the age of 2;0 and even earlier in Zulu³⁵, the acquisition of noun classes and verbal classes appears to develop similarly in all the analysed children and languages.

With regard to the systems on the meso-parametric level, the acquisition of Mordvin is analysed by Durst & Janurik (2011), with a focus on second language acquisition by adult speaker of Hungarian due to the similarities between the two systems concerning verbal inflection. Although several differences are found between Mordvin and Hungarian, the conjugation classes and their syntactic functions are reportedly comparable in the two languages. Since only adult acquisition is considered in Durst & Janurik's study and due to the absence of works focusing on first language acquisition of Mordvin, the observations by MacWhinney (1976) concerning morphological and syntactic development in Hungarian children are considered. With regard to the acquisition of agreement and inflection in the verbal domain, the author

³⁵ The data were analysed by Demuth (2003) starting at the age of 2;0 for Sotho and Swati. Zulu children were considered from 1;10 years old.

reports the findings of previous studies which show that the development is completed at the age of 1;11. MacWhinney, however, debates the results in light of his data which include target-deviant inflection at the age of 2;2. The class feature in the verbal domain can be defined as acquired not later than 2;6 (MacWhinney 1976:402)

As for German, the last language present on the class-hierarchy in Figure 22, studies concerning the acquisition of inflection in the adjective domain are reported in 4.4.1.2. The declension system in the nominal domain as well as the agreement within the DP is acquired consistently later than in the other languages, with target-deviant forms realized until the age of 4;0 (cf. Szagun 2007). A topic that has not been investigated yet in the monolingual acquisition of German is the omission of inflectional morphemes in the first stages of acquisition. Demuth (2003) observes that the acquisition of noun classes in Bantu languages is characterized by the production of noun and verb stems without inflection. Whether a similar behaviour can be found in monolingual German children – and, eventually, in bilingual children as well – is still to be analysed.

5 The study

Through a comprehensive review of the literature on the monolingual and multilingual acquisition of features within the DP and TP domains of Italian, German, and French as reported in chapters 2 to 4, a relevant research gap has emerged: the role of the class feature in the language acquisition process. The present work addresses the function of class in the context of the findings presented in the previous chapters and systematically explores its function in the language acquisition process of monolingual and multilingual children.

Section 5.1 outlines the primary research question and hypotheses. Further on, sections 5.2 and 5.3 present the dataset, which includes longitudinal data from monolingual and multilingual children, and the methods analysed for the analysis.

5.1 Research question and hypothesis

The results of various studies enable the formulation of a research question that was not adequately addressed within the existing literature:

(22) *Does class affect the monolingual and multilingual acquisition of nouns, adjectives, and verbs in Italian, German, and French?*

This research question aims to investigate the role of the class feature in the language acquisition process, providing a comparison between the multilingual and monolingual groups. With regard to this issue, the literature allows to formulate the following hypotheses:

H1: a) The class feature is acquired earlier by monolingual children learning Italian than by German monolingual children; b) Monolingual children acquiring Italian are expected to acquire inflectional classes at a similar pace to monolingual French children.

This hypothesis is supported by the findings of Eichler et al. (2013), Kupisch, Mitrofanova & Westergaard (2022) as well as by the comparison of the findings about monolingual children in Belletti & Guasti (2015), Kauschke (2012) and Prévost (2009) among many others (cf. 3.2 and 3.3).

H2: a) The class feature in German is acquired earlier by children acquiring Italian simultaneously to German than by German monolingual children; b) the class feature in French is acquired simultaneously by French monolingual children and by multilingual children acquiring French and Italian.

Hypothesis H2a) is based on the findings by N. Müller (2024a), Silva Colaço et al. (2024) as well as by the results of Arnaus Gil et al. (2021), since they find an acceleration effect in bilinguals acquiring a less marked system simultaneously to a more marked system concerning the parametric expression of features. As for hypothesis H2b), no acceleration effect can be expected on the basis of the parametric setting for the two languages, since a macroparametric expression of class is identified for Italian and French (cf. 4.5).

In conclusion, the current study intends to evaluate the assumption that children benefit of the simultaneous acquisition of multiple systems “from the language with the simpler or clearer structure to the language with the more complex or ambiguous structure” (Bialystok 2001:68), defining the more complex structure as the one represented on the lower levels of the class-hierarchy reported in Figure 22 in section 4.5, i.e., German.

5.2 The corpora

To test hypotheses H1 and H2, a corpus of longitudinal data from 15 children was analysed. The data were divided into a monolingual set consisting of three children for each language (Italian, German, and French), and a bilingual set including three children for each of the two language combinations (German-Italian and French-Italian). Based on the findings of previous studies, the data were analysed until the age of 3;6 years for all children. As indicated in various works, children are expected to acquire the inflectional system of Italian by the age of 2;6 years (see i.a. Belletti & Guasti 2015). In contrast, monolingual German children typically require more time, with target-deviant utterances still being produced at the age of 4 (cf. i.a. Szagun 2007). French children are anticipated to acquire inflectional features more quickly than German children due to the position of the respective language on the parameter hierarchy illustrated in section 4.5. This hypothesis lacks empirical support in the existing literature, as the acquisition of inflectional classes in French remains insufficiently explored. Moreover, ‘tremendous’ interpersonal variation in French is generally observed when comparing

monolingual children concerning the age of acquisition (cf. Prévost 2009:179). If an acceleration effect is observed in multilingual children, it is anticipated to become evident approximately at the age by which the Italian linguistic system is normally acquired, i.e., around the age of 2;6 years or potentially earlier, and by an MLU value of 2.0. If no acceleration effect is observed, the three inflectional systems are predicted to be acquired by the age of 3;6 years and MLU of 3.5-4.0, with target-deviant DPs and TPs still occurring for the multilingual children acquiring German simultaneously to Italian.

In order to account for the age of acquisition and differences among the three languages, the data were divided into three stages based on the age of the children. The first phase includes data from the first recording until the age of 2;5 years. The initial recording generally took place around the age of 1;10 to 2;0. However, for one French-Italian bilingual child, the first recording was at the age of 2;8, resulting in missing data for the first phase. The second phase comprises the children's utterances from the age of 2;6 to 2;11 years. Most children's data are available for this phase, with exception for two monolingual Italian children, Elisa and Marco. The final phase includes data from the age of 3;0 until the last considered recording, which, for all children, is at the age of 3;6 (for further details about age, number of recordings, and number of utterances, see Table 1).

Language dominance represents a further aspect that is generally expected to play a fundamental role in the language acquisition process of multilingual children. As reported by Paradis (2007) among many others, simultaneous multilingual acquisition is affected by differences in linguistic exposure across the languages being acquired. This often results in the emergence of a dominant language. Moreover, the languages acquired by a multilingual child are associated with different roles, depending on societal and familiar contexts. The language spoken within society is generally defined as the *environmental* or *societal* language (cf. Houwer 2009). A child can grow up multilingual either if the country of birth is a multilingual country, generally leading to the acquisition of all the languages spoken in the environment, or if different languages are spoken in the family. For the present study, the data considered are from children who did not grow up in multilingual countries but rather in Italy, Germany, and France, respectively. Although research has shown that in these European countries almost 15% of the population speaks another language at home (cf. i.a. Adler 2019 for Germany and Soehl

2016 for France), only one language is accepted for official acts and is spoken and understood by the majority of the population. For this reason, multilingual children born in these countries grow up in families with a migration background, which is often manifested by the presence of another language at home for at least one of the parents, generally defined as the heritage language (cf. i.a. Stahnke, Arnaus Gil & Müller 2021). In the literature, children who prefer one language over the other are generally defined unbalanced multilinguals, while children who develop two or more languages at the same pace are described as balanced multilinguals (Bonnesen 2009). Although many children develop the languages similarly from birth, many become unbalanced multilinguals as soon as they start attending kindergarten or school, which is primarily in one language, as well as when they start interacting with the environment without their parents mediating the language of interaction (Baker 2001:89).

Although the quantity of input may differ among the languages acquired by children, various criteria are considered to determine whether a multilingual child develops the different systems as a balanced or unbalanced bilingual or multilingual. N. Müller et al. (2011) provide a comprehensive list of methods used in the literature to measure language dominance, among which the Mean Length of Utterances (MLU) is considered in the present study. The MLU is a fundamental criterion for several reasons. As Brown (1973:53) states, "the MLU is an excellent simple index of grammatical development because almost every new kind of knowledge increases length." According to Brown, comparing the mean length of the utterances produced by children in each recording offers valuable insights into the language development process occurring in both monolingual and multilingual children. However, this method has faced substantial criticism within the literature, for reasons ranging from the difficulty of comparing languages with different morphological structures to the variation in syntactic structures that influence the number of words or morphemes in a sentence (N. Müller et al. 2011:77). To address these challenges, different methods are used to evaluate the MLU during language acquisition: MLU_w (where 'w' stands for words), which counts the number of words in an utterance, and MLU_m (where 'm' stands for morphemes), which considers the number of morphemes uttered. In the present study, MLU_w—henceforth referred to as MLU—is the chosen measure to assess the child's stage of language development. The reason supporting this choice lies in the expression of class in the target systems, since declension and inflectional classes do not always include an 'additional' morpheme. For instance, nouns of class IV in

Italian, e.g. *re* ‘king’, do not inflect for number and are used in the same form in the singular and in the plural. For this reason, the analysis of MLU values satisfies the criteria.

A further relevant measure for the purpose of the present work is the Difference in the Mean Length of Utterance (MLUD). While monolingual and multilingual children acquiring the same language can be compared through the MLU values, the presence of a dominant language can only be determined by comparing the MLU values among the two or more languages in a multilingual child. In particular, language dominance in early bilingual acquisition can be assessed through the difference between the MLU values in each language spoken by the child. In this context, Arencibia Guerra (2008) proposes the following table to establish language balance within multilingual children:

		Limit
balanced	strongly balanced	0 – 0.29 words
	balanced	0.3 – 0.59 words
	balanced with a preference	0.6 – 0.89 words
unbalanced	dominant	0.9 – 1.19 words
	strongly dominant	more than 1.2 words

Figure 23: MLUD in multilingualism adapted from Arencibia-Guerra 2008: 78

The values reported in Figure 23 are fundamental for indicating (un)balanced multilingualism. Another widely used criterion is the Upper Bound, which corresponds to the longest utterance produced in each recording by each child. Crucially, the Upper Bound does not necessarily provide the same information as the MLU. Unbalanced multilingual children with a clear preference for one language over the other—indicated by an MLUD (Difference in Mean Length of Utterance) value exceeding one word—may still produce one or more sentences in each recording that match the longest sentence produced by a balanced child in the same language.

Since the focus of the present work lies on the realization of inflectional classes in the nominal and verbal domain rather than on the ability of producing longer sentence that might include different features, in the present study, language development in monolingual and bilingual children is compared based on the MLU values. Furthermore, the MLUD is crucial for establishing the presence of a dominant language in the six bilingual children.

5.2.1 Monolingual children

The longitudinal data of the monolingual children originate from the CHILDES corpus (MacWhinney 2023) for all children, except for one monolingual German child, Chantal, whose data were collected for the corpus of the *Wuppertaler Bilinguismusgruppe* (WuBiG) at the University of Wuppertal.

The three Italian monolingual children, Camilla, Elisa and Marco, were recorded for different projects. The data pertaining to Camilla is available within the Antelmi corpus, wherein the recordings of the child span from the age of 2;2 to 3;4, with an MLU varying from 2.64 to 4.91. Camilla was born and raised in a monolingual Italian family in Italy. A total of seven recordings were carried out every two to three months (Antelmi 1997). Elisa and Marco's data were collected by Tonelli, Dressler, Vollmann & Marco (1998). Elisa was recorded from 1;10 to 2;1, and Marco from 1;5 to 2;5 years old. Their MLU values developed from 3.28 to 4.39 for Elisa and from 1.13 to 2.73 for Marco. Both children were born and raised in Rome in monolingual Italian families and had almost no contact to any further languages during the period analysed. Overall, 7 recordings are considered for Elisa and 13 for Marco. These three children were chosen as the Italian monolingual group due to their age, MLU values and the context of their acquisition of Italian.

The three German monolingual children were investigated in different corpora. Chantal was recorded by the WuBiG group. The age of the child developed from 1;10 in the first and 3;5 in the last analysed recording, with MLU values increasing from 1.10 to 4.95 over this period. Chantal was born and raised in Germany in a monolingual German family. Her data include 36 recordings. Kerstin and Simone's data come from Miller's corpus (Miller 1979) as reported in the CHILDES corpus. The two monolingual German children were 1;6 and 1;9 years old in the first recording, with MLU values of 1.27 and 1.53, and both were 3;5 years old in the last

recording, with MLUs of 2.88 and 4.84, respectively. Both children were raised in monolingual German families. The number of recordings amounts to 20 and 19 for Kerstin and Simone, respectively.

The data for the three monolingual French children can be found online in the CHILDES corpus. The first monolingual child, Adrien, was recorded by Yamaguchi (2015). Adrien was recorded from 2;0 to 3;5 years old, with MLU values increasing from 1.01 to 3.01 words. Adrien was born in France, he spoke and was spoken to only in French during the recordings, which amount to a number of 23 sessions. The recordings of two further monolingual French children, Madeleine and Theophile, are included in the Paris corpus, developed by Morgenstern (2009). At the time of the first recording, Madeleine was 1;11 years old with an MLU value of 2.43. By the last considered recording, she was 3;5 with an MLU value of 5.63. For this child, 15 recordings are provided in the corpus. Theophile was 1;9 years old with an MLU of 1.31 in the first recording and 3;5 years old with an MLU of 3.92 in the last recording. As for the number of recordings, 25 can be found in the Paris corpus. Both children were born and raised in Paris in monolingual French families.

5.2.2 Bilingual children

The six bilingual children were recorded in two different projects by the *Bilinguismus group* (WuBiG) at the University of Wuppertal³⁶. As discussed earlier, language dominance can play an extremely relevant function in the language development of multilingual children. In order to test whether dominance also affects the acquisition of inflectional classes, the bilingual children were chosen with either a dominance for Italian or for the other language. Moreover,

³⁶ All language data were collected and transcribed in three projects funded by the DFG (German Research Foundation) under the direction of Prof. Dr. Natascha Müller from 1999 to 2013. The data originate from the following projects: (i) 'Frühkindliche Zweisprachigkeit: Italienisch-Deutsch und Französisch-Deutsch im Vergleich (1999–2005)' (project number 5483483); (ii) 'Die Architektur der frühkindlichen bilingualen Sprachfähigkeit: Italienisch-Deutsch und Französisch-Deutsch in Italien, Deutschland und Frankreich im Vergleich (2005–2008)' (project number 5452914); (iii) 'Code-Switching bei bilingual aufwachsenden Kindern in Deutschland, Italien, Frankreich und Spanien: Italienisch-Deutsch, Französisch-Deutsch, Spanisch-Deutsch, Italienisch-Französisch, Italienisch-Spanisch, Französisch-Spanisch (2009–2011)' (project number 107909018). The projects collected linguistic material from different bilingual children over a large period of time thus enabling the development of several longitudinal studies on multilingual language acquisition; see Hauser-Grüdl et al. 2010:2638–2650 and N. Müller et al. 2011, 2015.

the data of a third, balanced child for every language was investigated in order to confirm or dismiss the relevance of language dominance, which was calculated through the MLUD value.

A common aspect for all multilingual children is the language strategy adopted by their families. All children grew up according to the One Parent – One Language (OPOL) strategy, i.e., one of the two parents generally speaks to the child in one language, while the other parent uses the other language. To communicate with each other, the parents generally use the family language which mostly coincides with one of the two languages used by the parents with the child and also with the societal language (cf. i.a. Döpke 1992). A further, common aspect for all multilingual children is the method used to record the data, since thirty minutes sessions per language were carried out to collect data for the two – or more – systems acquired, providing for almost every session two recordings, one in each language. Furthermore, all recordings were conducted in the children's home to maintain a familiar environment and minimize potential stress.

5.2.2.1 German-Italian bilingual children

The data from the three German-Italian bilingual children were chosen based on language dominance and the language combination. The first analysed child, Au_di, grows up in a family with an Italian mother and a German father. Au_di is born and raised in Germany throughout the recording period. The recordings took place from the age of 1;9 until 3;0 and from the age of 3;4 to 4;0. For the present work, 30 recordings per language are considered.

every language are taken into consideration. The MLU and MLUD schema is reported in Figure 25:

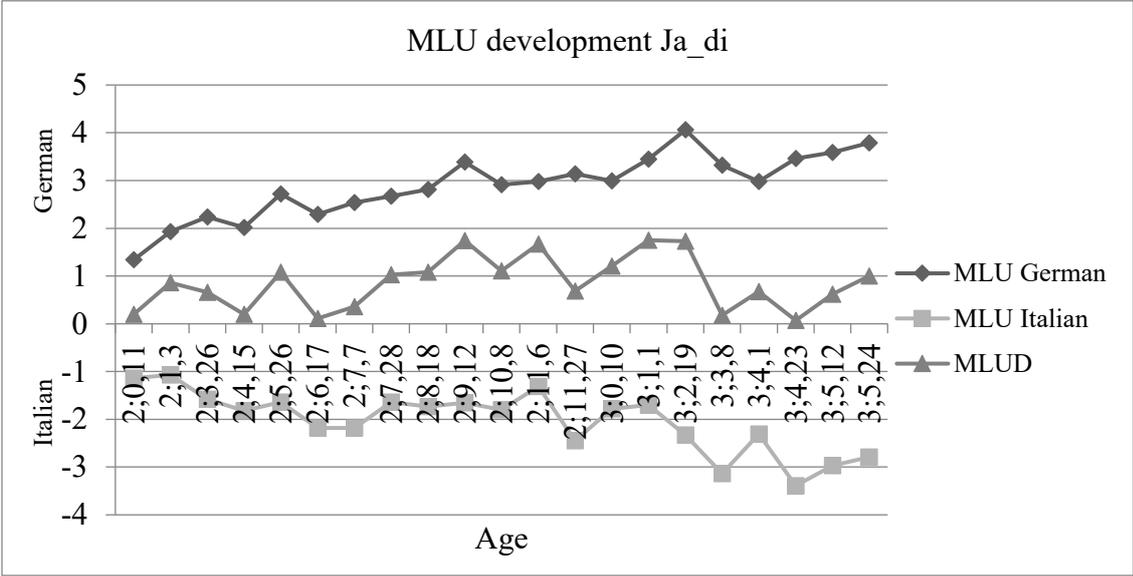


Figure 25: Ja_di language development in age and MLU(D)

Figure 25 illustrates the MLU development of Ja_di, with German plotted on the positive y-axis and Italian on the negative. The data indicates that Ja_di develops German as the dominant language throughout the analysed period. The MLUD line remains consistently above the zero point, signifying a clear imbalance in language development. Based on this, Ja_di can be characterized as an unbalanced bilingual with a strong preference for German.

The third German-Italian child is Ma_di. The child is born and raised in Germany by a bilingual mother and a German father. The recordings took place from the age of 1;6 to 5 years old, totalling 40 recordings for each language until the age of 3;6. Like Ja_di and Au_di, Ma_di is born and raised in Germany throughout the recording period. However, unlike Ja_di and Au_di, Ma_di develops German and Italian as a balanced bilingual.

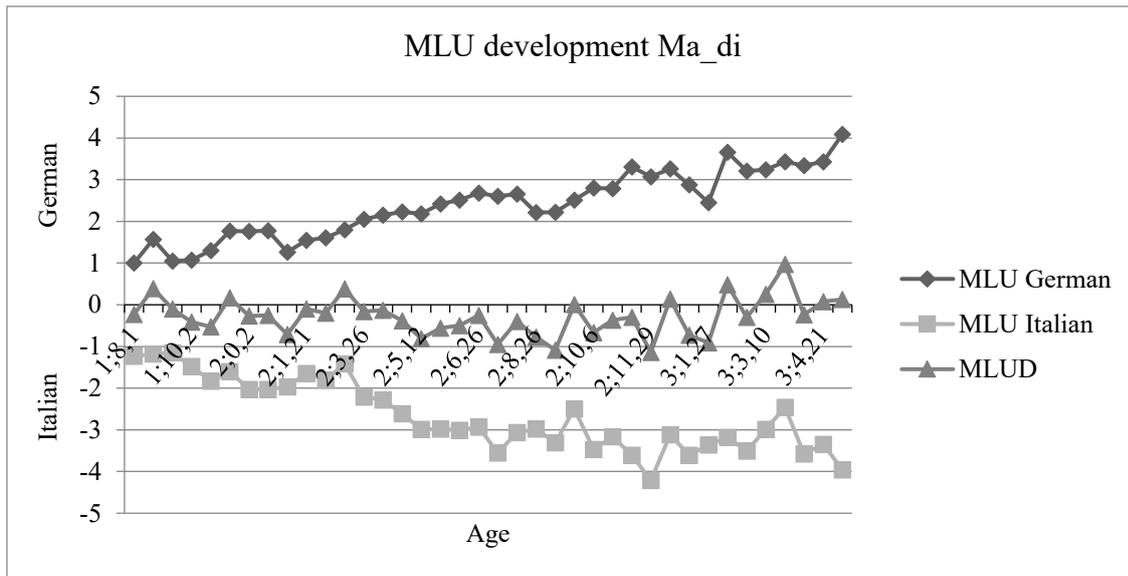


Figure 26: *Ma_di* language development in age and MLU(D)

As illustrated in Figure 26: *Ma_di* language development in age and MLU(D)

, the line representing the MLUD is close to the zero point until the age of 3;6. Both German and Italian develop at a comparable pace throughout the analysed recordings.

5.2.2.2 French-Italian bilingual children

The data about the three French-Italian bilingual children were chosen according to the language dominance and combination for the purpose of the present study, as reported for the previous group as well.

Di_fis is the first child considered in the framework of the present work. Unlike the other children, *Di_fis* grows up in a trilingual family. The child acquires Spanish from the mother and Italian from the father, while he is born and raised in France. For the present study, only the French and Italian recordings from the age of 2;8 to the age of 3;6 are considered, totalling 21 recordings for each language.

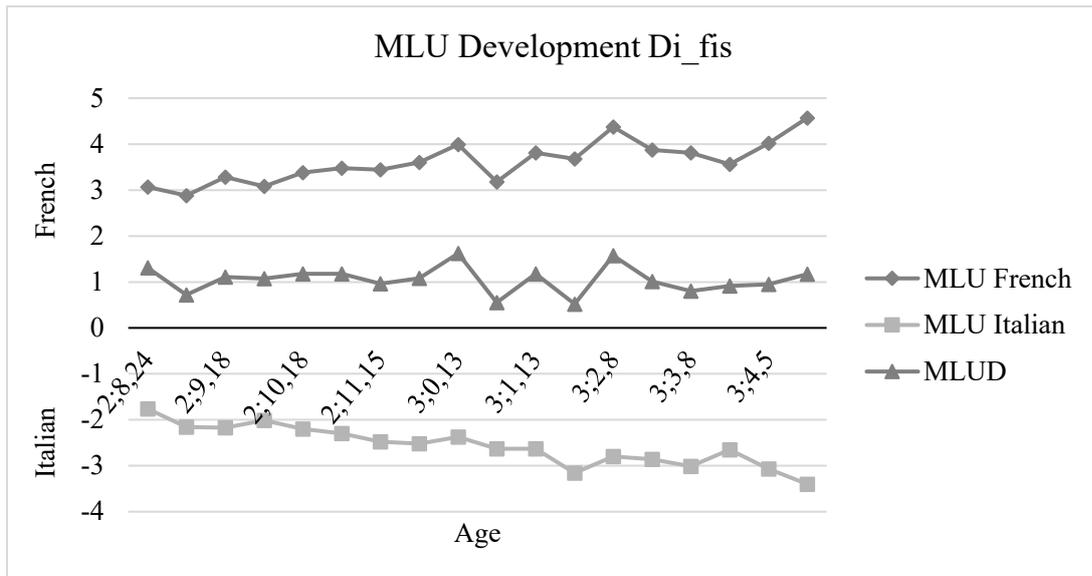


Figure 27: Di_fis language development in age and MLU

In Figure 27, age is plotted on the x-axis, while MLU values are shown on the y-axis. The y-axis is divided into positive and negative regions: MLU values for French are represented by positive values, and MLU values for Italian are represented by negative values. The MLUD is calculated as the difference between the MLU values for French and Italian (MLU French – MLU Italian = MLUD in French-Italian bilinguals). This method of illustration is used for all French-Italian bilingual children. Figure 27 enables to establish that the MLU values in French and Italian are acquired at a different pace, leading to the conclusion that the trilingual child is unbalanced as concerning the MLU development in the two languages. In particular, Di_fis displays a preference for French over Italian.

The next child, Ju_fi, is born and grows up in France. While her mother is French, her father is bilingual French-Italian. The data were recorded from the age of 1;6 to 5;0. For the present study, 30 recordings for each language collected until the age of 3;6 are taken into consideration.

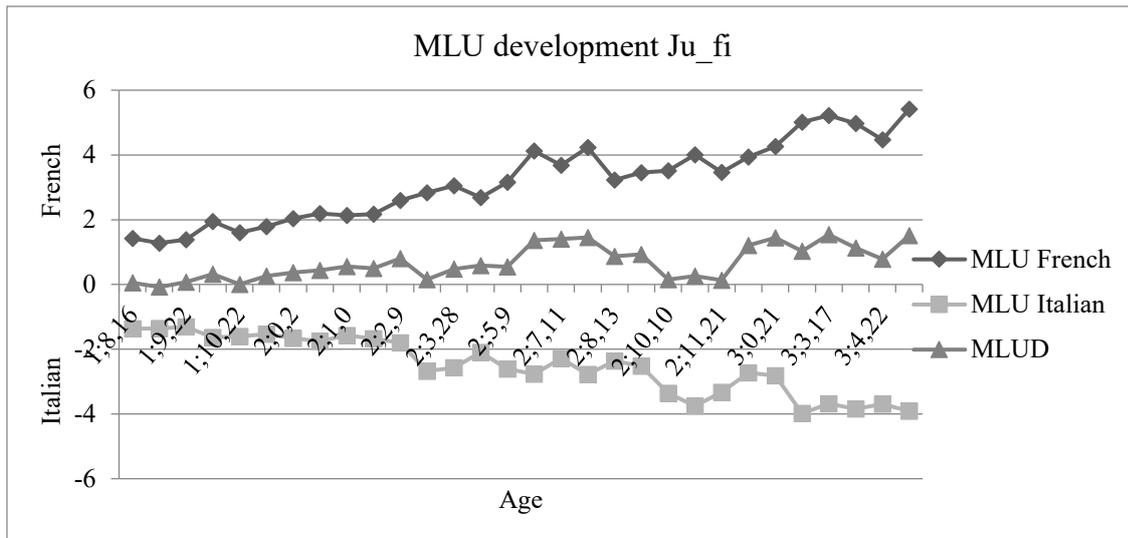


Figure 28: Ju_fi language development in age and MLU(D)

Figure 28 shows that Ju_fi acquires French and Italian as a balanced bilingual until the age of 2;6, as indicated by the MLUD line being very close to the zero point on the y-axis. After this age, Ju_fi shows a dominance in French, which is reflected in the MLUD values shifting to the positive side of the y-axis.

The last French-Italian child is Si_fi, who is born and grows up in Italy from a French mother and an Italian father. With regard to the recordings, the data were collected from the age of 1;6 until 5;0 years old. For the present study, 42 recordings for French and 42 for Italian were analysed.

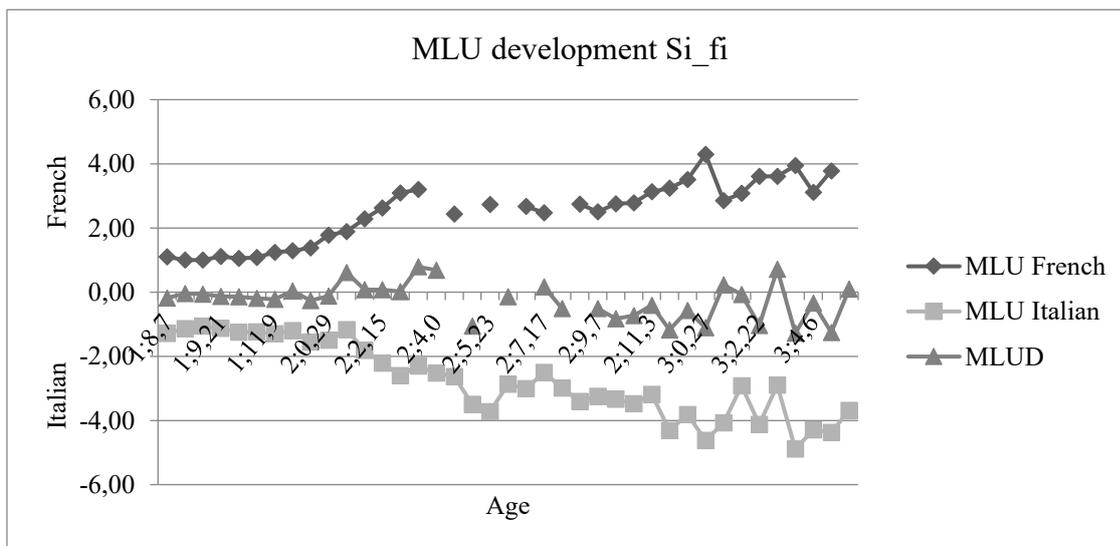


Figure 29: Si_fi language development in age and MLU(D)

As for most children considered so far, Si_fi is a balanced bilingual in French and Italian until the age of 2;6. Afterwards, she develops a preference for Italian. Figure 29 reports the MLUD line with a clear tendency for the negative area, i.e., for Italian.

5.2.2.3 Overview of the data

In order to consider the differences as concerning language dominance in the two bilingual groups, the following graphs illustrate the trends as concerning the MLUD values for every child in the two groups:

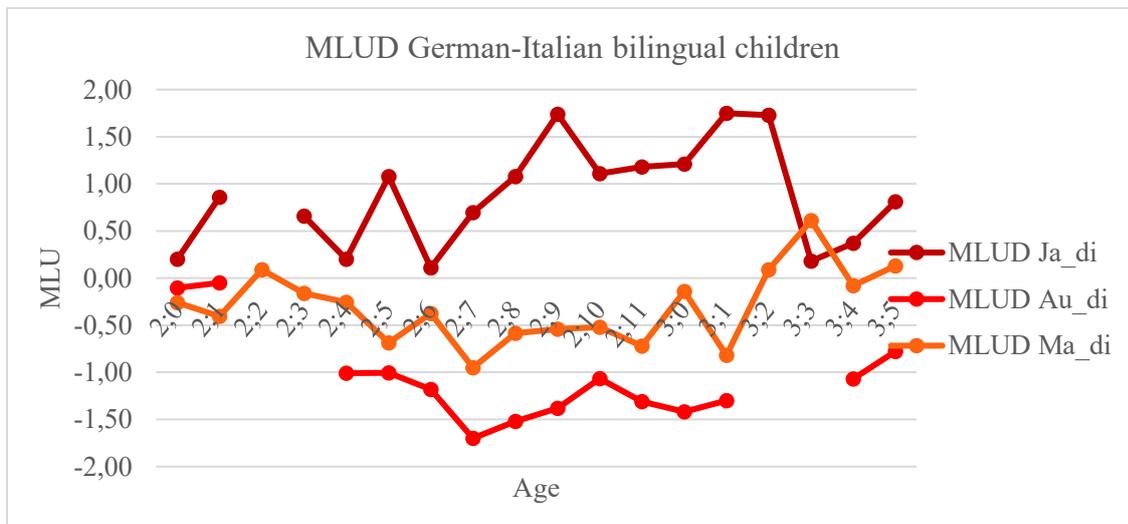


Figure 30: MLUD bilingual German-Italian children

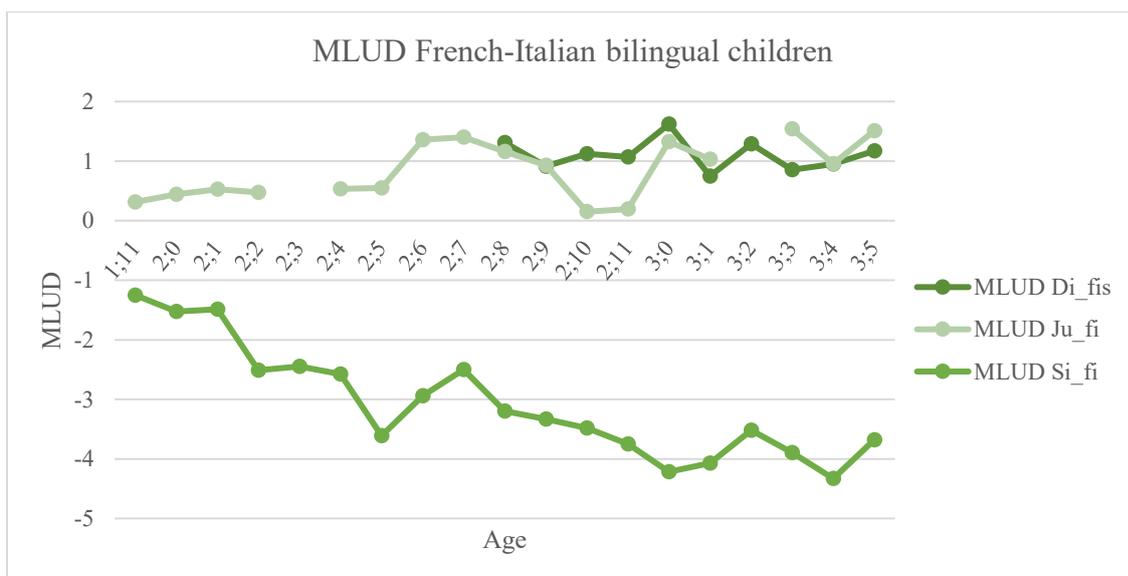


Figure 31: MLUD bilingual French-Italian children

Figure 30 and Figure 31 illustrate the development of MLUD values for German-Italian and French-Italian bilingual children, respectively. As also reported on the graphic, the x-axis in both figures represents the value for age, while the y-axis displays MLUD values. In Figure 30, positive values on the y-axis correspond to a preference for German, while negative values for Italian. In Figure 31, positive values represent a dominance in French and negative values in Italian. Both figures feature one line that predominantly lie in the negative region of the y-axis, indicating a preference for Italian compared to the other language in the dataset, on the first graphic representing the MLUD value by Au_di, while on the second is Si_fi. However, a key distinction between the figures is that Figure 30 includes a line approaching the zero line, representing the MLUD for Ma_di, the balanced German-Italian bilingual child. This line suggests a more balanced bilingual development. In contrast, Figure 31 lacks a similar line near the zero point, indicating that the French-Italian bilingual children exhibit dominance in either French (Ju_fi and Di_fis) or Italian (Si_fi). Additionally, all children depicted in the graphs start with MLUD values close to the zero line, except for Di_fis, whose recordings begin at a higher MLUD value. This initial value reflects a difference in the age at which recordings commenced: Au_di, Ja_di, Ma_di, Ju_fi, and Si_fi were all 2;0 years old or younger at their first recording, whereas Di_fis was already 2;8 years old.

An overview of the most relevant information considered for each child is provided in the following table:

Child	Language	Age span	Number of recordings	Total number of utterances
Camilla	Italian	2;2 – 3;4	7	1103
Elisa	Italian	1;10 – 2;1	6	623
Marco	Italian	1;5 – 2;5	13	2891
Chantal	German	1;10 – 3;5	36	2909
Kerstin	German	1;6 – 3;4	20	1760
Simone	German	1;9 – 3;5	19	2270
Adrien	French	2;0 – 3;5	23	1122
Madeleine	French	1;11 – 3;5	15	2611
Theophile	French	1;10 – 3;5	25	1383
Au_di	Italian	1;9 – 3;5	30 (each)	3249
	German			705
Ja_di	Italian	2;0 – 3;5	22 (each)	1001
	German			1609

Ma_di	Italian	1;6 – 3;5	40 (each)	2258
	German			960
Di_fis	Italian	2;8 – 3;5	19 (each)	515
	French			644
Ju_fi	Italian	1;8 – 3;5	30 (each)	1049
	French			2382
Si_fi	Italian	1;10 – 3;5	42 (each)	659
	French			979

Table 1: Overview of the data

Overall, approximately 33,000 utterances were considered for the analysis. As reported in Table 1, there are significant differences in the volume of data analysed for each child. For instance, Elisa’s dataset consists of six recordings between the ages of 1;10 and 2;1, clearly differing from Ma_di’s dataset, which includes two recording sessions per month, totalling 35 recordings in Italian over a period of 1 year and 7 months (from ages 1;10 to 3;5). Additionally, each child realizes a different number of nouns, adjectives, and verbs. For example, Ju_fi predominantly produces nouns up to age 2;5, with about 81% of all utterances consisting solely of DPs, whereas 66% of Adrien’s utterances during the same age period are primarily TPs. The data investigation involves qualitative data analysis through the examination of specific examples from the children’s language production in section 1696.1 and quantitative analysis using statistical tools such as R and R-Studio³⁸ in sections 6.2 and 6.3.

5.3 Methodology

The present section focuses, first, on the comparability of the data concerning the measures used for the analysis, specifically the MLU (or MLUD) values in relation to the age of the children, in section 5.3.1. This comparison is crucial to determine whether monolingual and bilingual children exhibit comparable language development and, consequently, acquisition of class features. To facilitate this comparison, the MLU values for each child in each language are represented in graphs, allowing for a qualitative assessment of the data. Additionally, differences between the groups — monolingual and bilingual — as well as developmental changes over time in MLU values are examined through statistical analysis. This approach will

³⁸ RStudio Team (2020). RStudio: Integrated Development for R. RStudio, PBC, Boston, MA URL <http://www.rstudio.com/>.

help determine whether the observed differences in language development are statistically significant and, in the following chapter, whether they relate to the acquisition of the class feature. Furthermore, the methods used to analyse the data are presented in 5.3.2 with a particular focus on the operational definition of target-like and target-deviant utterance as well as an overview of all data considered and omitted from the analysis.

5.3.1 Comparison of MLU values

As discussed in 5.2, the MLU is one of the most widely used and relevant metrics for assessing language development in both monolingual and multilingual children. According to Clahsen, Penke & Parodi (1993) as well as Brown (1973) among others, comparing children based on MLU yields more reliable results than using age alone. While monolingual and multilingual peers generally develop their languages at a comparable pace, age-based comparisons can sometimes lead to inconsistent results. Most studies report developmental stages based on the age of the children. To align with this common practice and ensure the reliability of the findings, the MLU development is compared according to the children's age in the following analysis. This approach will provide consistent and comparable results regarding language development.

In the following graph, the MLU values for Italian are displayed for three groups: monolingual Italian children (in blue), German-Italian bilingual children (in red), and French-Italian bilingual children (in green).

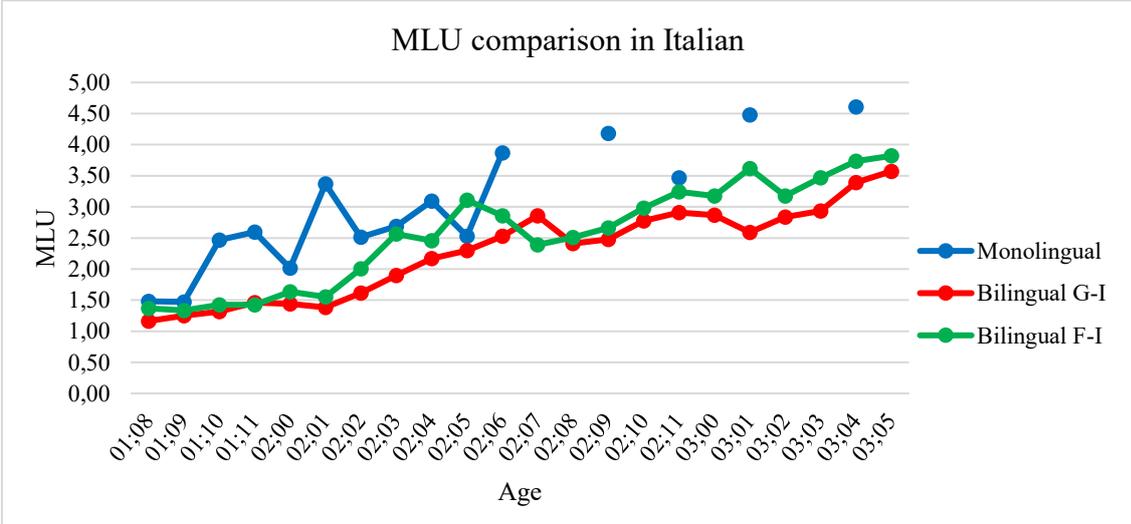


Figure 32: Comparison of MLU values in Italian

At first glance, the average MLU value for monolingual Italian children appears to be higher compared to those of the two bilingual groups. A notable trend is that the two lines plotting the bilingual data develop very similar throughout the graph. To determine whether the differences observed in the graph are statistically significant and to ensure that the results are not skewed due to sample comparability issues, statistical tests were conducted. Initially, a t-test for normally distributed data (with a p-value from the Shapiro-Wilk test > 0.1) was considered. However, the t-test only compares the mean MLU values between groups and does not account for the development of MLU values over time.

To address this, the data were grouped into three time periods:

- From ages 1;10 to 2;5
- From ages 2;6 to 2;11
- From ages 3;0 to 3;6

It should be noted that Elisa and Marco, from the Tonelli corpus, were only recorded until age 2;6, resulting in missing data for the second and third time periods. Similarly, Di_fis was first recorded starting at the age of 2;8, leading to incomplete data for the earlier periods. To account for these issues and to analyse the development of MLU values over time, a linear mixed-effects model was employed using R. This model considers both the MLU values and the groups, and provides estimated values for the missing observations based on the available data.

MLU ~ time + bilingualism + (1 child)					
Variable	Estimates	Std. Error	df	t-value	p-value
Intercept	1.2867	0.8102	18.1225	1.588	> 0.05
Time	0.3417	0.2716	17.0000	1.258	> 0.05
Bilingual	0.5439	0.7363	7.0000	0.739	> 0.05

Table 2: Linear mixed-effect model for comparison of MLU values in Italian

The linear mixed-effects model was designed to examine the influence of various factors on the MLU values for Italian. In this model, MLU values serve as the dependent variable, while the independent variables include time periods, bilingual status, and random effects for each child. The model aims to analyse MLU data with repeated measures over time, taking into account the effects of bilingual status and individual differences among children.

The analysis revealed no significant differences between the monolingual and bilingual groups concerning the development of MLU values. This finding indicates that the groups are comparable in terms of language development over the analysed period, from ages 1;10 to 3;6. Consequently, this allows for a valid comparison of language development and, for the purposes of this study, the acquisition of class features across the different groups.

Proceeding with the comparison of the MLU values between monolingual and bilingual children, the second language that was taken into consideration was German. In this case, only the monolingual German and the German-Italian bilingual groups were compared.

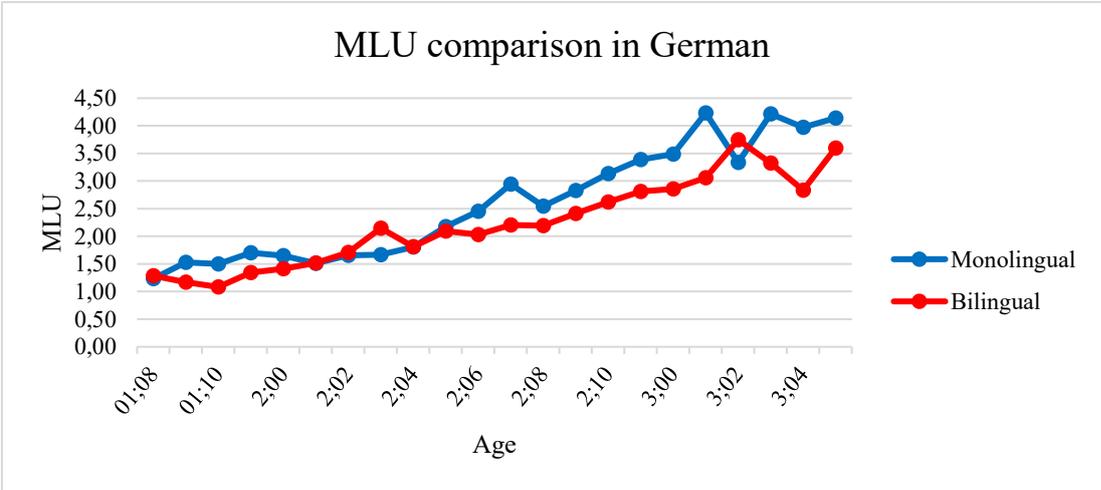


Figure 33: Comparison of MLU values in German

Figure 33 shows the average MLU values in German for the monolingual (in blue) and bilingual (in red) groups. The x-axis represents the age value in years and months, while the y-axis displays the development of the MLU values. The graph illustrates a similar and intricate development of MLU values across both groups. The MLU values for the bilingual children are slightly lower than the ones of the monolinguals starting with an age of 2;6 years old. This difference, however, consists of less than 0.5 words.

To ensure that the children in both groups are comparable in terms of language development, statistical tests were conducted. A linear mixed-effects model was used to analyse the development of the MLU values for German, similar to the approach used for the Italian data. Unlike the Italian dataset, no data are missing for the German sample. However, the number of children tested is smaller than in the Italian group.

MLU ~ time + bilingualism + (1 child)					
Variable	Estimates	Std. Error	df	t-value	p-value
Intercept	1.00222	0.33554	7.15963	2.987	< 0.05 *
Time	0.83500	0.08727	11.000	9.568	< 0.001 ***
Bilingual	-0.30222	0.40528	4.00000	-0.746	> 0.01

Table 3: Linear mixed-effect model for comparison of MLU values in German

The linear mixed-effects model was applied to the MLU values for German, i.e., the dependent variable. The model assessed the impact of several dependent variables, including time periods, bilingual status, and random effects for each child. Similar to the Italian model, no significant differences between the monolingual and bilingual groups were found ($p > 0.1$). However, unlike the Italian model, the MLU for German shows a significant increase over time ($p < 0.001$). This indicates that, while the MLU values for German significantly improve with age, there are no significant differences between bilingual and monolingual children in terms of their MLU development. Therefore, the two groups are comparable regarding the acquisition of the class feature in German.

A final comparison of MLU values among the monolingual French and bilingual French-Italian children is presented. The data from the German-Italian bilingual children are excluded from this comparison.

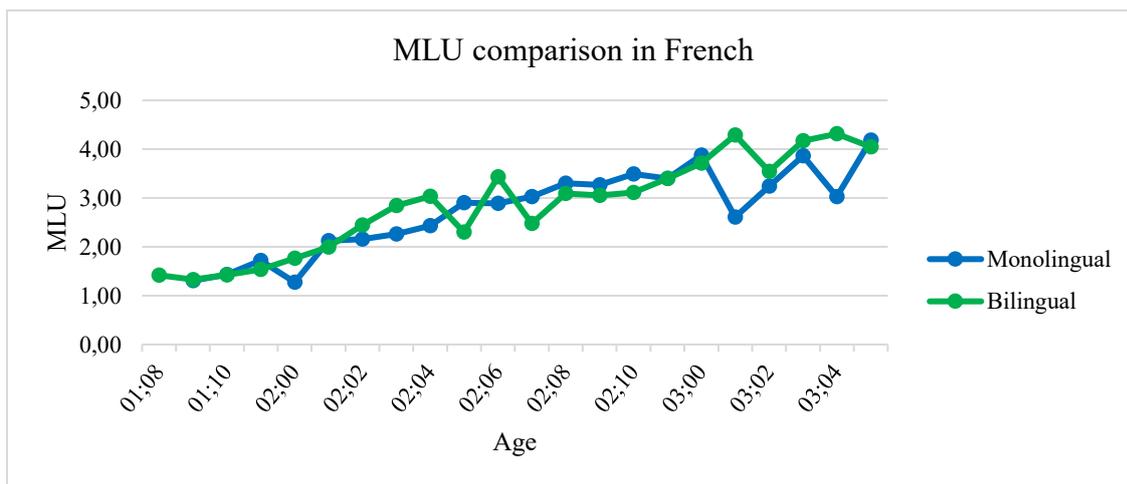


Figure 34: Comparison of MLU values in French

Figure 34 illustrates MLU values for French, with the average value for monolingual children depicted in blue and French-Italian bilingual children in green. As for the previous figures, the x-axis represents the value for age, while the y-axis displays the MLU values. In contrast to the Italian (Figure 32) and German (Figure 33) graphs, Figure 34 reveals distinct patterns for French. The monolingual blue line is intricated with the bilingual green line throughout the recording period. Moreover, the two lines increase consistently in the graphic.

To quantitatively assess these differences, a linear mixed-effect model was applied to compare the MLU values between the groups. As with previous analyses, a t-test was not used due to missing data for certain time periods (e.g., Di_fis) and the need for a comprehensive level of comparison.

	MLU ~ time + bilingualism + (1 child)				
Variable	Estimates	Std. Error	df	t-value	p-value
Intercept	0.8450	0.6463	6.7878	1.308	> 0.05
Time	1.1092	0.1606	11.0000	6.908	< 0.001 ***
Bilingual	-0.1811	0.7931	4.0000	-0.228	> 0.05

Table 4: Linear mixed-effect model for comparison of MLU values in French

The results of the linear mixed-effect model report a similar situation to the models presented in Table 2 for Italian and Table 3 for German. While the MLU values of all children significantly increase over time ($p < 0,001$), there are no (significant) differences between the monolingual and bilingual groups, leading to the conclusion that, as for the preceding groups, monolingual and bilingual children can be compared as concerning the acquisition of French.

Concluding, the MLU values of the monolingual and bilingual children present differences which, however, are not statistically significant. The MLU values of the children in all groups increase significantly over time, as expected for Italian, German and French.

5.3.2 Methods

After presenting the sources of the data analysed in this study, further details regarding the methods for observation and analysis, both qualitative and quantitative, have yet to be outlined. The present section addresses the categorization of the data and the identification of target-deviant and target-like utterances with regard to inflectional classes.

For the purposes of this study, utterances produced by the children between the age of 1;10 and 3;6 were analysed. The analysis involves several key steps, starting from the data filtering and categorization. From the total number of utterances, the first step was to delete those which could not be used for the present work and, accordingly, repetitions and imitations of the input as well as songs and poems learned by rote were excluded. Moreover, utterances realized by the multilingual children in which two or more languages are mixed, i.e. intra-sentential code-switching, were not considered, as in the following example:

(23) Ju_fi: *c'est nonno* 'this is grandfather'

A further group of utterances that were not considered includes sentences made out of parts of speech that, in the analysed languages, do not inflect according to inflectional classes, as in *ich auch, anche io* 'me too'. Furthermore, expressions and utterances that are often considered as "rote learned" (cf. i.a. Plunkett & Marchman 1993) were excluded as well. Examples are sentences that include only one particle such as 'yes', 'no', 'maybe', etc. in the respective languages as well as vocative utterances and, generally, proper names.

All utterances in which nouns, adjectives and verbs in all tenses and forms occur in the singular and / or the plural form were analysed. As discussed in 4, the number feature directly correlates with the class feature in Italian, German and French. Following this assumption, a noun – for instance – must be observed in the singular and plural forms in order to ensure that it is inflected according to the inflectional class it belongs to. As outlined in 3, there is a general tendency in the child language to use singular forms more frequently than plural forms. To account for this, nouns, adjectives, and verbs were considered target-like if they demonstrated correct inflection in either singular or plural form. This approach ensured that the analysis did not overlook correct usage due to a preference for singular forms. This method was chosen to address frequent corrections and repetitions during recordings, as illustrated in the following example:

(24) Chantal: *viele Mäusen* 'many *mouses*'
 Interaction Partner (IP): *hast du viele Mäuse gesehen?* 'have you seen many mice?'
 Chantal: *ja Mäuse* 'yes mice'

Considering the example in (24), the noun *Maus* ‘mouse’ was counted twice, the first time as target-deviant and the second time as target-like. Continuous repetitions of one word or one sentence without pauses or interruptions, however, were counted as only one instance. A similar case is reported in (25). In this example, however, the second occurrence of the noun *benda* ‘bandage’ was considered as an imitation and, for this reason, it was only counted as occurring once, namely target-deviant:

- | | |
|------------------------------|--------------------|
| (25) Elisa: <i>una bende</i> | ‘a bandage’ |
| IP: <i>si dice una benda</i> | ‘we say a bandage’ |
| Elisa: <i>una benda</i> | ‘a bandage’ |

In this case, the child was corrected and, as also reported in the description of the transcribed data, it is to be considered as an imitation of the utterance realized by the interaction partner.

For every noun realized by every child, the determiner used was classified as either missing (0) or reported. In the first recordings for every child, many determiners are missing or used in a truncated form, as in the following example:

- | | |
|--|--------------|
| (26) Ju_fi: <i>*e lapin [le lapin]</i> | ‘the rabbit’ |
|--|--------------|

In (26), the target-like determiner is *le* ‘the’. Ju_fi, however, realises only the vocal part of the determiner /ə/, omitting the consonant *l*. Although determiners were not considered within the present work, the combination of determiner and noun provides relevant insights as concerning the declension class, since class and gender are, for some classes, in a one-to-one relationship. Furthermore, the determiner used in the input was considered for the bilingual children, in order to further avoid the consideration of imitations or repetitions³⁹. Beyond the analysis of determiners, a separate investigation of tokens was undertaken, concentrating on roots and affixes to furnish a thorough analysis of the morphological function of declension classes. Information on noun gender in the adult language and the gender marked on adjectives and/or determiners by the child was documented. This information was also provided for multilingual children to eliminate influence from the gender value of the other system, e.g., the masculine

³⁹ This point was suggested during the presentation of the first part of the results at the MultiGender Conference in Tjøme, Norway, in May 2022.

gender of the noun *der Stuhl* ‘chair’ in German might influence the gender value in the Italian of bilingual German-Italian children, since in Italian the corresponding noun is feminine, i.e., *la sedia*. The data with regard to number (singular or plural), reference (singular or plural), and inflectional classes were reported separately for each item.

For German, it is also essential to consider the case system in relation to noun inflection. As outlined in 3.1.1.4, German nouns are inflected according to case in specific forms, i.e., the genitive singular for masculine and neuter nouns and the dative form for all plural nouns in most, but not all, inflectional classes. Consequently, if a noun is not inflected according to the case system where required, it is classified as exhibiting target-deviant inflection, as illustrated in the following example:

(27) Simone: **Kuhs Milch* [*Kuhmilch*] ‘cow’s milk’

In (27), the feminine noun *Kuh* ‘cow’ in German belongs to the VII declension class and, accordingly, does not add a *-s* in the genitive form. The child, however, inflects the noun as belonging to class II and, accordingly, inflects the noun for the genitive. Even though gender (feminine) and number (singular) can be defined as target-like, the genitive inflection is target-deviant.

As for the adjectives, the tokens were classified according to their realizations. Grammatical information about gender, number and class were considered. Target-deviant adjectives were classified as being either inflected for the wrong inflectional class, as in (28), or inflected according to the wrong gender and / or number, (29).

(28) Kerstin: **große Löwe* [*großer Löwe*] ‘big lion’

(29) Ja_di: **bella case* [*belle case*] ‘beautiful houses’

Even in this case, case inflection is extremely important in German. Since case, gender and number are expressed differently in the three inflectional classes for German adjectives, depending on the presence or absence as well as the type of determiner, the case value was partially taken into consideration for adjectives. For the results in the following chapter,

however, the columns containing information about the inflectional classes were particularly relevant.

A similar approach was applied to the analysis of verbs in Italian, German, and French. Information regarding tokens, reference, and inflection was categorized into separate columns. Instances of target-deviant inflection were classified into one of three common error groups: person and reference errors, as exemplified in (30), target-deviant inflectional class, as illustrated in (31), and other errors, which predominantly include the use of the infinitive form instead of the appropriate inflected form, as shown in (32).

- | | |
|--|--------------------|
| (30) Si_fi: * <i>mangia</i> [<i>mangio</i>] | ‘(he/she/it) eats’ |
| (31) Au_di: * <i>du esst</i> [<i>du isst</i>] | ‘you eat’ |
| (32) Madeleine: * <i>je manger</i> [<i>je mange</i>] | ‘I eat’ |

In (30), the Italian verb *mangiare* 'to eat' is inflected with a target-deviant person value, namely the third-person singular, while the intended reference is the speaker, who should be represented by the first-person singular inflection on the verb. In (31), the German verb *essen* 'to eat' shows target-deviant inflection as it follows the rules of the weak inflectional class, rather than the expected strong verb form. This is also evident from the incorrect past participle form *gegesst* 'eaten' which also occurs in the data. As illustrated in (32) and other instances involving root infinitives in French and German⁴⁰, only the inflectional class of the verb was considered, regardless of the use of the infinitive form.

A complex situation was represented by auxiliaries, modal and copula verbs as well as further forms that are generally reported to be ‘rote learned’ by the children (cf. Plunkett & Marchman 1993). In particular, the Italian forms *è*, *c’è* and *ho* or *ha*, German *ist*, *habe* und *hat* and French *c’est* and *il y a* are often considered rote-learned forms (cf. Bittner 2003:73, Prévost 2009:28, Belletti & Guasti 2015:22). Examples are (Ma_di, 1;11) **c’è allollo* [*scoiattolo*] ‘there

⁴⁰ Root infinitives were found in the data of neither monolingual nor bilingual children in Italian. Belletti & Guasti (2015:14) report that the absence of root infinitives in Italian has been attributed to either its null subject nature, where pronominal AgrSP prevents constraint violations, or verb movement properties, since Italian verbs, unlike those in languages with root infinitives such as German and French, cannot remain in the VP due to obligatory raising to higher functional layers. Belletti & Guasti propose to consider imperatives in Italian as displaying the same properties generally found in root infinitives.

is (a) squirrel’ and (Ju_fi, 2;1) **il y a des [bule]* ‘there are some meat balls’. Furthermore, modal verbs occur either as lexical verbs as in (Si_fi, 2;5) *io vojo il mio coltello* ‘I want my knife’ or as part of compound verbs with an infinitive form, e.g., (Di_fis, 3;2) *je veux dormir avec ces chaussons* ‘I want to sleep with these slippers on’. In Italian, both copula and modal verbs generally belong to class II, i.e., the *-ere* inflectional class which includes many irregular verbs. In German, the auxiliary and copula verb *sein* belongs to the strong class due to the stem inflection. Modal verbs as well as the verb *haben* are generally classified in the mixed inflectional class (cf. Bittner 2002:54). In French, the verb *être* and *avoir* are also irregular verbs which, however, belong to different classes if either the infinitive ending or the number of stems is considered. For this reason, the distribution of verbs into inflectional classes in each language for every child was carried out two times: in a first analysis, all verbs were considered; in a second analysis, copula verbs and further rote-learned forms were excluded from the investigation. The following table resume all data included and excluded from the analysis:

Category	Included	Excluded
Nouns	<ul style="list-style-type: none"> - bare nouns, e.g., (Ju_fi) <i>cheval</i> - DPs, e.g., (Elisa) <i>nel cestino</i> - DPs with adjectives, e.g., (Chantal) <i>ein kleines baby</i> 	<ul style="list-style-type: none"> - unclear DPs, e.g., (Si_fi) <i>ate</i> for <i>anatre</i> - imitations, e.g., (25) - code-mixing, e.g., (23)
Adjectives	<ul style="list-style-type: none"> - bare adjectives, e.g., (Marco) <i>grande</i> - adjectives in prenominal position, e.g., (Simone) <i>andere Milch</i> - adjectives in postnominal position, e.g. (Di_fis) <i>bateau rouge</i> - adjectives in predicate position in Italian and French, e.g., (Madeleine) <i>il était petit</i> 	<ul style="list-style-type: none"> - adjectives in predicate position in German, e.g., (Kerstin) <i>das ist süß</i> - unclear adjectives, e.g., (Au_di) <i>evite</i> for <i>veloce</i> - imitations, e.g., (25) - code-mixing, e.g., (23)
Verbs	<ul style="list-style-type: none"> - lexical verbs of all kinds, e.g., (Chantal) <i>ich Jogurt gern esse</i> - auxiliary verbs in compound forms, e.g., (Theophile) <i>il est démarré au port</i> - modal verbs in compound forms, e.g., (Di_fis) <i>je veux dormir avec cela</i> - modal verbs with lexical functions, e.g., (Ja_di) <i>vojo plastichina</i> - past participle forms, e.g., (Camilla) <i>pettinato</i> - copula verbs, e.g., (Au_di) 	<ul style="list-style-type: none"> - unclear verbs, e.g., (Ma_di) <i>sise</i> for <i>sitzen</i> - imitations, e.g., (25) - code-mixing, e.g., (23)

Table 5: Overview of utterances included and excluded from the analysis

Summarizing, monolingual and bilingual data were compared, first, for the overall speech production data and, then, on the basis of MLU and age values. The data preparation involved the exclusion of utterances not suitable for the study, such as one-word utterances or sentences containing only parts of speech not inflected for inflectional classes. Only utterances including at least one noun, verb, determiner, or adjective were counted and included in the overall dataset for each child.

6 Results

This chapter presents the results of the qualitative and quantitative data analyses from the monolingual and bilingual groups. To provide a comprehensive overview of the data, the chapter is divided into three parts. Initially, the data of monolingual and bilingual children concerning the three languages and the two language combinations are presented. The second part outlines the comparison of monolinguals and bilinguals from both qualitative and quantitative perspectives, focusing on each language and category analysed in this study. In the third section, a comparison of the data based on time and MLU is included in order to ensure consideration of relevant factors that affect first language acquisition.

6.1 Qualitative and quantitative analysis

The qualitative analysis of the data includes the examination of examples of target-deviant utterances concerning the inflection of the DP and TP. The purpose of selecting a qualitative method is rooted in its capacity to offer a comprehensive analysis of the data. As Baralt (2012:223) notes, this method involves "a process of delineating the nature of a phenomenon by continuous interaction with and re-reading of the data," which reveals "a much more detailed and complex picture about the human experience of language learning that a mathematical procedure would not be able to reveal." Hence, qualitative data analysis allows for the consideration of language acquisition and production aspects that might be overlooked in quantitative analysis.

The quantitative investigation was conducted using spreadsheets and graphs, alongside the development of various models and statistical data comparisons in R-Studio. The need for quantitative analysis became evident early on, as even a preliminary examination of the children's utterances indicated that, while target-deviant and target-like utterances occur in the monolingual and bilingual groups similarly from a qualitative perspective (as illustrated in examples (33) to (82)), quantitative analysis provided a means to confirm the presence of clear differences within and among groups.

6.1.1 Monolingual children

From a qualitative point of view, the data of the monolingual Italian children generally confirm the findings reported in studies by Belletti & Guasti (2015), Chini (1995) and Guasti (1993), among others. These studies indicate that Italian monolingual children rarely produce target-deviant inflected utterances. In contrast, the monolingual German children's data contain several target-deviant utterances. This observation aligns with the results of studies on the acquisition of other features such as gender (i.a. Walter et al. 2021.a. Szagun 2001), and TPs features (i.a. Kauschke 2012) in monolingual children. The findings support the hypothesis that the German inflectional system is more marked than the Italian system. Similar results are observed for monolingual French children. Several studies have shown that children acquiring French typically go through several phases, which can vary in duration for each child. The data confirm the presence of significant interpersonal differences among the children. Nevertheless, all French children produce target-deviant utterances in the investigated inflectional parts of speech, i.e., nouns, adjectives, and verbs. The qualitative data provide crucial insights into the French system concerning the first language acquisition process.

As outlined in the following sections, the target-deviant utterances throughout all the data of the monolingual children across the three languages are comparably similar. In particular, the inflection of DPs and TPs in classes of nouns, adjectives, and verbs can be compared among the Italian, German, and French data. Crucially, the examples reported in each section allow for the analysis of the role of the class feature in the acquisition process.

6.1.1.1 Monolingual Italian children

6.1.1.1.1 Camilla

Camilla, a child from the Antelmi corpus (Antelmi 1997), had her data collected over seven recordings from the age of 2;2 to 3;4 years old. She predominantly produced target-like utterances, although these included some phonological and spelling deviations. Overall, Camilla produced 1,103 utterances. However, only 1,087 of these were considered for further analysis, as 14 utterances were not clearly uttered, recorded, or transcribed, e.g., the sentence (1;10) **eo tdata a zardia Azelio [ero andata ai giardini Azelio]* ‘I went to the Azelio park’, for which the meaning can be extracted from the context even though the utterance is produced

ambiguously. Among the total number of sentences, Camilla produced 440 nouns, 173 adjectives, and 474 verbs.

As for target-deviant DPs and TPs, the total number of occurrences amounts to 42 utterances, which accounts for about 4% of the analysed utterances. Among these, 27 nouns, adjectives, and verbs can be classified as displaying target-deviant inflectional classes. The remaining 15 utterances, which do not include errors in inflectional classes, are target-deviant inflected verbs, which are either inflected for the wrong person, e.g., **io entra [io entro]* ‘I go(es) inside,’ or are morpho-phonologically deviant, as in **io leggio [io leggo]* ‘I read.’ All remaining nouns, adjectives, and verbs displaying target-deviant inflection can be analysed as being inflected according to a different inflectional class than the one expected in the target language, as exemplified in (33), (34), and (35).

Considering the distribution of nouns in declension classes, class II represents the most frequent class in the Camilla’s utterances with 183 (42%) nouns, as the noun *porta* in the utterance (2;6) *entra dalla porta* ‘(he) enters through the door’, followed by class I with 167 (38%) nouns, e.g., (2;11) *tu tieni il bambino* ‘you keep the baby’. Significantly fewer nouns appear in class III (53 items, 12%), class IV (26 items, 6%), class VII (8 items, 2%), and class VI (3 items, 1%)⁴¹. Crucially, the child does not produce any nouns of the type *poeta – poeti* ‘poet – poets’, or *ala – ali* ‘wing – wings’ i.e., nouns of class V. The frequency of nouns in each declension class is illustrated in Figure 35.

⁴¹ An example for class III nouns can be found in the utterance (2;11) *il bastone è rimasto al punto verde* ‘the stick stayed behind at the green point’. Example of nouns from classes IV, VI, and VII are reported in the following utterances respectively: (3;4) *io c’ho anche un bar* ‘I also have a bar’, (3;4) *mi lavo anche il dito* ‘I also wash my finger’, and (3;1) *ci sporchiamo tutte le mani* ‘we make our hands dirty’.

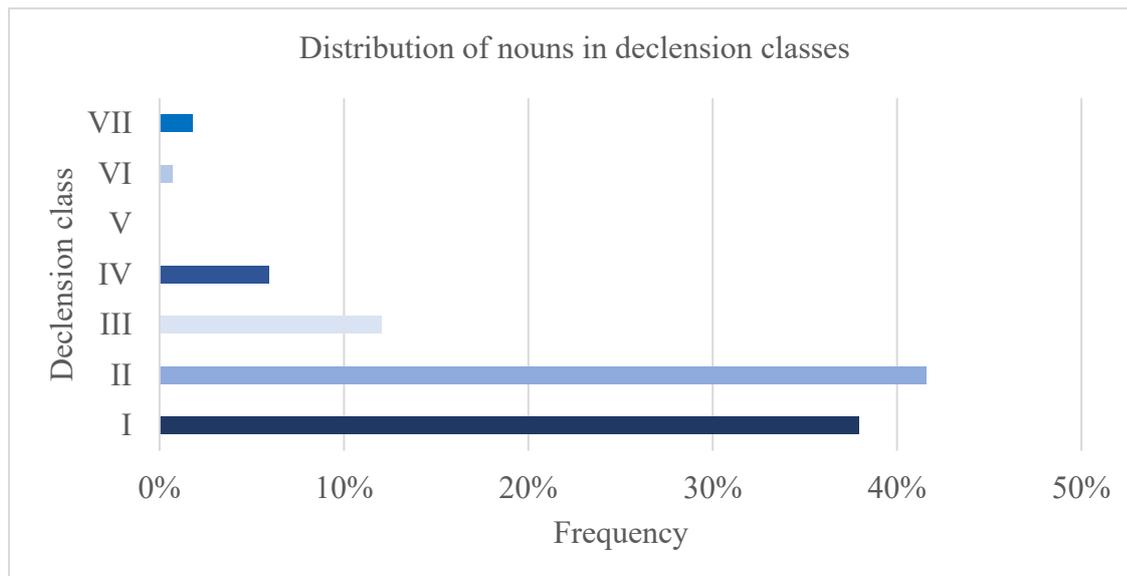


Figure 35: Distribution of nouns in declension classes in Camilla's data.

Although the total number of target-deviant DPs involving nouns is relatively low (10 items, accounting for 2% of the overall data), the distribution of declension class errors in the target system reveals relevant insights. Class I and II show the expected outcome, as they occur most frequently in Camilla's data, and accordingly, include a higher number of target-deviant DPs compared to less frequent classes, totalling 3 and 5 declension class errors respectively⁴². Class VI nouns of the type reported in (33) are produced target-deviantly as frequently as those from Class III, both displaying only 1 target-deviant noun. Overall, Camilla's data display a rather rare production of target-deviant utterances. An example of the errors found in her data is provided in (1) for class VI:

(33) (2;6) **con le dite* [*con le dita*] 'with the fingers'

The noun *dito* – *dita* 'finger – fingers', which in Italian generally belongs to the VI declension class, is inflected according to class II. As a result, the DP was counted as target-deviant in class IV. The target-deviant noun of class III is reported in the following utterance: (2;6) **non avevo voci* [*voce*] 'I had no say', in which the feminine noun *voce* 'voice' is target-deviantly inflected.

⁴² Examples for class II errors are the utterances (2;6) **tanta musichi* [*tanta musica*] 'much music' and (2;4) *la oche* [*l'oca*] 'the duck', while class I errors include utterances of the kind (3;4) **si farà un buca* [*si farà un buco*] 'a hole will be done'.

Similarly to nouns, adjectives in Camilla's data are unevenly distributed across the four⁴³ inflectional classes. Class I and II adjectives occur most frequently, including 156 (90%) out of the total 173 adjectives recorded⁴⁴. Adjectives from class III and IV are infrequent, appearing only 17 times (10%) in the count of tokens⁴⁵. This distribution pattern is also evident in the target-deviant adjectives, which occur in 5 utterances. Target-deviant errors of class III adjectives of the kind reported in (34) occur in only one utterance, while class I and class II errors occur in 2 utterances respectively, reflecting the overall distribution of adjectives in Camilla's data.

(34) (2;6) **sono grande* [*sono grandi*] '(they) are big'

In (34), the adjective *grande* 'big', which follows the class III inflectional pattern in Italian, is inflected by Camilla according to the rules of class II. Since *grande* appears with a target-deviant inflection in the plural form, it is debatable whether the inflection of class II or class IV (the invariable class, as in *viola* 'violet' or *blu* 'blue') is being applied. Further examples are the adjective (2;2) **piccolo* 'little' with reference to the plural form of the word *pennarello* 'marker', representing a target deviant adjective for class I, and the form (2;4) **la carrozzina mio* [*la mia carrozzina*] 'my stroller' for class II.

Finally, Camilla produces several verbs, with a significant majority belonging to class I (203 instances) and II (233 instances), as in *mangiare* 'to eat' and *leggere* 'to read' respectively. Verbs from class III, such as *dormire* 'to sleep', appear rarely (38 instances) compared to verbs from the other classes, especially the '-ere' class II verbs, which include many irregular forms. Frequently occurring verbs such as *essere* 'to be' and *avere* 'to have', which serve both as lexical and auxiliary verbs, belong to class II due to their infinitive suffix *-ere*.

Regarding target-deviant verb forms, the distribution reflects the overall frequency of the classes: verbs from class II are prevalent in Camilla's speech. Class II represents also the class

⁴³ Class V adjectives of the kind *belga* – *belgi* 'Belgian' are not realized by Camilla or any of the other Italian children. Additionally, this type of adjective does not appear in the input data. Consequently, only four inflectional classes are considered in the analysis.

⁴⁴ Examples are adjectives as in (3;1) *il mio bambino* 'that one small' for class I and (2;2) *la carne cruda* 'the raw meat' for class II.

⁴⁵ Examples are the adjectives *gentile* for class III and *viola* for class IV as in (2;2) *gatto gentile* 'kind cat' and (2;1) *la casa viola* 'the violet house'.

in which she realizes a larger number of target-deviant verbs, as the example reported in (35) compared to class I⁴⁶. If the verbs *essere* and *avere* are excluded from the analysis, then class I represents the most frequently occurring inflectional class in Camilla's data.

(35) (2;11) **non gli piacciono* [*non gli piacciono*] 'he does not like them'

For example, in (35), the verb *piacere* 'to like' is inflected incorrectly in the third person plural. Although this verb belongs to the *-ere* class (class II) in the target language, Camilla inflects it according to the *-are* class (class I). Further target-deviant examples can be found in the following utterances (2;11) **spingami dietro* [*spingimi*] 'push me off', (3;1) **dormano* [*dormono*] '(they) sleep', and (3;1) **i bambini a casa li prendano* [*prendono*] 'the children take them at home'. In all these utterances, verbs of class II *spingere* and *prendere* 'to push' and 'to take' and class III *dormire* 'to sleep' are realized as verbs of class I.

6.1.1.1.2 Elisa

Elisa's data, collected from the Tonelli corpus (Tonelli et al. 1998), exhibit a pattern similar to that found in Camilla's data. Overall, Elisa produced 623 utterances, with only one being unusable for analysis. The dataset comprises 343 nouns, 75 adjectives, and 244 verbs, including forms such as *è* '(he/she/it) is' and *c'è* 'there is'.

Among these utterances, 12 are identified as target-deviant. Of these, three involve errors in verb inflection for person (e.g., **mi sta a vedere* '(he/she/it) is looking at me', target-deviant due to the second-person reference) or the verb form (e.g., **non vienono* [*non vengono*] '(they) do not come'). The remaining nine target-deviant utterances involve deviant inflection concerning the inflectional class, accounting for almost 2% of the total number of analysed utterances. Among them, three involve nouns, five adjectives, and one involves a verb. Examples for each category are provided in (36), (37), and (38) below, respectively.

⁴⁶ A target-deviant verb for class I verb is the utterance (2;4) **quelli novi che bucheno* [*quelli nuovi che bucano*] 'the new ones that dig a hole', in which the class I verb *bucare* 'to dig a hole' is inflected target deviantly.

The distribution of nouns across declension classes is comparable to that illustrated in Figure 35 for Camilla and aligns with the distribution found in the adult system (cf. Thornton et al. 1998).

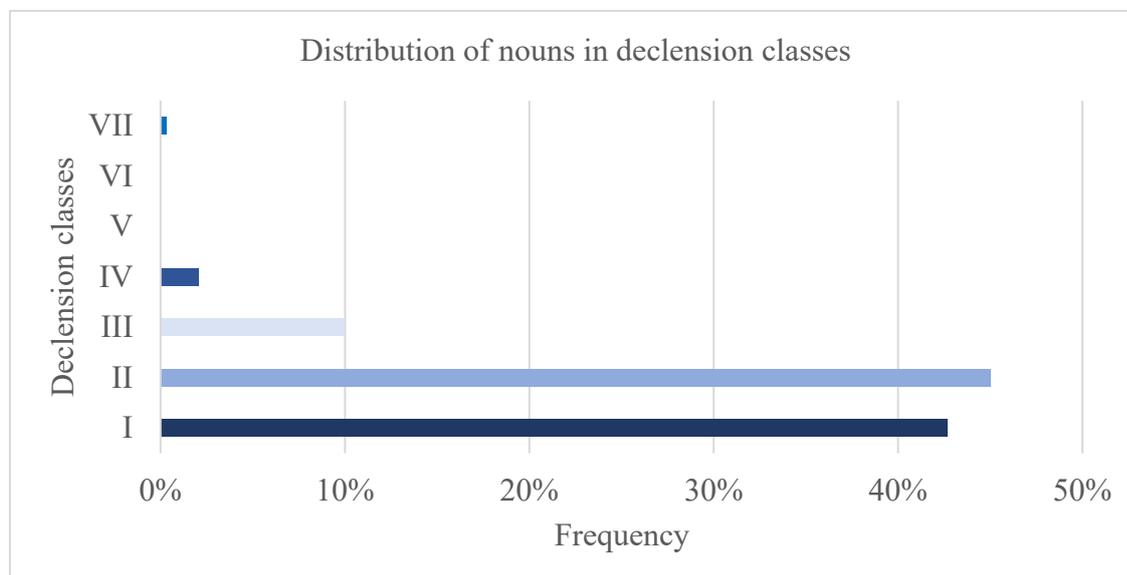


Figure 36: Distribution of nouns in declension classes in Elisa's data.

Nouns of class I (1;10 – *è un uccellino* ‘it is a bird’), II (1;10 – *è l’altalena* ‘it is the swing’), and III (1;10 – *è un bel ponte* ‘it is a nice bridge’) represent almost the totality of the speech production data for Elisa. Nouns of class IV (7 types, e.g., (1;10) *il the* ‘the tee’) and VII (1 type, e.g., (2;2) *mia mano* ‘my hand’) occur rarely. Only three nouns occur in the data that are classified in a target-deviant declension class. Two of them belong to class II in the adult grammar, as in (36), and one is a class I noun in the target-system, namely the utterance (1;11) **ho mangiato la galla* [*ho mangiato il gallo*] ‘(I) ate the rooster’, in which class I noun *gallo* is inflected as a noun of class II.

(36) (1;11) **una bende, due bende* [*una benda*] ‘one bandage, two bandages’

In (36), the noun *benda* ‘bandage’ is inflected according to the III declension class in the singular and class II for the plural form. Apparently, the child inflects the noun as belonging to class IV, i.e., invariable class.

For adjectives, the distribution in inflectional classes and the analysis of target-deviant forms reveal significant patterns. The distribution of adjectives mirrors the one of nouns: class I and

II adjectives are much more frequent than classes III and IV⁴⁷. As for the distribution of target-deviant adjectives in inflectional classes, the most errors are committed with adjectives of class II and III. With regard to target-deviant class II adjectives, an example can be found in the utterance (2;1) **miei mammina* [*mia mammina*] ‘my mommy’, in which the adjective *mia* occurs as an adjective of class I in the plural form. Although class III adjectives occur in only 3 utterances, two (75%) are target-deviant.

(37) (1;11) **le scarpine verde* [*le scarpine verdi*] ‘the green little shoes’

In (37), the adjective *verde* ‘green’ is not inflected in the target-like plural form *verdi* but is rather kept in the singular form and it accordingly does not agree with the number feature marked on determiner and noun as well as with the plural reference. A further possibility is that the adjective, which belongs to class III in the adult language, is used as an adjective of either class II in the plural form, leading to a singular form of the kind **verda*, or of class IV, being thus invariable.

The majority of verbs realized by Elisa belong to class I in the target system, e.g., (1;10) *mangio tutto* ‘I eat everything’, followed by class II as the verb *mettere* ‘to put’ in (2;1) *lo metto qui* ‘(I) put it here’. The most often occurring verbs are inflected forms of the lexical and auxiliary verb *essere* ‘to be’, e.g., (1;11) *è la mamma* ‘it is the mom’ or (1;10) *ci sono i cagnoni* ‘there are the big dogs’. If these forms are excluded, the frequency of verbs of class II decreases. The only target-deviant inflected verb which is classified in a wrong inflection class belongs to class I in the adult system and is reported in the following example:

(38) (2;1) **salvimi* [*salvami*] ‘save me’

As for (38), the verb *salvare* ‘to save’ is inflected in the second person singular form of the imperative form as belonging to class II or III rather than class I.

⁴⁷ An example for a class I adjective is (1;11) *questo è morbido* ‘this is soft’; class II (1;11) *la gallina lessa* ‘the boiled hen’; class III (2;1) *la grande casetta* ‘the big tiny house’; class IV (2;1) *quel piattino viola* ‘that violet dish’.

6.1.1.1.3 Marco

The data about Marco are included in the Tonelli corpus (Tonelli et al. 1998) as well. Overall, the child realizes 2,891 utterances. Nine utterances were excluded due to poor recording quality, leaving 2,882 for analysis. Of these, 1,553 included nouns, 569 included adjectives, and 760 included verbs.

Marco produces 138 target-deviant utterances, of which 87 involve errors of class. The remaining 51 target-deviant utterances include errors such as incorrect verb inflection for person, e.g., *entra* instead of *entro* ‘I enter’, or nouns of class III and IV being used with target-deviant determiners concerning gender value, as in **la latte* ‘the milk’.

The distribution of nouns across declension classes in Marco’s data shows a similar number of nouns in classes I and II⁴⁸, with class III nouns⁴⁹ occurring more frequently compared to other Italian monolingual children:

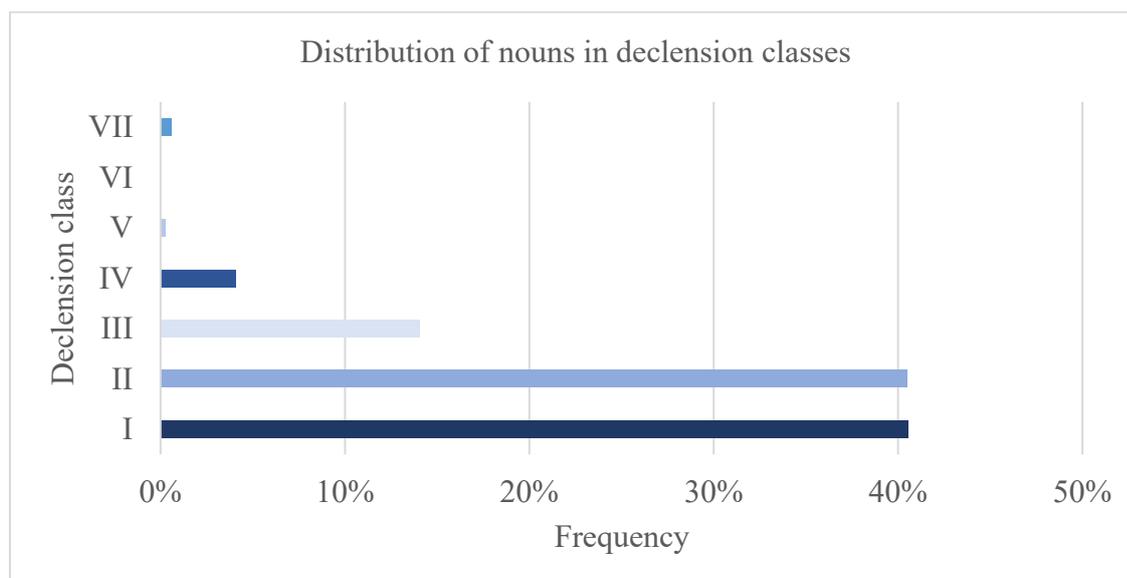


Figure 37: Distribution of nouns in declension classes in Marco's data

Nouns from classes IV, V and VII are rare⁵⁰, and class VI nouns are not realized in the data of the monolingual child. Among the target-deviant nouns, 69 DPs are distributed mostly across

⁴⁸ Examples are (1;8) *bimbo* ‘child’ for class I and (1;9) *palla* ‘ball’ for class II.

⁴⁹ An example for nouns of class III is (1;10) *torre* ‘tower’.

⁵⁰ An example for class IV nouns is (1;8) *papà Paolo* ‘daddy Paolo’, class V (2;0) *pirati* ‘pirates’ and class VII (2;4) *ti mangio la mano* ‘(I) eat your hand’.

classes I (30%), e.g., (1;10) **brutto catina* [*brutto cestino*] ‘bad bucket’, II (49%), e.g., (2;2) **bicicletto* [*bicicletta*] ‘bike’, and III (19%) as in (39). Three utterances include nouns of class IV target-deviantly inflected, as in (2;1) **un teo* [*un the*] ‘a tee’. Only one noun each from classes V, i.e., (1;9) **la ali* [*l’ala*] ‘the wing’, and VII, (1;8) **la mane* [*la mano*] ‘the hand’, is realized as target-deviant.

(39) (1;11) **elefanto* [*elefante*] ‘elephant’

In (39), the noun is inflected according to a target-deviant inflectional class: the noun *elefante* ‘elephant’ belongs to declension class III in Italian. The child, however, inflects it according to the rules of class I, hence changes the *-e* suffix of class III in the *-o* suffix of class I. Similar examples can be found in the utterance (1;10) **maialo* [*maiale*] ‘pig’ and (1;8) **apo* [*ape*] ‘bee’. The opposite pattern is displayed in utterances such as (2;1) **collaro* [*collare*] ‘collar’ and (2;4) **col pedo* [*col pettine*] ‘with the comb’, in which nouns of class III are inflected as belonging to class I.

As for adjectives, the distribution in inflectional classes mirrors that of nouns. Class I and II forms are predominant, while classes III and IV make up about 20% of the total number of adjectives⁵¹. The few target-deviant adjectives (14 types) are mostly from classes I and II, as in (2;4) **papa mia* [*papà mio*] ‘my dad’ and (1;10) **vuoti* [*vuota*] ‘empty’ with reference to the noun ‘hand’. Only two target-deviant adjectives from class III and none from class IV occur within the data. The following utterance displays an adjective of class III inflecting according to a target-deviant declension class:

(40) (2;4) **la festa gisanta* [*la festa gigante*] ‘an enormous party’

The target-like inflection in (40) of the adjective *gigante* ‘enormous’ includes the suffix *-e* in the singular form, as generally used for class III nouns and adjectives. The child, however, inflects the adjective according to the rules of class II.

⁵¹ An example for class I adjectives is (2;1) *il palloncino azzurro* ‘the blue balloon’, for class II (1;8) *bici gialle* ‘yellow bikes’, for class III (2;5) *questo è grande* ‘this is big’ and for class IV (2;3) *questo è blu* ‘this is blue’.

Marco predominantly produces verbs from class I, e.g., the verb *cambiare* ‘to change’ in the utterances (2;1) *cambiamo* ‘we change’, hence differently from Camilla and Elisa. This result is confirmed even if all occurrences of *essere* and *avere* are considered. Two out of the three target-deviant verbs are class II verbs mistakenly inflected as class I verbs. An example is reported in the following utterance:

(41) (1;10) *(*nas*)*conda* [*nasconde*] ‘(he / she) hides’

In (41), the verb *nascondere* ‘to hide,’ which belongs to class II due to its *-ere* infinitive ending, is incorrectly inflected in the third person singular according to class I rules, which apply to verbs ending in *-are*. The other verb following the same pattern is the verb *piovere* which is realized by Marco inflected for the third person singular as (2;5) **piova* [*piove*] ‘(it) rains’. A target-deviant verb which presents a different pattern is represented by (1;8) **colpo la testa* [*colpisco la testa*] ‘(I) hit the head’. In this utterance, the verb *colpire*, which corresponds to a class III verb that irregularly inflects adding the *-isc* infix in the present singular form (cf. section 4.3.1.3), is inflected target-deviantly.

Concluding, the Italian monolingual children rarely target-deviant utterances. A qualitative analysis of these instances indicates that while all three children occasionally produce utterances inflected according to incorrect inflectional classes, there are notable differences in their patterns of errors.

6.1.1.2 Monolingual German children

6.1.1.2.1 Chantal

Chantal’s data, analysed qualitatively in 36 recordings spanning from 1;10 to 3;5 years old, reveal a notable pattern in her use of inflectional classes. Out of the 2,909 utterances considered, 112 were excluded due to unclear recording, e.g., (1;10) ?*büt* [*Blume*] ‘flower’ and (1;11) ?*sasch* [*Waschbär*] ‘raccoon’, leaving 2,797 utterances for the analysis. Consistent with observations for Italian monolingual children, Chantal produces a higher number of nouns (63%) in comparison to verbs (30%) and adjectives (7%).

Target-deviant utterances are relatively frequent in Chantal’s data, with 373 occurrences of errors, 285 of which involve nouns, adjectives, or verbs inflected according to a target-deviant

inflectional class representing about 11% of the analysed utterances, e.g., (1;11) **Zahne* [Zähne] ‘teeth’ which is a class II nouns inflected for class I. The remaining 88 errors involve issues such as omitted subjects, as in (2;0) **will sehen* [*ich will sehen*] ‘I want to see’, or target-deviant agreement for other features like gender, number, or person, e.g., (2;4) **rotes Park* [*roter Park*] ‘red park’ and (2;5) **Schuhe passt* [*Schuhe passen*] ‘shoes fit’ among others.

Considering the distribution of nouns in declension classes, Chantal’s data align with previous research (e.g., Marcu et al. 1995 and Kauschke 2012) showing that nouns from class X (which form the plural with *-s* as in (2;7) *rote autos* ‘red cars’) are frequently realized. Regular feminine nouns, belonging to class VI, are the most common, e.g., (2;8) *brille auf* ‘glasses on’ and (2;8) *nur eine Seite nehmen* ‘to take only one page’, followed by nouns from class IX (which lack inflection in singular and plural, except for the dative plural, as in (2;9) *de Teller wird gewaschen* ‘the dish is getting cleaned’). Nouns from class I, II, and III also appear but are less frequent⁵². Notably, class VIII nouns of the type *Drangsal – Drangsale* ‘hardship’ are absent in the data.

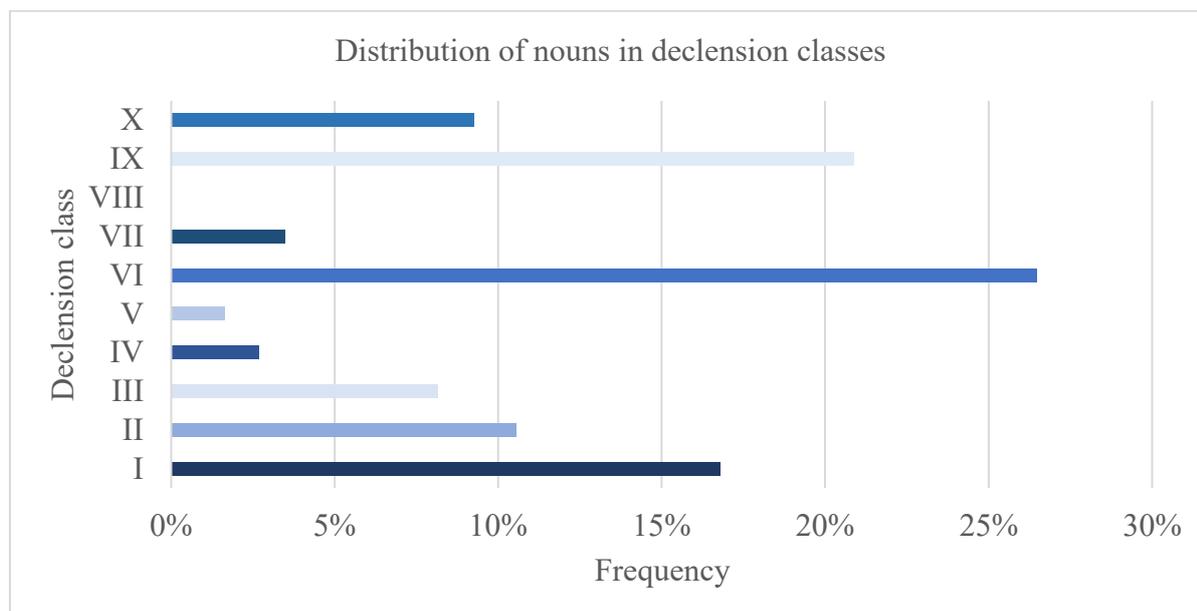


Figure 38: Distribution of nouns in declension classes in Chantal's data

⁵² An example for nouns of class I is (2;8) *den anderen Hausschuh* ‘the other glove’, class II (2;9) *aufn Stuhl setzen* ‘sit on the chair’ and class III (2;9) *die Kinder dürfen nur drauf* ‘only children are allowed to hop on’.

As for the classification of target-deviant nouns in inflectional classes, the distribution resembles the overall noun realization. Chantal produces 202 target-deviant utterances as concerning the declension of the noun, which correspond to about 10% of the overall occurring nouns. Within the target-deviant group, almost 40% of nouns belong to class VI, e.g., (2;4) **Entis* [*Enten*] ‘ducks’, followed by 19% of class IX, as in (2;5) **auf den Putzmittels* [*auf den Putzmitteln*] ‘on the cleaning products’, and 14% of class I, (2;11) **eine Wal is das* [*ein Wal ist das*] ‘this is a whale’. The rest of the target-deviant nouns can be classified into declension classes as reported earlier for the realization of nouns overall.

(42) (2;7) **die Mausen rausgelaufen* [*die Mäuse*] ‘mice walk out’

In (42), the noun *Maus* - *Mäuse* ‘mouse – mice’ is inflected not as expected in the target language since it belongs to class VII, but it is rather inflected in accordance to class VI, i.e. *Maus* – **Mausen* as in *Tasche* – *Taschen* ‘bag – bags’. The number value is marked target like, since both the verb and the suffix *-en* on the noun show that the utterances is inflected for the plural. The inflection on the noun, however, is target-deviant as concerning the declension class. A further example is represented by the utterance (2;3) **Männerns* [*Männer*] ‘men’ which includes a noun of class III inflected according to class X, i.e., by adding an *-s* in the plural form or by the utterance (2;7) **die Baume* [*die Bäume*] ‘the trees’, in which a noun of class II is inflected as belonging to class I.

As for adjectives, Chantal realizes only 58 inflected forms throughout the recording period. Although the overall number of adjectives is considerably higher with 114 additional forms to be counted, they occur in predicative position, as in (2;9) *is wackelig* ‘it is wobbly’, representing an utterance in which the adjective *wackelig* is not inflected. The most frequently occurring class is the strong one (27 types) in which the adjective is not preceded by a (overt) determiner, followed by the weak class (22 types), i.e., with a definite article, and last the mixed class (9 types) which includes the adjective preceded by an indefinite article⁵³. This distribution confirms findings related to determiner realizations in German monolingual children as

⁵³ Examples for the occurrence of three classes in Chantal’s data are the following utterances: (2;3) *roter Mann* ‘red man’ for strong adjectives; (2;11) *ein großer Hund war auf die roten Löwen* ‘a big dog was standing on the red lions’ for mixed and weak adjectives respectively.

reported in the literature (see i.a. Kupisch 20076). Target-deviant adjectives occur in only 7 utterances, e.g., (2;6) **jungen Damen* [*junge Damen*] ‘young women’, representing a big portion in comparison to the overall number of adjectives. The distribution of the target-deviant forms reflects the overall distribution of adjectives in declension classes: 71% are from the strong class, and 29% from the weak class. An example is reported in the following utterance:

(43) (2;6) **das großes haus raussetzen* [*das große Haus*] ‘the big house uncover’

In (43), the adjective *groß* ‘big’ is inflected according to the rules of the strong inflectional class, i.e., the class which is used in case the determiner is not phonologically overtly realized. The occurrence of the determiner *das* ‘the’, however, requires the inflection of the adjective according to the weak inflectional class. A further example including an adjective of the weak class inflected target-deviantly is represented by the utterance (2;11) **die schwere Wörter* [*die schweren Wörter*] ‘the difficult words’ as well as (2;10) **die beide is fest* [*die beiden sind fest*] ‘both of them are firm’, in which the adjectives *schwer* and *beide* follow a similar pattern to the one observed in (43). Differently, the utterance (3;2) **vielen dicken kissen* [*viele dicke Kissen*] ‘many thick pillows’ display two target-deviant adjectives inflected according to the rules of the weak class even though no definite determiner precedes the adjectives.

Chantal realizes verbs according to the three inflectional classes, with an overall number of 809 verbal forms. In this case, however, the child utters mostly verbs belonging to the strong inflectional class, i.e., a verb of the type *ziehen – zog – gezogen* ‘to pull’, differently from what predicted by several studies (i.a. Marcus et al. 1995), since these studies report that children tend to inflect verbs according to the inflection of the weak class. This result is confirmed even if *sein* und *haben* in utterances of the type (1;11) **is groß* ‘(it) is big’ are excluded from the analysis.

About 9% of Chantal’s verbs are inflected according to a target-deviant class, aligning with the overall distribution pattern of verbs.

(44) (2;6) *(*ich habe*) *ein bett baut* [*ein Bett gebaut*] ‘(I) built a bed’

The example in (44) concerns the target-deviant inflection of the verb *bauen* ‘to build’ in the past participle form. While the verb belongs to the regular class in German and is accordingly

inflected and classified within the weak inflection class, Chantal inflects it following the rules of the strong inflectional class. Further examples are displayed by the inflection of the verb *geben* in the utterance (3;4) **ich gib das* [*ich gebe das*] ‘I give this’ as well as by the verb *trinken* in (2;7) **Milch getrinkt* [*getrunken*] ‘drunk milk’.

Chantal’s data illustrate a distinct pattern compared to Italian monolingual children regarding inflectional classes. Despite the small number of adjectives, over 10% present a target-deviant inflection. A similar pattern is observed for nouns and verbs. The qualitative and observational data support the hypothesis that German monolingual children, like Chantal, take longer to acquire inflectional classes compared to their Italian counterparts.

6.1.1.2.2 Kerstin

Kerstin’s data, collected by Miller (1979), consist of 1,760 utterances from 20 recordings, with only 3 utterances excluded due to unclear recording quality, e.g., (3;2) *?die Wehweh*. Similar to the other children studied, the majority of utterances are composed of nouns (52%) and verbs (43%), with adjectives comprising a smaller proportion (5%).

Kerstin's data include a relevant number of target-deviant inflected utterances. Out of the total 200 target-deviant utterances, 92 involve nouns, adjectives, or verbs that are inflected according to the wrong inflectional class, as the noun *Nagellack* ‘nail polish’, which is realized by Kerstin as **Lackelacke*, displaying a target-deviant inflection. This kind of errors occurs in about 6% of the overall utterances. The remaining 108 target-deviant utterances involve errors such as subject omissions or incorrect agreement for case, gender, number, etc. An example for a target-deviant utterance as concerning the gender agreement is the following **wo ist der Buch* ‘where is the book’. In this example, the noun *Buch* which in German has the neuter gender, is inflected target-like in the singular form but the gender value on the determiner is target-deviant⁵⁴. With regard to gender, it is not possible to outline a preference for one gender value over the others, since masculine nouns can be referred to with neuter gender, as in **das Apfel ja* [*der Apfel*] ‘the

⁵⁴ This consideration can only be assessed if case and number are argued to be realized target-like, while the gender value is target-deviant. The noun *Buch* belongs to class III, as reported in Alexiadou & Müller (2008), a class in which nouns with masculine and neuter nouns are included. For this reason, it is not possible to claim that the declension class is target-deviant. Crucially, the gender feature is marked on the determiner rather than on the noun.

apple', neuter nouns with masculine gender, e.g., **der Bett da* [*das Bett*] 'the bed', and feminine gender, **da ist eine Baby* [*ein Baby*] 'there is a baby', among many others examples.

The most occurring class in Kerstin's data is represented by nouns of class X, i.e., nouns which inflect by adding the suffix *-s* in the plural, e.g., (3;2) *Bonbon ess ich eines* 'I eat one candy'. As for the other declension patterns, the nouns' distribution is similar to Chantal's data. Class VI is the second most recurrent class, as the plural noun *Tabletten* in the utterance (2;9) *da kann ich dann Tabletten essen* 'then I can eat pills, followed by nouns of class I and IX, which are represented by the nouns *Fisch* and *Krümel* in the following utterances (2;9) *ein Fisch ist des* 'this is a fish' and (3;4) *ich brauche keinen Krümel* 'I do not need any crumb'. Class II and III occur respectively in over 10% of the overall utterances including a noun, as in (2;0) *der Frosch* 'the frog' and (2;7) *Mama hole mal de die Bücher* 'mom, pick the books', while the remaining classes are represented by only a small number of tokens, e.g., (2;10) *Betten aufschütteln* 'to fluff up the beds' for class IV nouns and (2;7) *der Affe* 'the monkey' for class V.

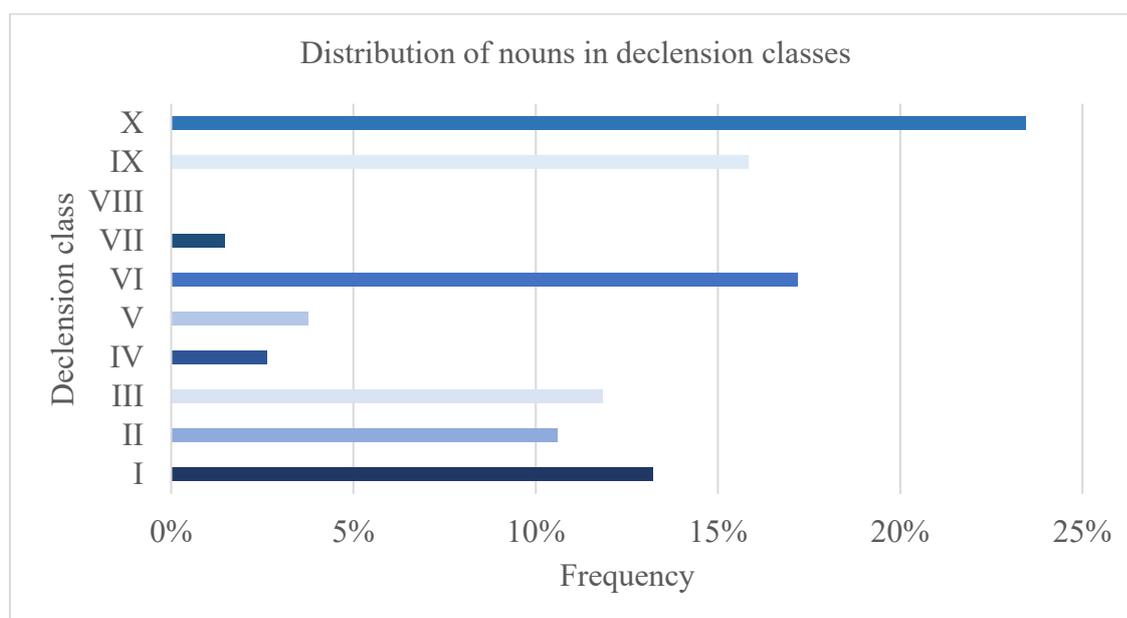


Figure 39: Distribution of nouns in declension classes in Kerstin's data

About 6% of all nouns realized by Kerstin are inflected target deviant. Crucially, the most occurring target-deviant nouns belonging to class VI (39%) and class II (29%)⁵⁵, although the

⁵⁵ An example of a noun of class VI target-deviantly inflected is represented in the utterance (3;2) **da im Tabletten drinne* [*in die Tablette*] 'in the pill'. As for class II, the noun occurring in the utterance (3;2) **drei zwei Stück*

overall distribution of nouns in declension classes displays another tendency, as reported in Figure 39. An example is reported in (45):

(45) (2;3) **die hausen* [*the houses*] ‘the houses’

The noun *Haus* ‘house’ in German inflects according to the morphological rules of class III, becoming *Häuser* ‘houses’ in the plural. In (45), however, it includes the inflection of class VI (or IV) in the plural⁵⁶.

As for adjectives, Kerstin realizes 141 instances. However, only 96 can be taken into further consideration since they occur inflected in prenominal position, and not as bare uninflected adjectives or in predicative position. The most occurring declension class is the strong one (80%), i.e., adjectives occurring without (overtly realized) determiners, as in (2;7) *schöne Schuhe* ‘beautiful shoes’. Only 14% and 6% of the inflected adjectives realized by Kerstin belong to the weak and mixed class respectively, e.g., (3;2) *die alte Oma* ‘the old grandma’ and (3;2) *ein rotes Stuck* ‘a red piece’. A total of 17 adjectives are inflected target-deviant as concerning the class feature, representing 18% of the overall occurring forms. The distribution of the target-deviant adjectives in declension classes follows the distribution of the overall realization of adjectives, with 88% of target-deviant adjectives belonging to the strong class and only 12% in the weak class. An example is reported in the following sentence:

(46) (2;3) **große ball* [*big ball*] ‘big ball’

The utterance in (46) is target-deviant since the adjective is inflected pertaining to the weak inflectional class instead of the strong one, as required in the target-language⁵⁷. Further examples of adjectives displaying a target-deviant inflection are included in utterances such as

[*Stücke*] ‘three two pieces’ is inflected target-deviantly for class in the plural form.

⁵⁶ It is not possible to definitely delineate whether the noun is inflected according to class IV or VI due to the similarity of inflection in the plural form. In order to distinguish the two classes, the occurrence of the noun in the singular form with a determiner is necessary.

⁵⁷ Although similar examples have also been considered as including a target-deviant inflection of gender and number value, the present work follows the inflectional class approach and accordingly considers the value of class as target-deviant.

(3;2) **die rote Fische* [*die roten Fische*] ‘the red fishes’ and (2;4) **meine Frosch* [*mein Frosch*] ‘my frog’.

The verbal category is represented by 725 tokens, with most verbs belonging to the strong class (53%), e.g., *finden* ‘to find’ in (3;2) *ich hab was gefunden* ‘I have found something’, a smaller number to the weak (38%), e.g., *gucken* in (2;10) *da guckt der Bube* ‘the guy is looking’, and the mixed (10%) classes, as *riechen* in (2;9) *riechst du gut* ‘you smell good’. As already observed for Chantal, Kerstin does not realize a great number of weak verbs of the type *machen – machte – gemacht* ‘to do’. If verbs such as *haben* and *sein* in utterances of the type (1;11) **Kakako habe* ‘(I) have cocoa’ are excluded from the analysis, then weak and strong verbs occur in approximately 280 utterances each. Differently from the other categories, only 3% of the total number of verbs can be considered as displaying a target-deviant inflectional class. There are, however, overgeneralizations with regard to weak inflectional classes over strong verbs, as reported in the following example:

(47) (2;7) **das buch hab geseht* [*gesehen*] ‘(I) have seen the book’

In (47), the inflection of the verb *sehen* ‘to see’ is in the past form, which in German is represented by the ‘*perfekt*’ tense. While the auxiliary verb *haben* ‘to have’ is inflected target-like according to the person, number and tense values of the utterance, the past participle form is target-deviant, since the verb is inflected according to the rules of the weak inflection class, while it belongs to the mixed class and should, therefore, be inflected as *gesehen* ‘seen’. A further example of this kind is represented by the utterance (3;2) **ich hab Kussi gegeben* [*gegeben*] ‘I gave kisses’, in which the verb *geben* ‘to give’ is inflected in the past participle form as a weak verb even though it belongs to the strong class. Utterances displaying an opposite pattern, i.e., weak or mixed verbs inflected as strong verbs, can be found in the following examples, (3;4) **das habe ich malt* [*gemalt*] ‘I drew this’ and (3;4) **hab die Mami ruft* [*gerufen*] ‘I called mom’, in which the weak verb *malen* ‘to draw’ and the mixed verb *rufen* ‘to call’ display a target-deviant inflection.

In conclusion, Kerstin’s data demonstrate a significant number of target-deviant utterances related to inflectional classes, contributing about 6% of the total utterances. The majority of these errors involve incorrect inflectional classes for nouns, adjectives, and verbs, while a

smaller proportion involves other types of grammatical errors such as subject omissions or agreement mismatches. This pattern aligns with findings from other studies on monolingual children's acquisition of inflectional morphology but provides additional context-specific insights into Kerstin's linguistic development

6.1.1.2.3 Simone

Simone's data, collected by Miller (1979) and available in the CHILDES database (MacWhinney 2023), consist of 2,270 utterances from 19 transcripts. 4 of these utterances were omitted due to quality issues. The distribution of the 2,266 analysed utterances across categories mirrors that of other children: nouns (51%), verbs (40%), and adjectives (9%). Simone's data show that 198 utterances contain target-deviant phenomena, representing 9% of all utterances. As for the other children, not every target-deviant utterance includes a misclassification of one – or more – elements in inflectional classes. Accordingly, utterances such as **mit die Mäuse* 'with the mice' display target-deviant inflection as concerning case. However, the inflection of the noun *Maus* follows the pattern of class VII and, hence, is target-like inflected.

The distribution of the 1161 nouns in declension classes is similar to the one observed for Chantal, since the most occurring inflection belongs to class VI, followed by class IX⁵⁸. Nouns of class I, II, III and X account for the majority of the resting nouns, with remaining classes being represented by a small number of tokens⁵⁹.

⁵⁸ Class VI is represented by nouns of the type *Ente* in (2;4) *die Enten füttern* 'to feed the ducks' and class IX by nouns as *Teller* in (2;4) *da oben da der Teller* 'there is the dish'.

⁵⁹ An example for class I nouns in Simone's data is represented by the noun *Schuh* in (2;9) *zieh Schuhe erst mal auf* 'first, wear the shoes'. As for class II, III and X, the nouns *Schwan* in (2;4) *die Schwäne auch* 'the swans too', *Buch* 'book' in (3;5) *die Bücher* 'the books' and *Bonbon* in (2;9) *esse Bonbons* '(I) eat candies' are examples for each class respectively.

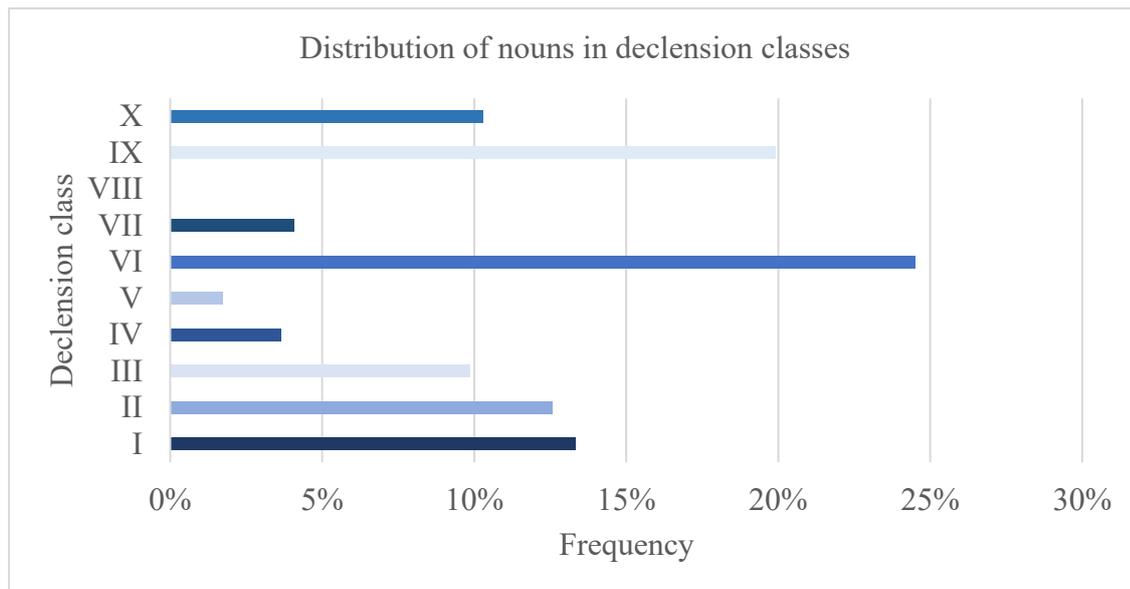


Figure 40: Distribution of nouns in declension classes in Simone's data

Overall, 8% of the total number of nouns are inflected according to a target-deviant declension class. As for the distribution of target-deviant nominal elements in declension classes, class VI represents the class with most occurring instances (34%), e.g., (1;11) **mehr Blume* [*Blumen*] ‘more flowers’, while class I (11%), II (17%), III (13%) and X (14%) present less target-deviant classification of nouns in declension classes. Examples are provided by the utterances (2;8) **ein Fische angeln* [*Fisch*] ‘to catch a fish’, (3;4) **die kann man totschießen die Wolfen* [*die Wölfe*] ‘one can shoot the wolfs dead’, and (3;1) **der Kinder macht das* [*das Kind*] ‘the child is doing this’ for each class respectively. A further example is reported in (48):

(48) (2;9) **hole Blatten* [*Blätter*] ‘I take leaves’

The noun *Blatt* (leaf) should be inflected according to class III, but Simone uses the plural form of class VI – or V –, realizing a target-deviant inflected noun.

As for adjectives, they occur in 270 utterances, although only 200 represent inflected forms. As observed for the other monolingual German children, Simone produces mostly adjectives inflected for the strong declension (72%)⁶⁰, with 15% and 13% of the remaining adjectives

⁶⁰ As the adjective *warm* ‘warm’ in (2;0) *warmes Wasser* ‘hot water’.

belonging to the weak and mixed⁶¹ classes respectively. 20 utterances of the overall occurring adjectives are inflected target-deviant, accounting for 10% of them. Most of these forms belong to the strong class (85%), with only 3 exceptions coming from the mixed class. An example is reported in the following sentence:

(49) (2;9) **immer der anderer Schuh* [*der andere Schuh*] ‘always the other shoe’

The example in (49) demonstrates that while the gender and number values in the DP are target-like, the inflectional class of the adjective must be considered independently, particularly in German. In this case, both the adjective and the determiner convey the same values for case, number, and gender. Although this is target-like for the determiner, it is considered target-deviant for the adjective when used with a definite article. Consequently, the adjective is inflected according to the strong inflectional class, despite the presence of the determiner, which would typically require the adjective to be classified in the weak inflectional class. The two further examples in which a mixed adjective displays a target-deviant inflection are reported in (1;9) **ein andere Buch* [*anderes*] ‘another book’ and (2;5) **ein gelbe Bilderbuch* [*gelbes*] ‘a yellow story book’.

In the analysed data, verbs account for 902 tokens. The data reveal that Simone produces a similar number of verbs in the strong (46%) and weak (42%) classes, with only 12% belonging to the mixed⁶² class. If copula sentences as well as rote-learned forms are excluded, the weak class represents the most frequently occurring one (52%), followed by strong verbs (40%) and finally the mixed class (8%). In contrast to Chantal and Kerstin, Simone’s production of verbs includes more variation, with instances of both strong and mixed inflection, whereas the other children predominantly used a single class.

(50) (2;9) **die ist zur Oma gegehen* [*gegangen*] ‘she is gone to grandma’

⁶¹ The weak adjective *blöd* ‘stupid’ in (3;5) *der blöde Wolf* ‘the stupid wolf’ and the mixed adjective *klein* ‘small’ in (3;4) *ein kleiner Kern drinne* ‘a small seed inside’.

⁶² Examples for target-deviant verbs of the strong, weak and mixed class are reported in the following utterances respectively: (1;10) *Mone schläft* ‘Simone sleeps’, (2;5) *ich mach weiter* ‘I go on’, and (2;8) *der fällt da runter* ‘he falls off’.

In (50), the verb *gehen* ('to go') is a strong verb in the target system and forms its past participle as *gegangen* ('gone'). However, Simone inflects this strong verb as though it were mixed. Unlike the overgeneralization observed in other studies of monolingual German children, which typically involves the weak inflection, Simone realizes an incorrect mixed inflected form similar to *lesen – gelesen* ('to read – read'). Additional examples can be found in the following utterances: (2;4) **guck mal was ich macht hab* [*gemacht*] 'look what I have done', (2;6) **das Häschen eßet* [*isst*] 'the small rabbit eats', and the past participle forms of the verbs *werfen*, *trinken* and *singen* which are target-deviantly realized as (3;5) *gewerft*, *getrinkt*, *gesungt*, *gegesingt* [*geworfen*, *getrunken*, *gesungen*] 'thrown, drunk, sung'.

Summarizing Simone's observational data, approximately 8% of the overall utterances contain target-deviant inflected nouns, adjectives, and verbs, of the type shown in (48), (49) and (50). Comparing data across the three children, German monolingual children exhibit target-deviant inflected determiner phrases DPs and TPs similar to those observed in Italian children. Qualitatively, the target-deviant instances from Chantal, Kerstin, and Simone reveal comparable tendencies. Nouns can have the correct target gender and number values – if determiners are realized and considered – but deviate in their inflectional class. Adjectives, however, show the highest percentage of target-deviant inflectional classes among the categories examined. In the verbal domain, frequent overgeneralization of the weak inflection over strong verbs is evident in the data of monolingual German children.

6.1.1.3 Monolingual French children

6.1.1.3.1 Adrien

The first monolingual child considered in this study is Adrien, whose data were collected by Yamaguchi (2015). Adrien's early language development is not as rich as Madeleine's but rather as developed as Theophile's data, which is also evident when comparing the number of uttered sentences among the three children (cf. Table 1 in section 5.3.2). From Adrien's corpus, 1,122 utterances were considered for this study. Crucially, Adrien produces more verbs than nouns, indicating a different tendency compared to the other monolingual children. Overall, the data consist of 40% nouns, 48% verbs, and 12% adjectives. Target-deviant utterances occur in 23%

of the total utterances if subject omissions are considered. Otherwise, a smaller number of sentences in Adrien's speech production data can be analysed further.

A total of 444 nouns were found in the observed data. Adrien produces only one type and two tokens belonging to the *-al/-aux* class, specifically *cheval* 'horse' at the age of 2;9. The noun is correctly inflected and occurs in isolation. The plural form *chevaux* occurs also target-like in isolation at the age of 2;8. In both cases, the context is descriptive, as the child is explaining what he sees in a picture presented by the observer. The use of the singular and plural forms is target-like in both examples. Among the remaining 442 nouns, only 2 target-deviant DPs are found in Adrien's data, all displaying target-deviant agreement between the determiner and the noun, as shown in the following example:

(51) (3;3) **veux la oeuf* [*le oeuf*] '(I) want the egg'

The noun *oeuf* 'egg' is generally linked to the masculine gender value. In the example, it occurs with the form of the definite article that is associated to the feminine gender, i.e., *la*, leading to a target-deviant agreement between the noun and the determiner. A further example is reported in the following utterance: (3;2) **dessine un fleur* [*une fleur*] '(I) draw a flower', in which the feminine noun *fleur* is used with a masculine determiner.

Adrien realizes a total of 144 adjectives. As for the target-deviant occurrences, only three adjectival forms are transcribed as target-deviant used in the adult language. In the following, one example is reported:

(52) (2;4) **un autre maman* [*une autre maman*] 'another mom'

The utterances in (52) represents one example of the target-deviant use of an adjective. In this example, however, it is not the adjective but rather the determiner that sheds lights on the error committed by Adrien, since the gender inflection on the adjective is not overtly realized, while the indefinite determiner can be categorized with regard to the gender value. The two remaining examples are represented by the utterances (3;1) **son bouche* [*sa bouche*] 'his mouth' and (2;8) **nouveau casserole* [*nouvelle casserole*] 'new pot'. Crucially, in all sentences a feminine noun, i.e., *maman*, *bouche*, and *casserole* occurs with an adjective displaying a masculine value, such as *un autre*, *son*, and *nouveau*.

Adrien realizes 534 verbal forms. If *être* in utterances of the type (2;0) *c'est pas* and *avoir* in utterances such as (3;2) *a pas* are excluded from the analysis, the number of verbs equals 472 forms. Target-deviant verbs concerning the inflection occur in 4 utterances, and all inflectional errors are comparable to the one in the following sentence:

(53) (3;2) **non je pas doucher* 'I do not (to) shower'

The utterance in (53) represents an example of an infinitive root, as the verb *doucher* 'to shower' is not inflected but rather used in the infinitive form. Since the subject occurs as an overt pronoun, *je*, the inflection is clearly missing on the verb. Further examples are represented by utterances such as (2;5) **est là poissons* [*poissons sont là*] 'fishes are there' and (2;5) **je t'aider papa* 'I (to) help you dad'. While the former example contains a target-deviant inflection for the number feature, since the plural subject occurs postverbal and with a singular verb form⁶³, the latter utterance includes another root infinitive verb which is not inflected according to the first-person singular pronominal subject *je*.

Concluding, Adrien displays a high number of target-deviant utterances that, however, dramatically decrease if the class feature is considered.

6.1.1.3.2 Madeleine

Madeleine's data were taken from the PARIS corpus (Morgenstern 2009) and include 15 recordings over a period of 1;6 years, from the age of 1;11 to 3;5. The child realizes 2,611 utterances which consists mostly of nouns (46%), followed by verbs (36%) and adjectives (18%). Target-deviant phenomena occur in 15% of the total number of utterances, if all kind of errors are taken into consideration such as subject omissions and phrase internal agreement among others. Focusing on the inflection, however, only 23 nouns and 960 verbs in Madeleine's data are further analysed.

Of the 1,173 nouns produced by the child, the majority form the plural with an *-s* suffix. In the *-al/-aux* class, only 3 types and 23 tokens are realized by Madeleine: the nouns *cheval*, *animal*,

⁶³ Royle & Valois (2010:317) argue that utterances in which the verb *être* occurs in the forms of *est* and *c'est* is to be considered a default form.

and *hôpital* ‘horse’, ‘animal’ and ‘hospital’ are produced in 23 different utterances, either in isolation or in utterances such as (3;3) *le paradis des animaux* ‘the paradise of the animals’ and (2;11) *toi tu vas avoir le cheval* ‘you are going to have the horse’. Among them, one determiner phrase (DP) includes the target-deviant use of the noun *cheval* ‘horse,’ as shown in (54):

(54) (2;5) **c’est pas un chevaux* [*un cheval*] ‘this is not a horse(s)’

This example illustrates one of the few utterances including a noun of the *-al/-aux* class. In this example, the use of the noun *cheval – chevaux* ‘horse – horses’ is target-deviant, since the child produces of the plural form with a singular determiner and a singular reference. Even though the noun is inflected target-like with regard to the declension class, the value of number marked on the noun – or the determiner – is target-deviant.

As for adjectives, different forms of *petit(e)*, *grand(e)*, *roug(e)*, *jaun(e)* etc. occur throughout the recordings, in some cases with target-deviant inflection, as reported in (55).

(55) (1;11) **un petit chaise* [*une petite chaise*] ‘a small chair’

This example shows that the agreement between adjective and noun is target-deviant as concerning the gender value. In the data of the monolingual French child Madeleine, all target-deviant inflections of the adjectives are comparable to the example in (55). Further examples are represented by the utterances (1;11) **enlever son botte* [*sa botte*] ‘put his boot away’ and (2;11) **ma doudou* [*mon doudou*] ‘my teddy bear’. In both utterances, the gender value on the adjective does not correspond to the one of the nouns.

No instances of target-deviant verbs occur in Madeleine’s data, if inflectional classes are considered. Overall, the child realized 948 verbs. The number decreases to 844 if *avoir* and *être* are not further considered. Most theories concerning the inflectional classes of verbs focus on either the number of stems (‘stem spaces’) or the theme-vowel (Hinzelin 2017:34). According to Bonami & Boyé (2003), verbs can be classified into 15 different classes in the adult language based on the number of stems. Thus, one would expect to see verbs inflected with different stems and, crucially, target-deviant realizations of these stems. Examples of target-deviant verbs from the corpus include:

(56) (2;3) * *je va apprendre dessiner dans mon école* [*je vais apprendre*]
‘I go(es) learning how to draw at my school’

In (56) with the verb *aller* ‘to go’ is used in a target-deviant form. While the subject is *je*, the verb is inflected in the third-person singular. Further target-deviant utterances include root infinitives with or without a subject, e.g. (1;11) **aller voir Marie* ‘to go to see Marie’, and subject omissions, as in (2;2) **peux aller là* ‘(I) can go there’. No target-deviant infinitive forms are found in Madeleine’s data.

Concluding, Madeleine realizes only a few instances of target-deviant noun inflection if the *-al/-aux* class is considered. This class does not seem problematic for the child, since she only commits one error. Further target-deviant inflection can be generally considered as involving gender and number or tense, person, etc. features, depending on the observed domain.

6.1.1.3.3 Theophile

Theophile’s data were collected by Morgenstern (2009) for the PARIS corpus as well. The author reports that “at 2;1 his vocabulary was very limited and often consisted of onomatopoeic repetitions”, further observing that “at the beginning of the corpus his language developed at a slower rate than that of Madeleine” (Morgenstern 2009). Theophile produces a total of 1,383 utterances, in which nouns (49%), verbs (35%) and adjectives (16%) are present. If all kinds of committed errors are considered, 13% of Theophile’s language production data consists of target-deviant utterances. However, if only inflection is taken into consideration, the numbers vary significantly.

Regarding the acquisition of declension classes, Theophile does not produce any noun that inflects according to the *-al/-aux* class. Consequently, the acquisition of the class feature in the nominal domain cannot be further analysed. The 41 instances of target-deviant noun realizations are characterized by agreement errors between the determiner and the noun, as demonstrated in the following examples:

(57) (2;6) **les l’avions* [*les avions*] ‘the airplanes’
(58) (2;10) **il y a une loup là* [*un loup*] ‘there is a wolf there’

The utterance in (57) is an example of a target-deviant noun which, however, is not ill-inflected for class. The error found in this example this can be traced back to the phonological phenomenon of *liaison* that occurs with nouns starting with a vowel. The noun in (57) agrees with a target-deviant determiner that carries the feminine gender instead of the masculine, as expected with the noun *loup* ‘wolf’.

As for adjectives, the child realizes forms that do not agree in number or gender with the noun and / or the reference, as already observed for Madeleine.

(59) (2;10) **un gros voiture* [une grosse voiture] ‘a big car’

The utterance in (59) includes a target-deviant gender agreement that also instantiates target-deviant inflection on the adjective. Overall, 21 utterances can be found that contain a target-deviant adjective of the kind observed in (59). The verb *gros* ‘big’ appears to represent a difficult form for the child, since in several utterances the masculine singular form is used with plural as well as feminine nouns, as in (3;5) **des gros policiers* [*des grosses policiers*] ‘some big policemen’. Crucially, the determiner is not always inflected according to the adjective as in (59), since it also occurs in the target-like form, as in (2;10) **des gros balles* [*des grosses balles*] ‘some big balls’.

As for verbs, the discussion outlined in 6.1.1.3.3 for Madeleine is confirmed by Theophile’s data. Whether the child acquires the verbal inflection through the consideration of the number of verb stems or based on the theme vowel, which occurs only in the infinitive form, is still to be discussed. In this context, the utterance in (60) provides an example of target-deviant use of verbs in Theophile’s data:

(60) (3;4) **et papa il m’ai dit* [*il m’a dit*] ‘and dad he told me’

The utterance is target-deviant since the child realizes the auxiliary verb *avoir* ‘to have’ inflected for the first-person singular although the subject is *il* ‘he’, i.e., the third person singular. Considering the verbal stem theory, the assumption is that the child uses a target-deviant stem. However, it can also be claimed that the child inflects the verb target-deviantly as belonging to the *-re* class and, thus, uses the inflection found in verbs such as *faire* ‘to do’: *je fais, tu fais, il fait*. This is supported by the use of target-like forms such as *j’ai*. Further examples of target-

deviant verbs are (3;3) **les deux araignées ils va là bas [ils vont]* ‘the two spiders they go(es) over there’, in which the verb *aller* is inflected for the third person singular even though the subject is in the plural form, and (3;2) **le monsieur montrer une photo [le monsieur montre une photo]* ‘the man shows a picture’ which includes one of many root infinitives occurring in Theophile’s corpus.

In conclusion, the acquisition of the class feature in Theophile’s data can only be observed based on verbal inflection, which still requires further discussion in alignment with the current state of the art in the literature. In general, the data of the monolingual French children lead to the conclusion that, while the acquisition of different features’ expression is characterized by the realization of several target-deviant forms, the inflectional class does not represent a particular issue for this group.

6.1.2 Bilingual children

The bilingual data consist of two groups, each including three children for every language combination. The following sections examine the target-deviant and target-like use of inflectional classes in Italian, German, and French. The hypotheses outlined in section 5.1 are investigated concerning the realizations of target-deviant utterances in the German-Italian and French-Italian bilinguals.

Qualitatively, the data of the bilingual children include target-deviant DPs and TPs as concerning the inflection of nouns, adjectives and verbs in classes that are comparable to those observed for the monolingual children. At a first glance, no qualitative differences are found regarding the nature of target-deviant utterances. Quantitatively, however, the number of realized target-deviant utterances in the two groups of children represents a relevant topic. This supports the hypothesis that observing the class feature in language acquisition and development processes indeed leads to the consideration of phenomena that have not been analysed yet.

6.1.2.1 Bilingual German-Italian children

The three bilingual German-Italian children develop the two languages differently, as already reported in section 5.3.2. While Italian represents the weak language for Ja_di and the strong language for Au_di, German is the strong language for Ja_di and, accordingly, the weak

language for Au_di⁶⁴. Ma_di develops the two languages in a rather balanced manner throughout the observed period. The question thus arises as concerning the realization of target-deviant utterances in the considered acquisition phase that starts at the age of 1;10 or 2;0 for the three children and ends at 3;5 for all of them.

6.1.2.1.1 Au_di

6.1.2.1.1.1 Italian

Au_di develops Italian as his strong language until the age of 3;5. Overall, the child realizes 3249 utterances in the Romance language that were analysed for the purpose of the present work. The proportion of nouns (43%) and verbs (46%) realized by the child is similar, while adjectives occur less often (11%) in the corpus. Target-deviant utterances are produced in 173 instances. Most of them, however, correspond to target-deviant determiner omissions and, crucially, occur predominantly within the first stages of language acquisition (see 6.3.1). Target-deviant utterances that were not considered for the purpose of the present work are included the following examples: (2;0) **questo è te [sei]* ‘this is you’, (2;4) **cappello ce l’ha [il cappello ce l’ha]* ‘(he/she/it) has the hat’ and (2;6) **io no è monello [non sono]* ‘I am not a rascal’ among many further utterances.

A total of 1338 nouns can be found in Au_di’s corpus. The distribution of these tokens within the Italian declension classes is illustrated in Figure 41:

⁶⁴ For a discussion of the definition of “weak” and “strong” language, see Silva Colaço et al. (2024).

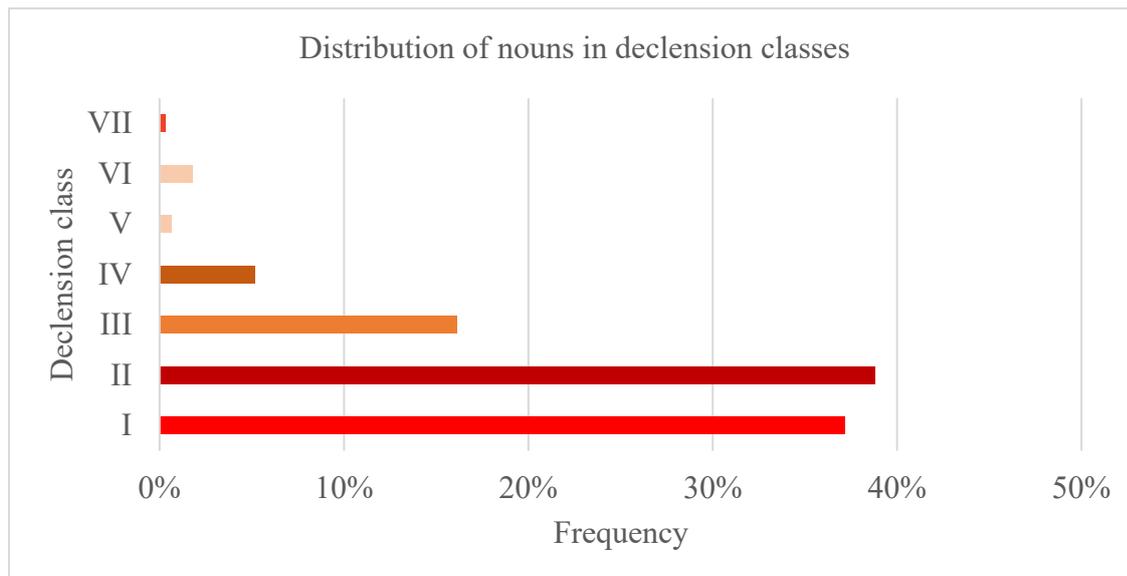


Figure 41: Distribution of nouns in declension classes in Au_di's Italian data

Class I and II, as for the monolingual children, occur in over 70% of all utterances⁶⁵. Nouns of class III are also well represented in Au_di's utterances such as (2;6) *la luce* 'the light' and (2;7) *c'è la neve* 'there is snow', while the other classes are included less frequently. Among the target-deviant DPs, 31 nouns are distributed similarly in the corpus, with class II including 11 target-deviant inflected nouns, e.g., (1;10) **la collane* [*la collana*] 'the 'necklace, class I including 9 tokens, e.g., (3;0) **io so con la maglio* [*io sono con la maglia*] 'I am wearing a t-shirt', and class III including 5 tokens, as in (2;6) **questo ifanti* [*elefante*] 'this elephant'. An example of a class II noun is reported in the following sentence:

(61) (2;6) **questi scarpi* [*queste scarpe*] 'these shoes'

The noun in (61), *scarpa* – *scarpe* which belongs to class II, is inflected in the plural form as belonging to either class I or III. Hence, the class of the noun is target-deviant in Au_di's utterance. Other 30 nouns also display erroneous declension.

Adjectives occur in 357 utterances. Even for this category, class I and II occur most frequently, e.g., (2;9) *un altro fucile bello* 'another nice gun' and (2;9) *c'ha la spada grossa* '(he/she/it) has a big sword', while class III adjectives are represented by a small number of types, namely

⁶⁵ An example for a noun of class I is *treno* in (2;4) *questo è il treno* 'this is the train', class II *pistola* in (3;0) **io sparo con la pistola* 'I shoot with the gun'.

grande ‘big’, *verde* ‘green’, and *forte* ‘strong’, but with a relatively high number of tokens. Target-deviant adjectives of the kind reported below occur in three utterances:

(62) (2;9) **è buonissime* [*è buonissima*] ‘it’s very good’

The adjective in (62) *buonissimo* ‘very good’ is inflected as an adjective of class III, for instance *grande*. Since the verb in the example is in the singular form, it can be excluded that the adjective is inflected as belonging to class II. The other two target-deviant inflected adjectives present a wrong suffix choice related to the classification of the adjective in a target-deviant class, namely the adjective *grande* in (2;0) **iejo ha cappe nuove e gande* [*Au_di ha scarpe nuove e grandi*] ‘Au_di has new big shoes’ and the form (2;7) **natuata* [*naturale*] ‘natural’.

As for TPs, Au_di realizes 1454 verbs, with most realized verbs belonging to class II (51%), e.g., *bere* ‘to drink’ in (2;9) *io bevo* (il) *mio caffè* ‘I drink my coffee’ or *rompere* ‘to break’ in (2;9) *il pesce* (s)*pada lo rompiamo* ‘we break the swordfish’. This is due to the frequent occurrence of the verbs *essere* ‘to be’ and *avere* ‘to have’, which occur both as lexical verbs and as auxiliaries. If the two forms are omitted from the data analysis in the cases where they occur as copula verbs, e.g., (2;2) *ponte è alto* ‘the bridge is high’, then class I verbs of the type *mangiare* ‘to eat’ in (2;9) *non lo mangia nessuno* ‘nobody eats it’ occur most frequently than the other two classes, while class III verbs of the kind *sentire* ‘to hear’ in (2;11) *io lo sento* ‘I hear it’ can be found in only 8% of the overall verb production. Target-deviant TPs occur in 32 utterances. Among them, 13 present target-deviant inflection concerning the choice of the conjugation class. The remaining 20 target-deviant verbs include either the use of an infinitive form in a context where the finite form is required, as in **io dare a te* ‘I (to) give to you’, or number agreement errors, as in **questo non li possono fare* ‘they cannot do this’. As for the verbs with target-deviant inflectional classes, an example is reported in the sentence below:

(63) (2;10) **questo l’ho leggiato per me* [*l’ho letto*] ‘I have read this for me’

The verb in (63) *leggere* ‘to read’ ends in *-ere* in the infinitive form and accordingly belongs to class II. However, the child inflects the past participle form of the verb by applying the rules of class I, adding the *-ato* suffix of regular verbs of class I to the verbal stem. Further examples of target-deviant inflection can be found in the following utterances: (3;0) **ti ho vedato* [*ti ho*

visto] ‘I saw you’ and (2;6) **chiuda ammadio questo* [*chiude l’armadio questo*] ‘this closes the wardrobe’.

6.1.2.1.1.2 German

Au_di develops a preference for Italian over the German language, as already described in section 5.2.2.1. The child’s MLU values in German are lower than the ones of the monolingual children as well as the German MLU values of Ja_di and Ma_di. Although this does not affect the data comparability from a quantitative point of view (cf. section 5.3.1), the child realizes less and shorter utterances in German, leading to the definition of this language as the ‘weak’ system in Au_di.

Overall, Au_di’s German corpus consists of 705 utterances for the present work. Among them, 21 had to be excluded due to incomprehensibility, e.g., (1;10) ?*pamambe* and ?*tabakelo*. The analysed 684 utterances include for the greatest part nouns (56%) and verbs (29%), with a smaller number of adjective (15%). Thirty-four utterances include a target-deviant inflectional class, the majority of which involves a noun.

The investigated corpus contains 378 nouns in German. The distribution of these nouns in declension classes is reported in the following figure:

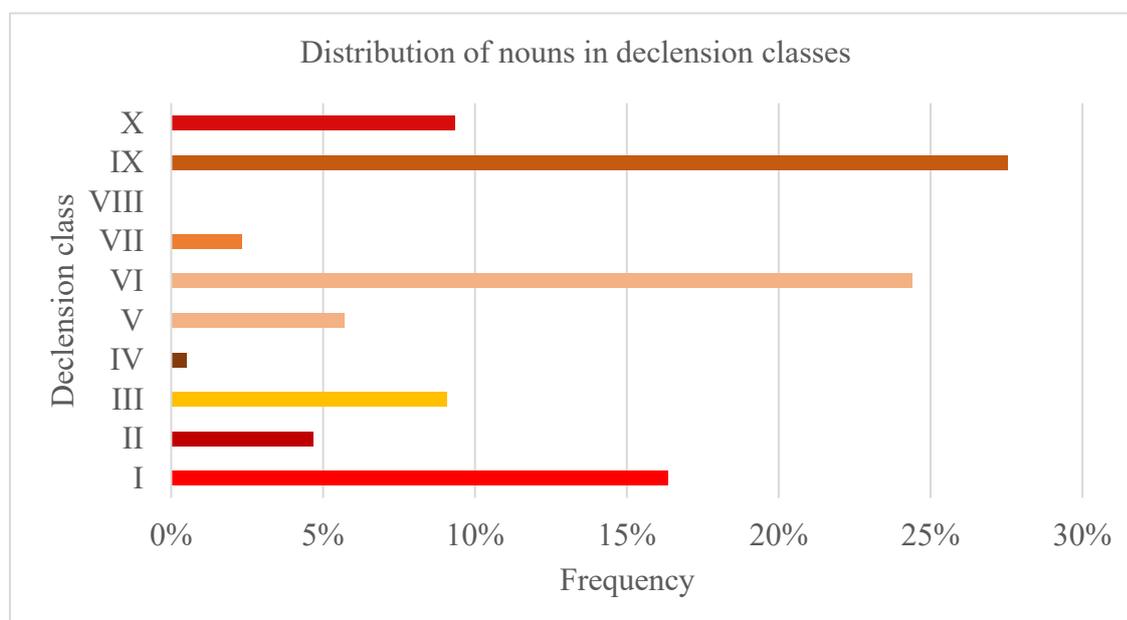


Figure 42: Distribution of nouns in declension classes in Au_di's German data

In Figure 42 is illustrated that class IX and VI occur most frequently within Au_di's noun productions in German, as in (3;5) *Monster* 'monster' and (2;6) *die Sonne* 'the sun' respectively. Furthermore, nouns of class I, III, and X are also realized often by the child⁶⁶. As for target-deviant nouns, 10 utterances were found where the inflection deviated from the target-system. The distribution of the target-deviant nouns into declension classes display a tendency as concerning the realization of errors with nouns of class I, IX, and VI, mirroring the same tendency found in the overall production of nouns. An example for class IX is reported in the following utterance:

(64) (2;1) **Baggas* [*Bagger*] 'diggers'

The utterance in (64) displays the target-deviant inflection of *Bagger* – *Bagger*, a noun that belongs to class IX in the target-language, which Au_di inflects according to the rules of class X, i.e. adding an *-s* to the singular form to inflect the noun in the plural number. The overgeneralization of the *-s* plural form has been found frequently in the data of monolingual and multilingual German children (see i.a. Kauschke 2012). Au_di, however, does not only realize this kind of error but also further target-deviant inflectional classes of the kind (2;8) **ein Säger* [*eine Säge*] 'a saw', realizing the noun as belonging to class IX although in the target-system it is part of class VI. In further examples, nouns of class IX are inflected as belonging to class X, e.g., (2;10) **Tigers* [*Tiger*] 'tigers', and nouns of class VI takes the inflection of nouns of class IX as in (3;5) **eine Enten* [*Ente*] 'a duck' among other errors.

As for adjectives, Au_di realizes overall 97 instances. Among them, 52 are inflected, while 45 occur in sentences of the kind (2;11) *das hier is(t) groß* 'this one is big', in which the adjective is in predicative position and, thus, uninflected. Among the 52 inflected adjectives, the most frequent class is represented by the strong one, as already observed for the monolingual German children. An example of an utterance including a strong adjective can be found in the following sentence: (3;4) *kleine Monster* 'little monsters'. The second most occurring class is the mixed one in which the adjective is preceded by an indefinite, mixed determiner of the type *ein* 'one', as in (3;5) *ein gelber Kreis* 'a yellow circle'. Weak adjectives can be found in seven utterances,

⁶⁶ Examples are included in the following utterances: (2;7) *Schiffe* 'ships' for class I, (2;11) *meine Ostereier* 'my easter eggs' for class III and (2;11) *Autos* 'cars' for class X.

e.g., (3;5) *die anderen Kinder* ‘the other children’. Crucially, only two utterances can be considered as displaying a target-deviant inflection for the class feature:

(65) (3;5) **das blödes Spiel* [*das blöde Spiel*] ‘the stupid play’

The utterance in (65) includes the adjective *blöd* ‘stupid’ inflected with the target-like gender and number value but target-deviant as concerning the inflectional class. The adjective occurs with the definite article *das* ‘the’ and accordingly corresponds to a weak inflectional class. The child, however, inflects it as a strong adjective. Au_di’s data reveal a further trend, that was not observed in the utterances of the monolingual German children, namely the realization of a weak adjective in a context which requires a strong or mixed form. This leads to the production of an adjective that is not overtly marked for gender and number as in (2;11) **ein kleine Mann* [*ein kleiner Mann*] ‘a small man’. Overall, four sentences in Au_di’s data display a comparable pattern, two of them represented by the sentence *ein kleine Mann* and the remaining two reported in the following utterances: (2;11) **ein kleine Dinosaurier* [*ein kleiner Dinosaurier*] ‘a small dinosaur’ and (2;11) **ein gute ranhängen* [*ein guter Anhänger*] ‘a good trailer’.

TPs containing a finite or infinitive verbal form were found in 199 utterances. The most realized class is the strong one, which includes frequent verbs such as *sein* ‘to be’ and *haben* ‘to have’ and can be found in 61% of the realized utterances. The other forms include verbs from the weak (32%) and mixed class (7%), e.g., (3;0) *hier wohnt Tarzan* ‘Tarzan lives here’ and (2;8) *schon kapiert* ‘I understood it’ respectively. If *sein* is excluded from the count, verbs of the strong class still represent the most frequently occurring ones, leading to a similar distribution to the one observed above. Target-deviant inflected TPs occur in twenty-one utterances, with ten displaying target-deviant subject omissions, eight reporting target-deviant agreement between the subject and the verb, and the remaining three including errors for inflectional classes, as reported in the following example:

(66) (3;5) **hab dich gar nicht gebringen* [*gebracht*], (I) have not brought you’

In (66), the lexical verb *bringen* ‘to bring’ occurs in the past participle form and it is inflected target-deviant as a verb of the mixed class, although it belongs to the strong verbs and its past participle form in the target-language is *gebracht*. The other two target-deviant verbs display a

similar inflection pattern to the verb in the sentence above, as displayed by the verb *trinken* in (3;5) **habe gar nix getrunken* [*getrunken*] ‘I did not drink anything’ and the inflection of *machen* in (3;5) **ich habe gemacht* [*gemacht*] ‘I have done’.

Concluding, Au_di realizes target-deviant inflected nouns, adjectives and verbs. There are almost no qualitative differences to the utterances reported for the monolingual Italian and German children. A first glance at the number and distribution of target-deviant inflectional classes, however, reveal relevant differences between Au_di and the monolingual group. A detailed qualitative and quantitative comparison is reported in 6.2.

6.1.2.1.2 Ja_di

6.1.2.1.2.1 Italian

Ja_di realizes a total of 1001 utterances in Italian, most of which are composed of nouns (76%). Verbs and adjectives occur less frequently than nouns, namely in about 18% and 6% of all utterances, respectively. Only 57 target-deviant utterances are realized by Ja_di throughout the recording period. With respect to target-deviant inflectional classes, 10 of the 57 utterances display the classification of a noun, adjective or verb in the wrong inflectional class. The remaining 47 target-deviant utterances include either gender errors of the type (3;2) **un tigre* [*una tigre*] ‘a tiger’, or number errors as in (3;1) **un dinosauri* [*un dinosauro*] ‘a dinosaur’ with a plural reference.

Ja_di realizes a total of 761 DPs including a noun. The distribution of nouns in inflectional classes is illustrated in the following figure:

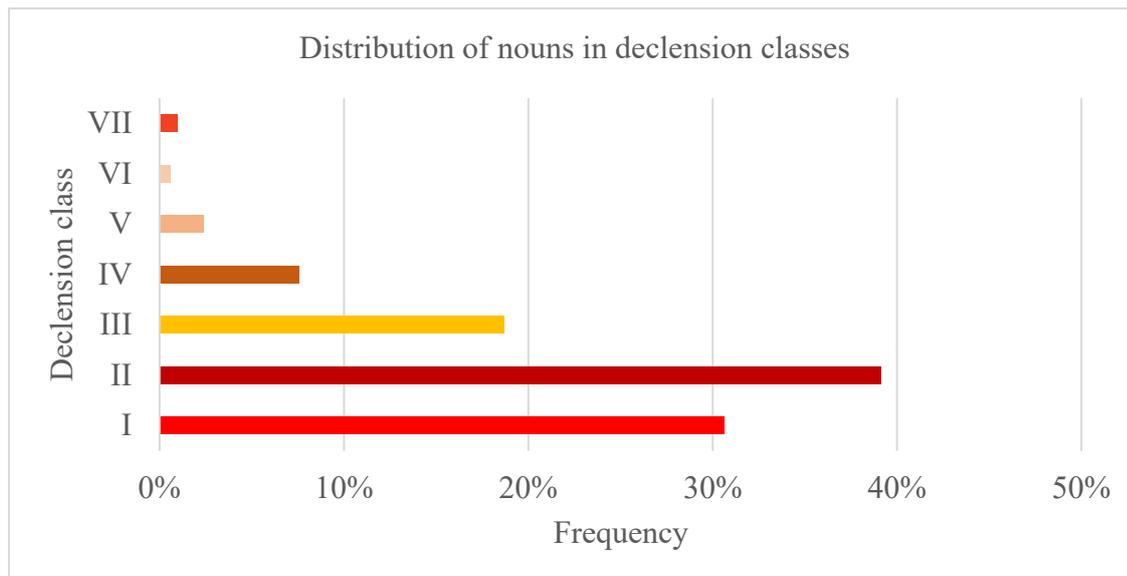


Figure 43: Distribution of nouns in declension classes in Ja_di's Italian data

Nouns of class I and II are included for over 70% of the overall noun production in Ja_di, as reported in Figure 43 and in the following utterances from Ja_di's corpus: (3;1) *un bambino mangia* 'a child eats' and (2;9) *la nonna viene* 'grandma comes'. As for the remaining nouns, almost 20% belong to class III, e.g., (3;0) *un grosso trattore* 'a big tractor', while only 76 nouns overall are classified in classes IV, V, VI, and VII, as in (3;0) *i cracker* 'the saltines', (2;7) *il pilota va* 'the pilot goes', (3;2) *ho le braccia* 'I have arms' and (2;9) *guarda mani* 'look (the) hands'. Crucially, Ja_di's frequency of declension classes mirrors the distribution of nouns in the target-language, as reported in Thornton et al. (1998). Among them, only 12 nouns display a target-like inflection, as reported in the following example:

(67) (3;4) **i valigi* [*le valigie*] 'the luggage'

The utterance in (67) includes a noun, *valigia* – *valigie* 'luggage', that is inflected according to the I declension class although it belongs to class II in the adult system (for an overview of Ja_di declension classes, see D'Aurizio et al. 2024:73). The other occurrences of target-deviant inflected nouns involve nouns of class II used as nouns of class I or V, as in (3;2) **il gamba* [*la gamba*] 'the leg', nouns of class I inflected for class II, e.g., (3;1) **la camila* [*il cammello*] 'the camel', and class III nouns realized as class I nouns, **un ospito* [*ospite*] 'the guest' among other errors.

As for the adjectival system, 60 adjectives can be found in Ja_di's corpus. Among them, 4 are inflected according to a deviant inflectional class, as reported in the example below:

(68) (3;3) **piccolo pizza* [*piccola pizza*] 'small pizza'

The utterance in (68) reports an often-occurring error in Ja_di's data. The adjective *piccolo* 'small' is inflected as belonging to declension class I although it should be inflected according to the inflection system of class II. This example, as well as the reversed use of adjectives, i.e. class II inflection used for adjectives which should be inflected according to class I as in (2;9) **con l'aereo piccola* [*piccolo*] 'with the small airplane' and in (3;2) **grossa trattore* [*grosso*] 'big tractor' cover the 4 inflectional errors in Ja_di's data.

Similarly, the TP's features are inflected target-deviant as concerning, among other topics, the number and person agreement between the subject and the verb, as well as the tense inflection. With a focus on the verbal inflectional classes, however, only a few utterances can be found, in which the verb is inflected according to a target-deviant class, as in the following example:

(69) (3;2) **svegliano* [*svegliano*] '(they) wake up'

The sentence in (69) represents the target-deviant inflection as concerning inflectional classes of the verb *svegliare* 'to wake up', which Ja_di inflects according to the rules of class II (or III) although the verb ends in *-are* in the infinitive form and, therefore, belongs to class I. The target-like inflection of the verb is *svegliano* '(they) wake up'.

6.1.2.1.2.2 German

German represents the strong language between the two acquired systems in Ja_di, and the child acquires it at a comparable rate to the monolingual children if MLU values are considered. The German corpus of Ja_di includes 1609 utterances which consist mostly of verbs (53%) and nouns (38%). Nine percent of utterances comprise an adjective as well. Especially in the first stages of language acquisition, target-deviant utterances can be found in Ja_di's data. Overall, there are 38 (1,34%) utterances in the corpus that contain a noun, adjective or verb that is not inflected according to the target-like class.

Ja_di realizes 1098 nouns which are distributed across the ten German declension classes as reported in the following figure:

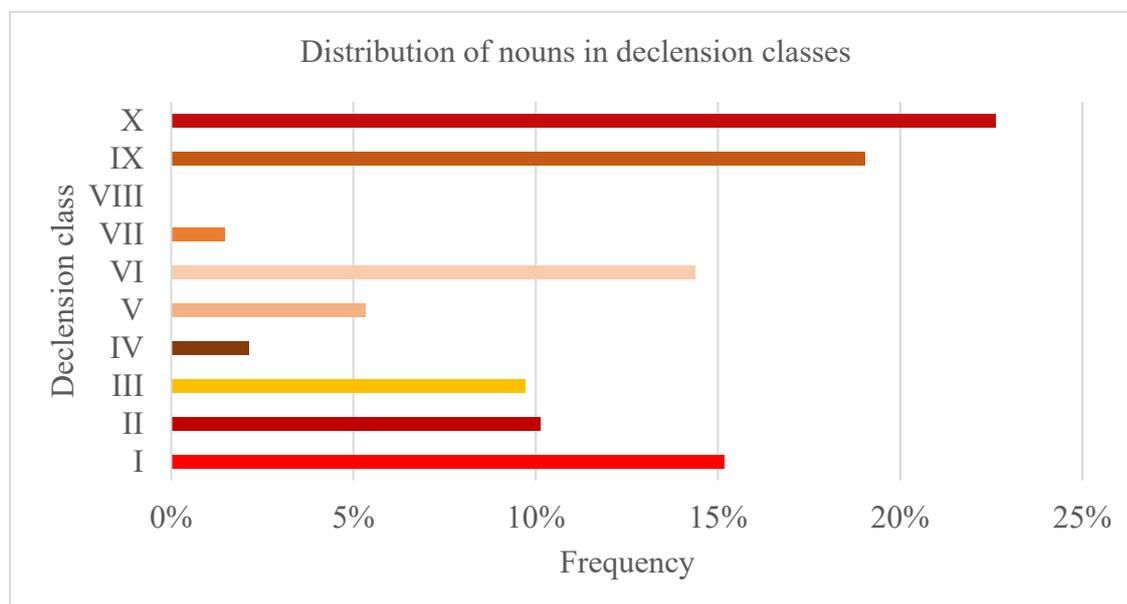


Figure 44: Distribution of nouns in declension classes in Ja_di's German data

Class X as well as class IX, I, VI and II correspond to the classes that are most frequently used by Ja_di, each accounting for more than 10% of the overall noun realization in the corpus. Utterances such as (2;3) *an den Laster* 'to the truck', (2;3) *jetzt park ich [das] Auto* 'I park the car now', (2;4) *ich aua aua Zähne* 'my teeth hurt', (2;4) *alle Fisse [Fische]* 'all fishes' and (2;7) *auf Wolken* 'on (the) clouds' include nouns belonging to each class. Class III occurs almost as frequently as well in utterances of the kind (2;5) *n Haus bauen* 'to build a home', while the remaining classes are used considerably less frequently.

Target-deviant nouns occur in 31 utterances. Among them, 16 display a target-deviant inflection on the noun, covering less than 1% of the noun realization. The remaining 15 target-deviant DPs concern the agreement between noun and determiner as in **die Kind* 'the child', which is inflected target-like with regard to the noun, while the determiner is target-deviant. An example of an error in declension class use is found in the following sentence in Ja_di's data:

(70) (3;1) **die koffern kommen [die Koffer]* 'the luggage come(s)'

The noun *Koffer – Koffer* ‘luggage’, which in the adult language inflects according to class IX, is used as a noun belonging to class IV or VI in (67). As for the noun *Koffer*, it is masculine in the target system. Crucially, nouns belonging to class VI are generally feminine in German, while nouns belonging to class IV can be either masculine or neuter. Since the noun is used in the plural form, it is not possible to decide which gender is marked on the noun and, accordingly, whether the noun is classified for Ja_di in the IV or VI class. As expected, the distribution of nouns in declension classes as concerning target-deviant inflection resembles the noun distribution as reported in Figure 44. Accordingly, classes I, VI, IX and X include the greatest number of target-deviant nouns, e.g., (3;0) **nur die Baggers* [*Bagger*] ‘only excavators’ and (3;4) **wenn Gästen kommen* [*Gäste*] ‘when (the) guests arrive’.

Adjectives occur in 279 utterances in Ja_di’s data, among which 153 are inflected and, hence, included in further analysis. Crucially, only four forms can be counted as target-deviant with regard to the declension, representing less than 2% of Ja_di’s overall adjective production. As expected, most adjectives (73%) belong to the strong class, i.e. they occur without a determiner of any kind, as in (2;7) *rote Farbe* ‘red colour’ and (2;8) *der hat lange Haare* ‘he has long hair’. Weak and mixed adjectives of the kind in (2;8) *der große Löwe* ‘the big lion’ and (2;8) *ein rotes Tuch* ‘a red cloth’ are found less frequently in Ja_di’s corpus. As for target-deviant adjective inflection, the following example report one of the four occurring forms:

(71) (2;10) **der großer Hund* [*der große Hund*] ‘the big dog’

The adjective in (71), *groß* ‘big’, must inflect according to the weak classes of adjective in order to be used target-like since a definitive article is realized before the adjective. Ja_di, however, inflects it according to the rules of the strong class of adjectives,. Crucially, the most frequent target-deviant declension is represented by the inflection of the adjective according to the weak class, although the adjective does not occur with a definite article but rather in isolation, as in **große papa* ‘big dad’. The remaining adjectives displaying target-deviant inflection are represented by the forms *groß* in (3;3) **den große Kindergarten* [*großen*] ‘the big kindergarten’ and (2;11) **ich wohn ein großen Haus* [*ein großes Haus*] ‘I live in a big house’.

Verbs are realized in 1505 utterances. Most verbs belong to the strong class, as (2;7) *gebrochen* ‘broken’, while a smaller number of tokens are classified in the weak and mixed classes, e.g.,

(2;1) *das weint* ‘it cries’ and (2;4) *ich esse viele* ‘I eat many’ respectively. Target-deviant TPs can be found in 14 utterances. Among them, only five verbal forms are target-deviant inflected for inflectional class. An example is reported in the following sentence:

(72) (2;7) **papa ist geflogt* ‘papa has flown away’

The verb *fliegen* ‘to fly’ is a strong verb in German and the past participle form is *geflogen*. In (72), however, the verb is inflected as a weak verb. Hence, the verb is classified in the wrong inflectional class. The nine remaining errors which do not include target-deviant inflectional classes contain a few verbal forms as concerning the choice of the auxiliary as in **ich hab auf burg gegangen* ‘I have gone to (the) tower’, in which the auxiliary *haben* ‘to have’ is chosen over the target-like form *sein* ‘to be’ which is used in the target system with motion verbs. Further examples are represented by the weak verb *sperren* ‘to lock’ which is inflected as a mixed verb in (3;1) **is gesperren* [*es ist gesperrt*] ‘(it) is locked’ and the mixed verb *waschen* ‘to wash’ inflected as a weak verb in (3;0) **hab ihn gewascht den Po* [*gewaschen*] ‘(I) washed the butt’.

6.1.2.1.3 Ma_di

Ma_di is the third, and last, German-Italian bilingual child analysed for the purpose of the present work. Differently from Ja_di und Au_di, the child develops both languages balanced, hence with an MLUD value inferior than the 0,5 throughout the investigated period from 1;10 to 3;5 years old. As the other children, however, Ma_di also realizes target-deviant utterances as concerning the classification of different categories in inflectional classes.

6.1.2.1.3.1 Italian

Overall, Ma_di’s Italian corpus includes 1438 nouns. Their distribution into declension classes is reported in the following figure:

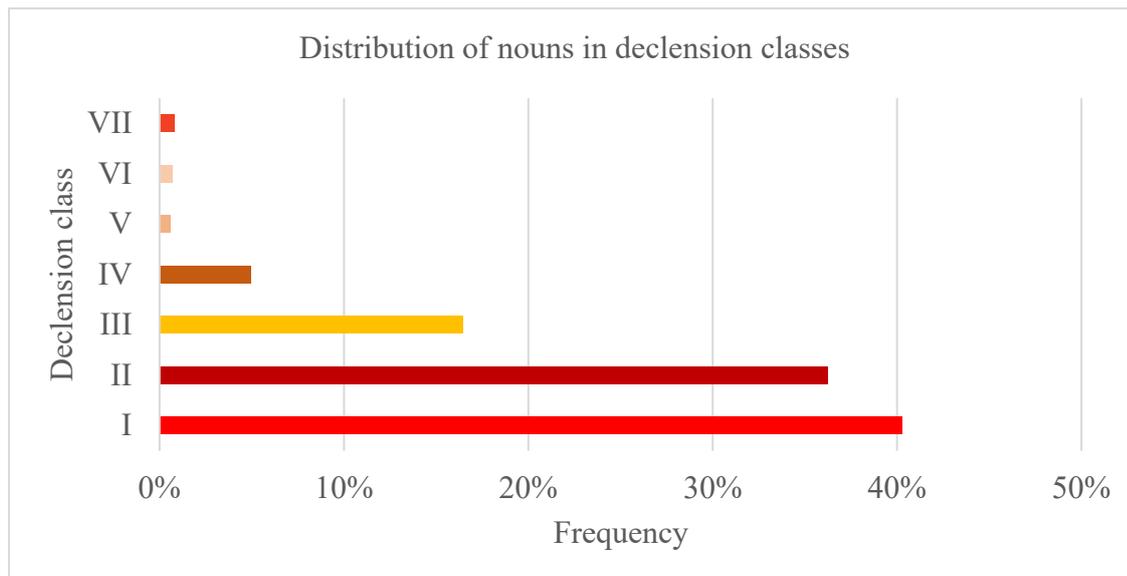


Figure 45: Distribution of nouns in declension classes in Ma_di's Italian data

As for the monolingual children as well as Au_di and Ja_di, the most frequent classes are class I and II, e.g., (2;6) *era un topolino* 'it was a small mouse' and (3;1) *questa (è) una casa* 'this is a house', with class III also displaying over 10% of the overall nouns' realization, e.g., (2;6) *il serpente non è qua* 'the snake is not here'. Nouns are target-deviant inflected in declension classes in 13 DPs. An example from Ma_di's data is reported below:

(73) (2;1) **due palli* 'two balls'

The noun *palla – palle* 'ball – balls' is inflected in (73) as if it belongs to class I or III with the suffix *-i* in the plural form. However, the noun belongs to class II and the plural suffix is *-e*. Most target-deviant nouns belong to class II, with classes I and III making up 24% of the target-deviant utterances each, as in (2;7) **la macchino* [*macchina*] 'the car' and (2;8) **la tigre* [*tigre*] 'the tiger'.

Adjectives are realized in 248 utterances throughout the data. Class I is the most frequent, followed by class II, with class III being the least frequent. Examples for the three classes are reported in the following utterances: (2;10) *il mio papa* 'my dad', (2;8) *la crema magica* 'the magic ointment' and (2;4) *questo è troppo grande* 'this one is too big'. Only three tokens of class IV are present in the data, including the adjectives *blu* and *viola* 'blue' and 'violet'.

‘I found a horse’, (3;2) *die Katze* ‘the cat’, (2;9) *die Würstchen sind da* ‘the sausages are there’ and (2;9) *da is Kaffee* ‘there is coffee’. Noun of class V, a strong – or weak – nominal class with masculine nouns taking the *-en* inflection for every case and number with exception of the nominative singular form, also occur frequently, as reported in utterances such as (2;10) *guck mal den Elefanten* ‘look at the elephant’ and (3;4) *da war ein Bär* ‘there was a bar’.

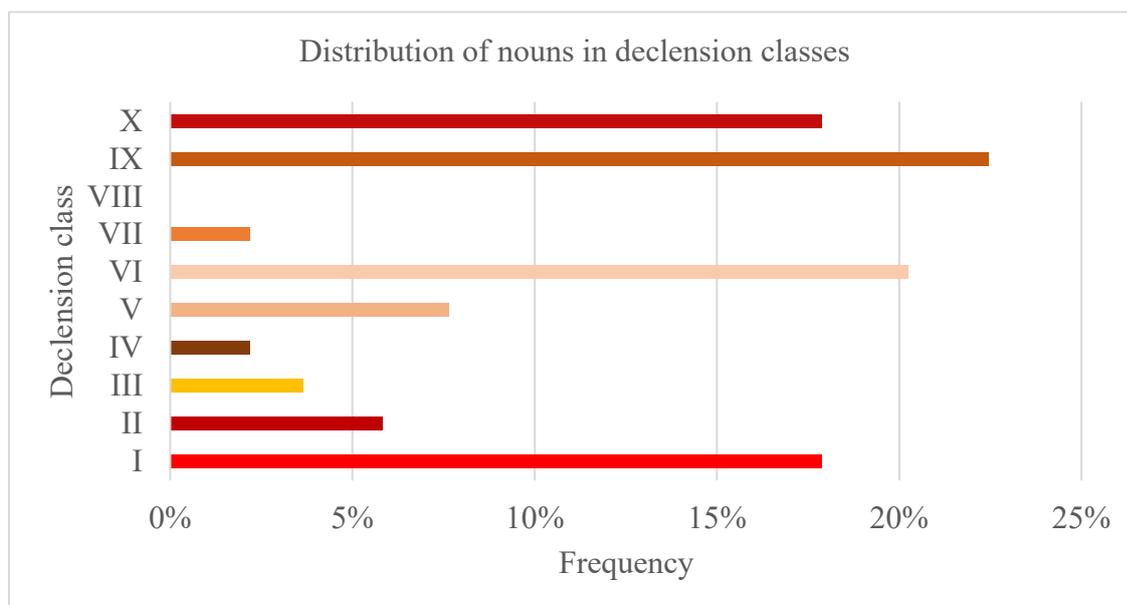


Figure 46: Distribution of nouns in declension classes in Ma_di's German data

As shown in the graph in Figure 46, the rest of the declension classes occur in less than 5% of the overall noun realization, respectively. Target-deviant nouns occur in 86 utterances. 22 of the 86 utterances include nouns inflected according to a target-deviant declension class, reflecting about 6% of overall nouns' production in Ma_di. An example from the child's German corpus is reported below:

(76) (3;3) *zwei Balle [zwei Bälle] 'two balls'

In (76), the noun 'Ball – Bälle' belongs to class II in the target system but is inflected according to declension class I by Ma_di, committing an inflectional error. Further errors include nouns of class VII inflected according to class VI, as in (3;1) *gleich kommen die Mause[n] [die Mäuse] 'the mice come' and nouns of class I inflected for class IX, e.g., (3;5) *wie viele kleine Schwein [Schweine] 'like many small pig(s)'.

Adjectives occur in 88 utterances, with 56 including an inflected adjective that is not predicative or realized without inflection in isolation. Strong adjectives (without overt determiners) represent the most frequent class with thirty-three tokens, followed by the weak and mixed class of adjectives with fourteen and nine tokens, respectively⁶⁷. Target-deviant inflected adjectives are found in three utterances, all part of the mixed class.

(77) (2;6) **ein kleine Vogel* [*ein kleiner Vogel*] ‘a small bird’

In (77), the adjective *klein* ‘small’ occurs with an indefinite article and should be inflected according to the mixed inflectional class. However, Ma_{di} inflects it as a weak adjective. The other two examples are found in the following utterance which is used twice with a masculine reference (2;11) *guck ma ein kleine* ‘look at a small’, namely *Vogel* ‘bird’ and *Fisch* ‘fish’.

Verbal forms occur in 291 utterances. Ma_{di} realizes most frequently verbs belonging to the strong class for 131 tokens. Mixed verbs occur in 95 utterances, while the least frequent class is represented by the weak one with 65 verbs. However, if the verbs *sein* and *haben* are excluded from the analysis, the most occurring class is represented by the mixed class, followed by the weak and the strong classes⁶⁸. Target-deviant verbs of the kind reported in the following sentence are realized overall in four utterances:

(78) (2;11) **die esst die spinne* [*die isst*] ,she eats the spider’

The last example in (78) includes the inflection of the verb *essen* ‘to eat’ in the third person-singular as target-deviant, since the verb is strong and its inflection is symbolized by the change of vowel’s quality in the second- and third-person singular inflection for the indicative present form, hence the target-like verb is *isst* ‘(he/she/it) eats’. Further examples are represented by

⁶⁷ An example for a strong adjective is represented by the inflection of *klein* in (3;4) *kleine Enten* ‘small ducks’. As for weak and mixed adjectives, the following utterances report examples for each type: (2;11) *die liebe Sonne* ‘the lovely sun’ and (2;11) *ein schönes Bett* ‘a beautiful bed’.

⁶⁸ Examples for the three classes can be found in the following utterances: the weak verb *machen* (2;11) *wir machen doch ein Haus*, the strong verb *gehen* (2;9) *jetzt geht er* ‘he goes now’ and the mixed verb *fahren* (2;9) *jetzt wir fahren* ‘we drive now’.

the verbal inflection in the following utterances: (2;11) **ess das [iss]* ‘eat this’, (3;1) **die kammt [kämmt]* ‘she combs’ and (3;1) **die kann fliegen [fliegen]* ‘she can fly’.

In conclusion, utterances with target-deviant nouns, adjectives, and verbs can be found in the speech production data of the three bilingual children. From a qualitative perspective, no differences are found in the use of inflectional classes among the children, regardless of whether they are balanced or unbalanced bilinguals. This suggests that language dominance does not influence the acquisition of inflectional classes. The existence of differences within the bilingual group, as well as in comparison to the monolingual group, pertaining to the development of the inflection system over time and competence remains a subject for further examination in the following sections.

6.1.2.2 Bilingual French-Italian children

The last dataset that needs to be introduced consists of three French-Italian bilingual children. Starting with Italian, Ju_{fi} acquires it as a weak language, manifesting a strong preference for the environmental language French, while Si_{fi} prefers Italian over her other first language, French. A similar trend can also be observed in the MLUD development of Di_{fis}, a child who prefers French over Italian. As already claimed for the German-Italian bilingual children, the role and relevance of language balance in the expression of acceleration and/or delay effects in bilingual language acquisition is a complex question. The examination of the data from the bilingual children is anticipated to provide further insights into this topic.

6.1.2.2.1 Di_{fis}

6.1.2.2.1.1 Italian

The first dataset was recorded from Di_{fis}, the trilingual child who acquires Italian and French simultaneously to Spanish. Starting with the analysis of the Italian data, the overall number of utterances corresponds to 515. The reason for the significantly lower number of utterances in comparison to the other monolingual and bilingual children lies in the shorter recording period. The utterances are composed mostly of nouns (65%), followed by verbs (29%) and adjectives (6%). The Italian as well as the French data include target-deviant realizations of inflectional classes for nouns and adjectives, but not verbs. As for Italian, about 2% of the child’s DPs and TPs are target-deviant.

Di_fis realizes 383 nouns. Their distribution in declension classes is reported in the following graph, where it becomes clear that, as for all the other children, the most frequently realized classes in Italian are classes I and II⁶⁹:

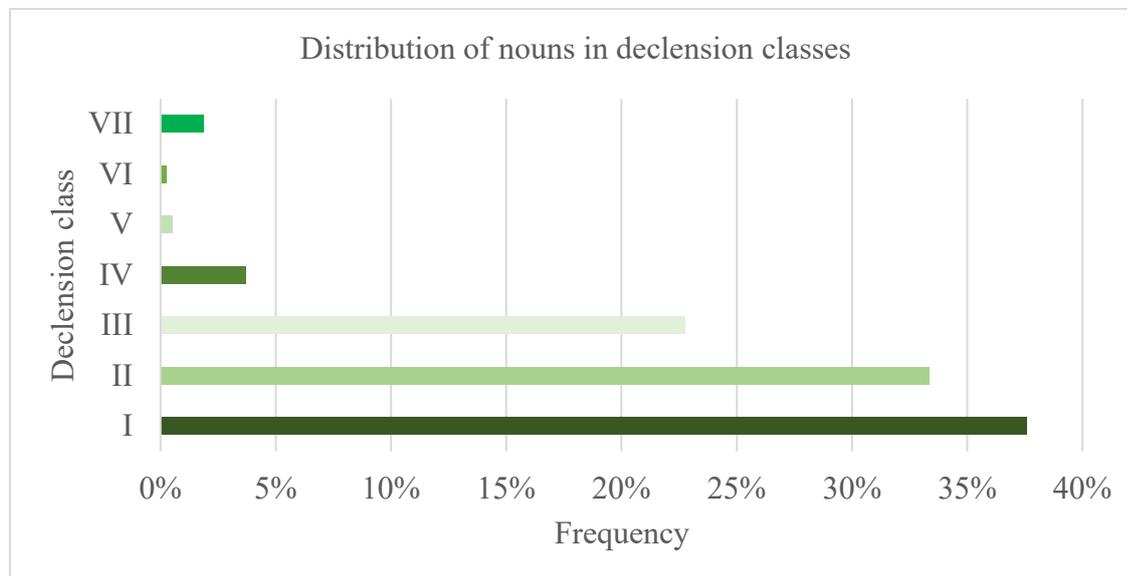


Figure 47: Distribution of nouns in declension classes in Di_fi's Italian data

Figure 47 shows that, while the first two classes comprise over 70% of the overall nouns' realization, class III is also frequent, occurring in 23% of the total number of DPs, as in (3;4) *perché sono brutti i rumori* 'because the noises are bad'. Nouns belonging to class IV, V, VI and VII are present in 7% of Di_fi's utterances in total, as reported in the following examples: (3;4) *ti devo vedere foto mie* 'I have to let you see my pictures', (3;3) *il pigiama* 'the pyjama', (2;11) *un uovo qua* 'an egg here' and (3;1) *vuoi pulire la mano* 'you want to make the hand clean'.

Target-deviant declension classes occur in seven utterances throughout the data, covering about 2% of the overall speech production. Moreover, three errors include nouns of class III which has already been reported as a generally difficult class for monolingual and bilingual children acquiring Italian (cf. D'Aurizio et al. 2024). One of the two examples from class II is reported in the following utterance:

⁶⁹ An example for a noun of class I frequently used by Di_fis is *bimbo* 'child' in (3;4) *il bimbo non puo' giocare con me* 'the child cannot play with me'. The noun *casa* represents one of the most frequently occurring nouns of class II, e.g., (3;2) *una casa bella* 'a beautiful house'.

(79) (3;1) **i moschi* [*le mosche*] ‘the flies’

The utterance in (79) includes the noun *mosca* – *mosche* ‘fly – flies’ which, according to the morphological and phonological traits of the noun, represents a noun of class II. Di_fis inflects it as a noun of class I, or III. Since the noun does not occur in the singular, it is not possible to determine in which class the noun is classified. Differently, the target deviant utterances (3;3) **lampadino* [*lampadina*] ‘light bulb’ and (3;4) **è la mia amico* [*amica*] ‘it is my friend’, occur in Di_fi’s utterances in the singular. The target-deviant utterances including nouns of class III are reported in the following utterances: (2;11) **questo è un nocchio* [*una noce*] ‘this is a nut’, (3;2) **voglio giocare coi costruzioni* [*con le costruzioni*] and a second, connected utterance **coi altri costruzioni* [*con le alter costruzioni*] ‘I want to play with the construction toys ... with the other constructions’.

Adjectives are realized in 53 DPs, distributed mostly in the first two inflectional classes⁷⁰. Four adjectives are target-deviant and display a similar trend in all utterances, since all errors include adjectives of class II inflected for class I, as reported in the following example:

(80) (2;9) **con la sedia rosso* [*rossa*] ‘with the red chair’

The adjective *rosso* ‘red’ in (80) can inflect following the rule of class I or II, depending on the value of the grammatical gender of the reference. Di_fi’s realizes the adjective form without inflecting it for class II, but rather using the inflection of class I. Even though the inflection is not target-deviant, there is no agreement. The remaining three declension classes errors are comparable to the one just observed, e.g., the adjective *altro* ‘other’ is target-deviantly inflected in the utterance (2;8) *l’altro plastilina* [*l’altra*] ‘the other clay’ as well as the adjectives *tonda* ‘round’ and *brutta* ‘ugly’ in two utterances with a class I reference.

As for verbs, Di_fis does not realize target-deviant verbs for inflectional class. Throughout the recordings, only a few utterances can be found in the data, in which the verb is inflected erroneously for person – (2;9,7) **può andare* ‘(he/she/it) can go’ instead of *puoi andare* ‘(you) can go’ – and number – (3;1,28) **va a casa* ‘(he/she/it) goes home’ with a third-person plural

⁷⁰ Examples are reported in the following utterances: (3;4) *c’ha i capelli corti* ‘he/she/it has short hair’ and (3;3) *una piccolo torta* ‘a small cake’.

reference, [*vanno a casa*] –. However, no errors with regard to inflectional classes can be found in Di_fis’ Italian dataset.

6.1.2.2.1.2 French

The French data show that the child does not realize any noun of the *-al/-aux* class inflected target-deviant. Although the noun *cheval* as well as *animaux* occur in the data of the trilingual child, they are only realized target-like. Target-deviant DPs include most frequently gender errors of the type (3;0) **un fraise* [*une fraise*] ‘a strawberry’ or (3;2) **un photo* [*une photo*] ‘a picture’.

Adjectives occur in 88 utterances in Di_fis corpus. Among them, only two utterances display a target-deviant form, as reported in the following example:

(81) (2;11) **le couleur blanche* [*blanc*] ‘the white colour’

The utterance in (81) displays the target-deviant inflection of the adjective *blanc*, which in the example is inflected according to the feminine gender, although the noun is masculine. The other target-deviant adjective can be found in the utterance (3;3) **je va -truire un autre grosse toit* [*un autre gros toit*] ‘I go(es) building another big roof’ which also includes the target-deviant inflection of the verb *aller*. As for the adjective, the feminine form *grosse* /*gros*/ is realized with a masculine noun, *toit*.

Finally, verbs are found in 277 utterances. If forms of the type *c’est* and *a* are excluded, then 217 verbal forms are realized by Di_fis. Target-deviant utterances are included in 4 utterances, with 3 of them including the verb *avoir* and *être*. An example is reported in (82):

(82) (2;11) **j’ai grand* [*je suis grand*] ‘I am big’

The formal verb used in this utterance is target-deviant since the verb *être* should occur. Further target-deviant utterances include the use of the verb *avoir* inflected for the third-person singular with a first-person reference, i.e., (3;2) **j’a pas un tigre* [*j’ai*] ‘I do(es) not have a tiger’, and the use of the infinitive in a finite context, (3;3) **je le decider encore* ‘I still (to) decide it’.

6.1.2.2.2 Ju_fi

6.1.2.2.2.1 Italian

Ju_fi's data are analysed from the age of 1;8 to 3;5. The child produces 1049 Italian utterances, with 6 excluded due to lack of clarity. The considered 1043 utterances are composed predominantly by nouns (63%), followed by verbs (23%) and adjectives (14%). Target-deviant utterances are relatively rare, with 57 instances overall, and only 26 (2%) involving errors in inflectional classes for nouns, adjectives, and verbs.

The distribution of nouns in declension classes resembles the one of the other Italian children, with more than 70% of the realized nouns belonging to classes I and II⁷¹. Class III nouns occur in almost 20% of the DPs, e.g., (2;10) *è alta questa torre* 'this tower is big'. Nouns of the remaining classes IV, V, VI and VII make out about 10% of the Italian nouns produced by Ju_fi in the analysed recordings, e.g., (2;2) *hai visto il bebé* 'you saw the baby', (3;5) *non so colorire le ali* 'I do not know how to colour the wings', (2;2) *ha fatto un uovo* '(he/she/it) made an egg' and (2;5) *co la mano* 'with the hand'.

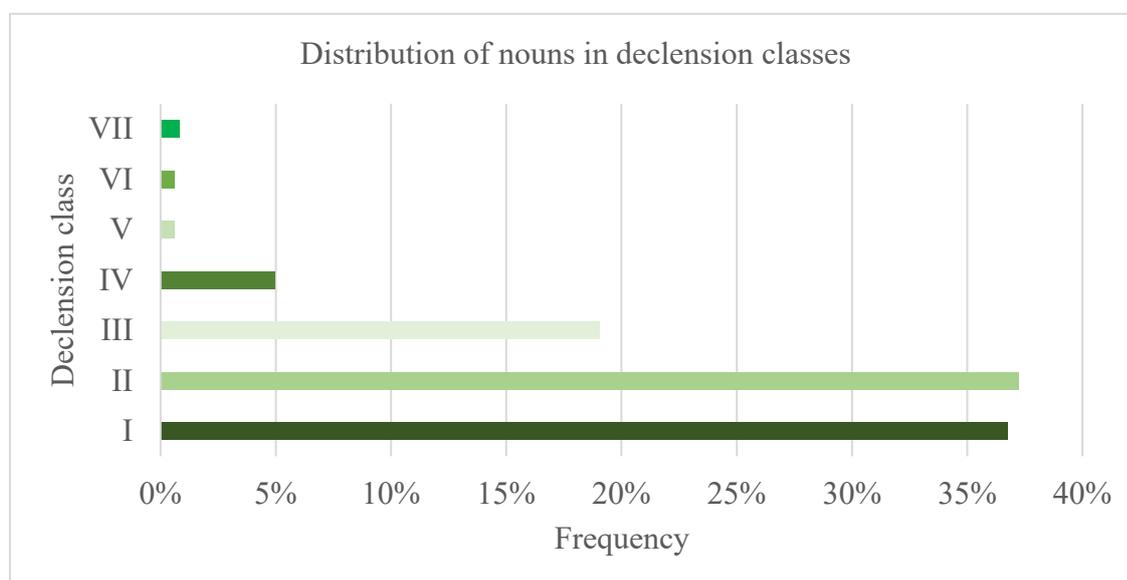


Figure 48: Distribution of nouns in declension classes in Ju_fi's data

⁷¹ Examples are reported in the following utterances: (3;3) *il piccolo piatto per mangiare* 'the small dish to eat' for class I and (3;4) *voio fare una nuova tavola* 'I want to make a new table' for class II.

As reported in Figure 48, nouns belonging to the three classes V, VI and VII occur in 1% of the overall utterances respectively. As for target-deviant nouns, which represent almost 2% of nouns' realization with 20 target-deviant inflected DPs in total, the greatest part of them (80%) belong to class I or II, leading to the conclusion that these classes are particularly complex to acquire for Ju_{fi}. Moreover, they also represent the most frequent classes in Ju_{fi}'s data. An example is reported in the following utterance:

(83) (2;5) **due zampe* [*due zampe*] 'two paws'

The example in (83) includes the target-deviant inflection of the noun *zampa* – *zampe* 'paw – paws' which inflects according to declension class II in the target system, but in the child's system it is inflected following the rules of class I, III or V. Since the noun also occurs in the singular in the same recording as *un zampa* 'a paw', it is possible to define the declension class that the noun has been classified in, namely class V. Further errors include nouns of class VI inflected as nouns of class II, e.g., (1;10) **dite* [*dita*] 'fingers', or of class III, e.g., (2;7) **un grande orecchie c'ha il cane* [*orecchio*] 'the dog has a big ear' among others.

Furthermore, 181 instances of inflected adjectives can be found in Ju_{fi}'s Italian data. The child realizes most types belonging to class I and II, as in (3;3) *un pane grosso* 'a big bread' and (3;4) *una grossa metà per me* 'a big half for me'. If the focus lies on tokens, however, an increasing number of adjectives of class III are also found in the data with either a feminine, e.g., (3;5) *una grande storia* 'a big history', or a masculine reference (2;10) *un grande tetto* 'a big roof'. In particular, 36% of the overall tokens production belongs to class I, 30% to class II and 30% to class III, while only 4% of adjectives is part of class IV, e.g., (3;2) *questo blu* 'this blue one'. Target-deviant forms can be found in four DPs, with three belonging to class II and only one example in class III, as reported through the following sentence:

(84) (2;7) **grande orecchie c'ha cane* [*grandi orecchie*] 'the dog has big ears'

The adjective in (84) *grande* 'big' should be expressed as *grandi* if the reference is plural. Ju_{fi}, however, does not inflect the adjective in the plural form and thus realizes a target-deviant inflected adjective. The same error can be found in two further target-deviant utterances in which the adjective *grande* is used in the plural form with the singular inflection, (3;0) **le*

grande schede [grandi] ‘the big cards’ and (3;5) **le ali sono troppo grande* [grandi] ‘the wings are too big’. An additional error includes the class III adjective *forte* ‘strong’ inflected as a form of class II, (2;11) **sono forta a fare barriera* [sono forte] ‘(I) am good at building a barrier’.

Lastly, 310 TPs with inflected or infinitive verb forms are produced by Ju_fi in the analysed period. Most of the forms belong to class I (52%), while a smaller number of verbs are from class II (41%) and III (7%)⁷². The gap concerning the frequency of occurrence of the different classes increases if *essere* and *avere* are excluded in utterances where the two verbal forms might represent ‘default forms’ (cf. Royle & Valois 2010:317). Crucially, only 2 utterances in Ju_fi’s data are target-deviant as concerning the inflection of verbs in inflectional classes, both of them including the verb *colorare* ‘to colour’. One of the two occurring examples is reported below:

(85) (3;5) **non so colorire* [colorare] ‘I do not know how to colour’

The verb *colorare* ‘to colour’ in (85) reports a target-deviant vowel theme in the infinitive form and, hence, is classified in the wrong inflectional class by Ju_fi. However, it is crucial to notice that this instance of verb classified as target-deviant might be caused by the input, since the father of the child uses the verb inflected in the same manner. It is not possible to determine whether the form was first used by the child and then adopted by the father or vice versa. The

6.1.2.2.2 French

As for French, Ju_fi realizes a greater number of utterances than in Italian, with a total of 2,382 sentences present in the analysed recordings. The most frequent category is represented by nouns, which occur in 86% of all utterances. Adjectives and verbs are included in 6% and 8% of the total number of utterances respectively. Target-deviant DPs and TPs occur in 50 utterances. While 27 of them include subject-omissions of the kind (1;11) **est belle* ‘(he/she/it) is beautiful’, 19 are target-deviant as concerning agreement between noun and adjective or determiner with regard to gender and number.

⁷² Class I verbs of the kind *trovare* as in (3;4) *ho trovato un bicchiere* ‘I found a glass’, class II verbs of the type *prendere* in (3;0) *io prendo queste* ‘I take these’ and class III verbs as *salire* in (2;10) *sono già salita* ‘I already climbed’.

As already reported for the monolingual French children, the number of realized nouns which can be classified within declension classes is low. Ju_{fi} realizes several nouns which belong to the still present declension class in the target-system, such as *animal*, *cheval*, *journal*, etc. Overall, 39 instances occur in the bilingual's data. Among them, 3 are realized target-deviantly, as reported in the following example:

(86) (3;5) **pourquoi un animaux?* [*un animal*] 'why an animal(s)?'

The example in (86) includes the noun *animal* – *animaux* in a target-deviant use. The plural form is used with a singular reference and, hence, does not correspond to the inflection of the declension class *-al / -aux* in the target system. An opposite error is found in the utterance (2;11) **y a pas beaucoup d'animal* [*des animaux*] 'there are not many animals', in which the noun *animal* is used in the singular form with a plural reference. The last occurring example of an *-al/-aux* noun inflected in a target-deviant form is the following:

(87) (2;2) **[f]aval* 'horse'

The utterance in 52 is target-deviant since the *-al* ending of the singular form is replaced with the *-o* suffix, typical of other Romance languages such as Italian, Portuguese and Spanish, but not in French (cf. Kilani-Schoch & Dressler 1992:69). For this reason, this utterance might be considered code-mixing as concerning the declension class value from Italian. Two further target-deviant DPs including *-al / -aux* nouns are

Adjectives occur in 132 utterances. Crucially, gender and number value are target-like marked only on a smaller portion of utterances including an adjective, as reported in the following utterance:

(88) (2;2) **ça fait un petit maison maman* [*une petite maison*] 'this makes a small house, mom'

The adjective *petit* in (88) is target-deviant since, although the reference is the feminine noun *maison*, the adjective is inflected in the masculine form. Crucially, the gender inflection of most adjectives in French cannot be defined on the basis of spoken language data. This is possible, however, for a small group of adjectives such as *petit* – *petite* 'small' which, according to the

phonological system of French, allows to distinguish the masculine and the feminine form of the adjective. A further indication that the adjective is target-deviant is provided by the determiner which is also marked for the masculine gender. Utterances of the kind in (88) occur rarely in Ju_fi's data, confirming the results of Hager (2014) as concerning the acquisition of gender marking and agreement in bilingual children. Overall, three further utterances include an adjective that is target-deviant with regard to gender, in all of them is the masculine form *vert* 'green' and *gros* 'big' that is used with a feminine noun, as in (1;9) **carotte vert* [*verte*] 'green carrot', (2;5) * *une pe'le vert* [*une perle verte*] 'a green pearl' and (2;2) **une gros montagne* 'a big mountain'.

Tps including an inflected verb forms can be found in 809 cases. Of these verbs, 29 include an error, with 27 sentences presenting target-deviant subject omissions. The two remaining target-deviant utterance are reported in the following exemplar:

- | | | | |
|------|-------|--|--------------------------------|
| (89) | (3;1) | * <i>moi je partir à deux heures</i> [<i>je pars</i>] | 'I (to) leave at two o' clock' |
| (90) | (2;2) | * <i>j'[a] fait une gros montagne</i> [<i>j'ai fait</i>] | 'I made a big mountain' |

In (89), the verb *partir* 'to leave' is used as a root infinitive and not inflected, even though the subject is overtly realized as *je* 'I'. Notably, this is the only occurrence of root infinitive verb use occurring in Ju_fi's data. Moreover, the child corrects herself in the following utterance without any external intervention by saying *je pars à deux heures* 'I leave at two o' clock'. The example in (90) include the target-deviant inflection of the verb *avoir* which is inflected from the third-person singular, even though the phonologically expressed subject is *je*, i.e., a first-person singular pronoun. Target-deviant inflected verbs in Ju_fi's French data occur seldom.

6.1.2.2.3 Si_fi

6.1.2.2.3.1 Italian

Oppositely to Ju_fi, Si_fi strongly prefers Italian over French, as also observed through the MLU and MLUD values in 5.2. Hence, the child can be defined as an unbalanced bilingual. In the Italian recordings, Si_fi realizes 659 utterances, which consist mostly of nouns (60%), followed by verbs (28%) and adjectives (12%). 20 utterances are produced as target-deviant,

with 10 including errors as concerning inflectional classes which represent about 1.5% of the overall data.

395 nouns occur from the age of 1;10 to 3;5. Among them, 5 include errors in the classification of nouns according to the declension system of the target language. The distribution in classes is reported in the following graph:

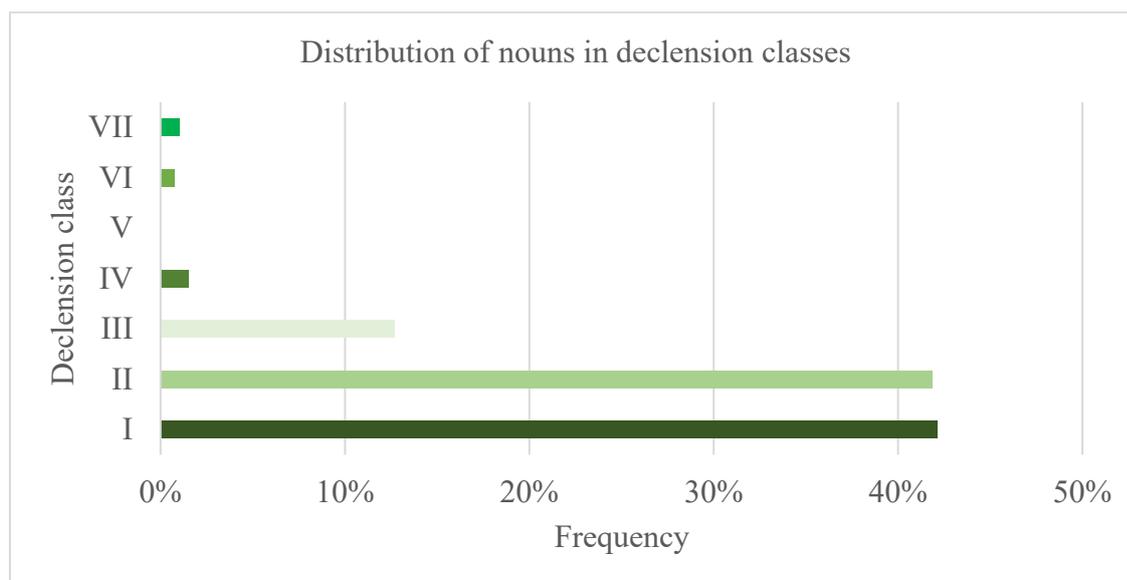


Figure 49: Distribution of nouns in declension classes in Si_fi's data in Italian

The realization trend is comparable to the one observed for the other children in Italian, since nouns of class I and II occur most frequently in Si_fi's corpus, as in (2;6) *il gelato è freddo* 'the ice cream is cold' and (2;6) *suona la campanella* 'the bell rings'. Nouns of class III cover almost 15% of Si_fi's language production, e.g., (2;9) *prendo l'ombrellone* 'I take the umbrella', nouns of classes IV, VI, and VII are rare⁷³, while class V nouns do not occur in the dataset. The five target-deviant tokens belong to class I, II and III. An example is reported below:

(91) (2;11) **un coloro* [un colore] 'a colour'

In (91), the noun *colore* 'colour', which in the target system is inflected according to class III, is realized by Si_fi as a noun of class I and accordingly takes the *-o* suffix. Further examples of

⁷³ The following utterances include a noun for each class: (2;5) *l'ho fatto una città* 'I made a city', (2;6) *le altre orecchie* 'the other ears' and (2;11) *l'altra mano* 'the other hand'.

target-deviant declension classes can be found in the following utterances: (2;1) **il potta [la pasta]* ‘the pasta’, (2;5) **un ondo [un’onda]* ‘a wave’, (2;5) **io faccio una canchio [un granchio]* ‘I make a crab’ and (2;5) **io voglio quello bende [quelle bende]* ‘I want that bandages’. In these utterances, nouns of class II are inflected according to class V **il pasta*, class I **un ondo* or class III **un bende*.

81 instances of inflected adjectives are realized by this French-Italian bilingual child, with most adjectives belonging to class I and II and only 7 tokens of class III⁷⁴. Overall, three adjectives are target-deviant in Si_fi’s Italian dataset, as reported in the following example:

(92) (2;1) **la macchina rosse [rossa]* ‘the red car’

The adjective in (92) which, in the target system should be inflected according to class II, is inflected as an adjective of class III, i.e., an adjective that does not change the agreement in the singular according to the gender value. This is confirmed by a further target-deviant utterance realized by Si_fi at the age of 2;1,28 in which the child uses the form of the adjective *rosse* to refer to a masculine noun of class I, i.e., *libro rosse* ‘red book’. A last example can be found in the use of the adjective *bello* ‘beautiful’ in the plural form of class I, i.e., *belli*, even though the reference requires the inflection for class II.

Verbs occur in 183 utterances, almost equally distributed in class I and II, e.g., the verb *girare* ‘to turn’ in (2;4) *io giro la testa* ‘I turn the head’ for class I and the inflected form of *mettere* ‘to put’ in (2;9) *ho messo le crocchette* ‘I put the croquettes’, and with only twelve forms of class III, as in (2;6) *domani viene lei* ‘she comes tomorrow’. However, if *avere* and *essere* are excluded from the analysis, class I is the most occurring one in Si_fi’s data. In two utterances, target-deviant inflected verbs can be found:

(93) (2;10) **dormete [dormite]* ‘(you) sleep’

⁷⁴ An example for an adjective of class I is represented by the form *altro* in (2;5) *un altro pesciolino* ‘another fish’. As for class II and III, one instance for each class of adjectives can be found in the following utterances: (2;8) *faccio una bella ciambellina* ‘I make a beautiful donut’ and (2;8) *ecco una palla gigante* ‘here is a huge ball’.

The verb in (93) *dormire* ‘to sleep’ is inflected target-deviant for the second-person plural, in that the characteristic theme vowel of class III *-i-* which occurs in the target system in the suffix of the second-person plural is replaced by the theme vowel of class II, namely *-e*. The other example can be found in the utterance (2;7) **stanno cuociando* [*cuocendo*] ‘they are cooking’, in which the class II verb *cuocere* ‘to cook’ is inflected as a verb of class I.

6.1.2.2.3.2 French

In French, Si_ifi realizes 979 utterances. Nouns occur most frequently (76%), especially until the age of 3, while adjectives (8%) and verbs (16%) occur with less frequency throughout the data. Errors in inflection and agreement can be found in 12 utterances, showing less than 1.5% of target-deviant realizations in the data.

The number of nouns produced is listed as 836 tokens. Crucially, the child realizes overall 16 instances of nouns belonging to the *-al / -aux* class, providing relevant data as concerning the acquisition of the declensional system. Among them, three utterances include an *-al/-aux* noun target-deviant inflected. An example is provided through the following utterance:

- (94) (3;3) **mes animals i' sont malades* ‘my animals, they are sick’
 (95) (3;1) **perché les animaux non si è svegliato* ‘because the animals has not woken up’
 (96) (3;5) **ell' donn' à manger la chevaux* ‘she gives food to the horse(s)’

The utterance in (94) includes the noun *animal – animaux* which, in the plural form, is inflected by Si_ifi as if the noun does not belong to the *-al / -aux* class but rather takes the standard *-s* plural inflection. In (95), code-switching occurs, with a first and last part of the utterance being produced in Italian, while subject of the sentence realized as a DP is in French. Although utterances including code-switching were generally excluded from the data analysis, this example is particularly relevant for the present work, since it allows to consider the noun *animal – animaux*. Although the number value marked on determiner and noun is target-deviant, the noun is inflected target-like with regard to the declension class. The utterance in (96) includes the noun *cheval – chevaux* ‘horse’ which, as for the noun in the preceding examples, belongs to the *-al/-aux* class. In this case, the reference is plural, so that the inflection of the noun is target-like. The determiner, however, is used in the feminine singular form. Hence, also the utterance

in (96) can be considered as an example of target-deviant marking of the gender and / or number value on the determiner, not an error as concerning the declension class.

In Si_fi's recordings, 42 adjectives are realized from the age of 1;10 to 3;5. No instances of target-deviant inflected adjectives occur in the data. This confirms the findings of Hager (2014:249) work about Si_fi's acquisition of gender accuracy on determiners and adjectives, since the author reports an accuracy of over 95% throughout the whole recording period in the child's weak language, French.

The consideration of TPs leads to a similar situation to the one illustrated for the adjective. Excluding few subject omissions and further target-deviant utterances which do not represent the topic of the present work, only one utterance can be considered as target-deviant for inflectional class:

(97) (2;8) **oui je veux métté dans la poussett'* 'yes, I want to put (it) in the bag'

The verb in (97), *mettre*, is inflected in the past participle form although the modal verb *vouloir* 'to want' requires the lexical verb in the infinitive form. The past participle form chosen for the verb does not correspond to the one of the target-system. Under the assumption that the child inflects verbs by considering the number of stems, the claim is that Si_fi chooses the wrong stem for the verb *mettre* 'to put' and, hence, classifies the verb in the wrong class. However, if further TP's features such as tense and person are considered, the error might reside in the inflection class selected on the basis of the theme-vowel. According to this hypothesis and proposing a phonological analysis of the verb, the child realizes the verb as belonging to class I, i.e. ending in *-er*, while the verb inflects according to the morphological rules of class II. Supposedly, the infinitive form of the verb *mettre* in Si_fi's vocabulary should be **metter*.

In conclusion, the French-Italian bi- and trilingual children produce target-deviant utterances that are qualitatively comparable to those of monolingual and bilingual children in both languages. Moreover, an analysis of the inflectional classes most frequently used by the children is relevant to further consider differences among the groups. The following section focuses on comparing the groups for each language and category.

6.2 Comparison of monolingual and bilingual groups

The examination of the descriptive data has revealed differences between the monolingual and bilingual groups regarding the acquisition of inflectional classes in the three target systems. These differences, however, are observed in the quantity rather than the quality of utterances. Consequently, a quantitative analysis is anticipated to investigate the presence of relevant differences between the two groups.

Regarding Italian, the acquisition of inflectional classes by monolingual and bilingual children aligns with expectations, as only a small number of target-deviant DPs and TPs are found in the data. Nevertheless, the two groups still require a comparison. The qualitative and quantitative observations of inflectional classes in German support the hypothesis proposed in various studies, namely that the German system is more complex than the Italian system, resulting in monolingual German children generally needing more time to acquire it. An initial, superficial analysis of the bilingual data suggests a significant difference between the two groups, which is addressed in the following sections. In the case of French, the inflectional system is expected to be similar to the Italian system. However, the data indicate a more complex situation regarding the acquisition of classes in both the nominal and verbal domains, as detailed in the following sections, with particular attention to the differences in the development of various grammatical categories.

The analysis in the following sections includes an initial, general comparison of the monolingual and bilingual groups concerning overall speech production in the respective languages. Then, the focus shifts to the variation within every category in each system.

6.2.1 Italian

Monolingual and bilingual children realize a comparable number of utterances in Italian. As for the overall production of target-deviant inflected nouns, adjectives and verbs, the values (%) are reported in the following figure:

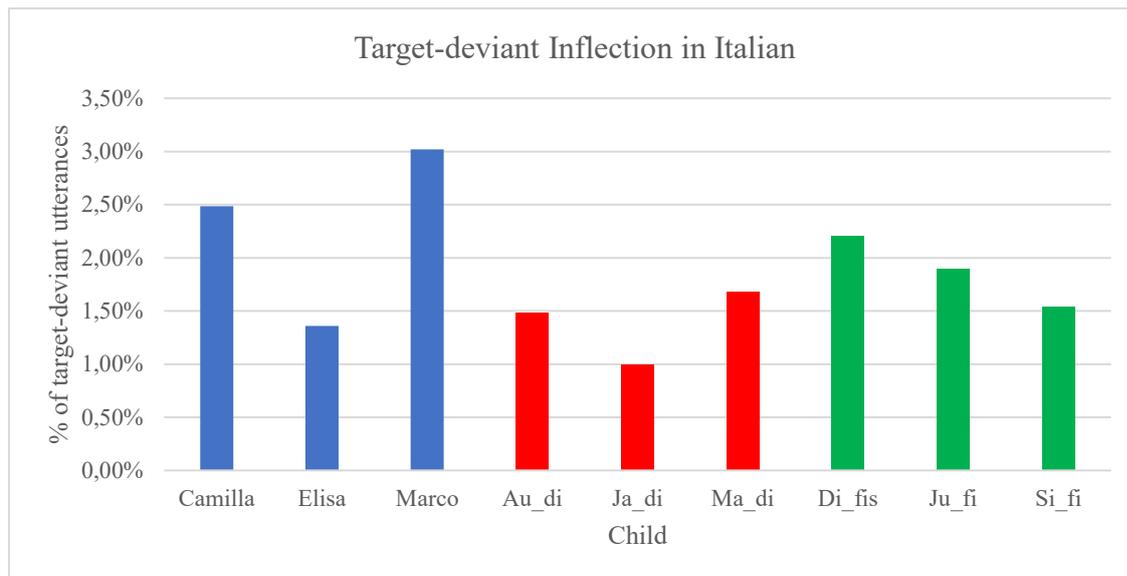


Figure 50: Ratio of target-deviant utterances in monolingual and bilingual Italian data

All children realize less than 3% of target-deviant utterances. At a first glance, it is not possible to define a difference between the monolingual group, whose data are shown in blue in Figure 50, and the bilingual one. The group with less target-deviant utterances is composed by the bilingual German-Italian children, shown in red, while the French-Italian bilinguals behave similarly to the monolingual children, as reported in green. To investigate whether there is a significant difference in the number of non-target inflected words (nouns, adjectives, and verbs) between monolingual and bilingual children in Italian, a Mann-Whitney U test (Wilcoxon rank-sum test) was conducted. This non-parametric test is suitable for comparing two independent groups when the data do not follow a normal distribution. The data set include the number of target-deviant utterances for every child as concerning inflectional classes. Crucially, the test compares the analysed data in the two groups, i.e., monolingual and bilingual children:

<i>wilcox.test(monolingual-Italian_target-deviant, bilingual-Italian_target-deviant)</i>			
Child	Bilingual	Utterances	Target-deviant Utterances
Camilla	no	1087	27
Elisa	no	622	9
Marco	no	2882	87
Au_di	yes	3249	48
Ja_di	yes	1001	10
Ma_di	yes	2265	38
Di_fis	yes	515	13
Ju_fi	yes	1043	26
Si_fi	yes	659	10

Table 6: Dataset for Statistical Analysis of Target-Deviant Utterances in Italian

The Mann-Whitney U test results indicated that there is no statistically significant difference in the number of non-target-like inflected words between monolingual and bilingual children ($W = 11$, $p\text{-value} = 0.7143$). The high $p\text{-value}$ suggests that differences observed in the data are likely due to random variation rather than a systematic effect of bilingualism.

Since this first analysis only considered two groups, i.e. monolinguals and bilinguals, a further test was carried on in order to examine whether the division of the bilingual children into two groups according to the language other than Italian might reveal differences. The data reported in Table 6 were used for the Kruskal-Wallis-Test⁷⁵, which is a non-parametric method used to determine if there are statistically significant differences between the medians of three or more independent groups. The Kruskal-Wallis test yielded a chi-squared statistic of 0.87395 with 2 degrees of freedom and a $p\text{-value} > 0.05$. Since the $p\text{-value}$ was bigger than 0.05, it was not possible to reject the null hypothesis, indicating that the medians of the three groups are equal.

Concluding, a first general analysis for Italian does not reveal differences between the monolingual and bilingual groups. Even the division of the bilingual children into two groups according to the other first language does not display significant variation among the children.

⁷⁵ It is an extension of the Mann-Whitney U test and is appropriate when the assumptions of ANOVA are not met, particularly the assumption of normality.

6.2.1.1 Nouns

The consideration of the number of nouns in the two groups leads to the observation that the two groups produce a comparable number of DPs. As reported in the following figure, target-deviant inflected nouns occur for most children in less than 2.5% of the overall number of DPs:

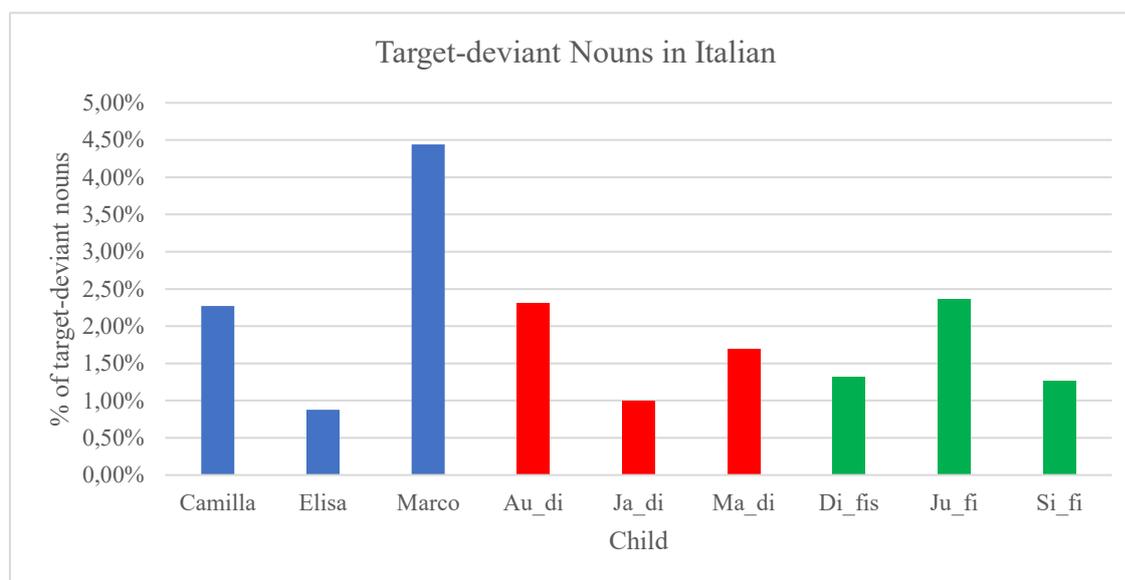


Figure 51: Ratio of target-deviant nouns in monolingual and bilingual Italian data

With the exception of the data of the monolingual Italian child Marco, all children realize a comparable number of target-deviant inflected nouns. No clear differences can be found between the two groups from the observation of Figure 51, leading to the conclusion that the groups do not differ as concerning the realization of target-deviant inflected nouns. In order to test this hypothesis quantitatively, the Mann-Whitney U test was carried out with the following dataset:

<i>wilcox.test(monolingual-Italian_target-deviant_nouns, bilingual-Italian_target-deviant_nouns)</i>			
Child	Bilingual	Nouns	Target-deviant Nouns
Camilla	No	440	10
Elisa	No	343	3
Marco	No	1553	69
Au_di	Yes	1338	31
Ja_di	Yes	761	12
Ma_di	Yes	1438	25
Di_fis	Yes	383	5
Ju_fi	Yes	846	20
Si_fi	Yes	395	5

Table 7: Dataset for Statistical Analysis of Target-Deviant Nouns in Italian

The Mann-Whitney U test results indicate that there is non-significant difference in the percentage of target-deviant nouns between monolingual and bilingual children ($W = 10$, $p > 0.05$). Hence, the observations with regard to the data in Figure 51 are confirmed by the statistical analysis.

As for the frequency of declension classes in monolinguals and bilinguals' speech production, the data do not display differences between the two groups: class I and II, i.e., nouns displaying the *-o/-i* and *-a/-e* singular/plural alternation, are included most frequently in the data of the monolingual and bilingual groups, occurring between 70% and 80% of every child's DPs. Furthermore, class III is the third most present declension class in the children's data, being involved in a variable number of DPs, from 23% in Di_fis data to 10% in Elisa's speech production. The remaining classes occur less frequently, representing less than 10% of the overall number of DPs. As for the distribution of target-deviant inflected nouns in declension classes, a similar trend can be observed, with class I and II including most non-target-like nouns in each child.

In conclusion, the analysis of nouns concerning declension classes in monolingual and bilingual Italian children does not reveal consistent differences, confirming the general trend observed in the preceding section. A crucial observation is that no differences are found with respect to balance as well: children acquiring Italian as their weak language, i.e., Ja_di, do not realize a

significantly higher number of target-deviant forms in Italian, leading to the assumption that language dominance does not affect the findings for Italian.

6.2.1.2 Adjectives

Differently from nouns, which generally represent the most frequent category in children’s data, adjectives are produced less frequently by monolingual and bilingual children, or, as reported in Cardinaletti & Giusti (2011:65) “adjectives are rare in child corpora”. For this reason, the analysis of adjectives realized between the age of 1;10 to 3;5 in the monolingual and bilingual children includes only a small number of DPs. Accordingly, the number of target-deviant inflected DPs with regard to adjectives is small as well, including in most children less than five utterances:

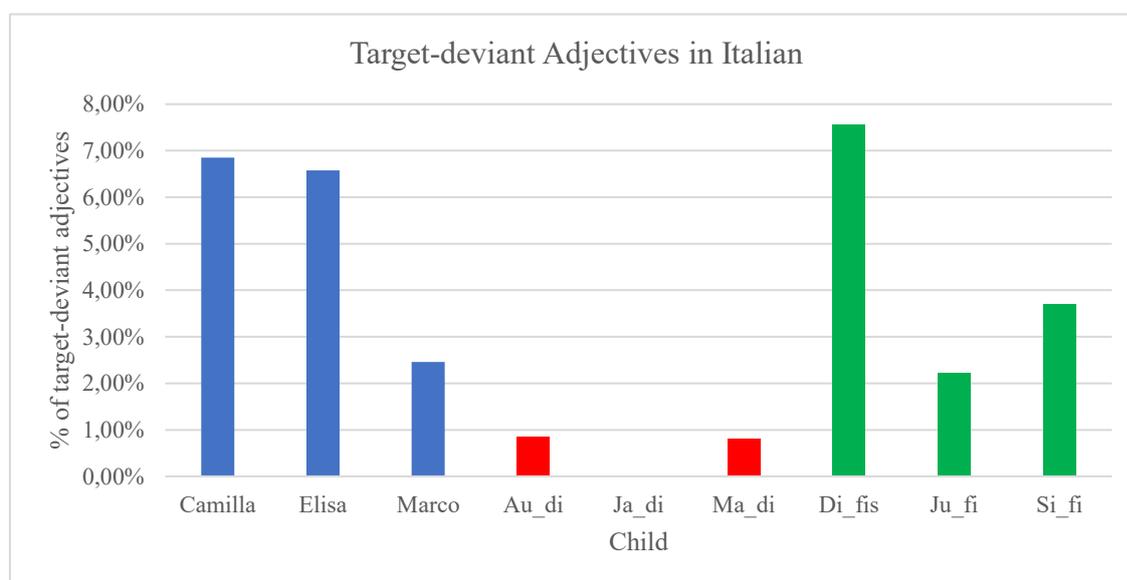


Figure 52: Ratio of target-deviant adjectives in monolingual and bilingual Italian data

Figure 52 reports the percentages of target-deviant adjectives for the monolingual and bilingual groups. All children realize less than 7% of target-deviant inflected adjectives, with exception of Di_fis. It is relevant to point out that, although Di_fis produces a higher number of non-target-like adjectives in relation to the total number of realized adjectives, the overall number is also considerably lower than in other children, for example, Marco, as reported in the following table:

<i>wilcox.test(monolingual-Italian_target-deviant_adjectives, bilingual-Italian_target-deviant_adjectives)</i>			
Child	Bilingual	Adjectives	Target-deviant Adjectives
Camilla	No	173	5
Elisa	No	75	5
Marco	No	569	14
Au_di	Yes	357	3
Ja_di	Yes	60	4
Ma_di	Yes	248	2
Di_fis	Yes	53	4
Ju_fi	Yes	181	4
Si_fi	Yes	81	3

Table 8: Dataset for Statistical Analysis of Target-Deviant Adjectives in Italian

According to the results in Table 8, Marco realizes consistently more target-deviant adjectives than the other children. A glance at the overall realization of adjectives and the comparison with Figure 52, however, reveal that the higher number of non-target-like adjectives is relative to Marco’s speech production’s data. To find out whether there are quantitative differences between the monolingual and bilingual group, a Mann-Whitney U test was carried out in RStudio. The results indicate that there are no significant differences between the groups. The p-value allows to reject the hypothesis that monolingual or bilingual children produce fewer target-deviant inflected adjectives than the other group.

Furthermore, the overall distribution of adjectives in declension classes discloses no differences between both groups, with class I and II occurring most frequently, and adjectives of class III including a high number of tokens but only few types. Indeed, the adjective *grande* ‘big’ and, for some children, *dolce* ‘sweet’, *verde* ‘green’ and *forte* ‘strong’ cover most of the occurrence of class III adjectives in the data. The same observation can be made for the few target-deviant inflected adjectives which are distributed in declension classes according to the frequency of occurrence.

In conclusion, a relatively low number of adjectives is realized by monolingual and bilingual Italian children, as already observed in previous studies. If the number of target-deviant inflected adjectives is observed in absolute numbers, most children realize less than six errors, leading to the conclusion that declension classes for adjectives are acquired relatively early in

Italian. However, if the quantity of target-deviant inflected adjectives is observed in relation to the overall occurrence of this category, the percentages are higher than expected. As for the comparison between the two groups, no differences can be found with regard to the target-like or -deviant realization and distribution of adjectives.

6.2.1.3 Verbs

At this point, it is crucial to outline a relevant observation concerning the verb analysis in Italian, German and French. As discussed in the preceding chapters, verbs of the type *essere*, *avere*, *sein*, *haben*, *être* and *avoir* as well as modal verbs in the three languages are considered as rote-learned or default forms in several studies. For this reason, two separate analyses were carried out for every child with regard to the realization of verbs. The qualitative examination of utterances, such as those exemplified in (60) and (82) among others, supports the conclusion that, although including these verbs increase the number of both overall realized and target-like verbs, it remains ambiguous whether these verbs serve lexical functions or are realized as rote-learned forms. Nonetheless, they facilitate the consideration of significant elements within the children's language production data. For this reason, these verbs are included in the following analyses of verbs for every language.

In the Italian data, verbs occur at a similar frequency to nouns in the Italian data. However, there are differences throughout the time and MLU values, as reported in 6.3.1 and 6.3.4. Comparing the data of the two groups qualitatively, the number of finite and non-finite TPs realized by monolinguals and bilinguals appears comparably high. As for target-deviant inflected verbs, a trend similar to the overall realization of verbs can be observed in both groups:

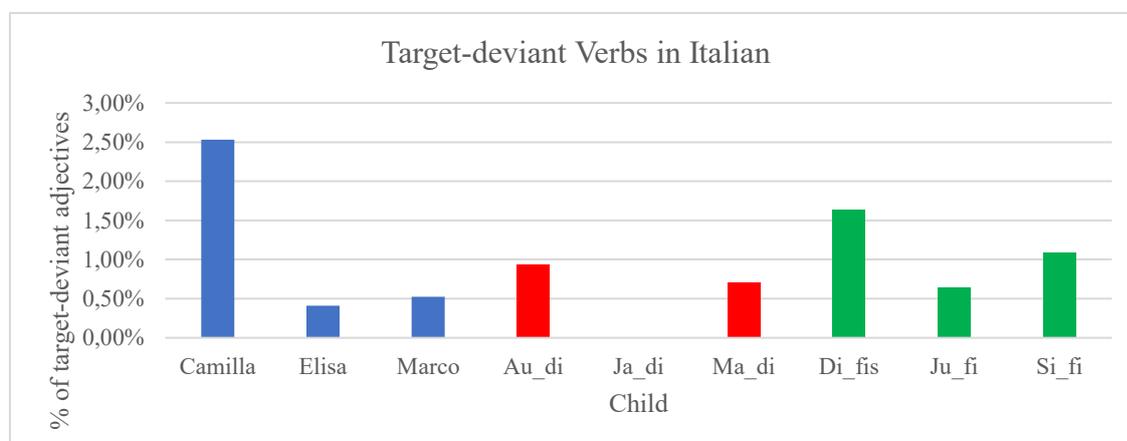


Figure 53: Ratio of target-deviant verbs in monolingual and bilingual Italian data

As reported in Figure 53, all children produce less than % of target-deviant inflected verbs, with the exception of Camilla, who reaches the value of 2.50%. In order to test whether there are significant differences between the monolingual and bilingual groups as concerning either the overall number of realized verbs or the target-deviant inflected TPs, a Mann-Whitney U test was carried out in RStudio with the following dataset:

<i>wilcox.test(monolingual-Italian_target-deviant_verbs, bilingual-Italian_target-deviant_verbs)</i>			
Child	Bilingual	Verbs (with <i>essere</i>, <i>avere</i>, ...)	Target-deviant Verbs
Camilla	No	474	12
Elisa	No	244	1
Marco	No	760	3
Au_di	Yes	1454	13
Ja_di	Yes	189	3
Ma_di	Yes	564	4
Di_fis	Yes	183	0
Ju_fi	Yes	310	2
Si_fi	Yes	183	2

Table 9: Dataset for Statistical Analysis of Target-Deviant Verbs in Italian

Crucially, the consideration of the dataset in Table 9 suggests that significant differences between the two groups should not be assumed. The results of the Mann-Whitney U test, indeed, lead to the rejection of the main hypothesis and enable to conclude that the two groups do not differ significantly in the realization of target-deviant inflected verbs. Accordingly, it can be assumed that the acquisition of inflectional classes for monolingual and bilingual Italian children is performed with similar results.

Furthermore, the distribution of verbs in inflectional classes does not disclose any differences between the two groups. If all verbs are considered, all children realize mostly verbs belonging to class II, i.e. the *-ere* class, due to the frequent occurrence of the verb *essere* ‘to be’ in Italian. However, if types are observed instead of tokens, verbs of class I ending in *-are* in the infinitive form occur most frequently for all children. The distribution of target-deviant verbs in inflectional classes is comparable to the trend just observed, with class II including the highest number of errors for most children. The exclusion of *essere* and *avere* in copula and auxiliary constructions considerably change the observations, since class I represent the most frequent

inflectional class in children’s data, confirming the findings by Belletti & Guasti (2015:18). Class II and III verbs occur in less than 20% of the overall verb production in each child.

Concluding, the two groups behave similarly for the realization of verbs in Italian, confirming the general results found in the preceding sections. Crucially, the inflectional class system appears to be completely acquired by 3;5 which, for the present work, represents the age of the children for the last analysed recording. According to preceding studies, it can be expected that the children acquire inflection before the age of 2;6 years old. Considering the data without focusing on age or MLU development, both the monolingual and bilingual children appear to realize less than 3% target-deviant inflected utterances throughout the recordings, supporting the claim that “Italian children start to use verb inflections before age 2;0 and at about age 2;0–2;6 they master the three present singular inflections” (Belletti & Guasti 2015:9).

6.2.2 German

The German data present a situation that differs notably from that observed in Italian. In terms of the overall number of utterances produced, monolingual children generally produce a greater number of utterances, including a higher number of target-deviant utterances, compared to the bilingual children:

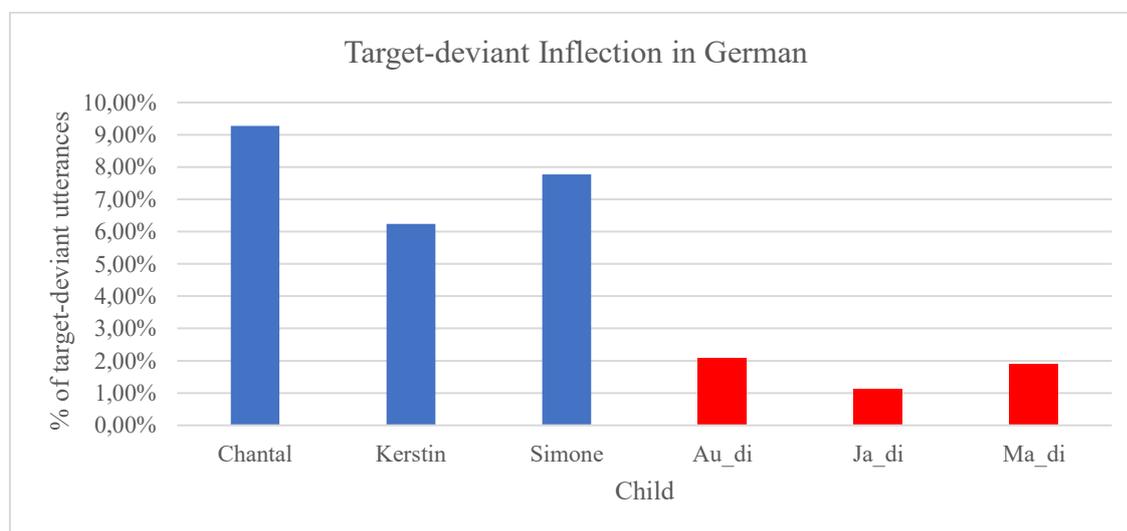


Figure 54: Ratio of target-deviant utterances in monolingual and bilingual German data

All monolingual children realize more than 6% of target-deviant inflected utterances throughout the recording period. As opposed to this result, all bilingual children produce less

than 2% of target-deviant inflected utterances. Crucially, a clear difference between the two groups can be observed in Figure 54. The question, however, arises as concerning the statistical difference between the groups, especially for the number of target-deviant utterances realized.

In order to test whether there is a significant difference between monolingual and bilingual children in German, the data were first checked for distribution and subsequently analysed. Then, a t-test (Welch Two Sample t-test) was conducted. The t-test was selected to compare two groups whose values follow a normal distribution. The dataset includes the number of target-deviant utterances for every child as concerning inflectional classes as well as the overall number of realized utterances:

<i>t.test(monolingual-German_target-deviant, bilingual-German_target-deviant)</i>			
Child	Bilingual	Utterances	target-deviant utterances
Chantal	No	2797	285
Kerstin	No	1757	92
Simone	No	2266	176
Au_di	Yes	684	15
Ja_di	yes	2830	38
Ma_di	yes	960	18

Table 10: Dataset for Statistical Analysis of Target-Deviant Utterances in German

The parametric test was initially conducted for the overall number of target-deviant utterances in German. The hypothesis that German monolingual children produce a higher number of non-target-like utterances was rejected, as the test did not yield significant results ($t = -3.2745$, $df = 2.0061$, $p\text{-value} < 0.05$). However, given the observable differences in the data (cf. Figure 54) and the purpose of the present analysis, a second t-test was performed. This test examined the ratio between target-deviant utterances and the total number of utterances for both groups. The results revealed a significant difference between the two groups ($t = -6.3665$, $df = 2.8407$, $p < 0.05$), indicating a consistent disparity between the groups. The groups are illustrated in the following graph:

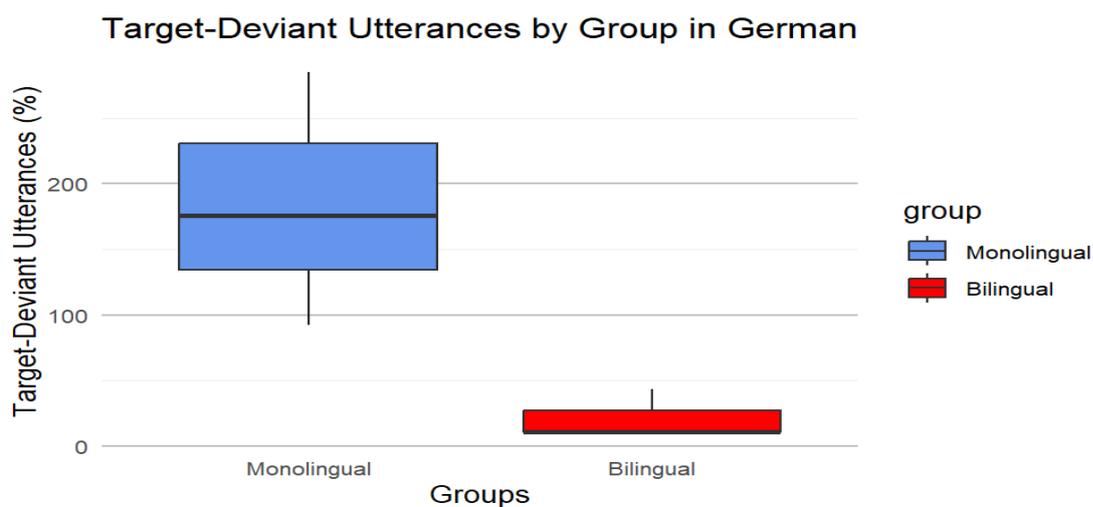


Figure 55: Ratio of target-deviant utterances by group in monolingual and bilingual German data

This result confirms the hypothesis formulated in 5, validating the claim that the two groups exhibit significant differences, as clearly represented in Figure 55. To explain this result, further aspects must be considered. The subsequent analysis will examine nouns, adjectives, and verbs separately to determine whether any particular category is more affected by the 'bilingual effect' in comparison to the others.

6.2.2.1 Nouns

Starting with the assumption that the German nominal system is relatively complex in comparison to the Italian and French with regard to the classification of nouns according to inflectional pattern, the first analysed category is the one of nouns. German nouns generally inflect according to ten different declension classes, as illustrated in 4.3.2.1. Similar to Italian, nouns are the most frequently occurring category in the early stages of language acquisition in German. All children, regardless of their language situation, produce target-deviant inflected DPs in less than 10% of the overall realized DP:

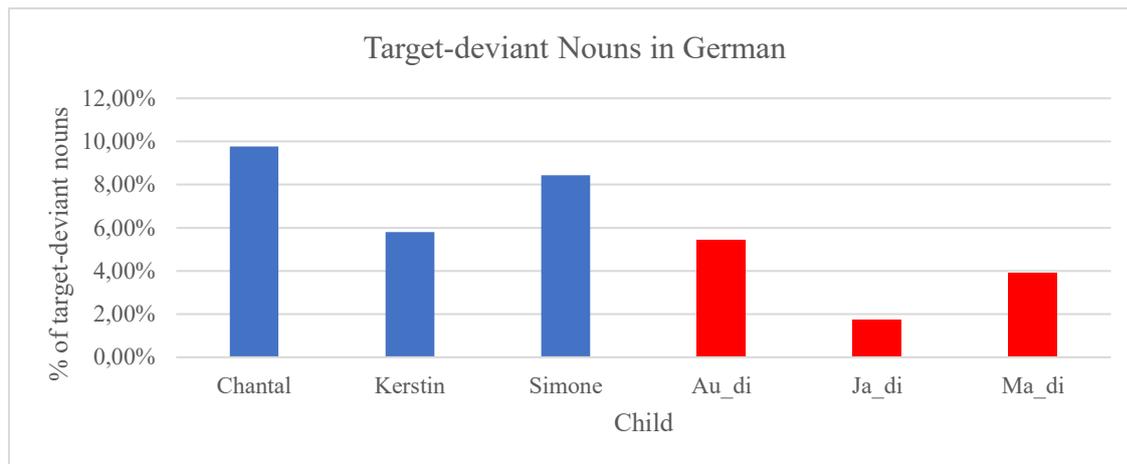


Figure 56: Ratio of target-deviant nouns in monolingual and bilingual German data

Notably, the bars representing the number of target-deviant nouns in the monolingual group in Figure 56 are clearly higher than the ones representing the bilingual children, with the exception of Kerstin from the monolingual group and Au_di from the bilingual group, both approaching a value of 6%. Among the other monolingual children, Chantal and Simone produce target-deviant DPs at a rate exceeding 8% of their total DPs. In contrast, Ja_di and Ma_di's percentages of target-deviant nouns remain below the 4%.

With regard to this observation, the question arises as concerning whether the difference between the two groups yields the significance value. In order to provide an answer to this question, parametric as well as non-parametric tests were carried out with the data reported in the table below:

<i>monolingual-German target-deviant nouns, bilingual-German target-deviant nouns</i>			
Child	Bilingual	Nouns	Target-deviant Nouns
Chantal	No	2068	202
Kerstin	No	878	51
Simone	No	1161	98
Au di	Yes	378	10
Ja di	Yes	1098	16
Ma di	Yes	566	13

Table 11: Dataset for Statistical Analysis of Target-Deviant Nouns in German

Table 11 presents the absolute values of realized DPs and target-deviant DPs for all children in the German group. Separate tests were conducted to compare the groups, both for the absolute number of target-deviant inflected nouns and for the ratio of these nouns to the overall number of DPs. The groups were compared using a t-test since the data are normally distributed. The test for absolute numbers did not yield significant results. However, the comparison of ratio values reached the significance threshold ($t = -2.693$, $df = 3.9998$, $p < 0.05$), indicating that the differences between the two groups observed in Figure 56 are statistically significant.

Regarding the distribution of nouns in declension classes, both monolingual and bilingual children exhibit similar patterns. Nonetheless, a chi-squared test was performed to identify differences that might not be immediately apparent. The results show a significant difference between monolinguals and bilinguals concerning the most frequently occurring declension class: monolingual German children predominantly use nouns from class VI, while bilingual German-Italian children favour nouns from class IX. This difference is statistically significant ($X^2 = 137.72$, $df = 9$, $p < 0.05$). However, no significant differences were observed in the general distribution of target-deviant nouns across declension classes. As expected, monolinguals make more errors with nouns from class VI, which is the most frequently occurring class in the monolingual data. Bilingual children, on the other hand, show comparable error rates in classes VI and IX, despite class IX being more frequent.

In conclusion, the findings indicate a statistically significant difference in the proportion of target-deviant nouns between monolingual and bilingual groups, with monolinguals exhibiting a higher proportion. This suggests that German declension classes for nouns are acquired with greater difficulty by monolinguals compared to German-Italian bilingual children. Monolingual children show a preference for class VI, whereas bilinguals more frequently use nouns from class IX. Despite this difference, the classification of target-deviant nouns into declension classes does not present significant variation.

6.2.2.2 Adjectives

German adjectives represent a complex scenario for language acquisition, since the class feature is not only morphologically but also syntactically active in the inflectional system. Consequently, the German adjectival system is generally expected to be acquired later and with greater difficulty compared to a language like Italian, i.e., a system in which class fulfils only

morphological functions. This section aims to determine whether quantitative differences between monolingual and bilingual groups can be established concerning German adjectives. Additionally, a qualitative analysis of data from further bilingual children with various language combinations⁷⁶ is conducted.

With regard to the realization of adjectives as well as target-deviant forms, the data reveal a clear trend:

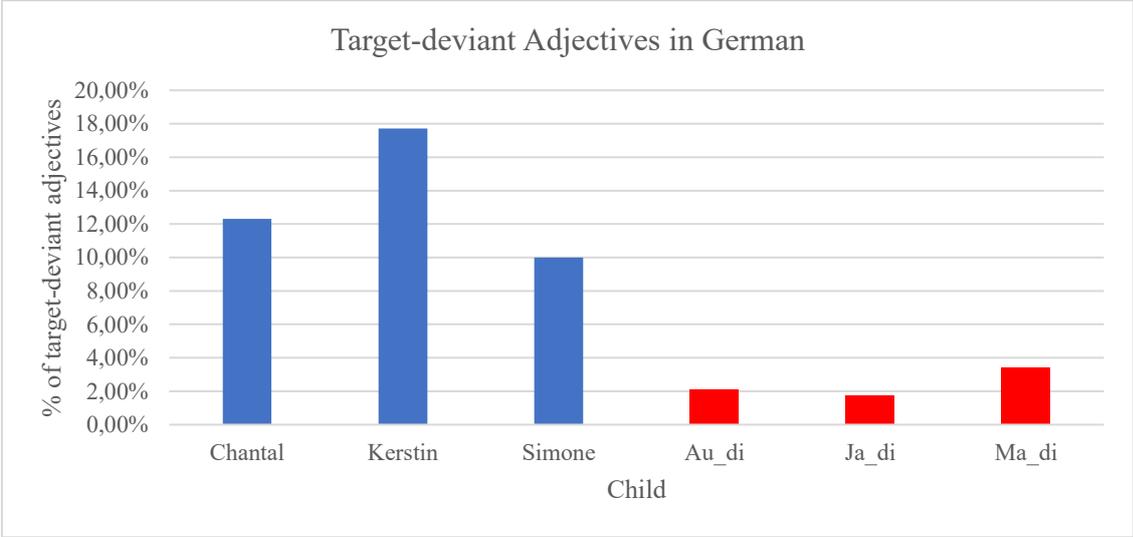


Figure 57: Ratio of target-deviant adjectives in monolingual and bilingual German data

As reported in Figure 57, the two groups exhibit markedly different results. In the monolingual groups, no child produces less than 10% target-deviant adjectives, while bilingual German-Italian children produce less than 4% target-deviant adjectives. While Figure 57 illustrates the relationship between the overall number of adjectives and target-deviant inflections, the following table provides the dataset used to statistically test the difference between the groups:

⁷⁶ The data were provided to me by Dr. Laia Arnaus Gil.

<i>monolingual-German_target-deviant_adj, bilingual-German_target-deviant_adj</i>			
Child	Bilingual	Adjectives	Target-deviant Adjectives
Chantal	No	58	7
Kerstin	No	96	17
Simone	No	200	20
Au_di	Yes	96	2
Ja_di	Yes	227	4
Ma_di	Yes	56	3

Table 12: Dataset for Statistical Analysis of Target-Deviant Adjectives in German

Since the data are normally distributed, two t-tests were carried out to compare the groups. The first t-test for the absolute numbers of target-deviant adjectives between monolingual and bilingual groups as reported in the column “target-deviant adjective” in Table 12 yields a t-value of -6.07 and a p-value lower than 0.05. Since the p-value is below the significance threshold of 0.05, it is possible to conclude that there is a statistically significant difference in the absolute number of target-deviant adjectives produced by the monolingual and bilingual groups. The negative t-value suggests that the monolingual group has a higher mean number of target-deviant adjectives compared to the bilingual group. The second t-test considers the number of target-deviant adjectives in relation to the overall number of uttered adjectives, as reported in the column “adjective” in the table above. Even in this case, the p-value reaches significance, since the value is under the 0.05 threshold and the t-value ($t = -5.02$) is represented by a negative value.

As for the distribution of adjectives in inflectional classes, monolingual and bilingual children realize most frequently adjectives of the strong inflectional class, i.e., without determiners. The observation of the data, as also reported for every child in the preceding sections, leads to clear results. This supports the findings of several studies on monolingual and bilingual children as concerning the omission of grammatical categories such as determiners in the first stages of language acquisition. Crucially, this phenomenon is observed in the data of both monolingual and bilingual children in German (see i.a. Kupisch 2001). As expected, the distribution of target-deviant adjectives in declension classes mirrors the distribution of the overall production⁷⁷.

⁷⁷ Since the numbers are really low, it was not possible to perform statistical analysis with the data.

As observed, monolingual and bilingual German children differ with respect to the realization of adjectives and, crucially, in the quantity of target-deviant adjectives. However, it is still to investigate whether the linguistic knowledge in Italian is the reason for this difference. Hence, a further qualitative analysis on adjectives were carried out with the data of four bilingual children who, as for the children of the present study, were collected longitudinally over a longer period of time. The four children are Al_df, Am_df, Ce_df und Lu_ds⁷⁸, with three of them acquiring French and German from birth and Lu_ds acquiring German simultaneously to Spanish. If the reason for the difference between the two groups lies in the declension system of Italian, which, according to Harris (1991) is similar to the Spanish inflectional system, then clear differences would not be expected between the bilingual French-German and the monolingual groups. However, if not only Italian but also further languages have an influence on the acquisition of German, namely languages in which the class feature is NOT syntactically relevant for ALL functional categories at a macro-parametric level, like Spanish and French, then less or even no target-deviant adjectives should occur in the data of these children. An overview of the data is reported in the table below:

Child	Adjectives	Target-deviant Adjectives	Target-deviant Declension
Al_df	157	13	5
Am_df	122	30	6
Ce_df	127	14	5
Lu_ds	89	8	3

Table 13: Realizations of adjectives in the four German-French and German-Spanish bilingual children

As reported in Table 13, the number of errors including target-deviant use of gender, number, or case occur more frequently than errors concerning declension classes. The relation between the overall adjective production and target-deviant inflection is below 4% for almost every child, as for the bilingual German-Italian children. The only exception is represented by Am_df, who realizes almost 5% of target-deviant adjectives as concerning the classification in declension classes.

⁷⁸ As for the other bilingual children and Chantal, the data were recorded for the project ‘Code-Switching bei bilingual aufwachsenden Kindern in Deutschland, Italien, Frankreich und Spanien: Italienisch-Deutsch, Französisch- Deutsch, Spanisch-Deutsch, Italienisch-Französisch, Italienisch-Spanisch, Französisch-Spanisch (2009–2011)’ (project number 107909018), granted to Natascha Müller at the University of Wuppertal, see N. Müller, Arnaus Gil, Eichler, Geveler, Hager, Jansen, Patuto, Repetto & Schmeißer (2015).

In conclusion, adjectives are acquired following different strategies by the monolingual and bilingual German-Italian children. From a quantitative point of view, the monolingual group realizes a significant higher number of target-deviant inflected adjectives in comparison to the bilingual children. This is also observed in the data of four bilingual French- and Spanish-German bilinguals, leading to the conclusion that is the other first language, i.e., Italian, French or Spanish, that has a beneficial effect on the acquisition of adjectives in German bilingual children.

6.2.2.3 Verbs

The analysis of verbs' production in monolingual and Italian-German bilingual children leads to the realization of several, different observations. As concerning the overall number of verbs, two of the three bilinguals, namely Au_di and Ma_di, realize fewer verbal forms in comparison to the other children. For this reason, target-deviant inflected forms are reported in percentages in relation to the overall number of TPs in the following figure:

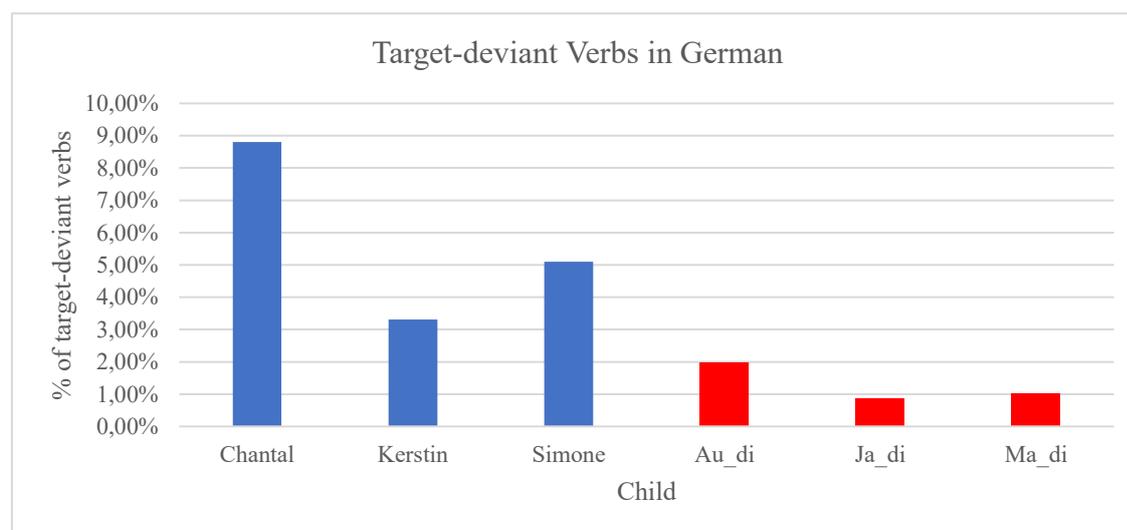


Figure 58: Ratio of target-deviant verbs in monolingual and bilingual German data

As for the preceding graphs about the acquisition of German, even in this case it is possible to detect differences between the two groups. The values, however, are considerably lower for verbs than for adjectives and nouns. The monolingual group generally realizes a higher number of verbs inflected according to the wrong inflectional classes than bilinguals. The difference is represented through a greater spark for Chantal and Simone in relation to Ja_di and Ma_di, while Kerstin and Au_di realize 3% and 2% of target-deviant inflected verbs, respectively.

As concerning the differences observed in Figure 58, parametric tests were conducted to compare the realization of target-deviant inflected verbs in the two groups.

<i>monolingual-German_target-deviant_verbs, bilingual-German_target-deviant_verbs)</i>			
Child	Bilingual	Verbs	Target-deviant Verbs
Chantal	No	809	44
Kerstin	No	725	24
Simone	No	902	49
Au_di	Yes	199	8
Ja_di	Yes	1505	5
Ma_di	Yes	291	4

Table 14: Dataset for Statistical Analysis of Target-Deviant Verbs in German

The data in Table 14 allow to consider the overall differences between the two groups that concern not only the target-deviant verbs but also the overall realization of verbs. Since the data are normally distributed, two t-tests were carried out to find out whether the overall number of target-deviant inflected verbs as well as the relation between them and the total realization of verbs provide significant results. Crucially, the results from the two tests report different outcomes. As for the overall number of target-deviant verbs, the monolingual group realizes a greater number with a p-value that reaches the significance threshold ($t = -4.4406$, $df = 2.099$, $p < 0.05$). A different result is yielded by the t-test concerning the relation between the TPs realized by the children and the number of target-deviant inflected verbs ($t = -2.7842$, $df = 2.1868$, $p > 0.05$), since the p-value does not reach the significance threshold.

As for the distribution of verbs in inflectional classes, differences can be observed between the two groups. If tokens are considered, the strong class and the verb *sein* ‘to be’ occur most frequently within the data of monolinguals and bilinguals. When types are considered, however, the most occurring class is the weak one for the bilingual group which is expected to be overgeneralized by the children. Although this observation applies to a portion of the monolingual data, the same trend is not found in the bilingual German-Italian verbs realization. The monolingual children, however, use verbs of the strong class more often than ones from the weak one. In order to find out whether this difference is also quantitatively represented, a chi² test was performed. The results for general verbs’ realization yield significant results ($X^2 = 150.76$, $df = 2$, $p < 0.05$). Differently, the class including most target-deviant inflected

verbs is the strong one which comprises verbs that are generally defined as inflecting according to “irregular” morphological patterns.

Summarizing, the verbal domain is acquired in a comparable fashion to the other categories in German. There are relevant differences between the monolingual and bilingual groups as concerning the realization of target-deviant verbs which, however, can only be determined through the observation of absolute numbers. The analysis of the proportion of target-deviant inflected verbs on the overall number of TPs, however, does not yield significant results. As for the distribution of verbs in inflectional classes, bilingual children prefer “regular” verbs, while monolingual realize mostly verbs from the strong inflectional class.

6.2.3 French

The acquisition of the French nominal and verbal system is generally described as a long process in monolingual children if agreement is considered, due to general difficulties in the distinction of feminine and masculine adjectives as well as the singular and plural form (cf. i.a. Prévost 2009). As concerning inflectional classes in the DP, the adjective system is not anymore inflected according to classes, while the nominal system only has one remaining class that includes a relatively small number of nouns. The verbal domain, diversely, represents a challenge since different theories diverge with respect to the analysis proposed (cf. i.a Dressler et al. 2006, Hinzelin 2017). Crucially, there are no studies concerned with the acquisition process of inflectional classes in monolingual and or bilingual children. Bearing this in mind, the following chart represents the number of target-deviant inflected DPs and TPs found in the

data of the monolingual and bilingual groups in relation to the overall number of realized utterances:

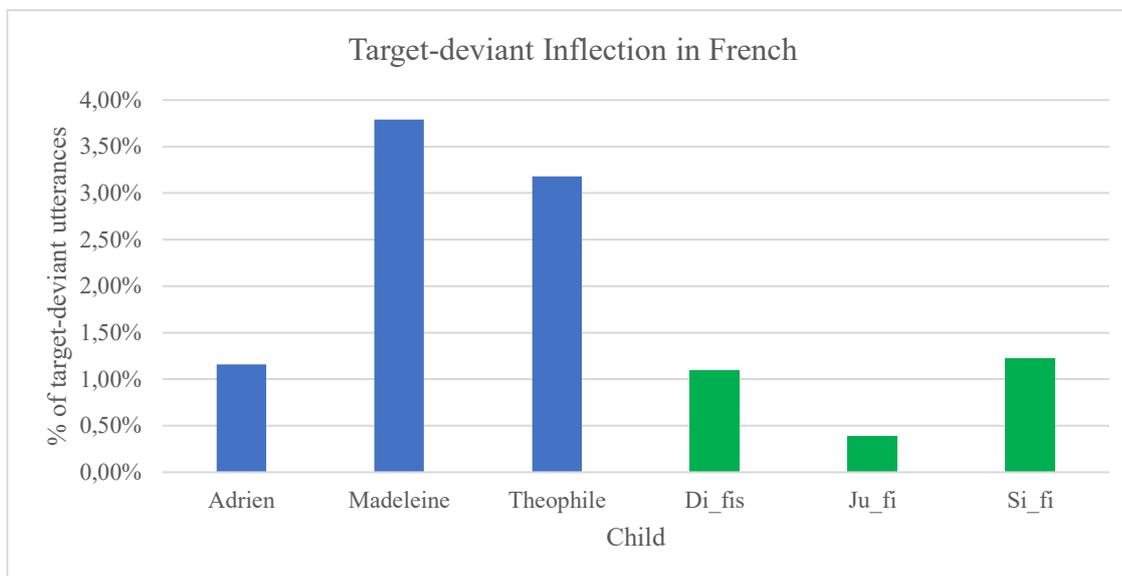


Figure 59: Ratio of target-deviant utterances in French

Crucially, the two groups exhibit differences both between and within them. On the one hand, the monolingual group, consisting of data from Adrien, Madeleine, and Théophile, shows varying patterns: Adrien produces a comparatively small number of target-deviant inflected utterances, whereas Madeleine and Théophile produce a significantly higher number of such errors. On the other hand, the bilingual group demonstrates relative homogeneity, with all three children showing less than 1.5% target-deviant inflected utterances. Regarding monolingual French acquisition, several studies report "tremendous variation across children" (Prévost 2009:27), a finding that is also reflected in these data. The source of the considerable interpersonal variation among the children remains an open question.

As already analysed for Italian and German, parametric and non-parametric tests depending on the data's distribution were carried out in order to check whether the differences between the two groups are statistically significant. The table below includes the data used for the analysis:

<i>monolingual-French _target-deviant, bilingual-French _target-deviant</i>			
Child	Bilingual	Utterances	Target-deviant Utterances
Adrien	No	1122	13
Madeleine	No	2611	99
Theophile	No	1383	44
Di_fis	Yes	638	7
Ju_fi	Yes	2382	13
Si_fi	Yes	979	12

Table 15: Dataset for Statistical Analysis of Target-Deviant Utterances in French

A first test considered the absolute values of target-deviant utterances in the two groups in order to establish potential differences. Since the data are not normally distributed, a Mann-Whitney U test was carried out in RStudio. The results reject the main hypothesis ($W = 0.5$, $p > 0.05$), allowing to maintain the null-hypothesis which expects no differences between the two groups. A second test concerning the proportion between the overall number of utterances and the target-deviant ones was performed. Since this time the data are normally distributed, a t-test was chosen to compare the groups. As for the preceding test, the results do not allow to find any statistically significant difference in the proportion of target-deviant utterances between the bilingual and monolingual groups ($t = -2.1585$, $df = 2.426$, $p > 0.05$).

Concluding, the two groups do not present significant differences from a quantitative perspective. Moreover, interpersonal variation within the monolingual and the bilingual group is observed in the data. The following sections provide a detailed examination of the acquisition processes of the French nominal and verbal systems separately, in order to facilitate a comparative analysis of monolingual and bilingual acquisition.

6.2.3.1 Nouns

The acquisition of the French nominal system has generally been analysed in bilingual children with either a focus on gender (i.a. Hager 2014) or number agreement (i.a. Koehn 1989, 1994) or on determiner realization (i.a. Kupisch 2007, Stahnke 2022). This study, however, examines declension without focusing on additional features. In terms of overall noun realization, monolingual and bilingual children differ both in the variability of the data and in the number of target-deviant determiner phrases (DPs) produced by each group:

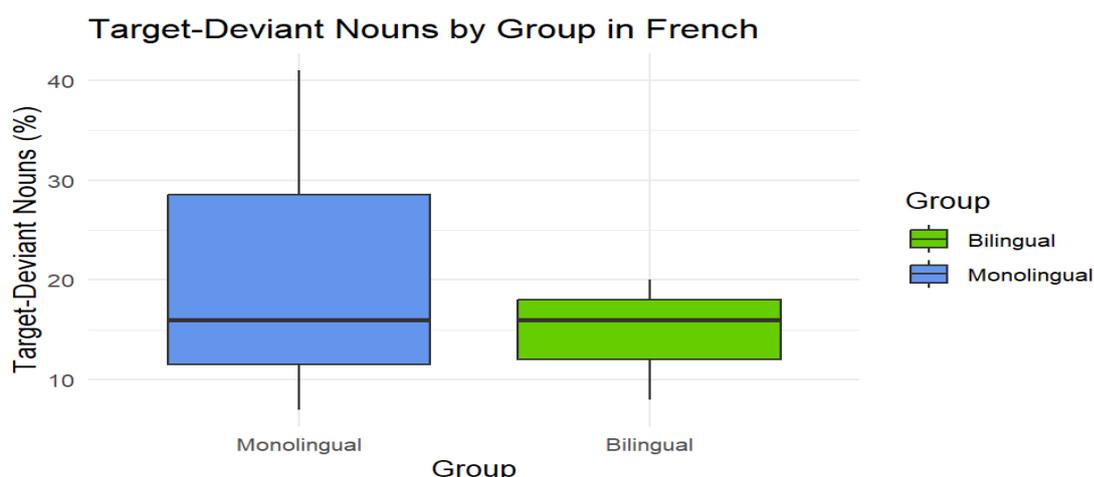


Figure 60: Ratio of target-deviant nouns in the data of monolingual and bilingual French group

The boxplot in Figure 60 provides relevant insights into the data distribution between the two groups. While the number of target-deviant nouns produced by the monolingual group varies considerably compared to the bilingual group, the median for both groups is slightly above the 15% threshold. In summary, the two groups do not exhibit clear differences. Statistical analysis, including t-tests performed after verifying the data distribution, corroborates this finding. Both the parametric test comparing absolute values of target-deviant nouns ($t = -0.61928$, $df = 2.4743$, $p > 0.05$) and the test analysing the ratio of target-deviant DPs to overall noun realization ($t = -0.25584$, $df = 2.711$, $p > 0.05$) yield non-significant results.

Regarding declension classes, the focus is on nouns ending in *-al* in the singular and *-aux* in the plural, which represent the remaining declension class in French, as discussed by Dressler et al. (2006), Becker et al. (2017) and Brinkmann et al. (2023). The analysis reveals that nouns from this class appear in only a very small number of determiner phrases (DPs) in both the monolingual and bilingual French data. In fact, some children do not produce any nouns from this class. The following table presents the total number of realized nouns, the number of nouns from the *-al/-aux* class produced by each child, and the target-deviant nouns within this class:

Child	Bilingual	Nouns	-al/-aux Nouns	Target-deviant -al/-aux Nouns
Adrien	No	444	3	0
Madeleine	No	1173	23	1
Theophile	No	679	0	0
Di_fis	Yes	433	10	0
Ju_fi	Yes	2187	39	2
Si_fi	Yes	836	16	3

Table 16: Dataset for Statistical Analysis of Target-Deviant Nouns in French

Crucially, the number of *-al/-aux* nouns realized by the children varies, while the number of target-deviant nouns belonging to this class does not exceed the 3 tokens for any of the children. In light of the data in Table 16, a consideration of the phenomenon in a quantitative perspective is not possible. However, a qualitative observation of the data allows to draw a first, tentative conclusion: there appears to be no differences between the two groups. The bilingual group generally realizes more nouns that belong to the *-al/-aux* class, while Adrien and Madeleine produce 28 tokens in total. The number of target-deviant inflected nouns, however, is also higher for the bilingual than the monolingual group. As reported for the general realization of utterances, there is variation across children even for the production of *-al/-aux* nouns.

In conclusion, French monolingual and bilingual children do not differ significantly with regard to the realization of nouns belonging to the *-al/-aux* group, i.e., the remaining declension class in French. Target-deviant *-al/-aux* nouns occur very rarely in the data as well. Nevertheless, a glance into the effect that time and MLU have on the acquisition of declension classes in French might reveal relevant information.

6.2.3.2 Adjectives

French adjectives are not inflected according to a class feature. Although the declension class *-al/-aux* appears in a similar morpho-phonological form in the adjectival system as well, the different inflection for feminine and masculine nouns as well as the status of *-al* as derivational affix leads to the exclusion of these adjectives from the further analysis for a study on declension class (cf. 4.3.2.2). For this reason, the adjectives will be presented only to offer an exhaustive analysis of the speech production data in French.

The overall realization of adjectives is presented by smaller numbers in comparison to nouns and verbs. As reported for German and Italian, also in French adjectives are generally realized

with less frequency than other categories. While from a qualitative perspective target-deviant DPs concerning gender and number inflection can be found in the data of monolingual and bilingual children, the quantitative analysis reveals consistent difference between both groups, as manifested in the following graph:

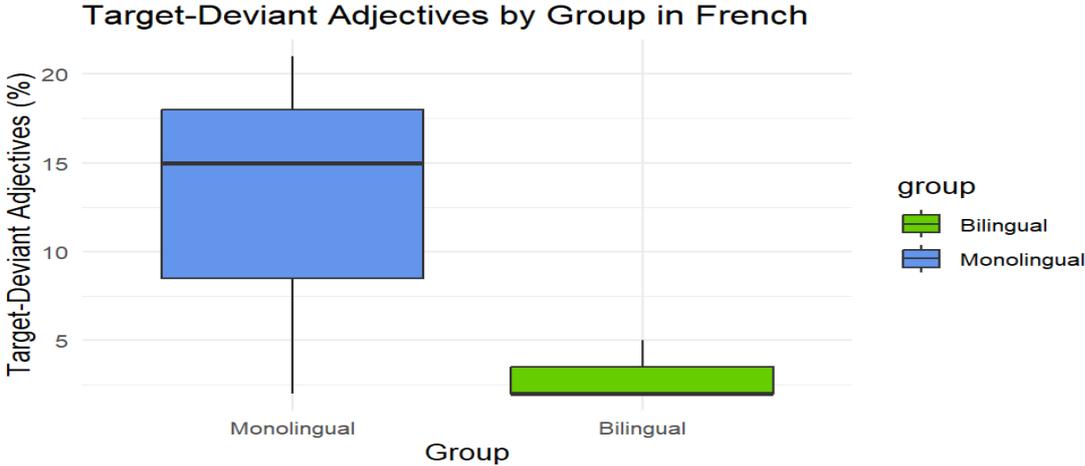


Figure 61: Ratio of target-deviant adjectives in monolingual and bilingual French data

The boxplot in Figure 61 reveals differing patterns in the realization of adjectives between monolingual and bilingual children. The distribution of target-deviant adjectives is notably broader in the monolingual group compared to the bilingual group, where the overall number of target-deviant adjectives is lower. To further analyse these differences, the Mann-Whitney U test was employed, a non-parametric method suitable for comparing groups with non-normally distributed data. The dataset used for this statistical analysis is provided in the following table:

Child	Bilingual	Adjectives	Target-deviant Adjectives
Adrien	No	144	3
Madeleine	No	478	15
Theophile	No	223	21
Di fis	Yes	88	2
Ju fi	Yes	374	5
Si fi	Yes	42	1

Table 17: Dataset for Statistical Analysis of Target-Deviant Adjectives in French

As reported in Table 17, the two groups produce a comparable number of adjectives. Initially, a test compared the absolute number of target-deviant adjectives between the groups, followed by a second test examining the proportion of target-deviant adjectives relative to the total

number of adjectives produced. However, neither of the parametric tests yielded significant results, leading to the conclusion that the differences observed in the boxplot in Figure 61 are not statistically significant and should therefore not be considered any further.

In conclusion, both monolingual and bilingual children produce target-deviant adjectives in French, including errors in gender or number marking. Although the monolingual group appears to make a higher number of errors, statistical comparisons do not support the observed differences between the two groups.

6.2.3.3 Verbs

The final category in the analysis of French involves verbs. The inflectional patterns found in the data from both monolingual and bilingual children reveal significant differences, consistent with observations from previous studies, such as the frequent occurrence of root infinitives and other non-finite forms in monolingual children's data compared to bilingual children (i.a. Prévost 2009). These phenomena have typically been associated with the acquisition of ϕ -features or subject realization rather than with inflectional classes. This study, however, focuses specifically on the acquisition of inflection and the classification of verbs into inflectional classes. The aim is to elucidate the phonological and morpho-syntactic phenomena observed in the children's data.

The analysis of inflectional patterns in the two groups enables a comparison of monolingual and bilingual children based on target-deviant inflected verbs. The following graph provides an overview of the errors in verb usage for each child in both groups. Although all instances of target-deviant verb usage were highlighted in the data, target-deviant subject omissions are excluded from this representation, as they fall outside the scope of the present study:

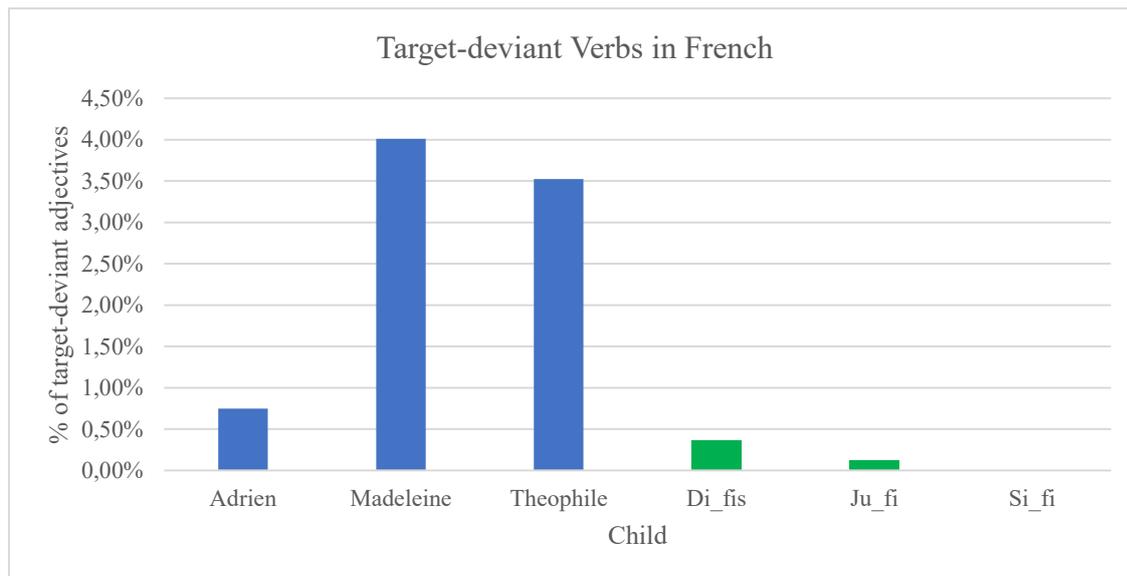


Figure 62: Ratio of target-deviant verbs in monolingual and bilingual French data

As illustrated in Figure 62, there are notable differences between the two groups across all children's data. Bilingual children exhibit a consistently low rate of target-deviant inflected verbs, remaining below the 1% threshold. In contrast, the data from the monolingual French children show considerable variation. Specifically, Adrien's rate of target-deviant verbs is similar to that of the bilingual children, while both Madeleine and Théophile show rates exceeding 3% for target-deviant inflected verbs. The absolute values for the proportions reported in the graph are detailed in the following table:

Child	Bilingual	Verbs	Target-deviant Verbs
Adrien	No	534	4
Madeleine	No	948	38
Theophile	No	539	19
Di_fis	Yes	277	1
Ju_fi	Yes	809	1
Si_fi	Yes	85	0

Table 18: Dataset for Statistical Analysis of Target-Deviant Verbs in French

The absolute values for target-deviant verbs as reported in Table 18, along with the proportion of target-deviant utterances relative to the overall number of verbs depicted in Figure 62, were analysed using both parametric and non-parametric tests to determine whether the observed differences are statistically significant. The Mann-Whitney U test, which compares the absolute values of target-deviant verbs between the two groups, did not provide sufficient evidence to

confirm a significant difference ($p > 0.05$). Similarly, the t-test conducted on the proportion data also failed to show statistically significant differences between the two groups ($p > 0.05$).

The distribution of verbs into inflectional classes remains an area for further investigation. Various approaches have been proposed in the literature to classify verbs into inflectional classes. This study considers two approaches: one based on the number of stems (Bonami & Boyé 2003) or following the Latin inflectional system (Schwarze (2009)). If either approach accurately reflects the French verbal system, a similar trend should be observable in the children's acquisitional data. An analysis based on the number of stems reveals that both monolingual and bilingual children frequently use verbs with six stems, such as *laver*, *manger*, and *couper*. Verbs with more than stems, such as *être* ('to be'), are the second most common, mostly appearing as auxiliary verbs. Verbs with several stems, such as *faire* ('to do') with five stems and *vouloir* ('to want') with at least three stems, are also notable. However, no consistent differences between monolingual and bilingual children emerge from this analysis. When classifying verbs according to the Latin inflectional classes, the distribution is similar across all children. The *-er* class (class I) is the most frequent, comprising over 40% of all verbs for each child. The second most common is class II, including verbs ending in *-re*, such as *être*. Class III (verbs ending in *-oir*) and class IV (verbs ending in *-ir*) are less frequent, accounting for about 20% and 10% of the total verbs, respectively.

An examination of target-deviant verbs using these classification methods reveals no significant differences between the groups. Furthermore, as discussed in chapter 5, these methods do not account for the inflectional errors observed in the children's data. A qualitative analysis of the most common verb types in errors among monolingual French children shows that the verbs *aller*, *être*, and *avoir* are frequently involved. These verbs share a notable feature: their inflections differ between the first- and third-person singular forms in the present indicative tense. Unlike verbs like *manger* or *vouloir*, which have consistent inflections for both persons, *aller*, *être*, and *avoir* present suppletion. The most frequent errors in the monolingual data involve using the third person singular inflection with a first-person singular subject, such as **j'a* or **je va*. The approaches proposed by Schwarze (2009) and by Bonami & Boyé (2003) do not account for these target-deviant forms.

In conclusion, while the realization of inflected verbs in monolingual and bilingual French data shows observable differences, they appear not to be statistically significant. The distribution of verbs into inflectional classes is explained by the adopted approach, with no notable differences between the groups. However, since neither approach effectively explains the target-deviant forms found in the monolingual data, the analysis reveals that verbs with differing audible inflections for the first- and third-person singular are the most frequent in target-deviant utterances.

6.3 Comparison over time and MLU

In the preceding sections, the monolingual and bilingual groups were compared across every system concerning the realization of target-deviant utterances, as well as the different categories of nouns, adjectives, and verbs. While no differences were found between the two groups in Italian and French, the German data reveal a trend: bilingual children generally produced fewer target-deviant utterances than monolingual children. However, it remains to be determined whether factors such as age, mean length of utterance (MLU), and the number of utterances produced affect the realization of nouns, adjectives, and verbs.

To investigate whether these factors influence the number of target-deviant utterances and the realization of nouns, adjectives, and verbs in the three languages, different models were employed using RStudio. The following sections focus, first, on the effect of age, a factor extensively examined in the literature. After testing whether age affects the realization of target-deviant utterances and the different categories in each language, the discussion shifts to the effect of MLU, an aspect crucial for first language development.

6.3.1 The acquisition of inflectional classes in Italian over time

Monolingual and bilingual children go through several phases as concerning the acquisition of the DP and TP in Italian. For instance, determiner omissions occur often in the first stages of language development in Italian (Bottari et al. 1993). In the meantime, children slowly acquire the features that are expressed through D and accordingly realize determiners, generally starting at the age of 2;6, which is generally considered the age at which monolingual children acquire gender, number and further aspects of the Italian language (Belletti & Guasti 2015).

The data in 6.1.1.1 as well as in 6.2.1 show that, even though some differences can be found between the two groups of children observed in the present work, the children present comparable data from a general perspective. In order to find out whether aspects such as MLU, bilingualism and the overall number of utterances have an effect on the production of target-deviant inflected items, a linear model was carried out in which the target-deviant utterances represent the independent variable, while the highest MLU value of every child in Italian, the bilingual variable and the total number of produced utterances from every child were considered as the dependent variables. The data, with exception of the MLU values for every child, are reported in Table 6. Crucially, the model indicates a significant effect of MLU, bilingualism, and number of utterances on the production of errors:

lm (target-deviant utterances ~ MLU + bilingualism + utterances)	Estimate	Std. error	t value	p value
Intercept	77.26	19.74	3.91	< 0.05*
MLU	-16.25	4.44	-3.66	< 0.05*
Bilingualism	-14.71	4.65	-3.16	< 0.05*
Utterances	0.02	0.002	6.84	< 0.01**

Table 19: Results from linear model for several predictors on realization of utterances in Italian

All aspects appear to be predictors for the realization of target-deviant utterances in Italian. While higher MLU values and bilingualism generally lead to a lower number of target-deviant utterances, as manifested by the t-value, a higher production of utterances correlates with more target-deviant sentences as well. For this reason, it appears crucial to further consider this variable, especially in the groups that showed significant differences, since monolingual and bilingual generally realize a different number of utterances, depending on the language and the category analysed. Moreover, a second test to consider the interaction of the dependent variable was outlined. As soon as bilingualism and MLU were included as interaction term in the model, bilingualism does not represent a significant predictor anymore. Even the interaction term is not a significant predictor. However, the variables MLU and total number of utterances maintain significance at a threshold of $p > 0.05$.

The variable of time has not been considered within the data yet. It is, however, extremely relevant in order to establish the age at which inflectional classes are acquired and, crucially, whether children might differ as concerning the acquisition of inflectional classes over time,

rather than from a general perspective as considered in the previous sections. Figure 63 represents the development of target-deviant utterances in the monolingual and bilingual Italian group over time:

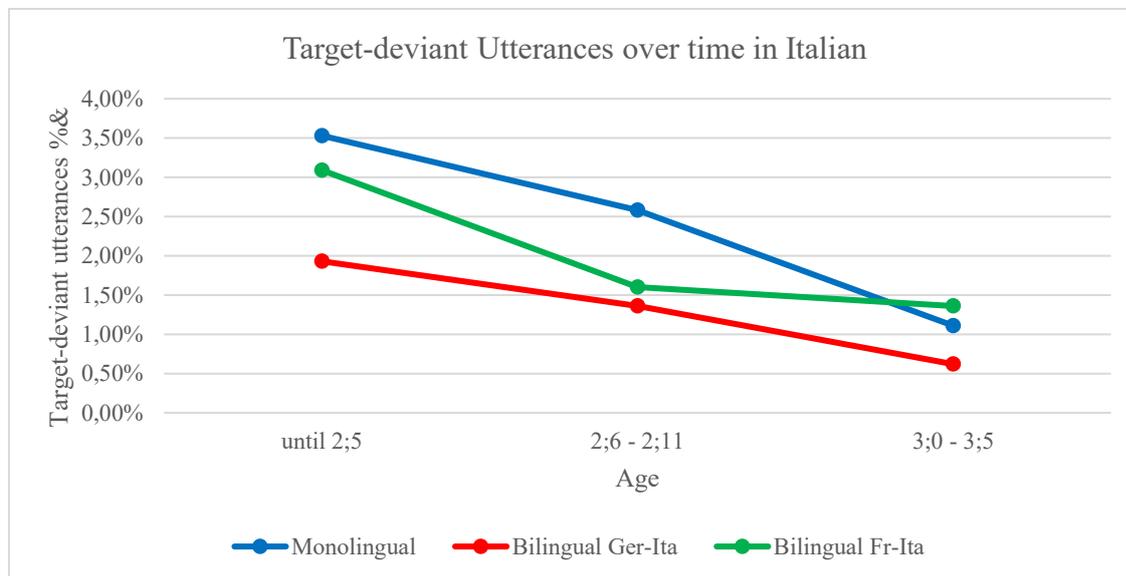


Figure 63: Target deviant utterances over time in Italian

The data of the monolingual and bilingual children were considered in three stages: a first phase until the age of 2;5, a second one includes data from 2;6 to 2;11 and, in a last stage, until 3;5 years old. Since Elisa and Marco were recorded until the age of 2;4, their data are represented only in the first span in Figure 63. Similarly, Di_fi's data were collected starting at the age of 2;8 and, hence, the data of this child are missing in the first stage. Crucially, all children – with the exception of Camilla – realize in every phase less than 3% of target-deviant utterances. Moreover, a general trend can be recognized in the data: the number of target-deviant utterances consistently declines for every group. Even though in some groups the decrease is more dramatic than in others, this can be defined as a general trend.

The values reported in Figure 63 on the y-axes were considered as independent variable in a linear mixed-effect model that tests the effect of MLU, bilingualism, the number of realized utterances for every phase in the monolingual and bilingual group for every observation time as well as a random effect for the child variable upon the independent variable. The results of the model show that time, MLU and the number or realized utterances influence the production of target-deviant utterances significantly. While a higher MLU value and a higher age positively

correlate with fewer target-deviant utterances, the number of inflectional errors increases along the number of produced utterances.

A comparable analysis was also carried out for the three categories investigated in the present work, i.e., nouns, adjectives and verbs. The data can be observed in Table 7, Table 8 and Table 9. As for the absolute numbers of target-deviant inflected nouns as well as the proportion of target-deviant inflected nouns, adjectives and verbs with regard to the overall realization of every category, the monolingual and the bilingual children commit a higher number of errors in the first recording phase, i.e., until the age of 2;5, which consistently decreases until the last recording phase from 3;0 to 3;5. In this last phase, the percentage of errors for every category is below 4%. Statistically, different linear mixed-effect models were performed, in order to find out whether age, bilingualism, MLU and the overall number of utterances have a significant effect on the production of inflectional errors, either as absolute numbers or as proportions. In all models, target-deviant nouns, adjectives and verbs depend on the overall number of categories realized. For instance, a higher number of realized nouns correlates with a higher number of target-deviant nouns. While this applies to all categories, factors such as MLU and time present significant p-values only for nouns and adjectives but not for verbs. The estimate values in all models show a tendency as concerning fewer errors in correlation to an increasing age and MLU. Bilingualism also correlates in all models with a decreased number of errors in the respective category, the p-value however never reaches the significance threshold.

Concluding, the quantitative analysis allows to confirm a general expectation, namely the general decrease of errors in correlation with a higher age of the children. This can be found in the overall data, without distinction between monolingual and bilingual Italian children. Within the bilingual group, no differences can be observed between the balanced child Ma_di and the unbalanced children Au_di and Ja_di with respect to the overall realization of target-deviant inflected utterances. Crucially, Ja_di, i.e., the child with a strong preference for German over Italian, behaves similarly to Au_di and Ma_di in Italian as well as to the monolingual Italian children. Further factors that influence the results are the MLU values and the overall number of realized elements for every category. However, there are no significant differences between the monolingual and bilingual group with regard to this matter. This leads to the conclusion that the two groups develop the language at a similar pace throughout the recording period with respect to the age factor.

6.3.2 The acquisition of inflectional classes in German over time

The acquisition of German by monolingual and bilingual children has been investigated in several studies and, with respect to the development of different categories, most works show that older children commit generally less errors than younger ones. Comparing children acquiring different languages, German children are reported to still realize target-deviant utterances with respect to, for example, grammatical gender at the age of 4 (Kauschke 2012), while gender in Italian is defined as acquired at the age of 2;6 (Chini 1995:103). Since the feature investigated in the present study has not been considered yet in the acquisition process, the factor of time as concerning the acquisition of declension classes in German might represent a significant aspect that enables to explain the difference between the two groups. Considering an acceleration effect in the terms of N. Müller (2024a), it is crucial to investigate whether it can be found in the observation of age or MLU for inflectional classes.

First, the focus lies on age. The data of the monolingual and bilingual German children were accordingly divided into three age spans, comparable to the ones outlined in the preceding section for Italian. The following illustration outlines the realization of target-deviant utterances over time in the monolingual and bilingual children. In order to successfully illustrate the opposing trend in the two groups, the following graph includes the average mean values for every group:

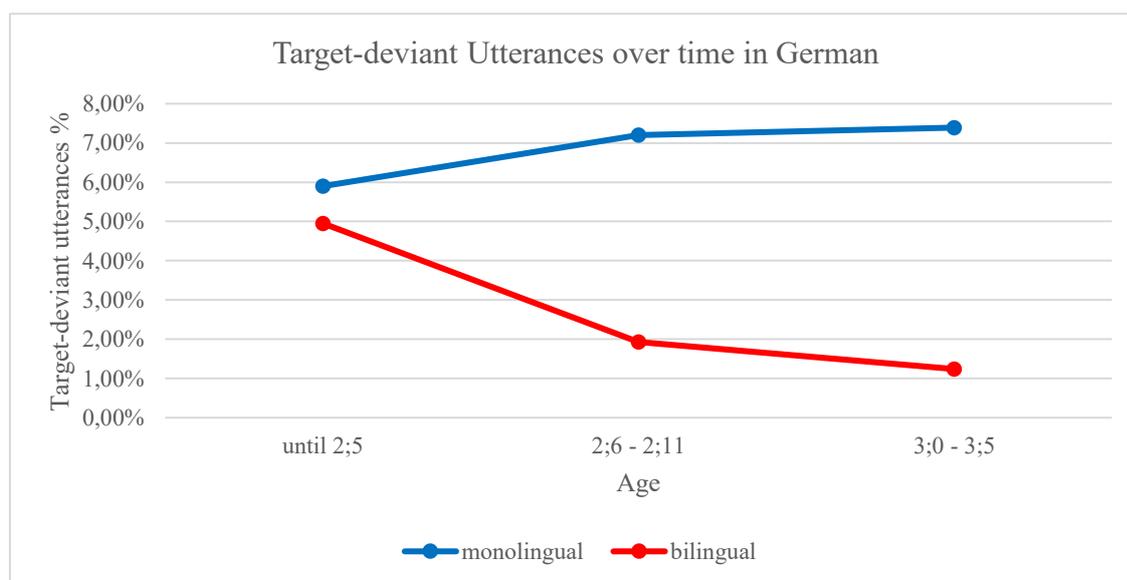


Figure 64: Target-deviant utterances over time in German

Crucially, the two groups behave differently as concerning the acquisition of inflectional classes over time. While the bilingual children decrease the number of target-deviant inflected utterances consistently over time, the proportion of errors on the overall realized utterances increases in the monolingual group, even though the growth is only of about 1%. A linear mixed-effect model considers the dependent variables that might have a positive or negative effect on the realization of target-deviant utterances in the two groups, i.e. MLU development over time, bilingualism and the overall number of realized utterances in the three age spans analysed. The analysis finds that only bilingualism has a significant effect on target-deviant utterances ($p > 0.05$) when absolute numbers as well as proportions on the realized utterances are taken into consideration. Hence, the statistical analysis confirms that bilingual children acquire inflectional classes earlier than monolinguals, if the children are compared on the basis of age.

Further tests were conducted to explore whether the differences can be found in all investigated categories, i.e. nouns, adjectives and verbs. While the data show that the trend observed in Figure 66 can be found in all three categories, the consideration of the effect of further aspects allows to consider several factors as significantly influencing the data. For nouns, a linear mixed-effect model based on the absolute number of target-deviant utterances found no significant effects. If proportions are included in the model, however, bilingualism has a significant effect on the realization of target-deviant inflected nouns. Age, MLU and the overall number of realized nouns, instead, do not influence significantly the independent variable. The absolute number of target-deviant adjectives, on the other hand, is affected by bilingualism and time, since bilinguals as well as older children realize fewer target-deviant inflected adjectives. While this is also true if proportions are considered, the overall number of produced adjectives also emerges as significant effect in this further analysis. Finally, the results as concerning verbs are comparable to the ones reported for nouns, since only bilingualism significantly affect the realization of target-deviant TPs.

Concluding, German-Italian bilingual children appear accelerated with regard to the acquisition of inflectional classes for all three categories analysed in the present work. Variables such as time, however, do not seem to significantly affect any category. Accordingly, in 6.3.5 the data are compared on the basis of MLU in order to potentially explain the acceleration observed through the MLU development, rather than through time.

6.3.3 The acquisition of inflectional classes in French over time

French represents a particularly complex case in the present analysis since, as previously discussed, the number of nouns still being inflected according to declension classes is relatively low and, hence, only a few instances can be found in the data of the monolingual and bilingual French children. Moreover, adjectives seem not to inflect for class but rather to have completely expelled this feature from their inventory and, thus, to inflect only according to gender and number values. For this reason, a quantitative analysis for the nominal system over time – or MLU – represents a challenge, considering that the numbers are very low. Regarding verbs, the field remains open to identifying the theory that best represents the data (cf. 6.2.3.3).

Considering the development of the overall number of target-deviant inflected utterances over time, the two groups generally realize a low number of errors:

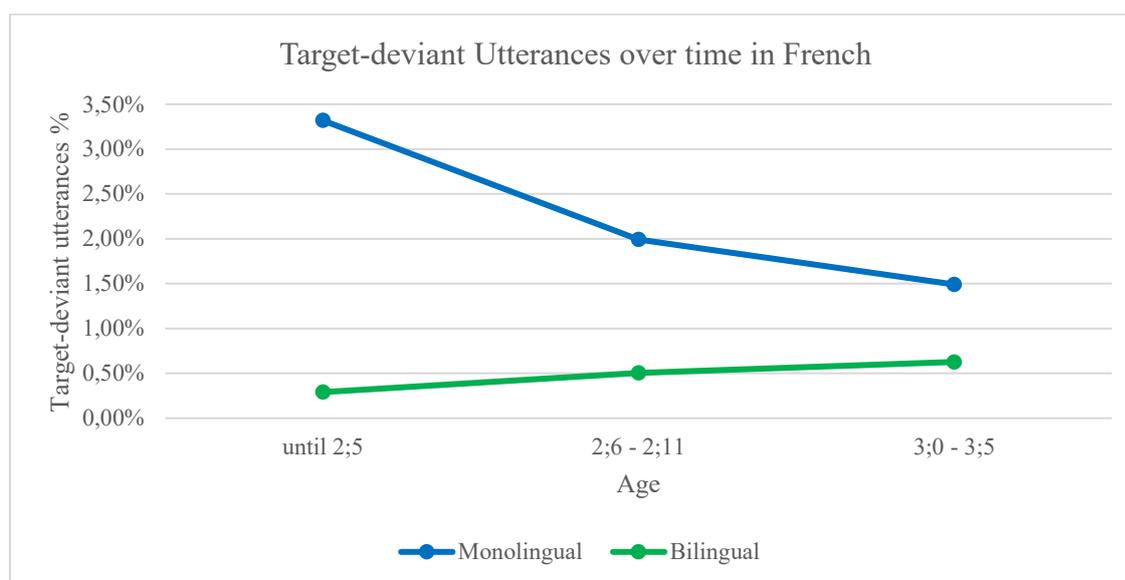


Figure 65: Target-deviant utterances over time in French

The graph represents the proportions of target-deviant utterances in relation to the overall number of produced utterances for the two groups. Crucially, the y-axis presents data from 0 to 3,5% with an interval of 0,5%, showing the small size of variation found within the data. The bilingual children realize less than 1% of target-deviant utterances throughout the recording period. Oppositely, the number of target-deviant utterances in the monolingual French children begins with the value of 3,3% and consistently decreases in the considered age spans. Two linear mixed-effect models considering the number of target-deviant inflected utterances and

the proportion of target-deviant utterances over time found that the two groups do not significantly differ. Although the estimated values for bilinguals is represented by a negative number, pointing to a general tendency in bilinguals of committing fewer errors, this factor is not statistically relevant. Moreover, increasing age and number of utterances tend to affect the number of errors by lowering the estimated values. As for MLU, the effect is the opposite, since higher MLU values correlate with more errors.

Nouns and adjectives were not further considered in the analysis, since the first category is represented by no nouns in some children and only a very few instances in other, while the second category does not inflect according to a class feature according to the approach proposed in 4.5. Verbs, however, represent a relevant class in French as concerning inflectional classes, since different proposals have been put forth and none of them has ever been investigated with regard to language acquisition. With regard to target-deviant inflection of verbs over time, the statistical analysis does not point to any significant factors. Moreover, the two groups do not significantly differ. Although a trend can be observed in the data reported in Table 18, the comparison allows to exclude the existence of consistent differences, at least with regard to the children analysed in the present work.

Concluding, monolingual and bilingual French children present differences in the acquisition of inflectional classes which, however, are complex to represent from a quantitative perspective. Hence, the comparison of the two groups can only take place through a qualitative observation, as proposed in 6.1.1.3 and 6.1.2.2.

6.3.4 The acquisition of inflectional classes in Italian over MLU

In 6.3.1, the linear mixed-effect models found a general negative correlation with higher MLU values, pointing to the fact that longer utterances contain fewer errors. Although this result contrasts with the general claim that “utterances increase in length and complexity, more errors are predicted to occur” (Castilla-Earls, Francis & Iglesias 2022:241) the MLU has been valued as one of the most relevant aspects in order to determine children’s language developmental stages (Brown 1973:53).

The data of the monolingual and bilingual children were separated into 6 stages according to the MLU value of every recording. The first stage includes the realization of 1.5 words, while

in the following three stages the MLU increases of 0.5 words. The last two stages comprise the data of the children for the MLU with a growth of one word, starting with an MLU of 3.1 to 4.0 for stage 5 and from 4.1 to the highest value for last stage⁷⁹. These stages were then considered for every child in Italian together with the age span, the overall number of utterances and the target-deviant utterances. The following graph includes an overview of the data of the monolingual and bilingual children as concerning the realization of utterances and the MLU development:

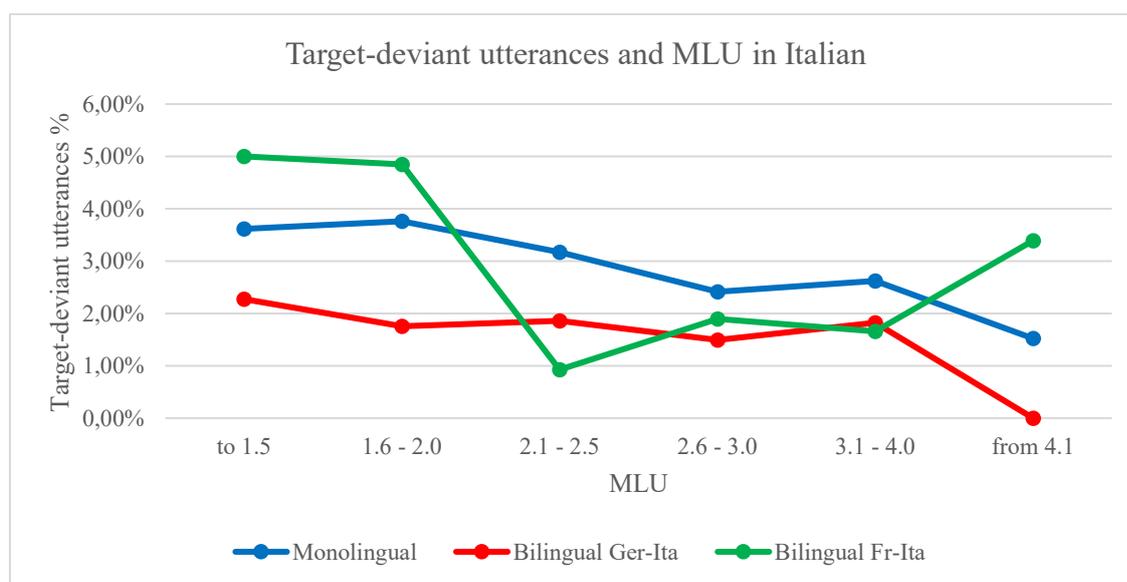


Figure 66: Target-deviant utterances and MLU in Italian

The data reported in Figure 66 show that, throughout all MLU stages, the children realize a comparable number of target-deviant utterances in Italian. In particular, the bilingual German-Italian children realize less 2% of target-deviant utterances throughout all MLU phases, while the monolingual Italian children steadily decrease the number of errors. The bilingual French-Italian group follows a similar path to the one of the monolingual children, even though in the last MLU span the values partially increase. With regard to this observation, it must be taken into account that neither Di_fis nor Ju_fi reaches the 4.1 MLU value throughout the analysed period and, hence, the data on the graph report only Si_fi's target-deviant utterances and not the average value of several children, as for the other groups.

⁷⁹ The MLU stages were determined on the basis of the available data.

As for the statistical analysis, a mixed-effect model with the absolute number of target-deviant inflected utterances as independent variable and age, bilingualism and the overall number of realized utterances as dependent variables was carried out. The results show that, generally, monolinguals tend to produce more target-deviant utterances than bilinguals. The bilingual factor, however, does not reach the significance threshold, leading to the conclusion that the two groups do not significantly differ. As for MLU and the number of realized utterances, the estimated values show that the two factors correlate with a decrease and increase of target-deviant utterances respectively. Comparable results are outlined from a mixed-effect model that considers the proportion of target-deviant utterances on the overall number of realized DPs and TPs as independent variables, rather than the absolute number. Also in this case, the two groups do not differ significantly.

The investigation of differences as concerning the categories of nouns, adjectives and verbs leads to the conclusion that, while higher MLU values generally correlate with less target-deviant inflected utterances for all three categories, the children behave comparably throughout the recording time. In conclusion, factors such as MLU, time and the number of realized utterances have an effect on speech production in monolingual and bilingual Italian children. Crucially, the two groups do not significantly differ and accordingly acquire inflectional classes at a comparable pace.

6.3.5 The acquisition of inflectional classes in German over MLU

In the following, the investigation proceeds as concerning the level on which the acceleration effect is to be found in the bilingual children. If the factor time does not deliver significant results, the MLU might uphold a crucial role. For this reason, the data were first categorized according to the MLU value reached by every child in every recording and, afterwards, separated into six MLU spans, as observed for Italian. The data are illustrated in the following graph:

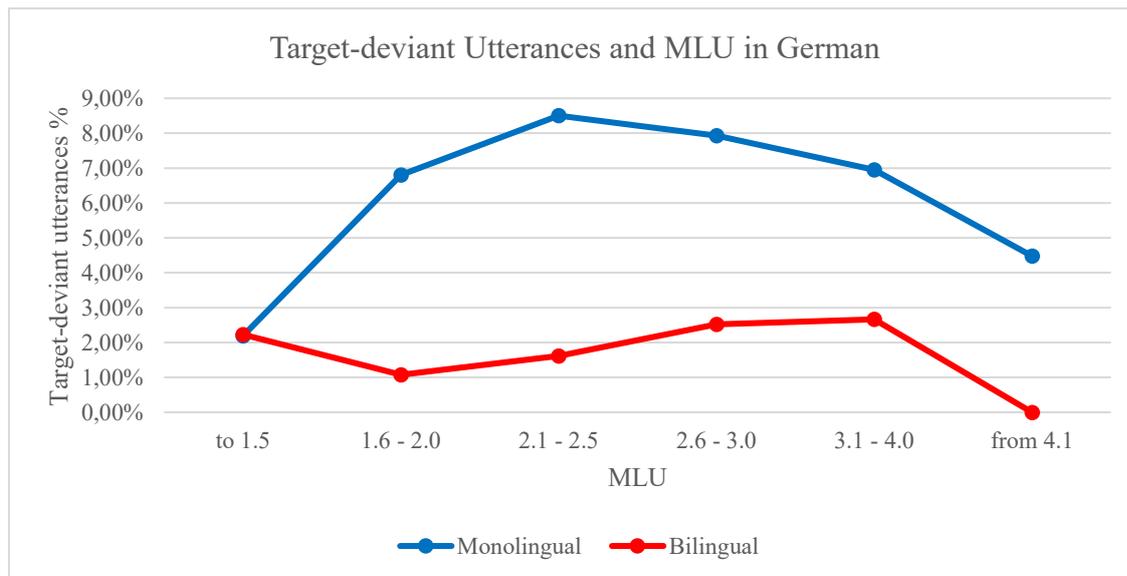


Figure 67: Target-deviant utterances and MLU in German

The monolingual and bilingual group crucially starts at the same point, that equals 2%. In further stages, however, the two groups behave oppositely, since the proportion of target-deviant utterances in relation to the overall number of produced utterances increase in monolinguals, while it decreases in bilinguals. Throughout all MLU spans, the bilingual children never realize over 3% of inflectional errors in average. The monolinguals, however, stay always over the point of 4% errors. This result is consistent with the trend observed in Figure 64 since MLU generally increases with time as well.

The following step was to carry out several mixed-effect models to find out whether MLU is a relevant factor as concerning the realization of target-deviant utterances. As in the preceding sections, separate analyses were outlined which considered either the absolute number of errors or the proportion of errors in relation to the overall number of realized utterances as independent variables. Crucially, the results are comparable to the ones observed for the production of target-deviant utterances over time. While bilingualism reaches significance in every model, further aspects do not appear to significantly affect the realization of errors in German. When the different categories are considered separately, however, also the overall number of realized nouns, adjectives and verbs gain significance.

Summarizing, the findings point to an acceleration effect in bilingual German-Italian children over the monolingual German children. The effect is found in all bilingual children consistently,

without differences between balanced and unbalanced language development. While the difference between both groups generally decreases with higher MLU values as well as with lower age values, the effect can be found throughout the age spans and MLU-spans analysed in the present work.

6.3.6 The acquisition of inflectional classes in French over MLU

The final analysis focuses on the acquisition of inflection in French throughout the development of mean length of utterance (MLU). As previously reported, there is limited data available. However, it is crucial to determine whether MLU significantly affects language acquisition differently in monolingual and bilingual children. Understanding these differences can provide valuable insights into the developmental trajectories of inflectional morphology in these two groups. The general trend is reported in the following graph:

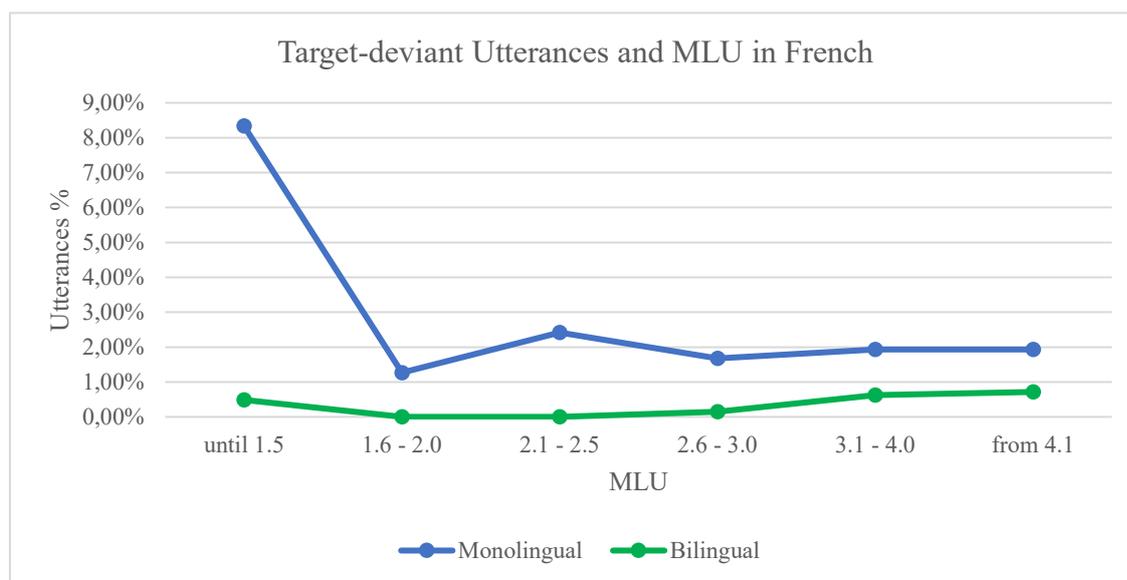


Figure 68: Target-deviant utterances and MLU in French

Considering the data in MLU spans allows to detect the general trend in the two groups. While the monolingual children realize a high number of target-deviant inflected utterances until an MLU of 1.5, the bilingual French-Italian group never realize more than 1% of target-deviant utterances throughout all MLU phases. This observation represents a crucial finding for the present study, since it enables to compare the monolingual and bilingual group in light of the approach outlined in the preceding sections. However, evident differences can only be found in

the first MLU stage, while in the second phase all children realize less than 3% of target-deviant utterances.

A last, statistical analysis was carried out to quantitatively account for the trends observed in Figure 68. Mixed-effect models were conducted in RStudio which considered the effect of the dependent variables bilingualism, age, MLU, and the overall number of utterances (or nouns and verbs in the corresponding model, respectively) on the independent variable, i.e. the number of target-deviant utterances, nouns, and verbs for every model. Moreover, the analysis was conducted for the absolute number as well as for the proportion of every variable on the overall produced categories. While bilingualism is always represented by a negative t-value, indicating that the bilingual children in this study generally realize less target-deviant utterances than monolinguals, the p-value is never below the significance threshold in all models. When absolute values are considered, the rate of language production significantly affect the independent variable. If proportion of target-deviant utterances or nouns or verbs are designed as the independent variable, age is a significant predictor, indicating that older children realize significantly less target-deviant inflected utterances than younger children.

In conclusion, the distribution of data in MLU phases for monolingual and bilingual children in French reveal that, in the first MLU phase, bilingual and monolingual French children differ. By an MLU value of 2.0, however, the two groups produce a comparable number of target-deviant utterances concerning inflectional classes.

6.4 Summary of results

The analysis presented in this chapter reveals crucial trends in language acquisition for both groups of children. Monolingual and bilingual children show significant differences in their use of German, whereas bilingualism does not appear to affect the acquisition of Italian and French.

Starting with Italian, monolingual and multilingual children realize less than 4% target-deviant utterances from the beginning, i.e., from the age of 1;10. Neither nouns nor adjectives or verbs are particularly affected by inflectional errors. Furthermore, the comparison of the two groups over time and MLU leads to different observations. While both factors do not represent significant variables within the different linear mixed-effect models outlined in each section, the comparison over time shows a similar trend throughout the three groups, since the – already

low – number of target-deviant utterances consistently decreases for all children. As for the acquisition of inflection over increasing MLU, the monolingual and bilingual German-Italian groups are characterized by a slow decline of the number of errors, while the French-Italian bilinguals dramatically decrease the production of target-deviant utterances from an MLU of 2.0.

In German, the two groups are characterized by significant differences. Monolingual children realize a higher number of target-deviant utterances with regard to inflection from the very beginning, while bilingual German-Italian children produce only a small number of errors. This difference is statistically significant. Moreover, the acquisition of the analysed categories, i.e., nouns, adjectives, and verbs, is characterized by significant differences between the two groups. The analysis of the acquisition over time indicates that the monolingual and bilingual children start at a comparison point, evolving however in different directions, with monolingual children consistently increasing the number of target-deviant utterances within the three considered stages. Oppositely, the ratio of target-deviant adjectives decreases over time for bilingual children. With regard to the MLU, the development is comparable to the one just observed, since monolingual children realize 5% of target-deviant utterances at an MLU of 4.1, while German-Italian bilingual children reach the 0% within the last MLU phase.

The findings with regard to French show that the monolingual and bilingual children behave similarly with regard to the production of target-deviant utterances. As reported for all children, no qualitative differences can be found between the two groups. Nouns and adjectives are characterized by a similar rate of acquisition. Verbs indicate an evident difference between monolingual and French-Italian bilingual children in Figure 62 that, however, does not reach statistical significance. While the comparison over time supports the general hypothesis that older children realize less errors, Figure 68 shows that the monolingual French group realizes almost 9% of target-deviant utterances at an MLU of 1.5, while the bilingual children produce less than 1% of errors throughout all MLU phases.

7 Discussion

In the preceding chapter, the results of the qualitative and quantitative analyses were delineated. The findings uncover three contexts in which inflectional classes fulfil relevant functions for the language acquisition process. First, inflection in Italian is generally acquired very early by monolingual and bilingual children. For bilinguals, whether the other language(s) presents a class feature that is only morphologically active or that also fulfils syntactic functions does not seem to affect the acquisition of the inflectional morphology in Italian. Second, German is acquired later than Italian when the two monolingual groups are compared on the basis of age and MLU. As for bilingual children, acquiring Italian simultaneously to German appears to beneficially influence and, thus, to accelerate the acquisition of inflection in German compared to monolingual children. Third, French presents similarities to Italian in the acquisition process. On the one hand, the acquisition of declension classes is affected by interpersonal variation within the monolingual and bilingual group, with some children realizing a high number of *-al/-aux* nouns, while other children do not produce any nouns belonging to this group. On the other hand, the differences observed between the two groups, for example with regard to inflection in the verbal domain, never reach significance. In the following sections, these findings are discussed and interpreted within a generative model of language acquisition.

7.1 Acquisition of inflection in monolingual children

The results show a diverse situation as concerning the monolingual data in the different languages. On the one hand, monolingual Italian children acquire inflection at the age of 2;6 or even earlier⁸⁰, as already reported in previous studies (i.a. Belletti & Guasti 2015, Noccetti 2003, Chini 1995). With respect to MLU, inflection is already acquired at an MLU value of 1.5 in Italian. French children behave similarly to the Italian monolingual group, setting the MLU at a value of about 1.6 to 2.0 for the acquisition of inflection, at least in the verbal domain. On the other hand, German monolingual children need comparably longer to acquire the inflection in the target system. Hence, German children are generally older than Italian and French monolinguals when they finally master inflection in the target-system. As for MLU, German

⁸⁰ If the 90% threshold, as proposed by Brown (1973:258), is used, then the monolingual Italian children acquire inflectional classes earlier than 2;6 years old.

children go through longer phases and generally tend to diminish the inflectional errors with an MLU value higher than 3.5. The findings about monolingual children confirm hypothesis H1 formulated in chapter 5, which was already supported by several works (i.a. Corbett 1991).

Inflection is a phenomenon that is present at the interface between morphology and syntax. Features that include several morpho-syntactic phenomena with regard to several aspects such as gender, number, person, etc. are generally defined as φ -features, namely features that are expressed through morpho-phonological devices and are morpho-syntactically active – as discussed in 3. While in languages like Svan, class – or gender (Matushansky 2013) – is generally considered a syntactically active feature (Tuite 2016), this is not the case for Italian or French, languages in which class is present only at the morphological level, as proposed by Aronoff (1994). However, the acquisition process of monolingual children as well as the findings about bilingual children indicate that there might be more behind the class feature. Considering the model put forth by Carstens (2010, 2011), features that are uninterpretable at the C-I interface are not required to be deleted a priori in the derivation process. The author proposes the following analysis with regard to grammatical gender in Romance languages, among other systems:

Since many nouns have invariant, idiosyncratic gender specifications, it makes sense to think that gender is part of the lexical listings of such nouns, hence a valued feature. For a feature to be valued entails, in Chomsky's system, that it is interpretable. But it is precisely the semantic arbitrariness of gender that suggests it is valued; thus it seems valued and uninterpretable may go together in this case (Carstens 2010:32).

In this approach, grammatical gender emerges as a feature that is inherent to the root of a category, in this case the noun. The gender value is claimed to be present in the root of the selected category before the derivation process takes place. However, the question arises with regard to the expression of this value on the lexical entry after the derivation process. If agreement is established among the various elements, then it is to be expected that gender is expressed on the noun itself or that nouns carry a valued gender feature with them in every context (cf. Lampitelli 2008). However, this is not true for a language like Italian or for the *-al/-aux* nouns in French. With regard to these languages, the claim is that there is an intermediate feature that regulates the agreement with the gender value, namely class.

This proposal was already put forth by different authors, among which the works of Lowenstamm (2008) and Jakubowicz (1998) for French and Kučerová (2018) and Acquaviva (2009) for Italian. These studies argue for the presence of a gender feature on D, rather than describing gender as an uninterpretable feature originating in the nominal root. In particular, Lowenstamm (2008) proposes “a high gender projection which determines agreement (ClassP or GenP, above *nP*), and a ... profile which affects morphological form”. Kramer (2015:35) argues that “Lowenstamm’s high gender is actually gender on *nP*, whereas low gender is declension class; the low “gender” profile is thus related to gender and expected to influence morphological form, but is not isomorphic to gender”. In the framework of the present approach, ‘low gender’ is represented by the class feature – or profile – hosted in the root, while the value of ‘high gender’ is hosted in D.

This claim can be further exemplified through the consideration of the following example: *la rosa* ‘the rose’ and *lo schema* ‘the scheme’. As marked on the determiner, the first noun has a feminine gender value, while the second one is masculine. There are no phonological, morphological or semantic cues that indicate the gender of the noun on the lexeme itself. Focusing on the two items, one might come to the conclusion that a noun ending in *-a* in Italian might be equally feminine or masculine⁸¹. The gender value is defined through the class value and the noun inflects according to different morphological forms in the singular and in the plural. The following figure exemplifies this claim:

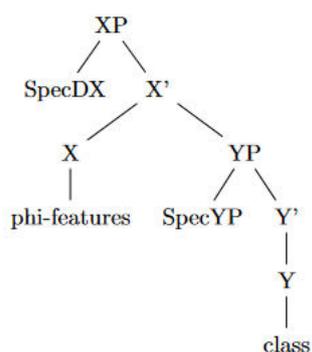


Figure 69: Syntactic representation of the class feature

⁸¹ Origin, frequency and productivity of inflectional patterns are not considered in this example.

The structure in Figure 69 illustrates that class determines the inflection for the noun, since the feature is inherent to the root. This approach can be applied on Italian nouns and, similarly, on adjectives as well. As for the verbal domain, not the expression of gender but further ϕ -features such as tense, person and number are mediated by class.

The acquisition data observed in 6.1.1.1 for Italian support this claim. The utterances reported in (33) to (35) extracted from Camilla's data indicate a clear pattern⁸²: while the child generally inflects most categories according to the target language, inflectional errors are still realized. Comparable utterances were found in Elisa's and Marco's data. Moreover, the examples of nouns and adjectives further reveal a tendency that, for the present work, is extremely relevant: while the children inflect the noun according to target-deviant inflectional classes, the values for gender and number are target-like on the determiner. A similar observation was already proposed by Noccetti (2009:316) who, on the basis of similar examples, argues that neither gender nor number but rather class is target-deviant marked on the noun or adjective in utterances of the type in (33). This leads to the conclusion that target-deviant declension class does not directly correlate with errors in gender or number and, hence, that these features are acquired separately from each other.

Furthermore, the qualitative analysis leads to an extremely relevant finding as concerning the inflection for class in the children's speech. Although nouns, adjectives, and verbs (rarely) appear inflected for a target-deviant inflectional class, the language production data clearly point to a consistent use of class. In essence, nouns might be classified according to another declension class than the one used in the target system. However, this shows that Italian children are aware from the very beginning that the feature is present in their target language and accordingly attempt to inflect categories for it. Since the inflectional system in a language like Italian is unmarked due to its macro-parametric setting, the children can set the parameter for this feature in a (very) short period of time. As soon as the parametric value for Italian is set, the children do not need to search for agreement in the DP and TP with regard to class and, arguably, use the class feature to determine the gender value of the noun, in order to start producing determiners. This allows to explain the great number of determiner omissions found

⁸² For clarity, the utterances are reported here: (33) *con le dite* [*con le dita*] 'with the fingers', (34) **sono grande* [*sono grandi*] '(they) are big', (35) **non gli piacciono* [*non gli piacciono*] '(they) do not like them'.

in the first stages of language acquisition in Italian children (see also D’Aurizio et al. 2024), since the data reveal that Italian children make use of the class value to predict the gender of the noun. Moreover, on a morpho-phonological level, the feature is detected with ease and very early due to its transparent and pervasive expression in Italian.

A different analysis to the one provided for Italian can be outlined for German nouns and verbs. The utterances in (42) to (50) present target-deviant inflection, revealing an attempt to inflect nouns, adjectives and verbs unanimously according to inflectional classes. Instances such as **Mausen rausgelaufen* as in (42), **die Hausen* in (45) or **hole Blatten* in (48) indicate that the child is using the rule of class VI – or IV, depending on the gender value (cf. Figure 13 in section 4.3.2.1) – for plural nouns. Such errors are not random but reflect the attempt of inflecting all items for class, leading to the assumption that these children are aware that class influences the system they are acquiring. The examples in (44), (47) and (50) for verbs display a similar pattern⁸³, although in this case class is predicted to interact with further features such as tense, person, and number. These utterances support the claim that the child is attempting to inflect the lexical head of the verbal category for class, consistent with the hypothesis that monolingual German children can detect the class feature early due to its pervasive expression in German, but that the (meso-)parametric setting takes longer than in monolingual Italian children to be set due to its marked expression in the target system. As displayed in the parameter hierarchy for class (see Figure 22 in section 4.5), class presents a meso-parametric setting in German since the class feature is syntactically active only in D. Although the feature is not active for nouns and verbs, the German monolingual children test the different possibilities found in the literature for the expression of class, until the target parametric setting is found at the age of 3;5, or above an MLU value of 3.5. The discovery of the feature, however, takes place almost immediately, as also observed for the Italian monolingual children.

Comparable observations can be put forth by looking at the examples in (43), (46) and (49)⁸⁴. In these utterances, the inflectional class is target-deviant in that, for instance, a determiner of

⁸³ (44) **(ich habe) ein bett baut* [*ein Bett gebaut*] ‘(I) built a bed’, (47) **das Buch hab geseht* [*das Buch habe (ich) gesehen*] ‘I saw the book’, (50) **die ist zu Oma gegehen* [*die ist zu Oma gegangen*] ‘she went to grandma’.

⁸⁴ (46) **große Ball* [*großer Ball*] ‘big ball’, (49) **immer der anderer Schuh* [*der andere Schuh*] ‘always the other shoe’.

the weak class is used with an adjective of the strong class, as in (43), i.e., *das großes haus raussetzen* [*das große Haus*] ‘the big house uncover’. As discussed in 4.3.2.2, the value of the class feature in German is not inherent to the stem of the adjective but is rather selected through agreement with the determiner which, in turn, inflects inherently for class. Since German is morphologically and syntactically marked in comparison to Italian and French with respect to the parametric setting for class, the monolingual German children need comparably longer to set the parameter and, hence, to establish agreement for class between the class of the determiner and the adjective. In consideration of time and MLU development, a significant difference is evident in the data. While Italian children are able to set the parameter earlier due to the macro-parametric expression of the system, German monolingual children need comparably longer to assess the meso-parametric option for their system. In essence, German children need longer to acquire the parametric expression for class in the target-system due to the marked inflectional system.

French represents the last system to be analysed in light of the findings outlined in the preceding chapter. As for the nominal system, only a small class of nouns inflects according to declension classes. For this reason, the data consist of a few tokens represented only by the three types *cheval* ‘horse’, *animal* ‘animal’, and *hôpital* ‘hospital’ in Madeleine’s and Adrien’s data. Theophile does not realize any noun with the *-al/-aux* ending. One target-deviant noun, reported in (54), is present in the monolingual data, in which a plural form is used with a verb inflected in the singular and with a singular reference, i.e., (54) **c’est pas un chevaux* [*un cheval*] ‘this is not a horse(s)’. Even though the form in (54) is target-deviant, Madeleine correctly inflects the noun for the target declension class, allowing to assume that the child already discovered the class feature. The French monolingual children are generally reported to acquire the noun inflection relatively early (i.a. Bassano 2000). Agreement, however, is acquired not before the age of 4 (Nicoladis & Marchak 2011) or even later (Boloh & Ibernou 2010). Since the class feature does not mediate the agreement pattern with the gender feature, the child needs to establish a correlation between gender and noun by relying on further phonological aspects, such as the phonological context in which the noun occurs. Crucially, the relationship between gender and noun in French is arbitrary (cf. 3.1.1.5), and class is only relevant for a small group of nouns, leading to the assumption that the monolingual French children do not use the class feature for acquiring the nominal inflection in French. Since the parametric setting for French

is on the highest level of the hierarchy (Figure 22 in section 4.5), the monolingual children can set the parametric option for their target language instantaneously as soon as the feature has been detected in the system, i.e., in the present data with an MLU of 1.6 to 2.0. The (small) difference observed in Figure 68 (see section 6.3.6) with the Italian monolingual children can be explained through a comparison of the two systems on a morphological basis: while the feature is morphologically everywhere in Italian, it is only present for a group of nouns in French. Hence, French monolingual children need longer than Italian children to discover the feature. Once they come across it, however, the parametric setting takes place immediately.

As for the verbal domain, French verbs can be either classified in more than 15 inflectional classes depending on the number of stems (Bonami & Boyé 2003), or according to the theme vowel, in a similar manner as the one reported for Italian (Schwarze 2009). The utterances in the children's data reveal important information as concerning the inflectional strategy used by the children. Focusing first on the stem-space theory, target-deviant utterances of the type in (60), i.e., **et papa il m'ai dit* [*il m'a dit*] 'and dad he told me', can be considered as errors in the choice of the verbal stem in the given grammatical context. Considering the acquisition process in light of this approach, the monolingual French children are expected (1) to classify verbs according to the number of stems in inflectional classes and, since target-deviant utterances during the (first) stages of the language acquisition process are considered "developmental errors, which are common to all children acquiring that specific language" (La Morgia 2011:73), (2) to commit errors as concerning the number of stem for every verb. The verb *avoir* in (60), for instance, might be target-deviant inflected according to the class of the verb *savoir*. Crucially, the children are expected to acquire the system not earlier than the age of 4;0, age at which different tenses occur in the production data of the monolingual children (Prévost 2009:33), enabling the acquisition of different stems. An example is represented by the subjunctive tense which, according to Bonami & Boyé (2003), constitutes one of the different tenses that allow to establish the number of stems. Grevisse, Watorek & Isel (2023) report that the first language acquisition of this tense is still debated: Parrisé, Pontonx & Morgenstern (2017) claim that the children in their study already acquired the subjunctive at the age of 4, while the children analysed by Bassano (2000) do not use this tense before the age of 7. In the current analysis, the data of the monolingual French children exhibits the use of the present tense, the simple past tense, and non-finite tenses in simple and compound forms.

Consequently, if a comprehensive examination of all tenses is required to determine the number of stems for each verb, this could possibly happen even later than 7 years old.

If the examples in (53), (56)⁸⁵ and (60) are analysed in light of the theme vowel approach, this theory predicts that the child inflects the verb according to a target-deviant inflectional class, depending on the verb and the infinitive ending. Hence, the French children use a system comparable to the one proposed for the Italian monolingual children. While the inflection of the verb in these utterances is target-deviant according to the theme-vowel approach, utterances of the kind reported in (53), i.e., including root-infinitives, should not be considered as a target-deviant verb as concerning inflectional classes but rather finiteness. Furthermore, the target-deviant inflection of the verb *avoir* in (60) could not be explained through the determination of inflectional classes but rather person, since *avoir* inflects differently from other verbs in the *-oir* class, e.g., *savoir*. However, errors of inflectional classes as the ones observed for Italian and German do not occur in the data of the monolingual French children. While the use of *colorire* instead of *colorare* (cf. the utterance in (85)) clearly manifests a class error in the same way the use of *piacciano* instead of *piacciono* in (35) does, the theme vowel approach does not determine differences in the inflection in finite tenses. If theme vowels are considered, the inflectional classes can only be predicted on the basis of non-finite tenses.

Concluding, the monolingual French children do not seem to categorize verbs according to inflectional classes if these are established on the basis of theme vowels or stem-spaces, otherwise verb forms such the ones found in the Italian data should occur. A further approach for first language acquisition of verbal inflection is considered in Ferdinand (1996) for the analysis of elsewhere forms in French monolingual children, as discussed in 4.3.3.3. Analysing the utterances of the monolingual French children according to the proposal by Ferdinand, the production of target-deviant utterances can be explained through the classification of verbs in a target-deviant class, since verbs are realized by the children according to their phonological form in the spoken language. The utterance in (60), for instance, displays the occurrence of

⁸⁵ (53) **non je pas doucher* [*je (ne) douche pas*] ‘I do not (to) shower’ (RI) and (56) **je va apprendre dessiner dans mon école* [*je vais apprendre*] ‘I go(es) learning how to draw at my school’.

avoir inflected for the third-person singular in a context in which the first-person singular form is required. If Ferdinand's approach is considered, the child classifies the verb *avoir* in the class of verbs which inflect phonologically similarly in the present tense of the first, second and third-person singular, as for the verb *manger* (cf. Figure 3). In contrast, the use of infinitive forms in finite contexts, as seen in example (53), cannot be analysed through inflectional classes. This is because *doucher* does not maintain the same phonological form across non-finite and finite tenses. Hence, aspects such as finiteness as well as person and number have to be further considered, if Ferdinand's model is employed.

Proposing a model of language acquisition for Italian, German and French within the emergentist framework, the class feature can be explained through the expression of parameters in the target-system as proposed in section 4.5. Even though class is only relevant for the morphological processing of the derived category, it still assumes a relevant role in the syntactic process, as long as the macro-parametric option is not set in the grammar of the monolingual child. As for German adjectives, the feature is uninterpretable but valued for syntax, in the same manner proposed by Carstens (2010) for gender in the Bantu languages. As reported by the author, even if a feature is not interpretable for the C-I interface, it does not need to be deleted. In other words, Agree is not connected to any deletion requirement of features (Carstens 2010:34). Hence, the uninterpretable feature is still present in the structure when the derivation process arrives at the C-I interface.

If language acquisition develops as proposed by Biberauer et al. (2014), Roberts (2019) and N. Müller (2024a), then parameters are “ ‘emergent’ cognitive subroutines ... made up of universal (and not specific for language) cognitive optimization strategies and grammatical features (specific to language)” (N. Müller 2024b:92). In a model that classifies parameters according to the functional elements affected by one feature, inflectional classes in a language like Italian can be defined as being expressed on the macro-parametric level. The reasons are twofold: on the one hand, all categories inflect according to class in Italian; on the other hand, class is not syntactically present in the inflectional system, resulting in a macroparametric choice of the ‘NO’ type, which assumes that the feature is not syntactically active in the system. However, on a morphological level, class is inherent in every inflectional category in Italian. The present study supports the claim that morphology interacts with syntax on several levels, as proposed by Baker (1985) and Harley (2015) among many others, and proposes that the outcome of the

interaction is represented by the relevant role of features in the syntax, even though the features are active only in morphology and are not spelled out in the syntactic process, but rather deleted – or, as proposed by Carstens (2010:41) “ignored” – at the C-I interface. Monolingual Italian children can easily arrive at this conclusion due to the pervasive presence of the feature at the morphological level. In contrast, monolingual French children typically require more time to consider the class feature, as it is present only in the morphological structure of some categories rather than uniformly across all categories⁸⁶. The monolingual German children represent the group who encounters more difficulties, since they are confronted with a feature that is everywhere in the system, but that is diversely active in the morphology and/or syntax of different categories.

In a theory that posits features in hierarchies, as proposed for syntactic features by Biberauer et al. (2014) and for phonological features in Özçelik (2019) among others, even the expression of morphological features can be considered on an increasing scale of markedness. Harley (1994) considers the expression of features such as gender, number, person, and class in a hierarchy – or geometry – that is based on the expression of complexity, i.e., the embedment of a feature in the system. Following the author, “features higher on the hierarchy are less embedded than features lower in the hierarchy”, placing person as directly related to agreement, while number, gender, and, lastly, class, are increasingly more marked and, hence, increasingly embedded. The interaction of these features in the derivation process is progressively more marked, starting with class, i.e. a feature that is losing its expression in many systems and that does not often fulfil syntactic functions. Gender is derived through the interaction of class with the determiner. Number and person activate a semantic value which is generally given by the context (cf. i.a. Carminati 2005).

⁸⁶ At this point, the question arises as concerning the presence of the class feature in the UG or the emergence of class through analysis of the input, as claimed by Wiltschko (2014). Assuming that class is ‘detected’ by the children, as outlined in these sections, implies that the feature does not emerge, but that it is already present in UG. However, it is not possible to completely answer this question, since features’ detection and features’ emergence are extremely difficult to separate in the acquisition data.

7.2 Acquisition of inflection in multilingual children

As discussed in the previous section, the class feature is acquired by monolingual children in Italian, German, and French through the consideration of several morphological and syntactic aspects. The age and MLU value of acquisition vary due to the morpho-syntactic expression of the feature in the target system. The findings about the bilingual German-Italian and French-Italian children display a situation that partially contrast to the results about the monolingual group.

Bilingual children acquiring Italian simultaneously to German manifest a different development of German in comparison to monolingual children. In particular, this group of bilingual children shows an acceleration effect in the acquisition of German that is attributable to the simultaneous acquisition of Italian, as also confirmed by the analysis of adjectives in French-German bilingual children outlined in 6.2.2.2. In chapter 5, hypothesis H2a) was formulated on the basis of previous studies on bilingual language acquisition which assume that children “start at the highest position of the hierarchy and keep testing down if the primary linguistic data is incompatible with a given option” (Picallo 2014:7). The parameter hierarchy in Figure 22 clearly predicts that Italian and French are placed higher on the hierarchy than German, a language that sets the class feature through a meso-parametric option. While monolingual German children have to test through the hierarchy until the target option is reached and the parameter is set, the bilingual German-Italian children use the linguistic knowledge acquired in the other system – in this case, Italian – to beneficially accelerate the acquisition of German.

This strategy of acquisition in bilingual and multilingual children has been considered in several studies to account for linguistic advantages found in the data of these groups. Concerning this approach, N. Müller (2024a) assumes that a first language is acquired on the basis of cognitive subroutines, as also proposed in MacSwan (2000), some of which can be duplicated – e.g. the lexicon –, while others cannot. The parameter hierarchies rely on features that belong to the latter class of subroutines, i.e., the non-duplicated, and the multilingual child uses the linguistic knowledge acquired in one of the two – or more – systems as soon as it is available. This process is properly outlined in two strategies. The first strategy, labelled the “Cognitive Optimization Strategy” ensures that the child proceeds from the top to the bottom of the hierarchy, with the following ‘command’ instructed to the acquisition process “(Re-)use already acquired

knowledge by generalizing to new domains” (Biberauer et al. 2014:110). This strategy is adopted by both monolingual and bilingual children and correctly predicts that the German monolingual children follow a longer path than Italian and French monolingual children to acquire the parametric setting for the class feature. This is corroborated in the findings.

The second strategy is based on linguistic knowledge and allows children to reconsider previously rejected linguistic options, thus enhancing their learning process and linguistic proficiency. The child is able to “consider rejected alternatives of earlier decisions in one language for use in the other language” (N. Müller 2024a:10). Crucially, this approach can only be adopted if the multilingual child acquires two languages that are parametrically different. The predictions for bilingual German-Italian and French-Italian children are, thus, different. The first group should benefit from the linguistic knowledge acquired in Italian earlier than 2;6 years old and at an MLU value of 1.5 for the acquisition of German. The latter group should not encounter any benefit from Italian for French, since the two languages display macroparametric settings.

While the findings confirm the acceleration effect in German as concerning the acquisition of class in different categories, the results from the bilingual French-Italian children do not disclose any qualitative or quantitative difference between the monolingual and the bilingual groups. French-Italian and French children behave similarly with regard to the acquisition of class in both systems. The expectation formulated in H2b) predicted that French-Italian bilinguals and French monolingual children behave alike due to the parametric setting for class, which is equal in the two languages. The qualitative analysis as well as the quantitative evaluation of the data confirm this hypothesis, with exception of the first MLU stage. In essence, no acceleration effect is observed in the bilingual children, as expected from the absent syntactic role of class in the two languages. In the first MLU stage, however, differences can be found between the two groups. In order to explain this, the markedness of the morpho-phonological French inflectional system needs to be compared to the Italian one, which represents a system with a transparent class feature in morphology. While the French children generally need longer to detect the feature, since it is not expressed on every category, the Italian children detect it very early. When acquiring the two languages simultaneously, the discovery of the class feature in French is influenced by the same phenomenon taking place in the acquisition of the Italian system. Since features are not duplicated but shared by the two systems

(N. Müller 2024a), when class is detected in Italian, the bilingual children searches for the same feature to their other system, namely French. According to Roberts (2019:291) “inflectional morphology acts as an acquisition trigger“, in that “F(unctional)F(eature)s are triggered when a child detects a departure from Saussurean arbitrariness in the sound–meaning mapping”. Evidently, languages with ‘rich morphology’, like Italian, trigger the acquisition of languages with ‘poor morphology’, like French.

The comparison of monolingual and bilingual data has highlighted an additional phenomenon related to the importance of data analysis on the basis of MLU values. Notably, significant developments occur during the initial MLU stage, up to a value of 1.5. The trends observed in German and French data reveal distinct patterns between the two groups. For German, both monolingual and bilingual children produce a similar number of target-deviant utterances during the first MLU phase. However, as MLU increases, monolingual children exhibit a rise in target-deviant utterances, whereas bilingual children show a dramatic decline. Even though the numbers are relatively low especially in the bilingual data, this trend points at the relevance of MLU analysis. In contrast, French monolingual children produce a ratio of approximately 8% of target-deviant utterances during this early stage, which is notably higher than that of bilingual children. Nonetheless, by the time MLU reaches 1.6 to 2.0 words, both groups produce comparable numbers of target-deviant inflected utterances.

In conclusion, the acquisition path of the class feature in monolingual and bilingual children differs due to the expression of the feature in the target system and, accordingly, of the interaction of the two systems. Marzi, Blevins, Booij & Pirrelli (2020:230) note that “the patterns described in terms of inflectional classes add substantially to the complexity of a language, and raise the question how children acquire such morphological systems”, proposing an analysis of the Italian system that takes into consideration frequency and distribution of inflectional patterns (see Pescuma, Zanini, Crepaldi & Franzon 2021 and Ivanova-Sullivan & Sekerina 2019 for a similar approach on different languages). A model of language acquisition that relies exclusively on distributional patterns and frequency in the input does not suffice to explain the variation found in the acquisition process, as posited by Chomsky (1981) among many others. However, a model that considers the expression of features and their markedness as related to the interaction of several aspects is able to explain a wide range of phenomena that were observed in the monolingual and bilingual population. Notwithstanding the relevance of

gender, number, as well as further features, class represents a complex trait that parametrically differ in the three languages analysed in the present study, leading to the determination of acquisitional pattern for – at least – Italian, German and French monolingual and bilingual children.

In chapter 8, the limitations of the present study are discussed, along with considerations about the role of class in language acquisition and teaching. Notably, much work remains to be done regarding the expression of inflectional class in further systems and the correlations for language acquisition.

8 Conclusion

In the present study, the main topic of investigation has been the role of inflectional classes in Italian, German, and French as well as the function of class in the acquisition of inflection by monolingual and multilingual children. The framework adopted within this work, namely the emergentist theory by Biberauer et al. (2014) within the generative approach, has been presented in chapter 2 with particular regard to its similarities and differences from the Minimalist Program. The focus lied especially on linguistic (parametric) variation and language acquisition, which represent the two main topics discussed throughout this study. With regard to variation, parameter setting in the emergentist theory is described as a process that relies on underspecification of features in the UG (Biberauer et al. 2014:107), leading to the determination of a parametric value through several synchronic and diachronic phenomena in the target language. In chapter 3, several examples of linguistic variation as concerning the phi-features in French, German, and Italian has been presented, leading to the assumption that, although these three systems belong to the family of Indo-European languages, they (can) differ with regard to the expression of features.

A similar development to the one described for parameter setting is observed in first language acquisition, since children acquiring a first language generally set parameters on the basis of linguistic knowledge that is gradually acquired and that is then generalized to further grammatical domain (cf. i.a. N. Müller 2024a). While all children are generally able to use the linguistic knowledge acquired in one domain to re-use it further domains, multilingual children (can) display acceleration effects in comparison to monolingual children if the languages acquired differ with regard to parameter setting from each other. The acceleration is explained through a further strategy applied by multilingual children in the grammar of the acquired systems, since not only the linguistic knowledge acquired in one domain can be applied to another domain as observed for monolinguals, but they can also use the knowledge acquired by the parametric setting for one language to fix the parameter for another language (cf. N. Müller 2024). Crucially, this explains the results of the study presented in section 3.3, which show that ϕ -features are acquired differently by monolingual and multilingual children. Does this also apply to the class feature and, hence, to the acquisition of inflectional classes in the target languages?

In order to answer this question, first a definition of class is introduced in chapter 4 together with a short overview of the state of art on the class feature as well as an overview of the diachronic development of class in the three target systems. Additionally, in section 4.3, the discussion of inflection in Italian, German, and French is introduced to delineate the foundational basis of the current study. While not many studies on the acquisition of inflection were conducted, the research's results are reported in section 4.4 to provide a general overview of the trend observed in monolingual and multilingual language acquisition. Section 4.5 includes the class feature in the emergentist approach. In this framework, class finds a macroparametric setting in Italian and French and a meso-parametric one in German. According to this assumption, the hypotheses are formulated in chapter 5, focusing on the different expectations concerning monolingual and multilingual children for the acquisition of inflection in the target systems. Furthermore, the data of the 15 children analysed in the presented work are presented along with the methods used for the qualitative and quantitative analysis. In chapter 6, the results are reported, first including a description of every child's language production with respect to inflection, and then presenting a comparison of the two groups with regard to the general use of inflection for nouns, adjectives, and verbs.

The results lead to the conclusion that class is acquired differently in the three systems. While Italian and French generally do not represent complex systems with regard to the syntactic function of class due to its macroparametric setting, German is a complex case which is accordingly acquired later by monolingual German children. Summarizing the main findings, Italian and French monolingual children behave generally alike, acquiring the inflectional system of the target language very early. A difference is found between the two groups with regard to the (low) MLU values, leading to the assumption that the less 'transparent' French system with regard to the expression of the inflectional class system leads to a 'delayed' discovery of the class feature. The parametric set for class is set as soon as the feature is discovered. As for German monolingual children, the results show that this group still commits errors of inflection at the age of 3;5 and with an MLU of above 3.5, leading to the assumption that this system is generally acquired later than French and Italian. Crucially, the claims formulated in section 4.5 with regard to the position of the German inflectional system on the meso-parametric level allow to explain the difference between the groups: if French and Italian are macro-parametrically affected by the class feature, while German has a meso-parametric

class feature in its system, then the acquisition of a meso-parametric feature takes longer than that of a macroparametric one. Moreover, the findings about multilingual children confirm these claims. While French-Italian bilingual children do not differ significantly from the Italian monolingual group, they present differences to the French monolingual group with regard to the first MLU stage, i.e., up to 1.5 words. Hence, the discovery of the feature takes place earlier in Italian than in French, possibly influencing the acquisition of French in the bilingual children. German-Italian bilingual children present significant quantitative differences to the monolingual German group and, crucially, no differences to the Italian monolingual group. As for the acquisition of German, the bilingual group is accelerated in the acquisition of inflection, leading to the claim that macroparametric Italian positively influences the parametric setting for meso-parametric German. Crucially, the acquisition of Italian is not delayed or ‘slowed down’ by any other parametric setting or language related-factors. In particular, whether the bilingual children are balanced or unbalanced does not influence the acquisition of Italian. The reason presumably lies in the transparency of the Italian inflectional systems, which express class morphologically on every inflectional category.

Although the findings lead to the assumption that multilingual children can positively benefit of the linguistic knowledge acquired in every system, the present study exhibits several limitations with regard to the quantitative analysis as well as the interpretation of the results. First, there are only a few studies that consider the acquisition of inflectional classes. While Italian has already been investigated (cf. i.a. Chini 1995, Noccetti 2003, de Marco 2005, Belletti & Guasti 2015), there are at the best of the author’s knowledge no study on this topic with regard to French or German. Not only the acquisition, but also the inflectional system in French has rarely been observed in light of declension and inflectional classes. For this reason, the lack of previous research on this topic clearly represents a first, relevant limitation. Second, the groups analysed in the present work consist of three children for every language and language combination, leading to an overall sample of 15 children. Despite the large number of analysed utterances, the statistical analyses present limitations as concerning the size of the samples. Accordingly, a comparable statistical analysis with different children could potentially reveal different tendencies. Finally, the realization of inflectional classes is analysed on the basis of longitudinal data which, for the present work, present both benefits as well as limitations. While the data are spontaneously produced by the children and include a considerable number of

utterances, inflectional classes were not intentionally elicited, leading to a smaller amount of data in all languages, especially considering the general realization of adjectives in children's spontaneous language production. The observation about the data's limitation is further supported by the limited number of nouns still inflecting according to declension classes in French.

Further research should address these restrictions and accordingly implement the research on the acquisition of inflectional classes as well as on their expression in further languages. Moreover, increased data samples as well as purposely elicited data should be taken into consideration in future studies. As claimed for further features such as Tense, Person, and, arguably, ϕ -features (see Roberts 2019), parametric variation in the expression of one or more features is directly linked to further phenomena such as incorporation and subject omission, among others. Even though this is not the main purpose of the present work, this claim allows to enlarge potential research in the theoretical field to prove the relevant role of class for further syntactic phenomena. For instance, the syntactic role of the class feature in German adjectives might be linked to their postnominal position, which differs from the Romance systems (Cinque 2010). Further research should focus on this as well as on the morpho-syntactic implications of inflectional classes in the target systems. Furthermore, the role of inflectional classes and their acquisition in second and third language acquisition still need to be investigated. Accordingly, different theories would predict contrasting results for data on second and third language acquisition (cf. Westergaard 2021). For instance, whether the transparency of the inflectional pattern supports the acquisition of Italian in second language acquisition might reveal contrasting results, depending on factors such as the typology of the first language, the AoA or further aspects.

At this point, the relevance of the class feature in the inflectional system has become evident. G. Müller (2002:113) posits that “any theory of nominal inflection has to fulfil two tasks for a given language. First, the inventory of inflection markers has to be determined; and second, the syntactic distribution of these markers has to be accounted for”, a claim that is supported by Matthews (2010:893) with regard to language acquisition, who states that “any theory of grammatical category acquisition must accord a role for both distributional as well as semantic and phonological cues”. Within the generative framework, the present work has laid the ground for further research on the topic of inflection in multilingual acquisition. If the function of the

class feature goes beyond its morphological expression, as proposed by the present study, then inflectional classes represent a relevant topic for studies in the field of morphology, syntax, language acquisition, and education. Moreover, the description of an acceleration effect in parameter setting supports the main claim that multilingual children benefit from their linguistic knowledge in several domains. Accordingly, acquiring Italian simultaneously to a system that is generally acquired late, e.g., Norwegian (Tedeschi 2017), could boost the acquisition process. Undoubtedly, the proposal of multilingual language acquisition for all children is not generally applicable. However, the use of several techniques such as code-switching and translanguaging (cf. MacSwan 2022) might lead to surprising results for the acquisition of the inflectional system in different languages.

9 References

- Abney, Steven P. 1987. *The English noun phrase in its sentential aspect*. PhD Thesis, Massachusetts Institute of Technology & MIT.
- Acquaviva, Paolo. 2009. The Structure of the Italian Declension System. In Fabio Montermini, Gilles Boyé & Jesse Tseng (eds.): *Selected Proceedings of the 6th Décembrettes*. Somerville, MA: Cascadilla Proceedings Project, 50–62.
- Adger, David. 2004. *Core syntax: A minimalist approach*. Oxford: Oxford Univ. Press.
- Adger, David & Harbour, Daniel. 2008. Why Phi? In Daniel Harbour, David Adger & Susana Béjar (eds.): *Phi theory: Phi-features across modules and interfaces*. Oxford: Oxford Univ. Press, 1–34.
- Adler, Astrid. 2019. Sprachstatistik in Deutschland. *Deutsche Sprache* 19:3, 197–219.
- Aikhenvald, Alexandra Y. 2004. *Evidentiality*. Oxford: Oxford Univ. Press.
- Alexiadou, Artemis. 2001. *Functional structure in nominals: Nominalization and ergativity*. Amsterdam: Benjamins.
- Alexiadou, Artemis. 2004. Inflection Class, Gender and DP Internal Structure. In Gereon Müller, Lutz Gunkel & Gisela Zifonun (eds.): *Explorations in Nominal Inflection*. Mouton de Gruyter, 21–50.
- Alexiadou, Artemis, Haegeman, Liliane M. V. & Stauru-Sēphakē, Melita. 2007. *Noun phrase in the generative perspective*. Berlin: Mouton de Gruyter.
- Alexiadou, Artemis & Müller, Gereon. 2008. Class features as probes. In Asaf Bachrach & Andrew Nevins (eds.): *Inflectional identity*. Oxford: Oxford Univ. Press, 101–155.
- Antelmi, Donella. 1997. *La prima grammatica dell'italiano : indagine longitudinale sull'acquisizione della morfologia italiana*. Bologna: Il Mulino.
- Archila-Suerte, Pilar, Woods, Elizabeth A., Chiarello, Christine & Hernandez, Arturo E. 2018. Neuroanatomical profiles of bilingual children. *Developmental science* 21:5, 1-13.
- Arencibia Guerra, Lastenia. 2008. *Sprachdominanz bei bilingualen Kindern mit Deutsch und Französisch, Italienisch oder Spanisch als Erstsprachen*. PhD Thesis,

Universitätsbibliothek Wuppertal, Wuppertal.

- Arnaus Gil, Laia, Müller, Natascha, Sette, Nadine & Hüppop, Marina. 2021. Active bi- and trilingualism and its influencing factors. *International Multilingual Research Journal* 15:1, 1–22.
- Aronoff, Mark. 1994. *Morphology By Itself: Stems and Inflectional Classes Linguistic*. Cambridge (Massachusetts), London: The MIT Press.
- Arsenijević, Boban & Borik, Olga. 2020. Gender and number in the nominal domain: An introduction. *Catalan Journal of Linguistics* 19, 5.
- Austin, Jennifer. 2013. Markedness, input frequency, and the acquisition of inflection: Evidence from Basque/Spanish bilingual children. *International Journal of Bilingualism* 17:3, 259–283.
- Baerman, Matthew, Brown, Dunstan & Corbett, Greville G. 2017. *Morphological Complexity*. Cambridge: Cambridge University Press.
- Baker, Colin. 2001. *Foundations of bilingual education and bilingualism*. Clevedon: Multilingual Matters.
- Baker, Mark C. 1985. *Incorporation, a theory of grammatical function changing*. PhD Thesis, Massachusetts Institute of Technology.
- Baker, Mark C. 2003. *Lexical categories: Verbs, nouns, and adjectives*. Cambridge, UK, New York: Cambridge University Press.
- Baker, Mark C. 2008a. The Macroparameter in a Microparametric World. In Theresa Biberauer (ed.): *The limits of syntactic variation*. Amsterdam, Philadelphia: Benjamins, 351–375.
- Baker, Mark C. 2008b. *The syntax of agreement and concord*. Cambridge: Cambridge University Press.
- Baker, Mark C. 2015. *Case: Its principles and its parameters*. Cambridge: Cambridge University Press.
- Baralt, Melissa. 2012. Coding Qualitative Data. In Alison Mackey (ed.): *Research Methods in Second Language Acquisition: A Practical Guide*. Newark: John Wiley & Sons Incorporated, 222–244.

- Bassano, Dominique. 2000. Early development of nouns and verbs in French: exploring the interface between lexicon and grammar. *Journal of Child Language* 27:3, 521–559.
- Bassano, Dominique, Korecky-Kröll, Katharina, Maillochon, Isabelle & Dressler, Wolfgang U. 2013. The acquisition of nominal determiners in French and German. In Dominique Bassano & Maya Hickmann (eds.): *Grammaticalization and first language acquisition: Crosslinguistic perspectives*. Amsterdam: Benjamins, 37–60.
- Bauer, Laurie. 1985. Tracing phonetic change in the received pronunciation of British English. *Journal of Phonetics* 13:1, 61–81.
- Bazalgette, Timothy O. 2015. *Algorithmic Acquisition of Focus Parameters*. PhD Thesis, Magdalene College.
- Becker, Michael, Clemens, Lauren E. & Nevins, Andrew. 2017. Generalization of French and Portuguese plural alternations and initial syllable protection. *Natural Language & Linguistic Theory* 35:2, 299–345.
- Behrens, Heike. 2006. The input–output relationship in first language acquisition. *Language and Cognitive Processes* 21:1-3, 2–24.
- Belletti, Adriana & Guasti, Maria T. 2015. *The acquisition of Italian: Morphosyntax and its interfaces in different modes of acquisition*. Amsterdam, Philadelphia: John Benjamins Publishing Company.
- Bermúdez-Otero, Ricardo. 2013. The Spanish lexicon stores stems with theme vowels, not roots with inflectional class features. *Probus* 25:1, 3–103.
- Bernardini, Petra. 2003. Child and adult acquisition of word order in the Italian DP. In Natascha Müller (ed.): *(In)vulnerable Domains in Multilingualism*. Amsterdam/Philadelphia: John Benjamins Publishing Company, 42–81.
- Bernstein, Judy B. 1993a. The syntactic role of word markers in null nominal constructions. *Probus* 5:1-2, 5–38.
- Bernstein, Judy B. 1993b. *Topics in the syntax of nominal structure across Romance*. PhD Thesis, University of New York.
- Bernstein, Judy B. 2001. The DP Hypothesis: Identifying Clausal Properties in the Nominal

- Domain. In Mark Baltins & Chris Collins (eds.): *The Handbook of Contemporary Syntactic Theory*. John Wiley & Sons, Ltd, 536–561.
- Bialystok, Ellen. 2001. *Bilingualism in Development: Language, Literacy, and Cognition*. Cambridge: Cambridge University Press.
- Biberauer, Theresa. 2019a. Children always go beyond the input: The Maximise Minimal Means perspective. *Theoretical Linguistics* 45:3-4, 211–224.
- Biberauer, Theresa. 2019b. Factors 2 and 3: Towards a principled approach*. *Catalan Journal of Linguistics*, 45–88.
- Biberauer, Theresa, Holmberg, Anders, Roberts, Ian G. & Sheehan, Michelle. 2014. Complexity in comparative syntax: the view from modern parametric theory. In Frederick J. Newmeyer & Laurel B. Preston (eds.): *Measuring Grammatical Complexity*. Oxford University Press, 103–127.
- Bittner, Dagmar. 1992. Die Außermorphologische Struktur von Flexionsystemen oder ‚Was ist eigentlich Paradigmenökonomie?!. In Livia Tonelli & Wolfgang U. Dressler (eds.): *Natural Phonology: Perspectives for the nineties*. Padova: Imprimeria, 75–88.
- Bittner, Dagmar. 1994. Die Bedeutung der Genusklassifikation für die Organisation der deutschen Substantivflexion. In Klaus-Michael Köpcke (ed.): *Funktionale Untersuchungen zur deutschen Nominal- und Verbalmorphologie*. Niemeyer: Tübingen, 65–80.
- Bittner, Dagmar. 2000. Gender classification and the inflectional system of German nouns. In Barbara Unterbeck, Matti Rissanen, Terttu Nevalainen & Mirja Saari (eds.): *Gender in grammar and cognition: I approaches to gender, II manifestations of gender*. Berlin, New York: Mouton de Gruyter, 1–24.
- Bittner, Dagmar. 2003. The emergence of verb inflection in two German speaking children. Dagmar Bittner, Wolfgang U. Dressler & Marianne Kilani-Schoch 2003. 53–88.
- Bittner, Dagmar. 2006. Case Before Gender in the Acquisition of German. *Folia Linguistica* 40:1-2.
- Bittner, Dagmar, Wolfgang U. Dressler & Marianne Kilani-Schoch, eds. 2003. *Development of Verb Inflection in First Language Acquisition: A Cross-Linguistic Perspective*. Berlin, New

York: Mouton de Gruyter.

- Bobaljik, Jonathan D. 2017. Distributed Morphology. In Mark Aronoff (ed.): *Oxford Research Encyclopedia of Linguistics*.
- Boeckx, Cedric, ed. 2011. *The Oxford handbook of linguistic minimalism*. Oxford: Oxford Univ. Press.
- Boloh, Yves, Escudier, Frédérique, Royer, Stéphanie & Ibernou, Laure. 2012. Determiners and noun endings in French children's gender attribution choices. *First Language* 32:3, 398–410.
- Boloh, Yves & Ibernou, Laure. 2010. Gender attribution and gender agreement in 4- to 10-year-old French children. *Cognitive Development* 25:1, 1–25.
- Bonami, Olivier & Boyé, Gilles. 2003. Supplétion et classes flexionnelles. *Langages* 37:152, 102–126.
- Bonnesen, Matthias. 2009. The status of the “weaker” language in unbalanced French/German bilingual language acquisition. *Bilingualism: Language and Cognition* 12:2, 177–192.
- Bottari, Piero, Cipriani, Paola & Chilosi, Anna M. 1993. Protosyntactic Devices in the Acquisition of Italian Free Morphology. *Language Acquisition* 3:4, 327–369.
- Brandt-Kobe, Oda-Christina & Höhle, Barbara. 2010. What asymmetries within comprehension reveal about asymmetries between comprehension and production: The case of verb inflection in language acquisition. *Lingua* 120:8, 1910–1925.
- Brinkmann, Miriam C., Fünter, Antonia, D'Aurizio, Laura & Müller, Natascha. 2023. *Die Repräsentation von Genus im Französischen: Psycholinguistische Evidenz für ein dreigliedriges System*. Bergische Universität Wuppertal.
- Brown, Roger. 1973. *First Language: The Early Stages*. Cambridge: Harvard University Press.
- Cahill, Lynne & Gazdar, Gerald. 1999. German noun inflection. *Journal of Linguistics* 35:1, 1–42.
- Calabrese, Andrea. 2020. Remarks on the Role of the Perfect Participle in Italian Morphology and on its History. *Probus* 32:2, 209–269.
- Cantone, Katja F. 2022. Language exposure in early bilingual and trilingual acquisition.

International Journal of Multilingualism 19:3, 402–417.

Cantone, Katja F., Kupisch, Tanja & Müller, Natascha. 2008. Rethinking Language Dominance in Bilingual Children. *Linguistische Berichte* 215, 307–343.

Caprin, Claudia & Guasti, Maria T. 2006. A cross-sectional study on the use of “be” in early Italian. In Vincent Torrens & Linda Escobar (eds.): *The Acquisition of Syntax in Romance Languages*. Amsterdam: John Benjamins Publishing Company, 117–133.

Cardinaletti, Anna & Giusti, Giuliana. 2011. The Acquisition of Adjectival Ordering in Italian. In Merete Anderssen, Kristine Bentzen & Marit Westergaard (eds.): *Variation in the Input*, vol. 39. Dordrecht: Springer Netherlands, 65–93.

Cardinaletti, Anna & Giusti, Giuliana. 2016. The syntax of the Italian indefinite determiner *dei*. *Lingua* 181, 58–80.

Carminati, Maria N. 2005. Processing reflexes of the Feature Hierarchy (Person > Number > Gender) and implications for linguistic theory. *Lingua* 115:3, 259–285.

Carstairs-McCarthy, Andrew. 1994. Inflection Classes, Gender, and the Principle of Contrast. *Language* 70:4, 737.

Carstens, Vicki. 2010. Implications of grammatical gender for the theory of uninterpretable features. *Exploring Crash-Proof Grammars* 3, 31–58.

Carstens, Vicki. 2011. Hyperactivity and Hyperagreement in Bantu. *Lingua* 121:5, 721–741.

Carstens, Vicki. 2016. Delayed Valuation: A Reanalysis of Goal Features, “Upward” Complementizer Agreement, and the Mechanics of Case. *Syntax* 19:1, 1–42.

Castilla-Earls, Anny, Francis, David J. & Iglesias, Aquiles. 2022. The Complex Role of Utterance Length on Grammaticality: Multivariate Multilevel Analysis of English and Spanish Utterances of First-Grade English Learners. *Journal of Speech, Language, and Hearing Research : JSLHR* 65:1, 238–252.

Chini, Marina. 1995. *Genere grammaticale e acquisizione. Aspetti della morfologia nominale in italiano L2*. Milano: Franco Angeli.

Chomsky, Noam. 1965. *Aspects of the theory of syntax*. Cambridge, Mass., London: MIT Press.

Chomsky, Noam. 1970. Remarks on Nominalization. *Studies on Semantics in Generative*

Grammar, 11–61.

Chomsky, Noam. 1981. *Lectures on Government and Binding: The Pisa Lectures*. Berlin, New York: De Gruyter.

Chomsky, Noam. 1982. *Some concepts and consequences of the theory of government and binding*. Cambridge, Mass., London: MIT Press.

Chomsky, Noam. 1986. *Barriers*. Cambridge.

Chomsky, Noam. 1988. *Language and problems of knowledge: The Managua lectures*. Cambridge, Mass. MIT Pr.

Chomsky, Noam. 1995. *The minimalist program*. Cambridge, Mass. MIT Press.

Chomsky, Noam. 2000. Minimalist Inquiries: the Framework. In Roger Andrew Martin, David Michaels & Juan Uriagereka (eds.): *Step by step: Essays on minimalist syntax in honor of Howard Lasnik*. Cambridge (Massachusetts), London: MIT Press, 89–155.

Chomsky, Noam. 2005. Three Factors in Language Design. *Linguistic Inquiry* 36:1, 1–22.

Chomsky, Noam. 2023. *The Miracle Creed and Strong Minimalist Thesis*. University of Wien.

Cinque, Guglielmo. 1996a. *Italian Syntax and Universal Grammar*. Cambridge University Press.

Cinque, Guglielmo. 1996b. The ‘antisymmetric’ programme: theoretical and typological implications. *Journal of Linguistics* 32:2, 447–464.

Cinque, Guglielmo. 1999. *Adverbs and functional heads: A cross-linguistic perspective*. New York: Oxford University Press.

Cinque, Guglielmo. 2010. *The syntax of adjectives: A comparative study*. Cambridge, Mass. MIT Press.

Cipriani, Paola, Chilosi, Anna M., Bottari, Piero & Pfanner, Lucia. 1993. *L’Acquisizione della morfosintassi in italiano : fasi e processi*. Padova: Unipress.

Clackson, James. 2011. The Forms of Latin: Inflectional Morphology. In James Clackson (ed.): *A Companion to the Latin Language*. Wiley, 105–117.

Clahsen, Harald. 1990. Constraints on Parameter Setting: A Grammatical Analysis of Some

- Acquisition Stages in German Child Language. *Language Acquisition* 1:4, 361–391.
- Clahsen, Harald, Eisenbeiss, Sonja, Hadler, Meike & Sonnenstuhl, Ingrid. 2001. The Mental Representation of Inflected Words: An Experimental Study of Adjectives and Verbs in German. *Language* 77:3, 510–543.
- Clahsen, Harald, Penke, Martin & Parodi, Teresa. 1993. Functional Categories in Early Child German. *Language Acquisition* 3:4, 395–429.
- Clahsen, Harald & Richman, Karin. 1991. *Child Language and Developmental Dysphasia: Linguistic studies of the acquisition of German*. Amsterdam: John Benjamins Publishing Company.
- Clark, Eve V. 1985. The Acquisition of Romance, with Special Reference to French. In Dan Isaac Slobin (ed.): *The crosslinguistic study of language acquisition: Vol. 1: The data*. London: Lawrence Erlbaum Associates, Inc, 687–783.
- Clark, Eve V. 2017. Morphology in Language Acquisition. In Andrew Spencer & Arnold M. Zwicky (eds.): *The Handbook of Morphology*. Oxford, UK: Blackwell Publishing Ltd, 374–389.
- Collings, Andreas. 1990. The acquisition of morphology and syntax in German child language. In Jürgen M. Meisel (ed.): *Two first languages: Early grammatical development in bilingual children*. Dordrecht: Foris Publ, 23–46.
- Collins, Chris & Kayne, Richard S. 2023. Towards a Theory of Morphology as Syntax. *Studies in Chinese Linguistics* 44:1, 1–32.
- Colombo, Lucia, Fonti, Cristina & Stracciari, Andrea. 2009. Italian verb inflection in Alzheimer dementia. *Neuropsychologia* 47:4, 1069–1078.
- Corbett, Greville G. 1991. *Gender*. Cambridge: Cambridge University Press.
- Corbett, Greville G. 2000. *Number*. Cambridge: Cambridge University Press.
- Corbett, Greville G. 2005. The canonical approach in typology*. In Zygmunt Frajzyngier, David Rood & Adam Hodges (eds.): *Linguistic Diversity and Language Theories*. Amsterdam: John Benjamins Publishing Company, 25–49.
- Corbett, Greville G. 2006a. *Agreement*. Cambridge: Cambridge Univ. Press.

- Corbett, Greville G. 2006b. Gender, Grammatical. In Brown, Keith E., Anderson, Anne H. (ed.): *Encyclopedia of Language & Linguistics*. Elsevier, 749–756.
- Corbett, Greville G. 2006c. Number. In Brown, Keith E., Anderson, Anne H. (ed.): *Encyclopedia of Language & Linguistics*. Elsevier, 724–731.
- Corbett, Greville G. 2009. Canonical inflectional classes. *Selected Proceedings of the 6th Décembrettes*, 1–11.
- Corbett, Greville G. 2010. Features: essential notions. In Anna Kibort & Greville G. Corbett (eds.): *Features: Perspectives on a key notion in linguistics ; [Workshop on Features in London on 1-2 September 2007]*. Oxford: Oxford University Press, 17–36.
- Corbett, Greville G. & Fedden, Sebastian. 2016. Canonical gender. *Journal of Linguistics* 52:3, 495–531.
- Corbett, Greville G. & Fraser, Norman M. 1999. Default genders. *Gender in Grammar and Cognition*, 55–98.
- Coveney, Aidan. 2000. Vestiges of nous and the 1st person plural verb in informal spoken French. *Language Sciences* 22:4, 447–481.
- Crain, Stephen, Goro, Takuya & Thornton, Rosalind. 2006. Language acquisition is language change. *Journal of Psycholinguistic Research* 35:1, 31–49.
- Creissels, Denis. 2019. Noun class systems in Atlantic languages. In Friedrich Lüpke (ed.): *The Oxford guide to the Atlantic languages of West Africa*. Oxford: Oxford University Press, 1–31.
- Cyrino, Sonia & Espinal, M.Teresa. 2020. On the Syntax of Number in Romance. *Studia Linguistica* 74:1, 165–203.
- D'Alessandro, Roberta. 2017. When you have too many features: Auxiliaries, agreement and clitics in Italian varieties. *Glossa: a journal of general linguistics* 2:1, 1–36.
- D'Alessandro, Roberta, Franco, Irene & Gallego, Àngel J. 2017. Introduction: the verbal domain. In Roberta D'Alessandro, Irene Franco & Àngel J. Gallego (eds.): *The verbal domain*. Oxford: Oxford University Press, 17–28.
- Dammel, Antje, Kürschner, Sebastian & Nübling, Damaris. 2010. Pluralallomorphie in zehn

- germanischen Sprachen : Konvergenzen und Divergenzen in Ausdrucksverfahren und Konditionierung. In Antje Dammel, Sebastian Kürschner & Damaris Nübling (eds.): *Kontrastive Germanistische Linguistik*. Hildesheim: Olms, 587–642.
- Danon, Gabi. 2010. The definiteness feature at the syntax-semantics interface. In Anna Kibort & Greville G. Corbett (eds.): *Features: Perspectives on a key notion in linguistics ; [Workshop on Features in London on 1-2 September 2007]*. Oxford: Oxford University Press, 143–165.
- Danon, Gabi. 2011. Agreement and DP - Internal Feature Distribution. *Syntax* 14:4, 297–317.
- D'Aurizio, Laura, Stahnke, Johanna & Müller, Natascha. 2024. Acquisition of morpho-syntactic features in a bilingual Italian child: An integrated approach to gender. In Lindsay Hraes (ed.): *Perspectives on Input, Evidence, and Exposure in Language Acquisition*, vol. 69. Amsterdam: John Benjamins Publishing Company, 54–87.
- Davis, Stuart. 1990. Italian onset structure and the distribution of *il* and *lo**. *Folia Linguistica* 1, 43–56.
- Déchaine, Rose-Marie. 2019. Partitioning the Nominal Domain: The convergence of morphology, syntax, semantics, and pragmatics. In Éric Mathieu, Myriam Dali & Gita Zareikar (eds.): *Gender and noun classification*. Oxford: Oxford Univ. Press, 17–40.
- Déchaine, Rose-Marie, Dufresne, Monique & Tremblay, Mireille. 2018. The trajectory of ϕ -features on Old French D and n. *Canadian Journal of Linguistics/Revue canadienne de linguistique* 63:2, 167–193.
- Déchaine, Rose-Marie & Wiltschko, Martina. 2002. Decomposing Pronouns. *Linguistic Inquiry* 33:3, 409–442.
- Demuth, Katherine. 2003. The Acquisition of Bantu languages. *The Bantu languages*, 209–222.
- Dewaele, Jean-Marc & Véronique, Daniel. 2001. Gender assignment and gender agreement in advanced French interlanguage: a cross-sectional study. *Bilingualism: Language and Cognition* 4:3, 275–297.
- Dikken, Marcel den. 2011. Phi-feature inflection and agreement: An introduction. *Natural Language & Linguistic Theory* 29, 857–874.

- Döpke, Susanne. 1992. *One parent, one language: An interactional approach*. Amsterdam, Philadelphia: John Benjamins Publishing Company.
- Dressler, Wolfgang U. 2002. Latin inflection classes. In Alide M. Bolkestein (ed.): *Theory and description in Latin linguistics: Selected papers from the XIth International Colloquium on Latin Linguistics, Amsterdam, June 24 - 29, 2001*. Amsterdam: Gieben, 91–110.
- Dressler, Wolfgang U., Kilani-Schoch, Marianne, Gagarina, Natalia, Pestal, Lina & Pöchtrager, Markus. 2006. On the Typology of Inflection Class Systems. *Folia Linguistica* 40:1-2, 51–74.
- Durst, Péter & Janurik, Boglárka. 2011. The acquisition of the Hungarian definite conjugation by learners of different first languages. *Linguistic Variation* 21, 19–44.
- Eddington, David. 2002. Dissociation in Italian conjugations: a single-route account. *Brain and Language* 81:1-3, 291–302.
- Eichler, Nadine, Jansen, Veronika & Müller, Natascha. 2013. Gender acquisition in bilingual children: French–German, Italian–German, Spanish–German and Italian–French. *International Journal of Bilingualism* 17:5, 550–572.
- Enger, Hans-Olav. 2004. On the relation between gender and declension. *Studies in Language* 28:1, 51–82.
- Estivalet, Gustavo L. & Meunier, Fanny E. 2015. Decomposability and mental representation of French verbs. *Frontiers in human neuroscience* 9, 4.
- Estivalet, Gustavo L. & Meunier, Fanny E. 2016. Stem Formation in French Verbs: Structure, Rules, and Allomorphy. *Languages* 1:2, 13.
- Faust, Noam & Lampitelli, Nicola. 2009. How vowels point to syntactic structure: roots and skeletons in Hebrew and Italian. *Proceedings of ConSOLE XVII* 1-14.
- Ferdinand, R. A. 1996. *The development of functional categories: The acquisition of the subject in French*. PhD Thesis, Leiden University, Leiden.
- Ferrari-Bridgers, Franca. 2008. A unified syntactic analysis of Italian and Luganda nouns. In Cécile de Cat & Katherine Demuth (eds.): *The Bantu-Romance connection: A comparative investigation of verbal agreement, DPs, and information structure*, vol. 131. Amsterdam:

- Benjamins, 239–258.
- Fournet, Arnaud. 2011. About the difficulty of determining the lexical classes of the Moksha language. *ReVel* 9:17, 33–54.
- Fuchs, Zuzanna. 2019. *Gender in the Nominal Domain: Evidence From Bilingualism and Eye-Tracking*. PhD Thesis, Harvard University.
- Fuchs, Zuzanna, Polinsky, Maria & Scontras, Gregory. 2015. The differential representation of number and gender in Spanish. *The Linguistic Review* 32:4, 703–737.
- Gabriel, Christoph & Meisenburg, Trudel. 2017. *Romanische Sprachwissenschaft*. Paderborn: Wilhelm Fink.
- Georgi, Doreen. 2010. Third Cycle Agree Effects in Mordvin. In Sebastian Bank, Doreen Georgi & Jochen Trommer (eds.): *2 in agreement*. Universität Leipzig: Linguistische ArbeitsBerichte, 125–161.
- Giusti, Giuliana. 2008. Agreement and concord in nominal expressions. In Cécile de Cat & Katherine Demuth (eds.): *The Bantu-Romance connection: A comparative investigation of verbal agreement, DPs, and information structure*. Amsterdam: Benjamins, 201–237.
- Goedsche, C. R. 1934. Verbal Aspect in German. *The Journal of English and Germanic Philology* 33:4, 506–519.
- Granlund, Sonia, Kolak, Joanna, Vihman, Virve, Engelmann, Felix, Lieven, Elena V., Pine, Julian M., Theakston, Anna L. & Ambridge, Ben. 2019. Language-general and language-specific phenomena in the acquisition of inflectional noun morphology: A cross-linguistic elicited-production study of Polish, Finnish and Estonian. *Journal of Memory and Language* 107, 169–194.
- Grant, Anthony. 2009. Loanwords in British English. In Martin Haspelmath (ed.): *Loanwords in the World's Languages: A Comparative Handbook*. Berlin/Boston: De Gruyter, 360–383.
- Grevisse, Daniel G., Watorek, Marzena & Isel, Frédéric. 2023. The Subjunctive as a Model of Grammatical Complexity: An Integrative Review of Issues Based on Combined Evidence from Mental Chronometry and Neurosciences. *Brain Sciences* 13:6.
- Grosjean, François. 1989. Neurolinguists, beware! The bilingual is not two monolinguals in one

- person. *Brain and Language* 36:1, 3–15.
- Guasti, Maria T. 1993. Verb Syntax in Italian Child Grammar: Finite and Nonfinite Verbs. *Language Acquisition* 3:1, 1–40.
- Guasti, Maria T. 2002. *Language acquisition: The growth of grammar*. Cambridge (Massachusetts), London: The MIT Press.
- Gudmundson, Anna. 2010. *L'acquisizione del genere grammaticale in italiano L2: Quali fattori possono influenzare il grado di accuratezza*. PhD Thesis, Stockholms universitet, Stockholm.
- Hager, Malin. 2014. *Der Genuserwerb bei mehrsprachig aufwachsenden Kindern: Eine longitudinale Untersuchung bilingualer und trilingualer Kinder der Sprachenkombinationen deutsch-französisch/italienisch/spanisch, französisch-italienisch/spanisch und deutsch-spanisch-katalanisch*. PhD Thesis, Bergische Universität Wuppertal.
- Halle, Morris. 1957. In defense of the number two. In Ernst Pulgram (ed.): *Studies Presented to Joshua Whatmough On His Sixtieth Birthday*. The Hague: Mouton de Gruyter, 65–72.
- Halle, Morris. 2000. Distributed Morphology: Impoverishment and Fission. In Jacqueline Lecarme, Jean Lowenstamm & Ur Shlonsky (eds.): *Research in Afroasiatic Grammar: Papers from the Third conference on Afroasiatic Languages*. Amsterdam: John Benjamins Publishing, 125–149.
- Halle, Morris & Marantz, Alec. 1993. Distributed morphology and the pieces of inflection. *The view from building 20*, 111–176.
- Harbour, Daniel. 2014. Paucity, abundance, and the theory of number. *Language* 90:1, 185–229.
- Harley, Heidi. 1994. Hug a tree: deriving the morphosyntactic feature hierarchy. In Andrew Carnie, Heidi Harley & Tony Bure (eds.): *Papers on Phonology and Morphology*. Boston: MIT Working Papers on Linguistics, 289–320.
- Harley, Heidi. 2008. When is a Syncretism more than a Syncretism? Impoverishment, Metasyncretism, and Underspecification. In Daniel Harbour, David Adger & Susana Béjar

- (eds.): *Phi theory: Phi-features across modules and interfaces*. Oxford: Oxford Univ. Press, 251–294.
- Harley, Heidi. 2015. The Syntax-Morphology Interface. In Tibor Kiss & Artemis Alexiadou (eds.): *Handbücher zur Sprach- und Kommunikationswissenschaft. Volume 2*. Berlin, Munich, Boston: Mouton de Gruyter, 1128–1154.
- Harley, Heidi & Ritter, Elizabeth. 2002. Person and Number in Pronouns: A Feature-Geometric Analysis. *Language* 78:3, 482–526.
- Harris, James W. 1991. The exponence of gender in Spanish. *Linguistic Inquiry*, 27–62.
- Harris, Martin. 1988. The Romance Languages. In Martin Harris & Vincent Nigel (eds.): *The Romance languages*. London: Routledge, 1–26.
- Haspelmath, Martin. 1994. Functional categories, X-bar theory, and grammaticalization theory. *STUF - Language Typology and Universals* 47:1, 3–15.
- Hasselaar, Juliane, Letts, Carolyn & McKean, Cristina. 2020. Verb morphology in German-speaking children with developmental language disorder and phonological impairment. *Clinical Linguistics & Phonetics* 34:7, 671–691.
- Hawkins, John A. 2011. Germanic languages. In Bernard Comrie (ed.): *The world's major languages*. London: Routledge, 51–59.
- Heinen, Sabine & Kadow, Helga. 1990. The acquisition of French by monolingual children. A review of the literature. In Jürgen M. Meisel (ed.): *Two first languages: Early grammatical development in bilingual children*. Dordrecht: Foris Publ, 47–72.
- Henkel, Harald. 1972. Zur Konjugation im Deutschen. In Karl-Otto Apel (ed.): *Neue Grammatiktheorien und ihre Anwendung auf das heutige Deutsch*. Düsseldorf: Schwann, 171–183.
- Heycock, Caroline & Zamparelli, Roberto. 2005. Friends and Colleagues: Plurality, Coordination, and the Structure of DP. *Natural Language Semantics* 13:3, 201–270.
- Hickey, Raymond. 2011. On the phonology of gender in Modern German. *Gender in Grammar and Cognition*, 621–664.
- Hinzelin, Marc-Olivier. 2017. Inflection Classes in Verbs in the Romance Languages. In

- Gregory T. Stump (ed.): *Oxford Research Encyclopedia of Linguistics*. Oxford University Press.
- Hoff, Erika, Core, Cynthia, Place, Silvia, Rumiche, Rosario & Senior, Melissa, Parra, Marisol. 2012. Dual language exposure and early bilingual development. *Journal of child language* 39:1, 1–27.
- Houwer, Annick. 2011. Language input environments and language development in bilingual acquisition. *Applied Linguistics Review* 2:2011, 221–240.
- Houwer, Annick. 2023. The danger of bilingual–monolingual comparisons in applied psycholinguistic research. *Applied Psycholinguistics* 44:3, 343–357.
- Houwer, Annick de. 2009. *Bilingual first language acquisition*. Bristol, Buffalo, Toronto: Multilingual Matters.
- Hulk, Aafke & Müller, Natascha. 2000. Bilingual first language acquisition at the interface between syntax and pragmatics. *Bilingualism: Language and Cognition* 3:3, 227–244.
- Hyams, Nina. 2011. Missing Subjects in Early Child Language. In Jill de Villiers & Tom Roeper (eds.): *Handbook of Generative Approaches to Language Acquisition*, vol. 41. Dordrecht: Springer Netherlands, 13–52.
- Hyams, Nina M. 1986. *Language acquisition and the theory of parameters*. Dordrecht: Reidel.
- Imedazde, Natela & Tuite, Kevin. 1985. The acquisition of Georgian. In Dan Isaac Slobin (ed.): *The crosslinguistic study of language acquisition: Vol. 2: Theoretical issues*. London: Lawrence Erlbaum Associates, Inc, 39–109.
- Ivanova-Sullivan, Tanya & Sekerina, Irina A. 2019. Distributional Regularity of Cues Facilitates Gender Acquisition: A Contrastive Study of Two Closely Related Languages. In Megan M. Brown & Brady Dailey (eds.): *Proceedings of the 43rd Boston University Conference on Language Development*. Somerville, MA: Cascadilla Press, 311–323.
- Jakubowicz, Celia. 1998. Gender Agreement in the Processing of Spoken French. *Journal of Psycholinguistic Research* 27:6, 597–617.
- Janssen, Bibi E. 2016. *The acquisition of gender and case in Polish and Russian: A study of monolingual and bilingual children*. Amsterdam: Pegasusboek.

- Johnson, Elizabeth K. & White, Katherine S. 2020. Developmental sociolinguistics: Children's acquisition of language variation. *Wiley Interdisciplinary Reviews: Cognitive Science* 11:1, 1-15.
- Kaiser, Georg A. 2014. *Romanische Sprachgeschichte*. Paderborn: Fink.
- Karmiloff-Smith, Annette. 1979. *A functional approach to child language: A Study of Determiners and Reference*. Cambridge: Cambridge University Press.
- Kauschke, Christina. 2012. *Kindlicher Spracherwerb im Deutschen: Verläufe, Forschungsmethoden, Erklärungsansätze*. Berlin: Mouton de Gruyter.
- Kauschke, Christina, Kurth, Anna & Domahs, Ulrike. 2011. Acquisition of German Noun Plurals in Typically Developing Children and Children with Specific Language Impairment. *Child Development Research* 2011, 1–17.
- Kayne, Richard S. 1994. *The antisymmetry of syntax*. Cambridge (Massachusetts), London: MIT Press.
- Kerswill, Paul & Shockey, Linda. 2006. The description and acquisition of variable phonological patterns: phonology and sociolinguistics. In Martha C. Pennington (ed.): *Phonology in Context*. Basingstoke: Palgrave Macmillan, 51–75.
- Kibler, William W. 1984. *An introduction to Old French*. New York, N. Y. Modern Language Association of America.
- Kibort, Anna. 2010. Towards a typology of grammatical features. In Anna Kibort & Greville G. Corbett (eds.): *Features: Perspectives on a key notion in linguistics ; [Workshop on Features in London on 1-2 September 2007]*. Oxford: Oxford University Press, 64–106.
- Kibort, Anna & Corbett, Greville G. 2008. *What is 'number'?*. <http://www.grammaticalfeatures.net/features/number.html>.
- Kilani-Schoch, Marianne. 2003. Early verb inflection in French: An investigation of two corpora. In Dagmar Bittner, Wolfgang U. Dressler & Marianne Kilani-Schoch (eds.): *Development of Verb Inflection in First Language Acquisition: A Cross-Linguistic Perspective*. Berlin, New York: Mouton de Gruyter, 269–296.
- Kilani-Schoch, Marianne. 2009. Relations between the development of the category of nominal

- and verbal number in two French-speaking children. In Ursula Stephany & Maria D. Voeikova (eds.): *Development of nominal inflection in first language acquisition: A cross-linguistic perspective*. Berlin, New York: Mouton de Gruyter, 371–410.
- Kilani-Schoch, Marianne. 2015. Development of adjectives in two French-speaking children: Relation between Inflection and Semantics. In Elena Tribushinina, Maria D. Voeikova & Sabrina Noccetti (eds.): *Semantics and morphology of early adjectives in first language acquisition*. Newcastle-upon-Tyne: Cambridge Scholars Publishing, 99–137.
- Kilani-Schoch, Marianne & Dressler, Wolfgang U. 1992. Prol-o, intell-o, gauch-o et les autres. Propriétés formelles de deux opérations du français parlé. *Romanistisches Jahrbuch* 43:1, 65–86.
- Kilani-Schoch, Marianne & Xanthos, Aris. 2013. The adjective petit ‘small, little’ in French acquisition data: An example of the relationship between pragmatics and morphosyntactic development. *Journal of Pragmatics* 56, 113–132.
- Koehn, Caroline. 1989. *Der Erwerb der Pluralmarkierungen durch bilinguale Kinder (Französisch/Deutsch). Eine empirische Untersuchung*. Unpublished Master Thesis.
- Koehn, Caroline. 1994. The Acquisition of Gender and Number Morphology within NP. In Jürgen M. Meisel (ed.): *Bilingual first language acquisition: French and German grammatical development*. Amsterdam: Benjamins, 29–52.
- Köpcke, Klaus-Michael. 1987. Die Beherrschung der deutschen Pluralmorphologie. *Linguistische Berichte* 107, 23–43.
- Köpcke, Klaus-Michael. 1988. Schemas in German plural formation. *Lingua* 74:4, 303–335.
- Köpcke, Klaus-Michael. 1994. Zur Rolle von Schemata bei der Pluralbildung monosyllabischer Maskulina. In Klaus-Michael Köpcke (ed.): *Funktionale Untersuchungen zur deutschen Nominal- und Verbalmorphologie*. Niemeyer: Tübingen, 81–96.
- Köpcke, Klaus-Michael & Zubin, David. 1996. Prinzipien für die Genuszuweisung im Deutschen. In Ewald Lang & Gisela Zifonun (eds.): *Deutsch - Typologisch*. De Gruyter, 473–491.
- Kotthoff, Helga & Nübling, Damaris. 2018. *Genderlinguistik: Eine Einführung in Sprache*,

Gespräch und Geschlecht. Tübingen: Narr Francke Attempto.

- Kramer, Ruth. 2014. Gender in Amharic: a morphosyntactic approach to natural and grammatical gender. *Language Sciences* 43, 102–115.
- Kramer, Ruth. 2015. *The morphosyntax of gender*. New York, New York: Oxford Univ. Press.
- Kramer, Ruth. 2016. The location of gender features in the syntax. *Language and Linguistics Compass* 10:11, 661–677.
- Kramer, Ruth. 2019. A novel kind of gender syncretism. In Éric Mathieu, Myriam Dali & Gita Zareikar (eds.): *Gender and noun classification*. Oxford: Oxford Univ. Press, 159–185.
- Kučerová, Ivona. 2018. ϕ -Features at the Syntax-Semantics Interface: Evidence from Nominal Inflection. *Linguistic Inquiry* 49:4, 813–845.
- Kučerová, Ivona. 2019. The double life of gender and its structural consequences: A case study from Standard Italian. In Éric Mathieu, Myriam Dali & Gita Zareikar (eds.): *Gender and noun classification*. Oxford: Oxford Univ. Press, 119–135.
- Kupisch, Tanja. 2001. *The acquisition of determiners in bilingual German-Italian and German-French children*. München: Lincom.
- Kupisch, Tanja. 2007. Determiners in bilingual German–Italian children: What they tell us about the relation between language influence and language dominance. *Bilingualism: Language and Cognition* 10:01, 57–78.
- Kupisch, Tanja, Geiss, Miriam, Mitrofanova, Natalia & Westergaard, Marit. 2022. Structural and phonological cues for gender assignment in monolingual and bilingual children acquiring German. Experiments with real and nonce words. *Glossa: a journal of general linguistics* 7:1, 1–37.
- Kupisch, Tanja, Mitrofanova, Natalia & Westergaard, Marit. 2022. Phonological vs. natural gender cues in the acquisition of German by simultaneous and sequential bilinguals (German-Russian). *Journal of child language* 49:4, 661–683.
- Kupisch, Tanja, Müller, Natascha & Cantone, Katja F. 2002. Gender in Monolingual and Bilingual First Language Acquisition : Comparing Italian and French. *Lingue e Linguaggio* 1, 107–149.

- Kürschner, Sebastian. 2009. *Deklinationenklassen-Wandel: Eine diachron-kontrastive Studie zur Entwicklung der Pluralallomorphie im Deutschen, Niederländischen, Schwedischen und Dänischen*. Berlin: Mouton de Gruyter.
- Kürschner, Sebastian & Nübling, Damaris. 2011. The interaction of gender and declension in Germanic languages. *Folia Linguistica* 45:2, 355–388.
- La Morgia, Federica. 2011. *Bilingual First Language Acquisition: The Nature of the Weak Language and the Role of the Input*. PhD Thesis, Dublin City University, Dublin.
- Laaha, Sabine & Dressler, Wolfgang U. 2012. Suffix predictability and stem transparency in the acquisition of German noun plurals. In Ferenc Kiefer, Mária Ladányi & Péter Siptár (eds.): *Current issues in morphological theory: (ir)regularity, analogy and frequency ; selected papers from the 14th International Morphology Meeting, Budapest, 13 - 16 May 2010*. Amsterdam: Benjamins, 217–236.
- Laaha, Sabine, Ravid, Dorit, Korecky-Kröll, Katharina, Laaha, Gregor & Dressler, Wolfgang U. 2006. Early noun plurals in German: regularity, productivity or default? *Journal of Child Language* 33:2, 271–302.
- Lampitelli, Nicola. 2008. Nounness, gender, class and syntactic structures in Italian nouns. In Reineke Bok-Bennema, Brigitte Kampers-Manhe & Bart Hollebrandse (eds.): *Romance Languages and Linguistic Theory 2008: Selected papers from 'Going Romance' Groningen 2008*, vol. 2. Amsterdam: John Benjamins Publishing Company, 195–214.
- Leonard, Laurence B., Caselli, Maria C. & Devescovi, Antonella. 2002. Italian children's use of verb and noun morphology during the preschool years. *First Language* 22:3, 287–304.
- Lightfoot, David & Hornstein, Norbert. 2011. Verb Movement: An Introduction. In David Lightfoot & Norbert Hornstein (eds.): *Verb Movement*. Cambridge: Cambridge University Press, 1–18.
- Longobardi, Giuseppe. 2006. A minimalist program for parametric linguistics? *Organizing Grammar*, 407–414.
- Loporcaro, Michele. 2018. *Gender from Latin to romance: History, geography, typology*. Oxford: Oxford University Press.

- Loporcaro, Michele, Faraoni, Vincenzo & Gardani, Francesco. 2014. The third gender of Old Italian. *Diachronica* 31:1, 1–22.
- Lowenstamm, Jean. 2008. On Little n, \surd , and Types of Nouns. In Jutta M. Hartmann (ed.): *Sounds of silence: Empty elements in syntax and phonology*. Amsterdam, Heidelberg: Elsevier, 105–143.
- Lowenstamm, Jean. 2012. Feminine and gender, or why the ‘Feminine’ profile of French nouns has nothing to do with gender. In Eugeniusz Cyran, Henryk Kardela & Bogdan Szymanek (eds.): *Sound structure and sense: Studies in memory of Edmund Gussmann*. Lublin: Wydawnictwo KUL, 371–406.
- Lust, Barbara C. 1999. Universal grammar: The strong continuity hypothesis in first language acquisition. In William C. Ritchie (ed.): *Handbook of child language acquisition*. San Diego: Academic Press, 111–155.
- Lyster, Roy. 2006. Predictability in French gender attribution: A corpus analysis. *Journal of French Language Studies* 16:1, 69–92.
- MacSwan, Jeff. 2000. The architecture of the bilingual language faculty: evidence from intrasentential code switching. *Bilingualism: Language and Cognition* 3:1, 37–54.
- MacSwan, Jeff. 2022. Codeswitching, Translanguaging and Bilingual Grammar. In Jeff MacSwan (ed.): *Multilingual perspectives on translanguaging*. Bristol, Jackson: Multilingual Matters, 83–125.
- MacWhinney, Brian. 1976. Hungarian research on the acquisition of morphology and syntax. *Journal of Child Language* 3:3, 397–410.
- MacWhinney, Brian. 2023. *CHILDES Corpora*. <https://childes.talkbank.org/access/>, Accessed November 26, 2024.
- Maiden, Martin. 1957. *A linguistic history of Italian*. London: Longman.
- Maiden, Martin. 2005. Morphological autonomy and diachrony. In Geert Booij & Jaap van Marle (eds.): *Yearbook of Morphology 2004*. Springer, Dordrecht, 137–175.
- Marantz, Alec. 1997. No Escape from Syntax: Don't Try Morphological Analysis in the Privacy of Your Own Lexicon. *University of Pennsylvania Working Papers in Linguistics* 4:2, 201–

225.

- Marco, Anna de. 2005. *Acquisire secondo natura: Lo sviluppo della morfologia in italiano*. Milano: F. Angeli.
- Marcus, Gary F., Brinkmann, Ursula, Clahsen, Harald, Wiese, Richard & Pinker, Steven. 1995. German inflection: the exception that proves the rule. *Cognitive Psychology* 29:3, 189–256.
- Martin, Roger A. & Uriagereka, Juan. 2000. Introduction. Some Possible Foundations of the Minimalist Program. In Roger Andrew Martin, David Michaels & Juan Uriagereka (eds.): *Step by step: Essays on minimalist syntax in honor of Howard Lasnik*. Cambridge (Massachusetts), London: MIT Press, 1–30.
- Marty, Fernand. 2001. Les signaux morphologiques du français parlé. *Français moderne* 69:2.
- Marzi, Claudia, Blevins, James P., Booij, Geert & Pirrelli, Vito. 2020. Inflection at the morphology-syntax interface. In Vito Pirrelli, Ingo Plag & Wolfgang U. Dressler (eds.): *Word Knowledge and Word Usage*. Berlin/Boston: De Gruyter, 228–294.
- Matthews, Clive A. 2005. French Gender Attribution on the Basis of Similarity: A Comparison Between AM and Connectionist Models. *Journal of Quantitative Linguistics* 12:2-3, 262–296.
- Matthews, Clive A. 2010. On the nature of phonological cues in the acquisition of French gender categories: Evidence from instance-based learning models. *Lingua* 120:4, 879–900.
- Matushansky, Ora. 2013. Gender Confusion. In Norbert Corver & Lisa Lai Shen Cheng (eds.): *Diagnosing syntax*. Oxford: Oxford Univ. Press, 271–294.
- McConnell Ginnet, Sally. 2013. Gender and its relation to sex: The myth of ‘natural’ gender. In Greville G. Corbett (ed.): *The Expression of Gender*. Berlin: Mouton de Gruyter, 3–38.
- McGinnis, Martha. 2005. On Markedness Asymmetries in Person and Number. *Language* 81:3, 699–718.
- Meisel, Jürgen M. 1994. Getting FAT. Finiteness, Agreement and Tense in Early Grammars. In Jürgen M. Meisel (ed.): *Bilingual first language acquisition: French and German grammatical development*. Amsterdam: Benjamins, 88–130.
- Meisel, Jürgen M. 2003. Early differentiation of languages in bilingual children. In Wei Li (ed.):

- The Bilingualism Reader*. New York: Routledge, 335–359.
- Miller, Max. 1979. *The Logic of Language Development in Early Childhood*. Berlin, Heidelberg: Springer.
- Mills, Anne E. 1985. The acquisition of German. In Dan Isaac Slobin (ed.): *The crosslinguistic study of language acquisition: Vol. 1: The data*. London: Lawrence Erlbaum Associates, Inc, 141–254.
- Mills, Anne E. 1986. *The Acquisition of Gender: A Study of English and German*. Berlin: Springer.
- Montermini, Fabio & Bonami, Olivier. 2013. Stem spaces and predictability in verbal inflection. *Lingue e Linguaggio* 12:2, 171–190.
- Montrul, Silvina. 2016. Age of Onset of Bilingualism Effects and Availability of Input in First Language Attrition. In Elena Nicoladis & Simona Montanari (eds.): *Bilingualism across the lifespan: Factors moderating language proficiency*. Washington: American Psychological Association, 162–185.
- Morgenstern, Aliyah. 2009. *L'enfant dans la langue. De l'observation du naturaliste à l'analyse du linguiste*. Paris: Presses de la Sorbonne Nouvelle.
- Moscato, Vincenzo & Rizzi, Luigi. 2014. Agreement configurations in language development: A movement-based complexity metric. *Lingua* 140, 67–82.
- Moscato, Vincenzo & Tedeschi, Roberta. 2009. The delay of Italian past participle agreement: *BUCLD 33: Proceedings of the 33rd annual Boston University Conference on Language Development (33rd annual Boston University Conference on Language Development), Boston*. In Jane Chandlee, Michelle Franchini, Sandy Lord & Gudrun-Marion Rheiner (eds.), 370–390. Somerville, MA: Cascadilla Proceedings Project.
- Mueller Gathercole, Virginia C. 2016. Factors Moderating Proficiency in Bilingual Speakers. In Elena Nicoladis & Simona Montanari (eds.): *Bilingualism across the lifespan: Factors moderating language proficiency*. Washington: American Psychological Association, 142–161.
- Müller, Gereon. 2002. Remarks on nominal inflection in German. In Ingrid Kaufmann (ed.):

- More than words: A Festschrift for Dieter Wunderlich*, 113-146. Berlin: Akad.-Verl.
- Müller, Gereon. 2004. On Decomposing Inflection Class Features: Syncretism in Russian Noun Inflection. *Explorations in Nominal Inflection*, 189–228.
- Müller, Gereon. 2005. Syncretism and iconicity in Icelandic noun declensions: a Distributed Morphology approach. In Geert Booij & Jaap van Marle (eds.): *Yearbook of Morphology 2004*. Springer, Dordrecht, 229–271.
- Müller, Natascha. 1990. Developing two gender assignment systems simultaneously. In Jürgen M. Meisel (ed.): *Two first languages: Early grammatical development in bilingual children*. Dordrecht: Foris Publ, 193–236.
- Müller, Natascha. 1994. Gender and Number Agreement within DP. In Jürgen M. Meisel (ed.): *Bilingual first language acquisition: French and German grammatical development*. Amsterdam: Benjamins, 53–88.
- Müller, Natascha. 2000. Gender and number in acquisition. In Barbara Unterbeck, Matti Rissanen, Terttu Nevalainen & Mirja Saari (eds.): *Gender in grammar and cognition: I approaches to gender, II manifestations of gender*. Berlin, New York: Mouton de Gruyter, 351–400.
- Müller, Natascha. 2017. Different sources of delay and acceleration in early child bilingualism. *Zeitschrift für Sprachwissenschaft* 36:1, 7–30.
- Müller, Natascha. 2022. The Acquisition of Syntax in the Romance Languages (in Mono- vs. Multilingual Children). *Oxford Research Encyclopedia of Linguistics*.
- Müller, Natascha. 2024a. AAiMLL: Acquisition Advantages in MultiLingual Learners: The Case of the Multilingual Child. *Languages* 9:1, 1–24.
- Müller, Natascha. 2024b. Epistemological issue. From the child's perspective. *Linguistic Approaches to Bilingualism* 14:1, 90–95.
- Müller, Natascha, Arnaus Gil, Laia, Eichler, Nadine, Geveler, Jasmin, Hager, Malin, Jansen, Veronika, Patuto, Marisa, Repetto, Valentina & Schmeißer, Anika. 2015. *Code-Switching: Spanisch, Italienisch, Französisch : eine Einführung*. Tübingen: Narr Francke Attempto.
- Müller, Natascha & Hulk, Aafke. 2001. Crosslinguistic influence in bilingual language

- acquisition: Italian and French as recipient languages. *Bilingualism: Language and Cognition* 4:1, 1–21.
- Müller, Natascha, Kupisch, Tanja, Schmitz, Katrin & Cantone, Katja F. 2011. *Einführung in die Mehrsprachigkeitsforschung: Deutsch - französisch - italienisch*. Tübingen: Narr Verlag.
- Mykhaylyk, Roksolana. 2013. Bilinguals vs. monolinguals: Where is the difference? *Studia Linguistica* 67:1, 101–122.
- Nanousi, Vicky, Masterson, Jackie, Druks, Judit & Atkinson, Martin. 2006. Interpretable vs. uninterpretable features: Evidence from six Greek-speaking agrammatic patients. *Journal of Neurolinguistics* 19:3, 209–238.
- Napoli, Donna J. & Vogel, Irene. 1990. The Conjugations of Italian. *Italica* 67:4, 479.
- Negro, Isabelle, Bonnotte, Isabelle & Lété, Bernard. 2014. Statistical learning of past participle inflections in French. *Reading and Writing* 27:7, 1255–1280.
- Nelson, Katherine. 1981. Individual differences in language development: Implications for development and language. *Developmental Psychology* 17:2, 170–187.
- Newman, Elise. 2022. *C-selection and the verb phrase*. Universität Gottingen.
- Newmeyer, Frederick J. 2004. Against a parameter-setting approach to typological variation. *Linguistic Variation Yearbook* 4:1, 181–234.
- Newmeyer, Frederick J. 2017. Where, If Anywhere, Are Parameters? A Critical Historical Overview Of Parametric Theory. In Claire Louise Bower, Laurence R. Horn & Raffaella Zanuttini (eds.): *On looking into words (and beyond): Structures, relations, analyses*. Berlin: Language Science Press, 547–569.
- Nicoladis, Elena & Marchak, Kristan. 2011. Le Carte Blanc or la Carte Blanche? Bilingual Children's Acquisition of French Adjective Agreement. *Language Learning* 61:3, 734–758.
- Nicoladis, Elena, Palmer, Andrea & Marentette, Paula. 2007. The role of type and token frequency in using past tense morphemes correctly. *Developmental science* 10:2, 237–254.
- Noccetti, Sabrina. 2003. Acquisition of verb morphology in Italian: A case study. In Dagmar Bittner, Wolfgang U. Dressler & Marianne Kilani-Schoch (eds.): *Development of Verb Inflection in First Language Acquisition: A Cross-Linguistic Perspective*. Berlin, New York:

- Mouton de Gruyter, 351–378.
- Noccetti, Sabrina. 2009. The emergence of nominal number in Italian. In Ursula Stephany & Maria D. Voeikova (eds.): *Development of nominal inflection in first language acquisition: A cross-linguistic perspective*. Berlin, New York: Mouton de Gruyter, 303–340.
- Nübling, Damaris. 2008. Was tun mit Flexionsklassen? Deklinationsklassen und ihr Wandel im Deutschen und seinen Dialekten. *Zeitschrift für Dialektologie und Linguistik* 75:3, 282–330.
- Opitz, Andreas & Pechmann, Thomas. 2016. Linguistic Perspectives on Morphological Processing. *The Mental Lexicon* 11:2, 216–241.
- Opitz, Andreas, Regel, Stefanie, Müller, Gereon & Friederici, Angela D. 2013. Neurophysiological evidence for morphological underspecification in German strong adjective inflection. *Language* 89:2, 231–264.
- Orsolini, Rachele, Fanari, Hugo & Bowles, Margherita. 1998. Acquiring Regular and Irregular Inflection in a Language with Verb Classes. *Language and Cognitive Processes* 13:4, 425–464.
- Özçelik, Öner. 2019. The Foot is not an obligatory constituent of the Prosodic Hierarchy: “stress” in Turkish, French and child English. *The Linguistic Review* 34:1, 157–213.
- Paciaroni, Tania, Nolè, Graziella & Loporcaro, Michele. 2013. Persistenza del neutro nell'italo-romanzo centro-meridionale. *Vox Romanica*; 72:1, 88–137.
- Panagiotidis, Phoevos, Spyroupolus, Vassilios & Revithiadou, Anthi. 2017. Little v as a categorizing verbal head: evidence from Greek. In Roberta D'Alessandro, Irene Franco & Àngel J. Gallego (eds.): *The verbal domain*. Oxford: Oxford University Press, 29–48.
- Paradis, Carole & El Fenne, Fatimazohra. 1995. French verbal inflection revisited: Constraints, repairs and floating consonants. *Lingua* 95:1-3, 169–204.
- Paradis, Johanne. 2007. Early bilingual and multilingual acquisition. In Peter Auer & Li Wei (eds.): *Handbook of multilingualism and multilingual communication*. Berlin: Mouton de Gruyter, 15–44.
- Paradis, Johanne & Crago, Martha. 2004. Comparing L2 and SLI grammars in child French. In Philippe Prévost & Johanne Paradis (eds.): *The acquisition of French in different contexts:*

- Focus on functional categories*. Amsterdam: Benjamins, 89–107.
- Paradis, Johanne & Genesee, Fred. 1997. On Continuity and the Emergence of Functional Categories in Bilingual First-Language Acquisition. *Language Acquisition* 6:2, 91–124.
- Paradis, Johanne & Grüter, Theres. 2014. Introduction to “Input and experience in bilingual development”. In Theres Grüter & Johanne Paradis (eds.): *Input and experience in bilingual development*. Amsterdam, Philadelphia: Benjamins, 1–14.
- Parisse, Christian, Pontonx, Sophie de & Morgenstern, Aliyah. 2017. *L'émergence de la temporalité dans le langage de l'enfant*. Presses de la Sorbonne Nouvelle.
- Parisse, Christophe. 2023. Acquisition of Inflection in Romance Languages. *Oxford Research Encyclopedia of Linguistics*.
- Parisse, Christophe & Le Normand, Marie-Thérèse. 2000. How children build their morphosyntax: the case of French. *Journal of Child Language* 27:2, 267–292.
- Parker, Jeffery & Sims, Andrea. 2016. How inflection class systems work: On the informativity of implicative structure. *Word Structure* 9:2, 215–239.
- Penke, Martina. 2012. *The acquisition of inflectional morphology*. University of Cologne.
- Pescuma, Valentina N., Zanini, Chiara, Crepaldi, Davide & Franzon, Francesca. 2021. Form and Function: A Study on the Distribution of the Inflectional Endings in Italian Nouns and Adjectives. *Frontiers in psychology* 12, 1–29.
- Pesetsky, David M. 1996. *Zero syntax: Experiencers and cascades*. Cambridge (Massachusetts), London: MIT Press.
- Pesetsky, David M. & Torrego, Ether. 2007. The syntax of valuation and the interpretability of features. In Simin Karimi, Vida Samiian & Wendy K. Wilkins (eds.): *Phrasal and clausal architecture: Syntactic derivation and interpretation in honor of Joseph E. Emonds*. Amsterdam: John Benjamins Publ, 262–294.
- Petrova, Svetlana. 2024. On the distribution of the strong and weak adjectival inflection in Old High German: A corpus investigation. In Kristin Bech & Alexander Peter Pfaff (eds.): *Noun phrases in early Germanic languages*. Berlin: Language Science Press, 181–218.
- Picallo, M. C. 1991. Nominals and Nominalizations in Catalan. *Probus* 3:3.

- Picallo, M. C. 2008. Gender and Number in Romance. *Lingue e Linguaggio* VII:1, 47–66.
- Picallo, M. C. 2014. Introduction: Syntactic variation and Minimalist inquiries. In M. Carme Picallo (ed.): *Linguistic variation in the minimalist framework*. Oxford: Oxford University Press, 1–12.
- Picallo, M. C. 2017. A note on the locus and function of formal gender. *Borealis – An International Journal of Hispanic Linguistics* 6:1, 1.
- Pierce, Amy E. 1989. *On the emergence of syntax : a crosslinguistic study*, Massachusetts Institute of Technology.
- Pijpops, Dirk, Beuls, Katrien & van de Velde, Freek. 2015. The rise of the verbal weak inflection in Germanic. An agent-based model. *Computational Linguistics in the Netherlands Journal* 5, 81–102.
- Pinker, Steven. 1995. *The language instinct: How the mind creates language*. New York, NY: HarperPerennial.
- Pirrelli, Vito & Battista, Marco. 2000. On the interaction of paradigmatic and syntagmatic stem alternation in Italian conjugation. *Acta Linguistica Hungarica* 47:1/4, 289–314.
- Pizzuto, Elena & Caselli, Maria C. 1992. The acquisition of Italian morphology: implications for models of language development see comment. *Journal of child language* 19:3, 491–557.
- Plunkett, Kim & Marchman, Virginia. 1993. From rote learning to system building: acquiring verb morphology in children and connectionist nets. *Cognition* 48:1, 21–69.
- Polinsky, Maria & van Everbroeck, Ezra. 2003. Development of Gender Classifications: Modeling the Historical Change from Latin to French. *Language* 79:2, 356–390.
- Pollock, Jean-Yves. 1989. Verb Movement, Universal Grammar, and the Structure of IP. *Linguistic Inquiry* 20:3, 365–424.
- Pomino, Natascha & Remberger, Eva-Maria. 2021. Thematic formatives and linguistic theory. *Glossa: a journal of general linguistics* 7:2, 1–32.
- Prentza, Alexandra, Kaltsa, Maria, Tsimpli, Ianthi M. & Papadopoulou, Despina. 2019. The acquisition of Greek gender by bilingual children: The effects of lexical knowledge, oral

- input, literacy and bi/monolingual schooling. *International Journal of Bilingualism* 23:5, 901–920.
- Prévost, Philippe. 2009. *The acquisition of French: The development of inflectional morphology and syntax in L1 acquisition, bilingualism, and L2 acquisition*. Amsterdam: Benjamins.
- Ralli, Angela, Gkiouleka, Marianna & Makri, Vasiliki. 2015. Gender and inflection class in loan noun integration. *SKASE Journal of Theoretical Linguistics* 12:3, 422–460.
- Ravid, Dorit. 2019. First-Language Acquisition of Morphology. *Oxford Research Encyclopedia of Linguistics*, 1–37.
- Ritter, Elizabeth. 1991. Two Functional Categories in Noun Phrases: Evidence from Modern Hebrew. In Susan Rothstein (ed.): *Perspectives on Phrase Structure*. Leiden: BRILL, 37–62.
- Ritter, Elizabeth. 1993. Where's Gender? *Linguistic Inquiry* 24:4, 795–803.
- Rizzi, Luigi. 1982. *Issues in Italian syntax*. Berlin: De Gruyter.
- Rizzi, Luigi. 1997. The Fine Structure of the Left Periphery. In Liliane Haegeman (ed.): *Elements of Grammar*. Dordrecht: Springer Netherlands, 281–337.
- Roberts, Ian G. 2007. *Diachronic syntax*. Oxford, New York: Oxford University Press.
- Roberts, Ian G., ed. 2018. *Diachronic and Comparative Syntax*. Milton: Routledge.
- Roberts, Ian G. 2019. *Parameter hierarchies and universal grammar*. Oxford: Oxford University Press.
- Roberts, Ian G. & Holmberg, Anders. 2006. On the role of parameters in Universal Grammar: a reply to Newmeyer. In Hans Broekhuis, Norbert Corver, Riny Huybregts, Jan Koster & Ursula Kleinhenz (eds.): *Organizing Grammar: Linguistic Studies in Honor of Henk van Riemsdijk*. Berlin: De Gruyter, 538–553.
- Rodina, Yulia & Westergaard, Marit. 2013. The acquisition of gender and declension class in a non-transparent system: monolinguals and bilinguals. *Studia linguistica: A journal of general linguistics* 67:1, 47–67.
- Rodina, Yulia & Westergaard, Marit. 2017. Grammatical gender in bilingual Norwegian–Russian acquisition: The role of input and transparency. *Bilingualism: Language and*

Cognition 20:1, 197–214.

- Royle, Phaedra, Beritognolo, Gustavo & Bergeron, Eve. 2012. Regularity, sub-regularity and irregularity in French acquisition. *In* Thomas Stolz, Hitomi Otsuka, Aina Urdze & Johan van der Auwera (eds.): *Irregularity in Morphology (and beyond)*. Akademie Verlag, 227–250.
- Royle, Phaedra & Valois, Daniel. 2010. Acquisition of adjectives in Quebec French as revealed by elicitation data. *Journal of French Language Studies* 20:3, 313–338.
- Russo, Andrea G., Esposito, Fabrizio, Laudanna, Alessandro, Mancuso, Azzurra, Di Salle, Francesco, Elia, Annibale & Martino, Maria de. 2021. The neural substrate of noun morphological inflection: A rapid event-related fMRI study in Italian. *Neuropsychologia*, 1–49.
- Sallustri, Manola. 2001. Bilinguismo e acquisizione infantile di L2: alcune osservazioni sull'acquisizione simultanea di italiano e tedesco da parte di bambini in età prescolare. *Rivista di Grammatica Generativa* 26, 85–119.
- Salzmann, Martin. 2020. The NP vs. DP debate. Why previous arguments are inconclusive and what a good argument could look like. Evidence from agreement with hybrid nouns. *Glossa: a journal of general linguistics* 5:1.
- Say, Tessa & Clahsen, Harald. 2002. Words, Rules and Stems in the Italian Mental Lexicon. *In* Sieb Nooteboom, Fred Weerman & Frank Wijnen (eds.): *Storage and Computation in the Language Faculty*. Springer, Dordrecht, 93–129.
- Scalise, Sergio. 1984. *Generative Morphology*. Berlin, Boston: De Gruyter.
- Scalise, Sergio. 1988. Inflection and derivation. *Linguistics* 26:4, 561–581.
- Schmid, Hans U. 2017. *Einführung in die deutsche Sprachgeschichte*. Stuttgart: J.B. Metzler Verlag.
- Schpak-Dolt, Nikolaus. 2016. *Einführung in die französische Morphologie*. Berlin, Boston: Mouton de Gruyter.
- Schuler, Kathryn, Yang, Charles & Newport, Elissa. 2016. Testing the Tolerance Principle: Children form productive rules when it is more computationally efficient. *In* Anna.

- Papafragou, Daniel Grodner, Dan Mirman & John Trueswell (eds.): *Proceedings Of The 38th Annual Conference Of The Cognitive Science Society*. Austin, Texas: Cognitive Science Society, 1–38.
- Schwartz, Mila, Minkov, Miriam, Dieser, Elena, Protassova, Ekaterina, Moin, Victor & Polinsky, Maria. 2015. Acquisition of Russian gender agreement by monolingual and bilingual children. *International Journal of Bilingualism* 19:6, 726–752.
- Schwarze, Christoph. 1999. Inflectional classes in lexical functional morphology: Latin-sk-and its evolution. In Miriam Butt & Tracy Holloway King (eds.): *Proceedings of the LFG 99 Conference*. Cambridge: CLSI Publications, 1–13.
- Schwarze, Christoph. 2009. The French i-Conjugation from a Diachronic Perspective. In Fabio Montermini, Gilles Boyé & Jesse Tseng (eds.): *Selected Proceedings of the 6th Décembrettes*. Somerville, MA: Cascadilla Proceedings Project, 35–49.
- Séguin, Hubert. 1969. *Les marques du genre dans le lexique français écrit contemporain: Compilation des cas et essai de classement. Mémoire de DES*. Mémoire de DES, Université de Montreal, Montréal, Québec.
- Séguin, Hubert. 1973. Le genre des adjectifs en français. *L'orthographe* 20:1, 52–74.
- Seigneuric, Alix, Zagar, Daniel, Meunier, Fanny & Spinelli, Elsa. 2007. The relation between language and cognition in 3- to 9-year-olds: the acquisition of grammatical gender in French. *Journal of experimental child psychology* 96:3, 229–246.
- Serratrice, Ludovica. 1999. The Emergence of Functional Categories in Bilingual First Language Acquisition. *Proceedings of the Edinburgh Linguistics Department Conference* 96, 171–180.
- Serratrice, Ludovica. 2013. Acquisition of features in the nominal domain in bilingual acquisition. *International Journal of Bilingualism* 17:5, 657–664.
- Serratrice, Ludovica, Sorace, Antonella & Sandri, Paola. 2004. Crosslinguistic influence at the syntax–pragmatics interface: Subjects and objects in English–Italian bilingual and monolingual acquisition. *Bilingualism: Language and Cognition* 7:3, 183–205.
- Sheehan, Michelle. 2021. Parameters and Linguistic Variation. In Nicholas Allott, Terje

- Lohndal & Georges Rey (eds.): *A Companion to Chomsky*. Newark: John Wiley & Sons Incorporated, 172–189.
- Sigurðsson, Halldor A. 2004. The syntax of Person, Tense, and speech features. *Rivista di Grammatica Generativa* 16, 219–251.
- Silva Colaço, Isabel, Hoffmann, Dinah, D'Aurizio, Laura & Müller, Natascha. 2024. Acceleration in multilingual children: The case of French. *International Multilingual Research Journal*, 1–18.
- Smet, Isabeau de & van de Velde, Freek. 2019. Reassessing the evolution of West Germanic preterite inflection. *Diachronica* 36:2, 139–180.
- Soehl, Thomas. 2016. But do they speak it? The intergenerational transmission of home-country language in migrant families in France. *Journal of Ethnic and Migration Studies* 42:9, 1513–1535.
- Sorace, Antonella & Filiaci, Francesca. 2006. Anaphora resolution in near-native speakers of Italian. *Second Language Research* 22:3, 339–368.
- Spreng, Bettina. 2004. Error patterns in the acquisition of German plural morphology: Evidence for the relevance of grammatical gender as a cue. *Toronto Working Papers in Linguistics* 23:2, 147–172.
- Stahnke, Johanna. 2022. The Acquisition of French Determiners by Bilingual Children: A Prosodic Account. *Languages* 7:3, 1–23.
- Stahnke, Johanna, Arnaus Gil, Laia & Müller, Natascha. 2021. French as a Heritage Language in Germany. *Languages* 6:3, 1–18.
- Stark, Elisabeth. 2008a. The role of the plural system in Romance. In Ulrich Detges & Richard WALTEREIT (eds.): *Current Issues in Linguistic Theory : The paradox of grammatical change : perspectives from Romance*. Amsterdam/Philadelphia: John Benjamins Publishing, 57-84.
- Stark, Elisabeth. 2008b. Typological correlations in nominal determination in Romance. In Henrik Høeg Müller & Alex Klinge (eds.): *Essays on nominal determination: From morphology to discourse management*. Amsterdam, Philadelphia: Benjamins, 45–61.
- Sternefeld, Wolfgang. 2004. Feature Checking, Case, and Agreement in German DPs. In Lutz

- Gunkel, Gereon Müller & Gisela Zifonun (eds.): *Explorations in Nominal Inflection*. Berlin, New York: Mouton de Gruyter, 269–300.
- Stump, Gregory T. 2017a. Inflection. In Andrew Spencer & Arnold M. Zwicky (eds.): *The Handbook of Morphology*. Oxford, UK: Blackwell Publishing Ltd, 11–43.
- Stump, Gregory T. 2017b. Inflectional Morphology. In Gregory T. Stump (ed.): *Oxford Research Encyclopedia of Linguistics*. Oxford University Press, 1–24.
- Stump, Gregory T. & Finkel, Raphael A. 2015. The complexity of inflectional systems. *Linguistics Vanguard* 1:1, 101–117.
- Sudartinah, Titik. 2016. The Role of Parentese in First Language Acquisition: A psycholinguistic Study. *Journal of English and Education* 2:1, 54–66.
- SurrIDGE, Marie E. 1989. Grammaire et phylogénèse: Le genre des animés humain en français [Grammar and phylogenesis: The gender of human animates in French]. *Alfa (Actes de langue française et de linguistique)*, 129–142.
- SurrIDGE, Marie E. 1993. Gender Assignment in French: the Hierarchy of Rules and the Chronology of Acquisition. *International Review of Applied Linguistics in Language Teaching* 31:2, 77–96.
- Svenonius, Peter. 1994. C-Selection as feature checking. *Studia Linguistica* 48:2, 133–155.
- Svenonius, Peter. 2006. Interpreting uninterpretable features. *Linguistic Analysis* 33, 375–413.
- Svenonius, Peter. 2019. Syntactic features. In Mark Aronoff (ed.): *Oxford Research Encyclopedia of Linguistics*, 2–24.
- Szagan, Gisela. 2001. Learning different regularities: the acquisition of noun plurals by German-speaking children. *First Language* 21:62, 109–141.
- Szagan, Gisela. 2007. Langsam gleich gestört? Variabilität und Normalität im frühen Spracherwerb. *Forum Logopädie* 21:3, 20–25.
- Szagan, Gisela, Stumper, Barbara, Sondag, Nina & Franik, Melanie. 2007. The acquisition of gender marking by young German-speaking children: evidence for learning guided by phonological regularities. *Journal of child language* 34:3, 445–471.
- Tedeschi, Ilaria. 2017. *Early Language acquisition and Development of Italian by a Bilingual*

Infant - A comparison to Italian Monolinguals, NTNU.

Thornton, Anna M. 2009. Constraining gender assignment rules. *Language Sciences* 31:1, 14–32.

Thornton, Anna M., Iacobini, Claudio & Burani, Crisitina. 1998. *BDVDB -Una base di dati sul Vocabolario di Base della Lingua Italiana, Roma, Bulzoni, 1997*. Rome: Burioni.

Tonelli, Livia & Wolfgang U. Dressler, eds. 1992. *Natural Phonology: Perspectives for the nineties*. Padova: Imprimerie.

Tonelli, Livia, Dressler, Wolfgang U., Vollmann, Ralf & Marco, Anna de. 1998. Le prime fasi dell'acquisizione della morfologia: un confronto fra l'italiano e il tedesco. In Patrizia Cordin, Maria Iliescu & Heidi Siller Runggaldier (eds.): *Parallela6. Italiano e tedesco in contatto e a confronto*. Trento: Università di Trento. Dipartimento di scienze filologiche e storiche, 287–303.

Traficante, Daniela & Burani, Crisitina. 2003. Visual processing of Italian verbs and adjectives: The role of the inflectional family size. In R. Harald Baayen & Robert Schreuder (eds.): *Morphological Structure in Language Processing*. Berlin: De Gruyter, 45–64.

Treffers-Daller, Jeanine. 2019. What Defines Language Dominance in Bilinguals? *Annual Review of Linguistics* 5:1, 375–393.

Trotzke, Andreas, Bader, Markus & Frazier, Lyn. 2013. Third factors and the performance interface in language design. *Biolinguistics* 7, 1–34.

Tsimpli, Ianthi-Maria. 1992. *Functional categories and maturation: the prefunctional stage of language acquisition*. PhD Thesis, University College of London, London.

Tucker, G. R., Lambert, Wallace E. & Rigault, André. 1977. *The French speaker's skill with grammatical gender: An example of rule-governed behavior*. The Hague: Mouton de Gruyter.

Tuite, Kevin. 2016. Language and Emergent Literacy in Svaneti. In Ramazan Korkmaz & Gürkan Doğan (eds.): *Endangered languages of the Caucasus and beyond*. Leiden, Boston: BRILL, 226–243.

Tuite, Kevin. 2023. The Svan language. *Languages of the World* 139, 1–97.

- Unsworth, Sharon. 2016. Quantity and quality of language input in bilingual language development. In Elena Nicoladis & Simona Montanari (eds.): *Bilingualism across the lifespan: Factors moderating language proficiency*. Washington: American Psychological Association, 103–121.
- Unsworth, Sharon, Teresa Parodi, Antonella Sorace & Martha Young-Scholten, eds. 2006. *Paths of development in L1 and L2 acquisition: In honor of Bonnie D. Schwartz*. Amsterdam, Philadelphia: Benjamins.
- Urbanczik, Gianna. 2023. Exploring case marking in German first language acquisition using the acquisition sketch approach. In Birgit Hellwig, Shanley E. M. Allen, Lucinda Davidson, Rebecca Defina, Barbara F. Kelly & Evan Kidd (eds.): *The acquisition sketch project*. Honolulu: University of Hawai'i Press, 109–134.
- Uriagereka, Juan. 2007. Clarifying the Notion “Parameter”. *Biolinguistics* 1, 99–113.
- Valdman, Albert. 1970. Competing models of linguistic analysis: French adjective inflection. *The French Review* 43:4, 606–623.
- Valian, Virginia. 1990a. Logical and Psychological Constraints on the Acquisition of Syntax. In Lyn Frazier & Jill de Villiers (eds.): *Language Processing and Language Acquisition*, 119–146. Springer, Dordrecht.
- Valian, Virginia. 1990b. Null subjects: a problem for parameter-setting models of language acquisition. *Cognition* 35:2, 105–122.
- Valois, Daniel. 1991. *The internal syntax of DP*. PhD Thesis, University of California, Los Angeles.
- Velnić, Marta. 2020. Acquisition of a Transparent Gender System: A Comparison of Italian and Croatian. *Frontiers in psychology* 11, 1–14.
- Vigliocco, G., Butterworth, B. & Semenza, C. 1995. Constructing Subject-Verb Agreement in Speech: The Role of Semantic and Morphological Factors. *Journal of Memory and Language* 34:2, 186–215.
- Vigliocco, Gabriella & Zilli, Tiziana. 1999. Syntactic accuracy in sentence production: the case of gender disagreement in Italian language-impaired and unimpaired speakers. *Journal of*

Psycholinguistic Research 28:6, 623–648.

Volterra, Virginia & Taeschner, Traute. 1978. The acquisition and development of language by bilingual children. *Journal of Child Language* 5:2, 311–326.

Walter, Annie, Fritzsche, Tom & Höhle, Barbara. 2021. Grammatical Gender Acquisition in German: Three-Year-Old Children Use Phonological Cues to Learn the Gender of Novel Nouns. In Danielle Dionne & Lee-Ann Vidal Covas (eds.): *Proceedings of the 45th annual Boston University Conference on Language Development*. Somerville, MA: Cascadilla Press, 746–760.

Weissenborn, Jürgen. 1990. Functional Categories and Verb Movement: The Acquisition of German Syntax Reconsidered. In Monika Rothweiler (ed.): *Spracherwerb und Grammatik: Linguistische Untersuchungen zum Erwerb von Syntax und Morphologie*. Opladen: Westdt. Verl., 190–224.

Westergaard, Marit R. 2014. Three Factors and Beyond. *Linguistic Variation* 14:1, 26–45.

Westergaard, Marit R. 2021. Microvariation in multilingual situations: The importance of property-by-property acquisition. *Second Language Research* 37:3, 379–407.

White, Lydia. 1992. Universal grammar: Is it just a new name for old problems. In Susan M. Gass & Larry Selinker (eds.): *Language transfer in language learning*. Amsterdam, Philadelphia: John Benjamins Publishing Company, 217–232.

White, Lydia. 2011. Second language acquisition at the interfaces. *Lingua* 121:4, 577–590.

Wiese, Richard. 1994. Die Personal- und Numerusendungen der deutschen Verbformen. In Klaus-Michael Köpcke (ed.): *Funktionale Untersuchungen zur deutschen Nominal- und Verbalmorphologie*. Niemeyer: Tübingen, 161–191.

Wiese, Richard. 2009. The grammar and typology of plural noun inflection in varieties of German. *The Journal of Comparative Germanic Linguistics* 12:2, 137–173.

Willim, Eva. 2000. On the Grammar of Polish Nominals. In Roger Andrew Martin, David Michaels & Juan Uriagereka (eds.): *Step by step: Essays on minimalist syntax in honor of Howard Lasnik*. Cambridge (Massachusetts), London: MIT Press, 319–347.

Wiltschko, Martina. 2014. *The universal structure of categories: Towards a formal typology*.

Cambridge: Cambridge Univ. Press.

- Wolvengrey, Arok. 2011. *Semantic and pragmatic functions in Plains Cree syntax*. Utrecht, Amsterdam: LOT; Universiteit van Amsterdam [Host].
- Wurmbrand, Susi. 2004. West Germanic verb clusters. In Katalin É. Kiss & Henk C. van Riemsdijk (eds.): *Verb clusters: A study of Hungarian, German and Dutch*. Amsterdam: Benjamins, 43–86.
- Wurzel, Wolfgang U. 1984. *Flexionsmorphologie und Natürlichkeit: Ein Beitrag zur morphologischen Theoriebildung*. Berlin: Akad.-Verl.
- Yamaguchi, Naomi. 2015. *Parcours d'acquisition des sons du langage chez deux enfants francophones*. PhD Thesis, Université de la Sorbonne nouvelle - Paris III.
- Yang, Charles. 2002. *Knowledge and learning in natural language*. PhD Thesis, MIT, Massachusset, USA.
- Yang, Charles. 2010. Three factors in language variation. *Lingua* 120:5, 1160–1177.
- Zamparelli, Roberto. 2000. *Layers in the determiner phrase*. London: Routledge.
- Zamparelli, Roberto. 2008. On the interpretability of ϕ -features. In Cécile de Cat & Katherine Demuth (eds.): *The Bantu-Romance connection: A comparative investigation of verbal agreement, DPs, and information structure*. Amsterdam: Benjamins, 167–200.
- Zwicky, Arnold M. 1986. German adjective agreement in GPSG*. *Linguistics* 24:5, 957–990.

Name, Vorname: D'Aurizio, Laura

Anschrift: Rodenkirchener Straße 133, 50997 Köln

E-Mail/ Tel.-Nr.: daurizio@uni-wuppertal.de / +49 1578 4377820

E r k l ä r u n g

Hiermit erkläre ich, dass ich

1. die von mir eingereichte Dissertation **Declension classes in a multilingual context** selbständig und ohne fremde Hilfe verfasst habe,
2. nur die in der Dissertation angegebenen Hilfsmittel benutzt und alle wörtlich oder inhaltlich übernommenen Stellen als solche unter Angabe der Quelle gekennzeichnet habe,
3. die Dissertation in der gegenwärtigen oder einer anderen Fassung noch keinem anderen Fachbereich oder noch keiner wissenschaftlichen Hochschule vorgelegt habe,
4. bislang keinen Promotionsversuch unternommen habe,
5. mit der Anwesenheit von Zuhörern, die nicht Mitglieder der Prüfungskommission sind, einverstanden bin.

Ich bin damit einverstanden, dass meine Dissertation wissenschaftlich interessierten Personen oder Institutionen zur Einsichtnahme zur Verfügung gestellt werden kann.

Korrektur- oder Bewertungshinweise in meiner Arbeit dürfen nicht zitiert werden.

Wuppertal, den 02.12.2024



(Unterschrift)