Early Language Acquisition and Development of Italian by a Bilingual Infant

A Comparison to Italian Monolinguals

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Abstract

This case study aims to investigate the acquisition of Italian language by a bilingual child and compare it to early language acquisition of Italian monolinguals. It is based on the analysis of data collected in a domestic environment. Vocabulary receptivity and production for the child in the case study have been recorded by means of the CDI, MacArthur Communicative Development Inventory. Grammar development was analyzed tracking MLUW/MLU. The results have been compared to those of Italian monolinguals, providing evidence of a similar development of early Italian language acquisition in the bilingual child of the study. Morphosyntactic development, evolution of verbs and determiners correlated to bilingualism have been compared to studies on Italian monolinguals. The results obtained seem to be in line with those collected for Italian monolinguals. This is interesting because our case study does not confirm the assumptions on the delay in early vocabulary development by bilinguals. It is in fact often believed that language development in young bilingual children can be delayed in comparison to monolinguals. This result, opens then to further research on what are the main factors inferring this kind of inline development.

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My father, who taught me how to be happy sitting on a train and watching from the window.

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Massimiliano, 'a questa strana ferrovia, unica al mondo per dove puo' andare, ti porta dove tira il vento, ti porta dove scegli di ritornare' (De Gregori, F., 1978).

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1 Introduction

The study of bilingual children is directly linked to the study of language acquisition in children.

The success of bilingual children in acquiring more than one language demonstrates that we are able to learn two languages in the same way as we are able to acquire one (Werker & Byers-Heinlein, 2008).

Production and comprehension of words are crucial for language development in young children. Parents take pride when their children start to understand them or begin to utter their very first words (de Houwer et al. 2011). Still, early language acquisition of two or more languages varies from child to child (Person, Fernandez and Oller 1993) and is influenced by quantity of input, age of exposure to each language, socio-cultural context and parental attitude towards bilingualism (Bedore, et al., 2012), (de Houwer, 2009).

1.1 Scope of the present study

This research conducts a longitudinal study by means of data collected on a bilingual Italian-Norwegian girl E. in a domestic environment in two periods of age: from 12 to 18 months and from 32 to 38 months. This work aims to analyse the acquisition of Italian language by a bilingual child, to compare it to early language acquisition of Italian monolinguals. Moreover, it intends to study the emergence of Italian inflected morphology in an Italian bilingual child living abroad. It also tries to discover if the first forms of comprehension at 12 months of age can predict vocabulary development at 2;6 years of age.

In order to do this, vocabulary size was tracked by means of the Norwegian CDI norms (Kristoffersen K. , Simonsen, Eiesland, & Henriksen, 2012). Vocabulary size was then compared with the results for Italian monolinguals tracked by means of the Italian CDI norms (Caselli, Bello, Rinaldi, Stefanini, & Pasqualetti, 2015). The reason behind this choice will be explained in the section dedicated to the methodology.

The bilingual girl of this study was exposed to both Norwegian and Italian from birth, whereas the Italian monolinguals had heard only Italian from birth. This aspect may help to explain whether exposure to two languages can influence vocabulary size in early language acquisition.

In this study only Italian word production and acquisition were considered; translation equivalent analysis (TE) and bilingual total conceptual vocabulary (TCV) were excluded from this research.

Grammar development was analysed by tracking mean length of utterance (MLU) and mean length of utterance in words (MLUW). MLUW was then compared to Italian monolinguals' MLUW (Caselli, Bello, Rinaldi, Stefanini, & Pasqualetti, 2015) to see if relevant differences emerge between monolinguals and E.'s development. MLUW was then employed to investigate if a correlation exists between the development of E.'s morphological inflection and that of her MLUW.

This research is significant as it intends to determine E.'s morphosyntactic development of Italian with focus on the evolution of verbs in terms of mode, tense, auxiliaries, copula and determiners correlated to bilingualism. Modal verbs have been analysed to examine their distribution and E.'s ability to distinguish between deontic or epistemic modality. The study also investigates a possible delay in language acquisition.

2 Bilingualism

The way children are able to acquire two languages is fascinating and scientists are still discussing divergent theories on language acquisition and definitions of bilingualism.

Language instinct theory states that human language acquisition can be both innate and species-specific. In this case language acquisition would not emerge from teaching acts but from a human innate capacity to acquire languages (Pinker S. , 1994). By some accounts language acquisition does not involve mechanisms evolved specifically and exclusively for language itself (Bates & Mac Whinney, 1989).

2.1 Types of bilingualism

Children become bilingual by acquiring two languages at the same time (as in the study of E.'s early language acquisition) or in different moments. In the first case, it is referred to as simultaneous bilingualism, in the second case as successive bilingualism (Grosjean F. , 2012).

Simultaneous bilingualism occurs when the child is exposed by the parents to two different languages or when both parents use one language at home and a caretaker adopts another language. This kind of bilingualism is far less spread than successive bilingualism (Grosjean F. , 2012). Although both in monolingual and bilingual children there can be some difference in the rate of language acquisition, the main breakthrough is reached at the same age (Grosjean F. , 2012). Good exposure to both languages is crucial for vocabulary size, indeed different exposure to the two different languages results in unequal vocabulary sizes (Grosjean F. , 2012).

Simultaneous bilingualism is then characterized by two different positions: the first arguing that the bilingual child develops a single unitary language system at the beginning, separating it into two different systems only later (Leopold, 1970) with the second suggesting that children develop a dual differentiated system from the beginning (Genesee, 1989).

The first position is adopted by those researchers who support Leopold's findings stating that bilingual children can mix languages at the beginning.

Scientists supporting the second position agree with the idea of the differentiation of two languages at a very early age. This results in the independent-development hypothesis stating: "as it is being acquired, each language is able to develop independently of the other with the same pattern of acquisition as is found in monolingual children learning that language" (Bergman, 1976). Bilingual children acquiring two languages simultaneously are able to

distinguish the grammatical system of their languages from the very beginning. The fact that they mix the languages around the age of two is often due to code switching, but they can use morphology and syntactic rules correctly (Meisel, 2004).

To differentiate between languages, children rely on phonetic and prosodic cues, the language context, and the language spoken by a given person. They are able in fact to detect a strong bound between a person and his or her language (Grosjean F. , 2012).

Age three is considered as the cut-off point for simultaneous acquisition in those children who receive regular exposure and inputs. For children who are exposed to a second language after age three we speak of successive acquisition (McLaughlin, 1978).

Successive bilingualism is more common and emerges when children learn one language at home and a second language at school for example. In this case, they already know one language when they start to learn a second one. The model of natural second language learning in children focuses on young immigrants learning a second language (Wong Fillmore, 1991). Successive bilingualism does not apply to the current study.

2.2 Cognitive development in bilingual children

For most monolinguals the left hemisphere of the brain is dominant for language, but researchers do not agree about neuroanatomical organization in bilinguals (Romaine, 1995). Three main hypotheses have been suggested. The first is that left hemispheric dominance applies to both languages. The second suggests that in case of bilinguals, left lateralization is weaker. The third proposes different lateralization for each language (Romaine, 1995). Several experiments have led to different results.

But how are languages stored, accessed and organized in the bilingual brain during speech production and perception? Different hypotheses have been advanced, such as the extended system hypothesis, the dual system hypothesis and the competition model (Romaine, 1995).

The extended system hypothesis suggests the presence of a single large language stock containing elements from both languages. In this case, when a second language is learned its sounds are treated as allophones of those phonemes already present in the first language system (Paradis M. , 1981).

The dual system hypothesis (as opposed to the extended system hypothesis) suggests the presence of different networks of neural connections for each level of language. This means

that language systems are positioned in the same general language area, but are represented separately (Ojemann & Whitaker, 1978), (Lucas, McKhann, & Ojemann, 2004).

Although both languages can be stored in a single extended system, some elements of each language may be present in a larger system. In this case 'bilinguals would have two subsets of neural connections, one for each language. Each can be activated or inhibited independently' (Paradis M. , 1981).

2.2.1 The Competition Model

The competition model is a framework based on three components that tries to explain language learning from a cognitive point of view. The three components of this model are the input, the learner and the context (MacWhinney, 2002).

The input considers phonology, syntax, semantics and morphology employed by the learner to crack the code of the utterance.

The cognitive skills of the learner are examined to discover how he or she can process a second language.

The context (or the environment where language learning happens) is examined to see how it can affect learning and how it can be modified to improve the learning process (MacWhinney, 2002).

In contrast with the generative grammar, the competition model states that language comprehension is determined by a series of inputs called cues. The reliability and availability of these cues help the process of comprehension. Sentences are processed through cue detection and interpretation. But how do languages distribute cues across sentences?

A connectionist model shows how surface cues mark grammatical functions. In the sentence "the cat is teasing the dog" the different combination of some of the following seven cues are the inputs to the network:

1. **Pre**: preverbal positioning ("the cat" is placed before "is teasing")
2. **Agr**: verb agreement morphology (marking "is" to agree in number with "the cat"
3. **Init.**: sentence initial positioning (placing "the cat" at the beginning of the sentence
4. **Nom**: nominative case-marking for pronouns ("I" vs. "me" as a marker for subject in English)
5. **The**: the use of the article "the"

6. **By**: the attachment of the preposition "by" to mark the agent in passive

7. **Pas**: the presence of passive morphology on the verb

(MacWhinney, 2002).

In the connectionist model, inputs are transferred to the hidden units and from there to the output at the top of figure 1.

Figure 1 Connectionist network relating subject-marking forms to subject functions in English (MacWhinney, 2002)
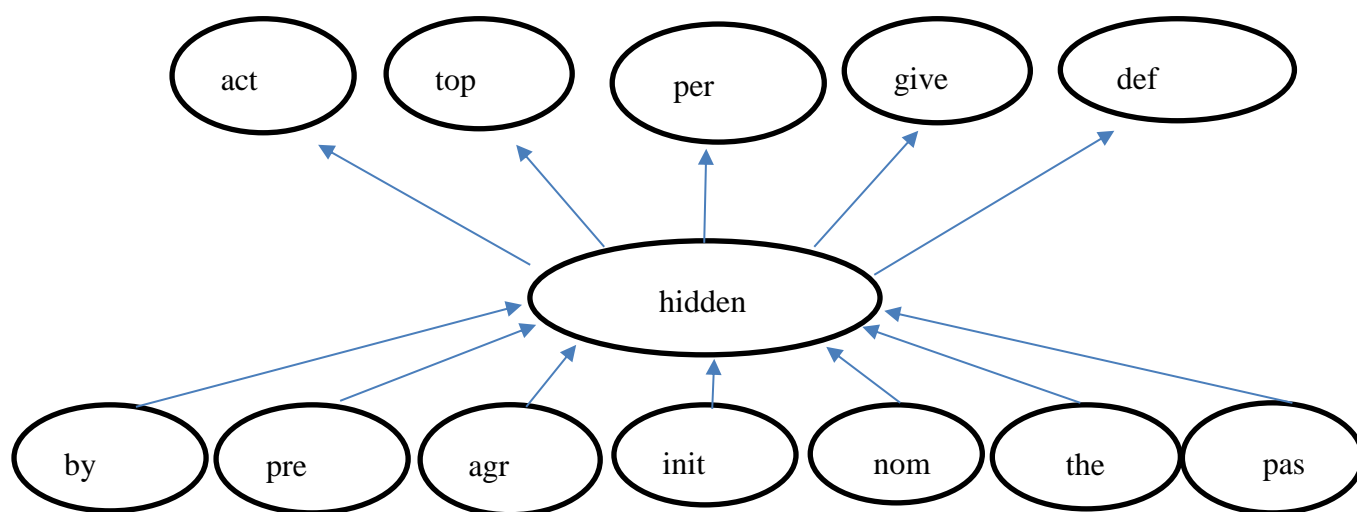
In figure 1 the output can have different interpretations as the actor (act), the topicality (top), the perspective (per), the givenness (giv) and the definiteness (def). The outputs of the network at the top of the figure are sometimes words in competition (MacWhinney, 2002). If we aim to find the actor of the sentence "the cat is teasing the dog", the two nouns "cat" and "dog" are in competition. Nevertheless, the word "cat" wins the competition for being the actor since it has a preverbal position (MacWhinney, 2002).

The output will vary according to different inputs. In spontaneous speech acts, communication happens in a peaceful coexistence, where the five functions create an appropriate cooperation and coalition. This cooperation is adjusted by the competition that results from other alternative forms. For example, in one sentence there can be only one noun with the role of the patient and only one noun with the role of the agent (MacWhinney, 2002). The system deriving from this competition and cooperation leads to a leakage that occurs when forms associated with a specific function suddenly express a different function (MacWhinney, 2002).

Cue strength is determined by four distribution dimensions. The first is *task frequency* that tries to determine the recurrence of a task (i.e. the agent of a verb appears whenever we have a transitive verb). The second is the *availability* of the cue. We can distinguish between *simple availability*, which is the relative availability of the cue and *contrast availability*. Contrast availability appears in the sentence "the cat teases the dogs" where only the noun "cat" agrees with the verb and the cue is both available and contrastive. The third distribution dimension is called *simple reliability*. A cue is reliable if it brings to the right functional

selection. The fourth is *conflict reliability*, where the cues present in a sentence can be marked by conflict reliability (MacWhinney, 2002).

Experiments on Competition Model consist in giving a sentence composed by two nouns and a verb to the subjects and asking them to find the actor. Different languages have different cue dominance patterns (MacWhinney, 2002).

The learner is the second component of the framework of the Competition Model. Facts on the human brain can help in understanding the process of language acquisition (MacWhinney, 2002). Neurons in the brain are connected through axons. When a neuron fires, axons lead activation or inhibition across the synapses to connect the other neurons with which it is connected. But the brain is not able to transmit phrases' structures, since they are abstract objects. To do so the brain uses a connectionist model. This means that the brain depends on a form of computation that aims to indicate structures of connectivity and activation (MacWhinney, 2002). Connectionist models are used in second language acquisition since they perceive mental processing as interaction and connection. Connectionist models moreover theorize emergent and permeable modules (MacWhinney, 2002).

The brain transfers information to the emergent modules. At the beginning, L2 is very dependent on the neurolinguistics system of L1. Indeed, it exploits lexicon and phonology belonging to L1 relying on its conceptual and formal structures (MacWhinney, 2002). When the learner acquires the word "gatto" in Italian as L2, this is only another way to say "cat".

The transfer works easily when there is a conceptual match between two words, such as "gatto", "cat". In some cases, the transfer can be easily mistaken as the cognate in Italian for the English noun "magazine", resulting in "magazzino" which means "warehouse". Sometimes a single word in L1 coincides with two words in L2 such as "to know" in English and "sapere"/ "conoscere" in Italian. To learn and control this difference between L1 and L2, the learner must reconstruct the concept of "to know" and convey it to the right structure of L2. In phonology, transfer often results in a foreign accent in the L2 (MacWhinney, 2002).

Transfer seldom appears in simultaneous bilingual children since they build a separate lexicon and grammar. If transfer emerges, it is due to the interactive nature of cognitive processing (MacWhinney, 2002).

The last component belonging to the framework of the Competition Model is the context. The interactional context derives from the experiences from social life. Language acquisition is easier if a child is supported and stimulated. On the contrary, if a child grows up in isolation it will be harder to learn a language. An example of interactional context is given by *motherese*, an infant-directed speech which exaggerates intonation and stress patterns within

words. It is combined with eye contact to maintain joint attention and is employed to strengthen an infant's language attention, creating dialogues between mother and infant (Karmiloff & Karmiloff-Smith, 2002).

2.3 Bilingualism: cognitive advantages or disadvantages?

Researchers continue to discuss divergent opinions about cognitive advantages and disadvantages in bilingual children.

In the same time span the monolingual child acquires one language, the bilingual child is exposed to two languages, acquiring both of them. This leads to two sides of a logical problem: either the bilingual child succeeds in acquiring the aspects of one or both languages even faster or the acquisition results incomplete and characterized by uneven development (Yip & Matthews, 2007).

It seems reasonable that bilingual children have a reduced input exposure to each language compared to that of monolinguals. The reduced frequency of structures in the dual stimulus in each language can be challenging for the acquisition of each single language (Paradis & Genesee, 1996).

In the case of bilingual acquisition, some aspects are more severe for the bilingual child than for the monolingual. These aspects are described in the *Argument from the Poverty of the Stimulus* (APS), as follows: "the quantity of input is reduced, because even in an ideal setting with an input on a 50-50 basis, a bilingual child can receive only 50% of the input received by a monolingual" (Fodor, 1981). The indeterminacy of input shows that the inputs are compatible with many different hypotheses and the child chooses the correct one. So, the grammar acquired by the child is probably underdetermined by the input data (Yip & Matthews, 2007). The development of grammar in bilinguals follows a different path, alternating periods of quietness to periods of burst. Language processing such as lexical access can be slower due to a constant language inhibition by the bilingual (Bialystok, 2008).

Several researchers have proved the advantages of being bilingual. Bialystock (2001) shows that bilingualism in children presents cognitive advantages, contributing to the improvement of linguistic knowledge, organization of cognitive processes and functional structure of the brain. Bilingual children are indeed different from monolinguals in the way they acquire language. One relevant difference is the multiple linguistic representation that they use in the process of language acquisition (Bialystok, 2008). Even though bilingual children demonstrate a smaller vocabulary in each language than monolinguals, they can better

understand the structure of the language and have a better metalinguistic awareness (Bialystok, 1988). They outperform monolinguals in reading ability when they master each language in a similar way. Moreover, they are faster and more efficient than monolinguals in problem solving and conflict resolution (Costa, Hernandez, & Sebastán-Gallés, 2007). This aspect is related to attention control. Bilinguals are in fact able to inhibit attention to misleading aspects that could lead to a wrong response, focusing attention to other relevant aspects (Bialystok, 2008). This emerges because a bilingual's executive control system is constantly involved in managing attention to the target language. This is explained by an experiment where bilingual children outperform monolinguals in recognizing that anomalous sentences can be grammatically correct (Bialystok, 2009).

Bilingual children are aware of different languages and are able to select the right language needed in a particular situation. They are conscious of the arbitrariness in the names of things, since they know that the same thing can be called by different names (Bialystok, 1999).

Bilingualism influences not only the linguistic domain of the child but also the non-verbal cognitive abilities (Bialystok, 2008).

Literature suggests that bilingualism has a positive influence on many cognitive aspects. (F. Asbjørnsen, 2013). Bilingual children outperform monolinguals in terms of creativity (Ricciardelli, 1992), arithmetic (Lauchlan, Parisi, & Fadda, 2013), and performance on symbol operation (Adesope, 2011). Attentional and executive control are improved in bilingual children and the way they acquire languages is more flexible than that of monolinguals (F. Asbjørnsen, 2013).

2.4   Vocabulary acquisition in bilingual and monolingual children

The comparison between bilinguals' and monolinguals' vocabulary acquisition depends on a translation equivalent (TE) analysis (Pearson, Fernandez, & Oller, 1993). TE analysis records the total number of different concepts that bilinguals possess in both languages. This analysis is now called total conceptual vocabulary (TCV), (Swain, 1972). In the case of monolinguals, one word stands for one concept. This means that the TCV is equivalent to the number of words recorded in the CDI. In bilingual children, this does not always occur (De Houwer A. , 2006).

This can be described in bilinguals by the example of the Italian word *mela* and the Norwegian word *eple. Mela* and *eple* form a TE pair referring to the single meaning "apple". A bilingual child learning Italian and Norwegian is able to understand this TE, where the total

comprehension of vocabulary is of two lexical items, while the TCV corresponds to only one lexical meaning. The result is that the size of the TCV in bilingual children is lower than vocabulary size when both languages are compared (De Houwer, Bornstein, & Putnick, 2013).

2.5 Grammar development in bilinguals

The question about how bilingual children actually manage to speak two languages still remains. The study of bilingualism is quite challenging, since there are different criteria to take into account. Social context and knowledge of both languages by the researcher are essential to investigate bilingualism (De Houwer A. , 1998).

Learning history of the bilingual learner is also important during data collection. In fact, to analyze development in a language with less input can lead to erroneous results. If a child hears one language (but different languages) from different people, he or she receives inputs related to different sociolinguistic contexts. On the contrary, if a child hears different languages from the same person, then the inputs received are not related to different sociolinguistic contexts (De Houwer A. , 1998).

Collecting information on history, sociolinguistic context and having high competence in both languages is crucial to understand whether the child being studied has been bilingual from birth or not (De Houwer A. , 1998).

Very young children are able to connect context to language aspects and can choose the language to speak according to the person they want to communicate with. (De Houwer A. , 1998).

The first utterance of a child is a vocalization of a word that adults can recognize and relate to a language. Vocalization of bilingual children starting to create utterances can be listed in the following way:

- Utterances in language A
- Utterances in language B
- Mixed utterances
- Utterances either of language A or B
- Utterances of unclear membership
- Utterances not belonging to any language

(De Houwer A. , 1998).

We can refer to unilingual utterances speaking about utterances in either Language A or B consisting exclusively of morphological and lexical elements.

Mixed utterances are those composed by elements of both language A and language B.

Utterances either of language A or B are often detected in similar languages such as Dutch and German where *ja*, "yes" could refer to both Dutch or German (De Houwer A. , 1998). In this study regarding Italian and Norwegian, there were no cases of utterances belonging to both these languages.

Utterances not belonging to any language are very frequent in bilingual children. These utterances are composed of a mix of morphemes belonging to both languages and their membership is not clear (De Houwer A. , 1998).

2.5.1 Language mixing

Language mixing is a general term to describe the debated phenomenon of bilingual children mixing languages using elements from two or more languages randomly (De Houwer A. , 1998).

It is essential to distinguish between language mixing and code-switching, where the latter is referred to bilingual children who are already proficient in both languages (Meisel, 1989).

Teachers and speech therapists consider language mixing as a negative phenomenon that prevents bilingual children from speaking any language properly, leading them to a state of confusion (De Houwer A. , 1998). This would confirm the unitary language system hypothesis that is in opposition to the theory of two separate language systems. The evidence that mixing is related to a single language system separating only later has been largely rejected by many scientists who believe in the theory of two separate language systems (Cantone, 2007).

Different hypotheses show evidence relating to the fact that bilingual children are able to discriminate between more languages, prolonging the phonological sensitive period (Weikum, Vouloumanos, Navarra, Soto-Faraco, & Nuria, 2007). Moreover, the phonological skills transfer positively between the two languages (Bialystok, Luk, & Kvan, 2005).

Early mixing is a phenomenon detected in young bilingual children that suddenly tends to disappear if language mixing is due to a lack of competence in different areas (Cantone, 2007). These areas group pragmatic competence: children's inability to choose the right language according to the interlocutor; lack of lexical competence if children do not know the word in one language and adopt the equivalent in the other language; lack of grammatical competence when children employ the structure of one language in the other language (Cantone, 2007).

Today's studies mostly agree on the fact that bilingual children have two different language systems from the very beginning, allowing them to differentiate their two languages (De Houwer A. , 1990). They are able to choose according to sociolinguistic and pragmatic principles and if they mix they try to self-correct, hesitate or employ metalinguistic comments (Köppe, 1996).

Language mixing and code-switching lasts until the age of three, after this threshold it suddenly ceases. This is probably because at this age children tend to increase their repertoire and do not need to borrow elements from a language to fill the gaps in the other language (Cantone, 2007).

Evidence of children's ability to distinguish their two languages lies in the choice of language according to situation, the interlocutor and the way they employ the two languages (Genesee, 1989).

Language mixing follows grammar development. In very early language acquisition, mixing is related to one-word and two-word utterances, while later, with the emergence of functional categories, it includes verbs (Köppe, 1996).

Imbalance of languages is one of the causes for language mixing where language dominance indicates the direction of mixing. Children tend to mix from the dominant language to the other language and not vice versa. They can mix more in one language than in the other because of socio-linguistic and pragmatic aspects, for example if one language is more accepted than the other (Cantone, 2007).

2.5.2 Code-switching and code-mixing

Code-switching and code-mixing are two distinct definitions. The latter is related to young children without a fully developed level of pragmatics and grammar competence. Code-mixing emerges when different lexical items and grammatical elements from two different languages appear in a sentence. Code-switching on the contrary describes a speech event characterized by the succession of several utterances in different languages. It can vary according to linguistic context and social environment (Cantone, 2007).

'Code-switching is the ability to select the language according to the interlocutor, the situational context, the topic of conversation, and so forth, and to change languages within an interactional sequence in accordance with sociolinguistic rules and without violating specific grammatical constraints' (Meisel, 1994).

Code-switching in bilinguals is a shift from one language to the other, where the bilingual decides unconsciously which language to employ. The two languages get activated in different ways: if the bilingual is speaking with another bilingual, both languages are fully activated. However, in a monolingual context, one language is never completely deactivated (Grosjean F. , 1998). This *language mode* theorized by Grosjean shows a continuum on which the bilingual moves (Cantone, 2007).

Bilinguals tend to be in the bilingual mode and mix more when they are in a familiar context, since code-switching is accepted. On the contrary, when they are in a monolingual context, the monolingual mode is activated and only one language is employed since code-switching is target deviant (Grosjean F. , 1998).

2.5.3 Proficiency

The use of the term *proficiency* is seldom employed in literature regarding language acquisition in young bilingual children and raises objections when it is employed for this particular group of bilinguals (De Houwer A. , 1998). While proficiency refers to second language development, for first language acquisition we talk rather about competence.

It seems to be inappropriate to measure proficiency in young bilinguals and competence in monolingual children, since the term *proficiency* describes a static state. Language acquisition however, is in constant development in young children and is characterized by changes in the nature of children's behavior (De Houwer A. , 1998).

Indeed, the development of a child's language acquisition is very personal and can vary greatly among individuals. A child functioning at higher levels in a specific area of language behaviour will probably function at a lower level in a different area. This is the reason why it is hasty to judge a child as more or less proficient, since this would cover all his or her total language behavior (De Houwer A. , 1998).

In cases where *proficiency* is mentioned in literature regarding bilingual acquisition, it refers to the comparison between the two languages spoken by the child and describes the child as more proficient in one language than in the other. Nevertheless, one child can use different morphosyntactic forms in both languages without showing a particularly less advanced level in one of his or her languages (De Houwer A. , 1998).

Differences in the development of the two languages can appear in a bilingual child. For instance, the child can use multiclause utterances in one language and single words in the other

language at the same age, but this can depend on factors such as the sociolinguistic context (De Houwer A. , 1998).

3 Methodology

3.1 How to measure language development

To record E.'s increase in vocabulary and in grammar it is crucial to correctly measure her language development. This is essential to determine if vocabulary size has any effect on the development of grammar in bilingual children.

The child participating to this study is a girl, E. Her language development has been tracked during two periods, the first one from the age of 12 months to the age of 17 months and the second from the age of 32 to the age of 38 months in a domestic environment. E. was born in October 2012 in Norway to Italian parents, both of whom are university graduates. E. is the second of three siblings and during the study her two brothers were 7 years old and 0 years old. She began attending Norwegian public kindergarten for approximately six hours a day when she was 9 months old, in August 2013. She has been exposed to both Italian and Norwegian since she was born. Exposure to Italian has occurred exclusively at home, while Norwegian is the language spoken in non-domestic environments.

3.2 Data collection

From the age of 12 months to the age of 17 months, her Italian vocabulary development was recorded using the Norwegian CDI. It is worth noting that the Norwegian CDI differs slightly from the Italian MB-CDI adapted by the Institute of Cognitive Science and Technologies at CNR. The differences are described in chapter 3.4.2.

During the study, kindergarten employees reported that E. understood several Norwegian words. Nevertheless, language development in Norwegian has not been recorded either for comprehension or for production in the CDI, since the focus of this study is on the development of Italian.

From June 2014 to December 2014, E.'s speech was recorded using an Olympus digital voice recorder VN-480PC in a natural conversation setting at home, while travelling by car and on holiday in Italy. E.'s spontaneous speech has been recorded by her mother and father while she was playing alone, with her two brothers and/or while she was speaking to her parents. Her utterances have been recorded from the age of 32 months to the age of 38 months. Each

recording session varied according to the family situation, but lasted about 2 hours per week every second week over the six-month period. Sometimes it was possible to record her speech over a longer period. No recording was aimed at testing the development of any single specific morphosyntactic feature in advance.

Each single utterance was transcribed using the conventional Italian orthography. All portions were listened to and only the intelligible ones have been analysed. Cases where several utterances are transcribed on the same line refer to situations when E. was asking herself something giving immediately an answer, when she impatiently wants the parents to do something or if she tells a short story.

The corpus of utterances was categorized according to the following model:

- Kitchen/eating (unilingual utterances in Italian)
- Toilet (unilingual utterances in Italian)
- Playtime (unilingual utterances in Italian)
- Travelling (unilingual utterances in Italian)
- Kindergarten (unilingual utterances in Italian)
- Bedtime (unilingual utterances in Italian)
- Getting dressed (unilingual utterances in Italian)
- Mixed utterances (utterances in Italian and Norwegian)
- Unilingual utterances in Norwegian

Only unilingual utterances in Italian have been examined (and not unilingual utterances in Norwegian) since the scope of the present study is to compare the development of Italian language acquisition of E. to that of monolingual Italian children living in Italy. Since mixed utterances do not belong to any specific language, they have been taken into consideration exclusively to refer to specific errors.

3.3 Analyses of the results

The results have been compared to the data collected from the CDI and MLUW of Italian monolinguals published in Caselli, Bello, Rinaldi, Stefanini, & Pasqualetti, 2015.

The data collected from the Italian CDI regard a study conducted on 648 children ranging in age from 8 to 24 months, 45.7% females, 54.3% males. Their parents had a variety of educational levels. In 38.5% of the families, at least one parent has a university degree, in 51% of the families at least one parent has a high school leaving certificate, in 10.3% of the

families one parent has a junior high school leaving certificate. All children are monolingual and there are no twins involved (Caselli, Bello, Rinaldi, Stefanini, & Pasqualetti, 2015).

The data collected from the Italian MLUW regard a study conducted on 752 children ranging in age from 18 to 36 months, 50.1% females, 49.9% males. Their parents also had a variety of educational levels. In 34.9% of the families, at least one parent has a university degree, in 6.6% of the families at least one parent has a high school leaving certificate, in 8.4% of the families one parent has a junior high school leaving certificate. All children are monolingual and there are no twins involved (Caselli, Bello, Rinaldi, Stefanini, & Pasqualetti, 2015).

The data collected regarding auxiliaries and present perfect are analysed and compared to a study on spontaneous speech of four Italian children aged between 18 and 36 months (Lorusso, 2015).

Moreover, data regarding the use of the copula and of auxiliaries, those regarding verb inflected morphology and those for the determiners have been compared to a study by Caprin & Guasti based on the speech of 59 Italian children (25 males, 34 females) ranging in age from 22 to 35 months, recorded in a semi-natural conversation setting (Guasti, 1993/1994).

The data collected for modal verbs have been compared to a study conducted on 192 Italian children (97 males and 95 females) ranging in age from 3;0 to 4;6 (Bascelli & Barbieri, 2002).

3.4 CDI

The MacArthur Communicative Development Inventory (CDI) is a parental questionnaire developed by Larry Fenson and colleagues that aims to examine children's developing abilities, such as vocabulary reception, production, gesture use, and grammar in early language acquisition (Karmiloff & Karmiloff-Smith, 2002).

The Italian and American CDIs were developed simultaneously and have been the first to be validated. Since then, CDI has been adapted and translated in about 60 different languages (Caselli, Bello, Rinaldi, Stefanini, & Pasqualetti, 2015) to allow cross-linguistic comparisons.

Proper use of the CDI can help predict the trend of language acquisition at specific moments during development. Moreover, it is an important instrument employed in longitudinal studies. It is structured in two columns, one for receptive vocabulary and one for vocabulary production, where parents can check all the words their child understands and produces (Karmiloff & Karmiloff-Smith, 2002).

In the first phase, the parents were asked to complete the questionnaire at home. Then in a second moment, their children were tested in a lab to verify the previous results (Karmiloff & Karmiloff-Smith, 2002).

Parents do not need any special training although they are instructed on how to record the receptive vocabulary of their child. They are moreover asked to record whether the child understands expressions such as "where's daddy?" or "where's the truck?" To be sure that the child understands the sentences, it is important to also analyse child's actions such as if he or she is looking around for the specific person or the specific object while hearing the question (Karmiloff & Karmiloff-Smith, 2002).

In the case of older children, the parents are asked to record whether the child is able to understand simple sentences such as "are you sleepy?" Moreover, they are required to check a list of words regarding animal sounds, animal names, food and drink, clothing, body parts, rooms and furniture, people, action words, prepositions and so on (Karmiloff & Karmiloff-Smith, 2002).

On the one hand, the CDI is a valid instrument to use in a family context, since parents do not require any kind of special training as previously mentioned. On the other hand, it becomes less suitable when child's grammar development starts to increase. The response rates are also an important criterion to evaluate CDI's reliability. Less well-educated parents tend to be less accurate than better-educated parents are, when they are requested to fill out the questionnaire (Karmiloff & Karmiloff-Smith, 2002).

Finally, yet importantly, the CDI is a reliable tool intended for professionals such as paediatricians, physicians, teachers and rehabilitators who need to record communication and language development to diagnose or follow up particular cases. It helps to study variability in individual language acquisition in terms of time and processes. Therefore it is mainly used in research and clinical contexts (Caselli, Bello, Rinaldi, Stefanini, & Pasqualetti, 2015).

3.4.1 Structure and scope of the CDI

The CDI is divided into two parts, the first called "Gestures and words" and the second called "Words and sentences". Results collected systematically from this questionnaire can contribute to cross-linguistic comparisons. The data collected from the "Gestures and words" part have detected an evolution path going from comprehension to word production. Moreover:

- there is a correlation between gestures/actions and the comprehension of words
- the ability to produce actions predicts the development of verbal comprehension

- the ability to produce deictic gestures predicts the emergence of first uttered words
- the first forms of comprehension at 12 months of age predict vocabulary development at 2 years of age

(Caselli, Bello, Rinaldi, Stefanini, & Pasqualetti, 2015).

The data collected using the questionnaire "Words and sentences" describe the changes in the development and composition of vocabulary and in the emergence of grammar in the 18 to 36 months age range. Moreover:

- the early vocabulary acquisition rate changes according to the number of words mastered by the child
- the lexicon changes in terms of quantity and quality after the child has acquired 100-150 words
- vocabulary size is a stronger predictor of grammar development than age and gender

(Caselli, Bello, Rinaldi, Stefanini, & Pasqualetti, 2015).

In clinical contexts, the data collected by the CDI permit identification of risky conditions and can confirm a possible language delay (Caselli, Bello, Rinaldi, Stefanini, & Pasqualetti, 2015).

It is possible to choose between the short form and the long form of the CDI for both the questionnaire "Gestures and words" and "Words and sentences". The short form is very useful in clinical situations when precocious diagnosis of risky conditions is needed (Caselli, Bello, Rinaldi, Stefanini, & Pasqualetti, 2015).

3.4.2 The Italian and the Norwegian CDI

The CDI used in this study is the Norwegian one for words and gestures (Kristoffersen & Simonsen, 2008) which has been adapted to Italian early language acquisition. This means that the list of words in Norwegian was translated into Italian and used during communication at home in an Italian domestic context. For example, the word *elg*, "elk" was often understood and produced in Italian as *alce*. Both sections regarding words and gestures have been filled out, but only those related to vocabulary have been taken into consideration in the actual study. The results have been compared to those collected in the Italian CDI for gestures and words. It

is worth noting that the Italian CDI for gestures and words differs slightly from the Norwegian CDI in terms of structure and list of words.

The Italian CDI for gestures and words is divided into three parts: a first part for global comprehension, a second part for the oral vocabulary and a third part for actions and gestures.

The first part is subdivided into two sections, A and B. Section A asks three questions aimed at recording signs of attention expressed by the child, such as reactions to particular questions, for instance if the child turns his or her head when someone calls his or her name. Section B collects 28 sentences aimed to investigate contextual comprehension.

The second part for oral vocabulary is subdivided into two sections, C and D. Section C records the ability and the frequency of the child to repeat words (imitation) and to call objects by name. Section D is composed of a list of 408 words divided into 19 categories, such as sounds in nature, animals, vehicles, toys, food and beverages, clothing, body parts, furniture and rooms, commonly used objects, things outside, people, routines, verbs, adjectives and qualities, adverbs and time expressions, pronouns, Wh-words, prepositions, determiners and quantifiers.

The third part focuses on the first communicative gestures and offers a list of actions and gestures such as games and routines, actions with objects, playing mummy and daddy, imitation of adults' actions, playing with objects (i.e. biting a ball, playing with it as though it was an apple). This last part was filled out, but the data collected have not been employed in this study.

The Norwegian CDI for words and gestures on the other hand is divided into just two parts. The first one regards first words and the second actions and gestures. Part one for global comprehension in the Italian CDI is included in the first part "first words" in the Norwegian CDI. Here the list of words is divided into 20 categories while in the Italian CDI we find only 19 categories. This is because the two categories *things outside* and *places to go* in the Norwegian CDI are grouped together under the category *things outside* in the Italian CDI. The location of several words can also differ in the two CDIs, i.e. words can be placed under different categories.

Moreover, the objects listed in the categories can differ in the two CDIs maybe because of cultural differences, since the CDI is adapted and not only translated, to different languages. Climate for example clearly influences activities, clothes, animals and food. Some examples of adaptation are reported in the Norwegian category for clothes where the words *regntøy* "waterproof clothing", *strømpebukse* "tights" and *støvler* "boots" are not present in the Italian CDI. Similar differences occur in the category of food: the Norwegian *grøt* "porridge" is not

present in the Italian CDI since it is not a common food; likewise, the Italian word *pesca* "peach" is not present in the Norwegian CDI. As for animal names, we do not find words such as *elg* "elk" or *reinsdyr* "reindeer" in the Italian CDI.

3.5 Productive grammar

By the age of two, children start to combine two or more words producing an utterance. An utterance can be a sound, one or more words or several sentences a person says during one turn of talking (Crystal, 1985).

Children are able to produce utterances of two or more words according to the development of their vocabulary. Children must indeed reach a minimum amount of words to be able to then combine them. This minimum number can vary. Some children can produce an utterance possessing a vocabulary of about 30-50 words, while others start when they possess a vocabulary of about 100 words (Caselli, Bello, Rinaldi, Stefanini, & Pasqualetti, 2015).

At the beginning, the combination of two words often includes two substantives such as *acqua mamma*, "water mom" or a verb and a subject/object such has *dai acqua* "give-IMP. 2Sg.) water". (Caselli, Bello, Rinaldi, Stefanini, & Pasqualetti, 2015).

3.6 Mean length of utterance

The most common method adopted to analyse children's grammar development is the Mean length of utterance, MLU. MLU was developed by Roger Brown and is particularly appropriate for analysing early language development during the first three years of life (Brown, 1973).

Early structure evolution of an utterance is connected to its length (Caselli, Bello, Rinaldi, Stefanini, & Pasqualetti, 2015).

In English, MLU records the number of words and the number of grammatical markers present in an utterance. This distinction is relevant to detect whether the child simply creates a string of words stems, or if he or she is producing an utterance based on more complex grammar (Karmiloff & Karmiloff-Smith, 2002).

I.e. comparison of the two following sentences leads to different results:

1. "Daddy eat red apple"
2. "Daddy eats apples"

Utterance 1 has four words and a MLU value of four. In utterance 2 we have three words but a MLU value of 5. This happens because we consider the two extra grammatical markers for

the third singular person on "eat" and the plural on "apple". To calculate the MLU it is necessary to count the number of total morphemes and to divide them for the total number of utterances (Johnson, 2005).

The relationship between vocabulary and increase in MLU in 233 italian children and 233 american children ranging in age from 18 and 30 months has been analysed in a cross linguistic study. The results have shown that both age and vocabulary are correlated to MLU, but the number of words in productive vocabulary is the most reliable value to consider in order to predict synctactic language development (Devescovi, et al., 2005).

3.6.1 The Italian MLUW

As mentioned previously, the MLU is based on a morphemes count.

Since Italian has a richer morphology than English, Italian children show a more complex vocabulary. Moreover, morphological complexity in Italian children already emerges during early stages of language acquisition and proceeds in a coherent way when vocabulary reaches 300 words. However, this aspect only emerges in American children when vocabulary exceeds 400 words. This is the reason why most Italian studies prefer to employ a word count rather than a morpheme count. This method will be referred to as MLUW (Caselli, Bello, Rinaldi, Stefanini, & Pasqualetti, 2015).

In order to accurately calculate the MLU/MLUW, it is essential to follow a protocol. The Johnson's protocol is a tool developed for English and is based on Brown's rules for calculating MLU (Johnson, 2005). This protocol has been adapted to fit Italian in this study. The adaptation, as previously mentioned, regards the count of both words and morphemes. To obtain reliable results one should analyse at least 100 utterances. To detect the mean length of utterance, take the total number of morphemes present in the utterances and divide it by the total number of utterances (Johnson, 2005).

The next stage is to find the age equivalent. This is the age at which most children would show a mean length of utterance equivalent to the one our particular child has scored (Johnson, 2005).

Individual differences among children in language acquisition are very evident. The ability to combine two or more words can appear in a particular period of language development and can be exclusively adapted to particular occasion at the beginning. A child who is able to create an utterance continues in fact to use single words for a long period (Caselli, Bello, Rinaldi, Stefanini, & Pasqualetti, 2015).

To study the MLU and grammar development, E.'s longest 100 utterances have been collected and analysed. It is crucial to note that the data collected from Italian monolinguals have undergone a different procedure as only the three longest utterances were recorded each month.

How to count morphemes (Johnson, 2005)

Method:
1 Select 100 completely intelligible utterances (i.e. if even one word in an utterance is not understood, that utterance is excluded from the analysis. Words that are not intelligible are transcribed as x.
2 Count the morphemes in each utterance according to the guidelines set out in the 'DO count' and 'DO NOT count' sections below.
3 Add the number of morphemes for all 100 utterances to give a total number of morphemes used.
4 Divide the total number of morphemes used obtained in step 3 above by 100 to get the mean length of utterance.

DO count:
1 The -s plural marker (e.g. *cat-s, dog-s*). Count it even when used on irregular plurals (e.g. *mouse-s*). [Exception: plurals never occurring in the singular (e.g. *pants, clothes*) count as just one morpheme.]
2 The -ed past tense marker (*walk-ed, play-ed*). The -ed morpheme is counted even when used improperly (*go-ed, drink-ed*).
3 The -ing present participle marker (e.g. *walk-ing, count-ing*).
4 The -s 3rd person regular tense marker (e.g. *he like-s sweets, Bob walk-s fast*). [Exception: *does* counts as one morpheme.]
5 Possessive -'s marker (e.g. *mummy's hat, boy's toy*).
6 Contractions (e.g. *she's, he'll, they're, what's, she'd, we've, can't, aren't* would all count as 2 morphemes each). [Exceptions: *let's, don't* and *won't* are assumed to be understood as single units, rather than as a contraction of two words, so are just counted as one morpheme.]

DO NOT count:
1 False starts, reformulations, or repetitions unless the repetition is for emphasis (e.g. "[then] then [he go] he went to the zoo" is counted as 6 morphemes; "No! No! No!" is counted as 3).
2 Compound words, reduplications, and proper names count as single words (e.g. *fireman, choo choo, Big Bird*).
3 Irregular past tense verbs and irregular plurals count as one morpheme (e.g. *took, went, mice, men*).
4 Diminutives (e.g. *doggie, horsie, dolly*) and catenatives (e.g. *gonna, wanna, hafta*) count as one morpheme.
5 Fillers (e.g. *um, well, oh, um hmm*).

Figure 2 Protocol for Calculating a Mean Length of Utterance (Johnson, 2005)

How morphemes were counted

Method:

1 Select 100 completely intelligible utterances (i.e. if even one word in an utterance is not understood, that utterance is excluded from the analysis. Words that are unintelligible are transcribed as x.

2 Count the morphemes/words in each utterance according to the guidelines set out in the 'DO count' and 'DO NOT count' sections below.

3 Add the number of morphemes/words for all 100 utterances to give a total number of morphemes/words used.

4 Divide the total number of morphemes/words used obtained in step 3 above by 100 to get the mean length of utterance.

DO count for morphemes:

1 The plural/singular, male/female markers in substantives, adjectives, verbs, determiners and gender marked indeterminatives (e.g. *bambin-e* "girls", *bambin-i* "boys"). The morphemes are counted as half a point when used improperly.

2 The *-ato, uto*, *ito,* past tense marker (*mangiato* "eaten", *bevuto* "drunk", *dormito* "slept"). The morphemes are counted as half a point when used improperly (*leggi-uto* "read").

3 The *-ando, -endo* gerund marker (e.g. *andando* "go-ing", *bevendo* "drink-ing").

4 The person regular tense marker .

5 Gender and number marked possessives (e.g. *mia* "my" f.sg, *mie* "my" f.pl., *mio* "my" m.sg., *miei* "my" m.pl.).

6 The *-av-, -ev-, -iv-* imperfect marker (e.g. *and-av-o* "I go- past imp.", *ved-ev-o* "I see- past imp", *dorm-iv-o* "I sleep-past imp."

DO NOT count:

1 False starts, reformulations, or repetitions unless the repetition is for emphasis.

2 Compound words, reduplications, and proper names count as single words (e.g. *motocicletta* "motorcycle", *ciuf ciuf* "choo choo", *Pompiere Sam* "Fireman Sam").

3 Irregular past tense verbs and irregular plurals count as half morpheme (e.g. *leggiuto* "read").

4 Diminutives (e.g. *furgon-cino* "minivan") count as one morpheme.

5 Fillers (e.g. *eee, hmm*).

Figure 3 Protocol for Calculating a Mean Length of Utterance adapted for use in Italian

3.7 Morphosyntactic development of Italian children

The development of inflected morphology and of syntax in Italian are strictly connected. Indeed, some syntactical information is deployed by morphological inflection of verbs communicating person (1st, 2nd, and 3rd), number (singular, plural), tense (present, past, future), mode (indicative, imperative, conditional, subjunctive, participle, gerund, infinitive) and aspect (perfect, imperfect), (Devescovi & D'Amico, 2001).

As all Italian words (apart from adverbs and interjections) present inflected morphology, lexical acquisition and morphological acquisition are strictly connected (Devescovi & Pizzuto, 1995).

Previous studies on the development of morphosyntax in Italian have reported that Italian children learn first present indicative and imperative as finite forms and past participle as non-finite (Antelmi, 1997). Furthermore, freestanding morphemes as copula and auxiliaries are often omitted, although when they are used, they are employed correctly (Cipriani P. , Chilosi, Bottari, & Pfanner , 1993), (Antelmi, 1997).

Errors in verb morphology are reported in terms of regularization of irregular forms (Devescovi & D'Amico, 2001).

All these aspects are discussed in the Results and Discussion section.

3.8 Bound and free inflectional morphology in Italian

The Italian verb system is organized into three major conjugation classes, according to the vowel deployed with the verb root in the infinitive (Orsolini, Fanari, & Bowles, 1998). This means that we can distinguish between first conjugation characterized by the infinitive ending *–are*, as in *mangiare* "eat", the second *–ere* as in *vedere* "see", and the third *–ire* as in *dormire* "sleep".

The inflected morphemes of each conjugation mark person (1st, 2nd and 3rd), number (singular and plural), tense (present, past, future) and mood (indicative, imperative, conditional, subjunctive, participle, gerund, infinitive), (Caprin & Guasti, 2009).

The first conjugation consists of over 3000 verbs and is the most productive one, collecting neologisms, loan words, denominal verbs, and some deadjectival verbs (Dressler & Thornton, 1991), (Rohlfs, 1968).

The second conjugation groups less than 400 verbs and is not productive (Rohlfs, 1968).

The third conjugation includes more than 500 verbs and although it is less productive than the first conjugation, it has attracted several verbs from other conjugations collecting deadjectival and denominal verbs (Orsolini, Fanari, & Bowles, 1998).

Table 1 Italian verbs: 1ˢᵗ, 2ⁿᵈ, and 3ʳᵈ conjugation

Person/Number	1ˢᵗ Conjugation	2ⁿᵈ Conjugation	3ʳᵈ Conjugation
	Mangi-are (to eat)	Ved-ere (to see)	Dorm-ire (to sleep)
1ˢᵗ Sg	Mangi-o	Ved-o	Dorm-o
2ⁿᵈ Sg	Mang-i	Ved-i	Dorm-i
3ʳᵈ Sg	Mangi-a	Ved-e	Dorm-e
1ˢᵗ Pl	Mangi-amo	Ved-iamo	Dorm-iamo
2ⁿᵈ Pl	Mangi-ate	Ved-ete	Dorm-ite
3ʳᵈ Pl	Mangi-ano	Ved-ono	Dorm-ono

3.9 Auxiliaries in Italian

The auxiliary *avere* "HAVE", *essere* "BE" and the copula *essere* "BE" are irregular inflected verbs. Auxiliaries HAVE and BE are used in compound tenses such as *passato prossimo.* The auxiliary BE is employed with unaccusative verbs such as *andare*, "go", to build reflexives as for example *vestirsi*, "dress oneself" and passive verbs. If it is in conjunction with a past participle, this agrees in gender and number with the subject (Caprin & Guasti, 2009).

Example:

Le ragazze sono arrivate a casa,

The girls are arrived-FEM-PL home

HAVE is employed in combination with transitive verbs and unergative intransitive verbs such as *dormire*, "sleep". If it is combined to a past participle, the latter does not agree in gender and number with the subject, on the contrary it ends with the default masculine singular morpheme *–o* (Caprin & Guasti, 2009).

 Example:

Le ragazze hanno mangiato le mele

The girls have eaten-MASC-SG the apples

In cases when HAVE is combined to a transitive verb, the past participle agrees in gender and number with its object if this is expressed by a clitic pronoun (Caprin & Guasti, 2009).

Example:

Io le ho mangiate

I them have eaten-FEM-PL

Table 2 Inflectional paradigms of AVERE and ESSERE

Person/Number	Avere (to have)	Essere (to be)
1st sg	Ho	Sono
2nd sg	Hai	Sei
3rd sg	Ha	E'
1st pl	Abbiamo	Siamo
2nd pl	Avete	Siete
3rd pl	Hanno	Sono

When Italian children start to use auxiliaries, they do not tend to mix BE and HAVE. (Pizzuto & Caselli, 1992).

The copula BE emerges before the auxiliary BE (Antelmi, 1997). The reason for this phenomenon may be that auxiliaries in Italian are used in compound past tenses that tend to emerge later than present tenses (Caprin & Guasti, 2009).

In Italian, auxiliaries are mainly used to produce present perfect tense *passato prossimo*. Italian is an auxiliary split language and the speaker needs to select the auxiliary BE or HAVE to produce a perfect tense (Lorusso, 2015).

3.9.1 Auxiliary selection in Italian

According to the *Aspect First Hypothesis*, children are not able to use tense inflection to mark temporal relation, due to a cognitive deficit (Antinucci & Miller, 1976).

On the one side, the lexical aspect of the verbs also known as *Aktionsart* refers to the temporal contour of a situation, independently of time, defining for instance a verb as telic or atelic (Lorusso, 2015). On the other side, the grammatical aspect is related to the temporal perspective of an event and is ruled by tense morphology (Rosen, 1999).

Telic verbs are characterized by the completion of an event, while atelic verbs do not reach an endpoint. As a consequence, Italian codes telicity both from a structural and lexical point of view and the presence of a definite or indefinite object in a verb phrase defines (a)telicity in Italian (Lorusso, 2015).

Auxiliary selection in Italian depends on the argument structure and its *Aktionsart*. According to the Unaccusative Hypothesis 'intransitive verbs fall into two classes depending on the locus of generation of their single argument: unergatives and transitives project an external argument while unaccusatives an internal argument' (Perlmutter, 1978).

Children during early language acquisition associate BE to unaccusative and defective predicates being telic and having an internal argument, while they choose HAVE for transitive predicates. When a child starts to select auxiliaries, she has already acquired the argument structure of the embedded verb and its *Aktionsart* (Lorusso, 2015). This leads us to think that in early language acquisition, children associate verbs with an external argument to the auxiliary HAVE and those with an internal argument to the auxiliary BE (Lorusso, 2015).

Italian children use auxiliaries more frequently with unaccusative and transitive verbs and less with unergative verbs. They generally choose the right auxiliary in relation to unaccusatives, unergatives, and transitives (Lorusso, 2015).

Italian children tend to omit more the auxiliary HAVE than BE. One explanation for this may be that HAVE selects a transitive predicate with an external argument (Caprin & Guasti, 2009).

3.10 Distribution of finite and non-finite verbs

Italian children are able to distinguish between finite and non-finite verbs as early as in other languages as French and German (Guasti, 1993/1994).

In early Italian language acquisition children associate verbs to agreement morphemes consciously. Infinitives in Italian (both in adult language as in early language acquisition) are located after governing verbs and propositions. This means that the use of root infinitives is not typical in Italian early language acquisition. Governing verbs in child language embrace modal, volitional and aspectual verbs (Guasti, 1993/1994).

Italian children are likely to omit prepositions preceding an infinitive. The occasional omission of preposition preceding an infinitive might be the result of a general process occurring in children's speech. In a context where infinitive is necessary, children do not use finite verbs. This supports the theory that Italian children are able to distinguish between finite and non-finite verbs (Guasti, 1993/1994). This is also reported by the following example given by E.

Vieni (a) vedere

Come-IMP 2ndSg (to) look-INF.

Come and look

3.11 Modal verbs in Italian

Modal verbs in Italian are *volere* "want", *potere* "can/may" and *dovere* "must/have to". *Dovere* and *potere* are always followed by an infinitive tense and behave exclusively as modal verbs, while *volere* can be used alone such in the examples below:

1. *Devo andare a casa*

   (I) have to 1st Sg (to) go-INF to-PREP home

   I have to go home

2. *Posso andare a casa*

   (I) can 1st Sg (to) go-INF to-PREP home

   Can/may I go home?

3. *Voglio andare a casa*

   (I) want 1st Sg (to) go-INF to-PREP home

   I want to go home

4. *Voglio un gatto*

   (I) want 1st Sg a cat

   I want a cat

The verb *sapere* "to know/can" plays a role of modal verb when it expresses ability, as in:

5. *So nuotare*

   (I) can 1st Sg (to) swim-INF

   I can swim

In the negative form the negation *non*, "not" always precedes the modal verb as in:

6. *Non devi andare*
   Not have to-PRES 2nd Sg (to) go-INF
   You don't have to go

In compound tenses the modal verb is preceded by the auxiliary and followed by the infinitive tense as in:

7. *Francesco ha dovuto mangiare la zuppa*
   Francesco have-PRES. 3rd Sg must-PP-MASC (to) eat-INF the soup
   Francesco had to eat the soup

The modal verbs *dovere* "must" and *potere* "can" express in Italian epistemic and deontic functions.

In the case of epistemic function these modal verbs convey the speaker's confidence in his/her belief and knowledge (Bascelli & Barbieri, 2002).

In case of deontic function, *dovere* expresses obligation while *potere* conveys meanings of permission and prohibition. The meaning of these two modal verbs is regulated by tense and mode (indicative vs. conditional), (Bascelli & Barbieri, 2002). To express obligation of different intensity in deontic modality, the modal verb *dovere* is used in the indicative tense (*devi*) or in the conditional tense (*dovresti*) as *must* vs. *should.* The same happens to the modal verb *potere* used in the indicative tense (*puoi*) or in the conditional tense (*potresti*) as *may* vs. *might* (Bascelli & Barbieri, 2002).

Listener's social and cognitive behavior is controlled by modal verbs. To recognize an epistemic function, the speaker must be able to identify subjective certainty and uncertainty and adapting the level of confidence in his/her knowledge. On the other hand, to catch a deontic function the listener must recognize the distinction between obligation and permission and their different levels of urgency (Bascelli & Barbieri, 2002).

Children aged between 2;6 and 3;6 years use modal verbs with more deontic functions than epistemic (Kuczaj & Maratsos, 1975).

In Italian early language acquisition, children start to distinguish between certainty and possibility in the epistemic modal system around the age of six (Bascelli & Barbieri, 2002). Children aged three do not distinguish the intensity of the different modals and consider all forms of *dovere* "must" and "should" and *potere* "may" and "might" as obligatory. At the age of five, children start to recognize the deontic model (Bascelli & Barbieri, 2002).

Table 3 Modal verbs in Italian

Person/Number	Dovere (must/have to)	Potere (can/may)	Volere (want)
1st Sg	Dev-o	Poss-o	Vogli-o
2nd Sg	Dev-i	Puo-i	Vuo-i
3rd Sg	Dev-e	Pu-o'	Vuol-e
1st Pl	Dobbi-amo	Poss-iamo	Vogl-iamo
2nd Pl	Dov-ete	Pot-ete	Vol-ete
3rd Pl	Dev-ono	Poss-ono	Vogli-ono

3.12 Determiners

The Italian article system is particularly complex and marks definiteness, number (singular and plural) and gender (masculine and feminine). The use of some articles is governed by phonological constraints, so for example definite article *lo* (masculine singular) and undefined article *uno* always precede nouns starting with *z, sp, gn, st, sc*. Articles in Italian can precede nouns, pronouns or adjectives. The choice of the article is in accordance with the initial sound of the following word:

1. *Il cane*

The ART-MASC-SG dog NOUN-MASC-SG

2. *Lo strano cane*

The ART-DEF-MASC-SG strange ADJ-MASC-SG dog NOUN-MASC-SG

3. *I cani*

The ART-DEF-MASC-PL dogs NOUN-MASC-PL

4. *Gli strani cani*

The ART DEF MASC-PL strange ADJ MASC-PL dogs NOUN MASC-PL

5. *Le amiche*

The ART DEF FEM-PL friends NOUN FEM-PL

6. *Le luci*

The ART DEF FEM-PL lights NOUN FEM-PL

7. *Uno stivale*

A ART INDEF MASC-SG boot NOUN MASC-SG

8. *Un grande stivale*

A ART INDEF MASC-SG *big* ADJ MASC-SG *boot* NOUN MASC-SG

9. *Una signora elegante*

A ART INDEF. FEM-SG lady NOUN FEM-SG elegant ADJ FEM-SG

10. *Un'elegante signora*

An ART INDEF. FEM-SG elegant ADJ FEM-SG lady NOUN FEM-SG

The definite masculine singular article *il* precedes masculine nouns starting with a consonant, the definite masculine singular article *l'* precedes masculine nouns starting with a vowel.

The definite masculine plural article *i* precedes masculine nouns starting with a consonant, the definite masculine plural article *gli* precedes masculine nouns starting with a vowel.

The definite feminine singular article *la* precedes feminine nouns starting with a consonant, the definite feminine singular article *l'* precedes feminine nouns starting with a vowel.

The definite feminine plural article *le* precedes all feminine nouns.

The indefinite masculine singular article *un* precedes masculine nouns starting with a consonant, while the indefinite feminine article *un'* precedes feminine nouns starting with a vowel.

The indefinite masculine and feminine plural articles (also called partitive articles) *dei, degli, delle* follow the same rule as *i, gli, le*.

Since some of these differences are obvious only in written Italian, this study cannot distinguish if *l'* and *un/un'* is employed as feminine or masculine by E.

Table 4 Definite and indefinite articles in Italian

	Definite	Indefinite
Masc-Sg	Il, lo, l'	Un, uno
Fem-Sg	La, l'	Una
Masc-Pl	I, gli	Dei, degli
Fem-Pl	Le	Delle

The use of articles in early language acquisition in Italian monolinguals is said to increase according to the MLUW. Singular articles increase rapidly while plural articles are omitted less often and their increasing trend is slow (Caprin & Guasti, 2009).

4 Results and discussion

4.1 CDI: comprehension and production

This chapter aims to compare the results collected from E.'s Italian CDI for comprehension and production to those of monolingual Italian children. Since this study focuses exclusively on Italian language acquisition, although Norwegian has appeared in both comprehension and production at an early stage of E.'s language acquisition, only Italian words and utterances are analysed here. This aspect is very important for the interpretation of the results.

4.1.1 Global comprehension - first signs of comprehension

Analysis of part one of the CDI *global comprehension section A, first signs of comprehension* shows that E.'s results at 12 month are identical to those for monolinguals. About 90% of monolingual children at 12 months react hearing the sentence "there's mummy/daddy" (Caselli, Bello, Rinaldi, Stefanini, & Pasqualetti, 2015) and the same does E.

4.1.2 Global comprehension - sentences

Analysis of part one of the CDI *global comprehension section B, sentences* shows that E. is below the fifth percentile at 12 and 13 months, but she increases from the age of 14 months and reaches the fiftieth percentile when she is 16 months old.

The table below shows E.'s results taken from *part one global comprehension section B sentences* of the CDI. E.'s results (E) are reported and compared to those of Italian monolinguals (IM) with percentiles for Italian (C) developed by (Caselli, Bello, Rinaldi, Stefanini, & Pasqualetti, 2015).

Table 5 CDI Gestures and words, comprehension of sentences - E. versus Italian monolinguals

	M12E	M12 IM	M13E	M13 IM	M14E	M14 IM	M15E	M15 IM	M16E	M16 IM	M17E	M17 IM
Comprehension	3	6 C5	6	7 C5	11	11 C10	15	12 C10	23	23 C50	25	25 C50

Figure 4 CDI Gestures and words, comprehension of sentences - E. versus Italian monolinguals
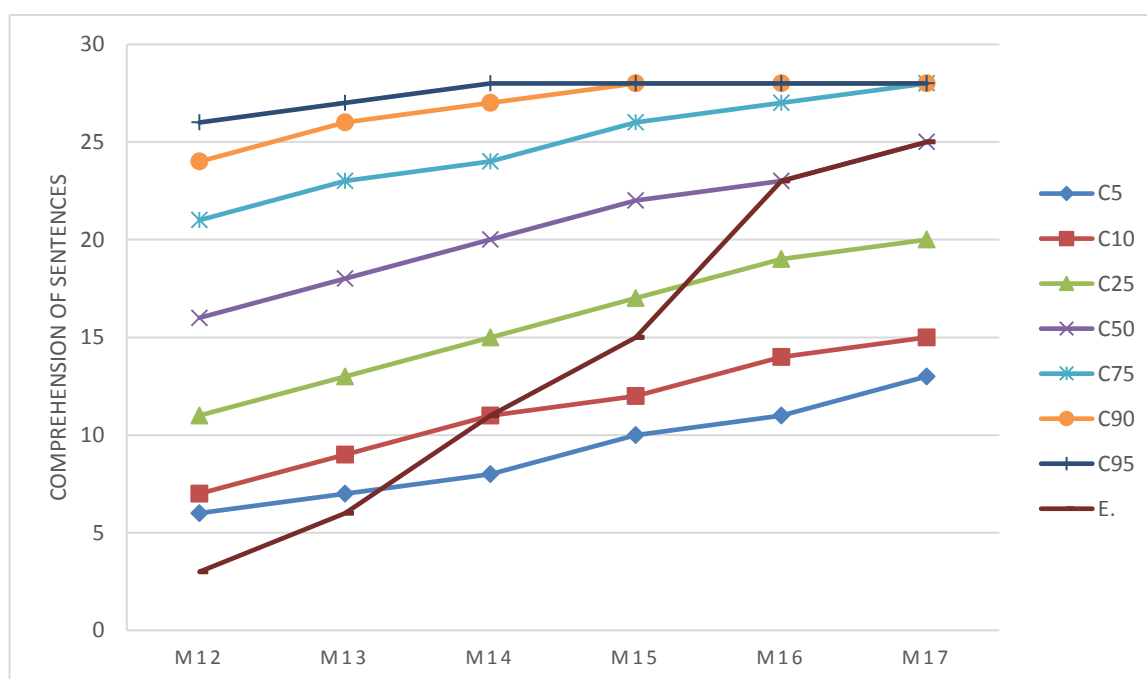
4.1.3 Oral vocabulary – first words

Analysis of part two of the CDI *oral vocabulary, section C first words* (part one in the structure of Norwegian CDI) is quite interesting. In this section, it is recorded if the child repeats words said by another person (imitation) or if the child tries to name objects around her. At the age of 12 months E. imitates words, while at 13 months she already starts to name objects. Literature states that until the age of 17 months children tend to imitate more than to name objects. From this age, the percentage of children that name objects increases and surpasses imitation (Caselli, Bello, Rinaldi, Stefanini, & Pasqualetti, 2015). This is not the case with E.

4.1.4 Oral vocabulary – receptive vocabulary and productive vocabulary size

Analysis of part two of the CDI *oral vocabulary, section D receptive vocabulary and productive vocabulary size* shows that E.'s language acquisition is growing over time both for comprehension and for production.

The data collected show that E.'s comprehension at 12 months is below the fifth percentile in comparison to Italian monolinguals, but it increases gradually reaching the twenty-fifth percentile at 16 months.

The results reveal that E. scores better in production than in comprehension. Indeed, she is already at the twenty-fifth percentile at 12 months and reaches the fiftieth percentile at 14 months.

Word production emerges later than comprehension and the size of productive vocabulary is smaller than that of receptive vocabulary in Italian. Still, it is interesting to note that she lies on a higher percentile for production than for reception when comparing E.'s results to those of monolinguals.

A study conducted by Hoff et al. (2012), comparing vocabulary acquisition in bilingual Spanish-English toddlers to monolingual English toddlers, has shown that bilingual overall vocabulary production did not differ from that of monolinguals. However, if only one language in bilinguals was considered, then the size of vocabulary of bilinguals was lower than that of monolinguals. This result is taken into account while analysing the data collected in this study.

Toddlers produce their first words when they are around one-year old, while comprehension emerges earlier. However, asymmetry between comprehension and production is not uncommon (Ünal & Papafragou, 2016). Explanations of this event take into account the methodology used to perform the studies. In this case, it is the metalinguistic nature of the study of comprehension, that expects the child to reason about linguistic expressions or focusing on children's pragmatic abilities (Reinhart, (2004). Minimizing memory and metalinguistic demands, comprehension performance can improve (Ünal & Papafragou, 2016).

Other explanations consider psycholinguistics, stating that the processes involved in comprehension and production are not the same computational processes executed in the same order. In comprehension, the listener unpacks the meaning of the incoming speech, in a sort of guessing game. In production, the speaker formulates an utterance with particular goals, resources and perspectives in mind (Ünal & Papafragou, 2016). The mechanism controlling

comprehension and production in adults is aligned, while in children these processes can be organized in different ways (Ünal & Papafragou, 2016).

The table below shows E.'s and monolinguals' results taken from the section *oral vocabulary* of the CDI for comprehension and production. E.'s results (E) are reported and compared to those of monolinguals (IM) with percentiles for Italian (C) developed by (Caselli, Bello, Rinaldi, Stefanini, & Pasqualetti, 2015).

Table 6 CDI Gestures and words, receptive vocabulary and production vocabulary size - E. versus Italian monolinguals

	M12 E	M12 IM	M13 E	M13 IM	M14 E	M14 IM	M15 E	M15 IM	M16 E	M16 IM	M17 E	M17 IM
Comprehension	11	20 C5	36	29 C5	62	54 C10	101	66 C10	150	122 C25	183	141 C25
Production	2	1 C25	5	2 C25	13	11 C50	20	15 C50	26	21 C50	37	28 C50

Figure 5 CDI Gestures and words, receptive vocabulary and production vocabulary size - E. versus Italian monolinguals
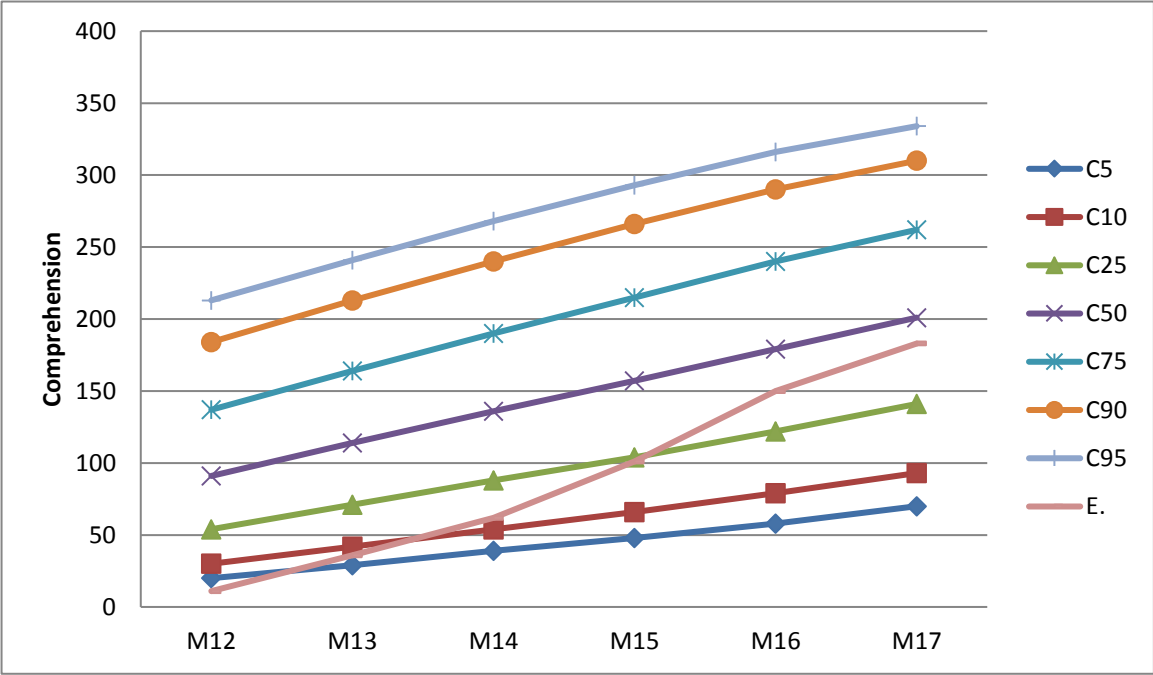

50

Figure 6 CDI Gestures and words, productive vocabulary - E. versus Italian monolinguals
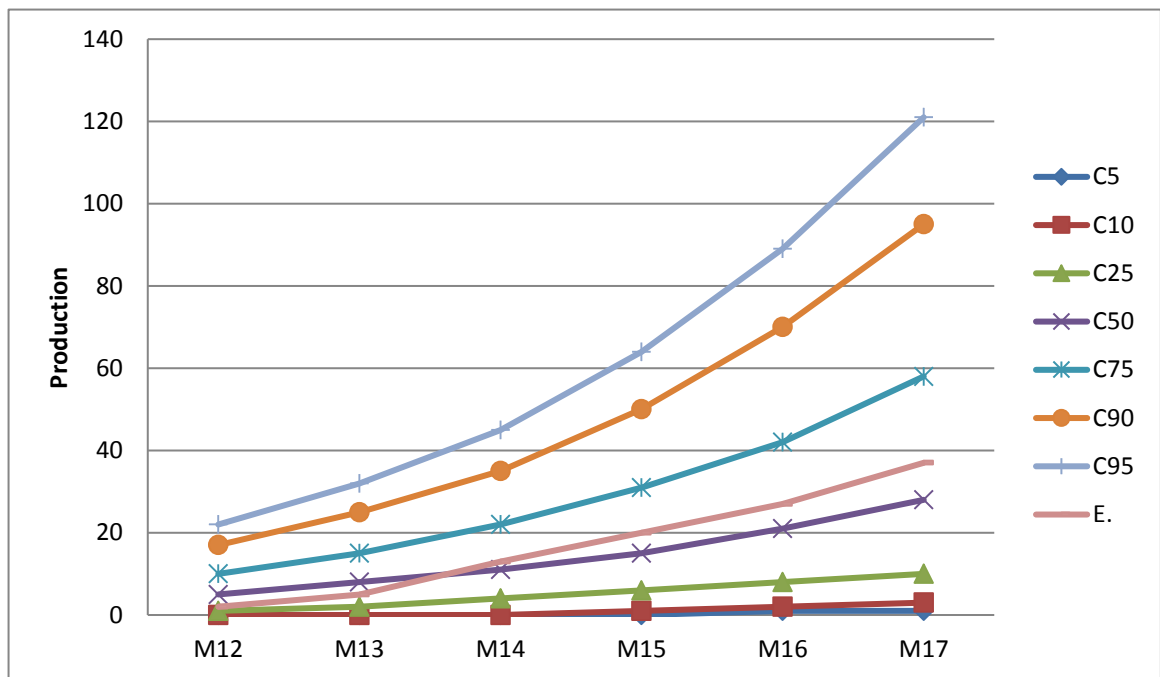
4.2 MLU and grammar development

This section aims to compare E.'s MLUW to that of Italian monolinguals. The data were compared from month 32 to month 36, since the MacArthur-Bates CDI adapted for Italian analyzes MLU from 18 to 36 months (Caselli, Bello, Rinaldi, Stefanini, & Pasqualetti, 2015). To better understand E.'s language acquisition, both words and morphemes where counted in two separate analyses. Figure 7 shows E.'s MLUW and MLU for the longest 100 sentences.

It is interesting to see that E.'s grammar development measured by the MLUW and MLU increases regularly from month 32 to month 34 while it decreases at month 35.

Table 7 E.'s grammar development measured by MLUW and MLU

	M32	M33	M34	M35	M36	M37	M38
E.'s MLU	8,7	12,4	13,2	12	27	18,2	15
E.'s MLUW	5,9	8	9,3	7,5	8,4	11,9	9,9

Figure 7 E.'s grammar development measured by MLUW and MLU
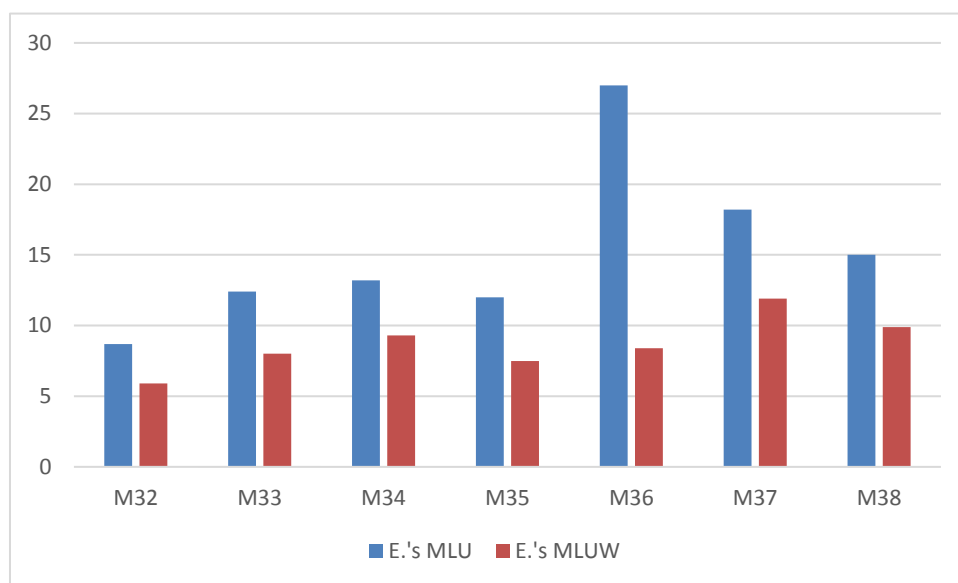
Table 8 E.'s and Italian monolingual's grammar development measured by MLUW from month 32 to month 36

	M32	**M33**	**M34**	**M35**	**M36**
Italian MLUW	7,5	8,3	9,3	9,9	9,7
E.'s MLUW	5,9	8	9,3	7,5	8,4

Figure 8 E.'s and Italian monolingual's grammar development measured by MLUW from month 32 to month 36
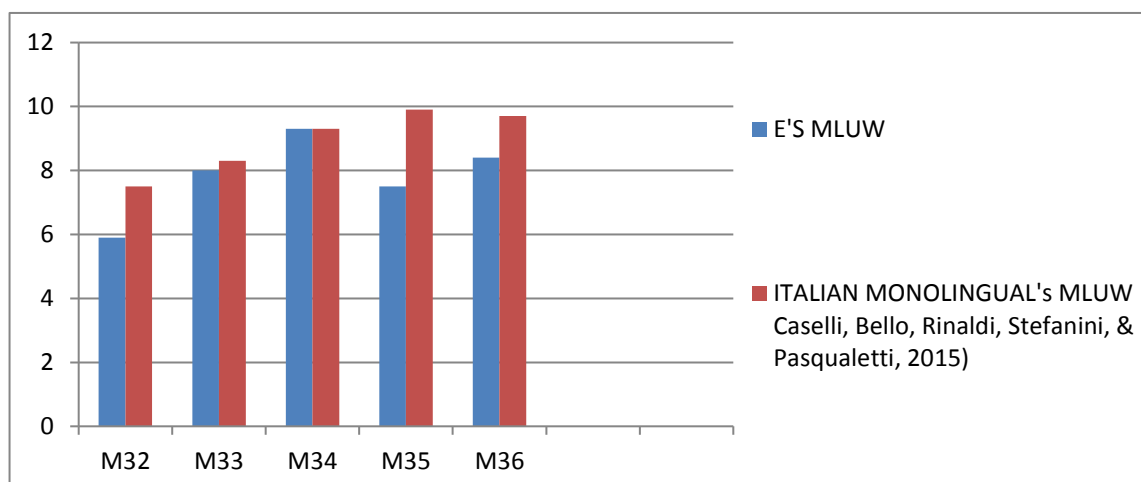
The comparison between E.'s grammar development and that of Italian monolinguals does not show particular differences.

4.3 Inflected verb morphology

Since Italian is a language characterized by rich inflected morphology, this study has analyzed E.'s average correct inflected morphemes from month 32 to month 38. The study examines the fourteen longest sentences per month (15 sentences at month 36 and 38), counting inflected morphology of verbs, and determiners, nouns and adjectives. Even though inflected nouns and adjectives are counted, only inflected morphology of verbs and determiners is investigated in this study.

One point was given to a morpheme inflected correctly, half a point was given to a morpheme inflected incorrectly, no point was given to non-inflected morphemes. To confirm the acquisition of morphemes in E., we have measured their presence in three consecutive speech samples.

Correct verb morphology

The most frequent verb form was the present indicative, while the less frequent one was the gerund. Other forms as *passato prossimo,* "past indicative", infinitives and imperatives increase in relation to the MLU. The results of this study confirm those collected for Italian monolinguals by Caprin & Guasti (2009, s. 30). E.'s development seems to be similar to that of Italian monolinguals.

Verb morphology related to present indicative, past indicative, imperative and gerund has emerged from month 32.

As the most frequent tense used by E. in this study is the present indicative, the investigation is limited to this tense and mood. The first, second, third person singular and the first person plural have emerged from month 32. The third person plural emerged at month 34, while the second person plural had not been detected. Since the study investigates only spontaneous speech in a domestic environment, no tests were carried out to check if E. was able to produce utterances employing the second person plural.

4.4 Errors in verb morphology, finite and non-finite

In this study ca. 1509 verbs have been examined and 97 errors are reported (about 6%). Table 7 below shows E.' errors in verb morphology and how they are distributed.

Table 9 Distribution of errors in verb morphology in E. from month 32 to month 38

| Errors	M32	M33	M34	M35	M36	M37	M38	%
Pres. ind.	1	2	2	4	2	2	0	13%
Past part.	0	2	0	1	1	0	0	4%
Past. ind.	1	4	0	6	1	2	3	17%
Aux. have	0	1	1	0	0	0	0	2%
Omitted aux. have	2	3	0	3	0	1	2	11%
Aux. be	0	0	0	0	0	0	0	0%
Omitted aux. be	0	1	0	0	0	0	1	2%
Omitted copula	2	2	0	1	0	0	1	6%
Infinitive	10	18	4	1	1	1	2	37%
Imperative	1	3	0	0	0	1	0	5%

The greatest number of errors is found in the use of infinitives (37%), followed by past indicative 17% and present indicative 13%.

Thirty-seven cases of incorrect use of infinitives are reported. In twenty-eight cases the modal verb preceding the infinitive is missing; in one case the preposition preceding the infinitive is omitted. These findings in E.'s language acquisition support Guasti's claim that Italian children are aware of the distinction between finite and non-finite verbs (Guasti, 1993/1994). These results go along with Caprin's and Guasti's findings showing that production of infinitives takes place when a preposition or a modal verb is omitted (Caprin & Guasti, 2009). This aspect of E.'s early language acquisition is similar to that of Italian monolinguals.

Table 10 E.'s distribution of errors with non-finite verbs from month 32 to month 38

	M32	M33	M34	M35	M36	M37	M38	%
Infinitives	1	4	1	0	0	1	2	24%
Missing modal	9	14	3	1	1	0	0	76%
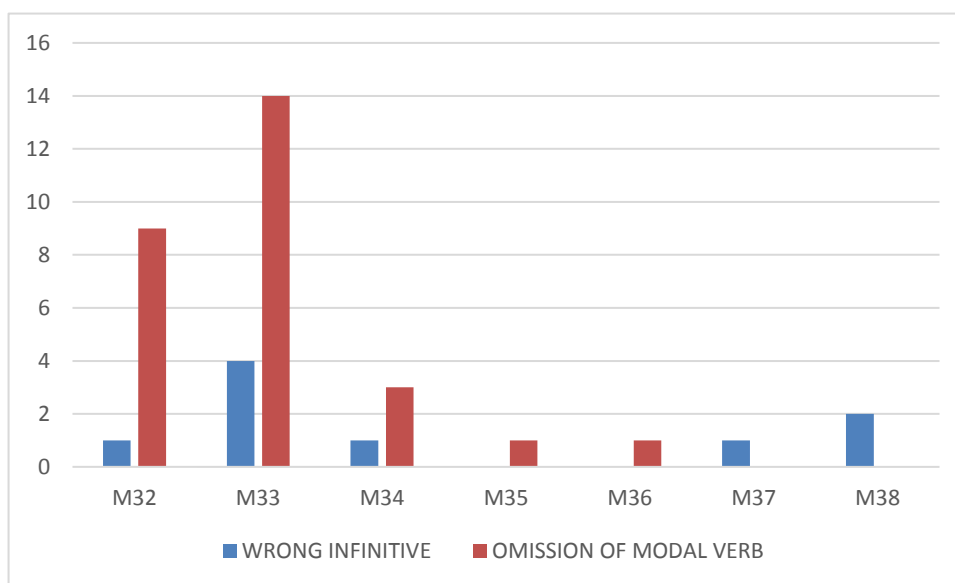
Errors in infinitives

It is possible to see a trend of non-correct use of non-finite verbs. In 76% of the cases, the non-correct use is detected when the modal verb is missing, as described in table 8.

Some examples of E.'s production of infinitives due to the omission of modal verbs are given in 1 and of prepositions in 2. In the examples, words missing from E.'s sentences are put between parentheses in the English translation.

1.
   a. Andare da Cristiana
      to go- INF to Cristiana
      (I want) to go to Cristiana

   b. Aprire questo
      To open- INF this
      (I want) to open this

   c. Andare qua
      To go-INF here
      (I want) to go here

      d.   Io sentire la mia voce

          I to hear-INF the my voice

          (I want) to hear my voice

      e.   Io avere una tyggis*?

          I to have- INF a chewing gum

          (I want) to have a chewing gum

          Tyggis, Norwegian word

2.

      f.   Vieni vedere

          Come-IMP (to) to see-INF

          Come and see

Errors in past indicative

The agreement in gender and number of the past participle with the subject or the object is the most common error in past indicative. The following example is a combination of several errors such as wrong agreement and choice of wrong auxiliary in the construction of a reflexive verb:

    3.   *Ho fatta* male sulla testa poi piangevo

         (I) Have made-FEM-SG pain on the head then (I) cried-IMPERFECT

         I have hurted my head and then I cried

In this case, the correct utterance is *Mi sono fatta male sulla testa poi piangevo* where BE is used with the reflexive verb *farsi,* "make oneself" and agrees in gender and number with the subject.

Other common errors are the omission of the auxiliary (see chapter 4.5.1) and the choice of the wrong morpheme for the past participle of irregular verbs such as in:

    4.   Ha *aprito* la sua porta

         (she/he) has opened the her/his door

         She/he has opened her/his door

The correct morpheme for the past participle of the irregular verb of the second conjugation *aprire* is *aperto.*

Table 11 E.'s distribution of errors with past indicative from month 32 to month 38

	M32	M33	M34	M35	M36	M37	M38
Total past indicative	3	31	15	24	12	63	27
Wrong Past indicative	1	4	0	6	1	2	3

Figure 10 E.'s distribution of errors with past indicative from month 32 to month 38
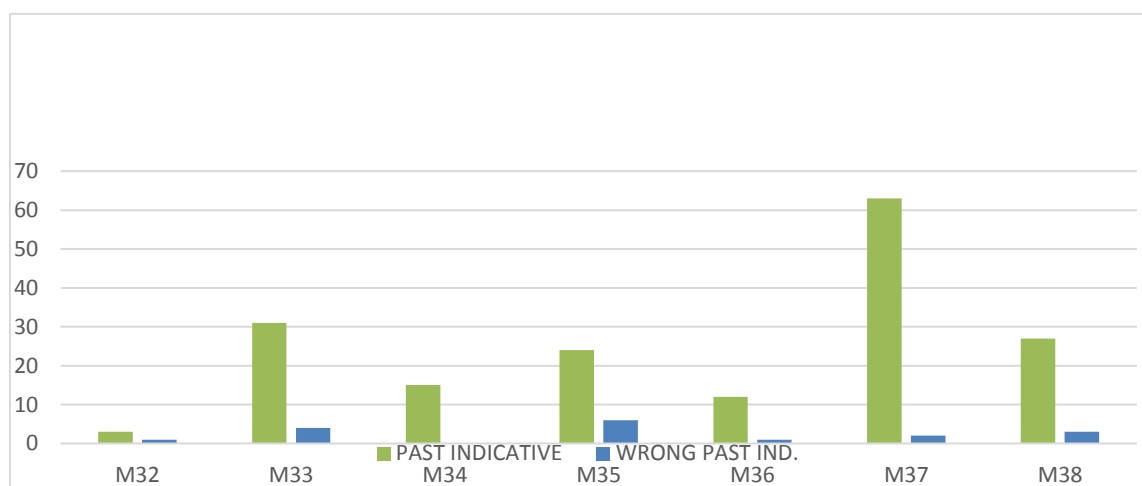
Errors in present indicative

The most common errors in present indicative are the wrong inflection of irregular verbs of the second conjugation or the replacement of the second singular morpheme with the third singular morpheme as in:

    5. Anche tu la *mastica* come me

        Also you it chew 3-SP like me

   You also chew it like me

    6. Io mi *leggio* un altro Handy Manny

        I me read 1-SP another Handy Manny

        I read another Handy Manny

In sentence 5 the correct morpheme of the second singular person of the regular verb of the second conjugation *masticare* "to chew" is *mastichi*. In sentence 6 the correct morpheme of the first singular person of the irregular verb of the second conjugation *leggere*, "to read" is *leggo*,

Table 12 E.'s distribution of errors with present indicative from month 32 to month 38

	M32	M33	M34	M35	M36	M37	M38
Total present indicative	66	127	79	125	119	164	184
Wrong present indicative	1	2	2	4	2	2	0

Figure 11 E.'s distribution of errors with present indicative from month 32 to month 38
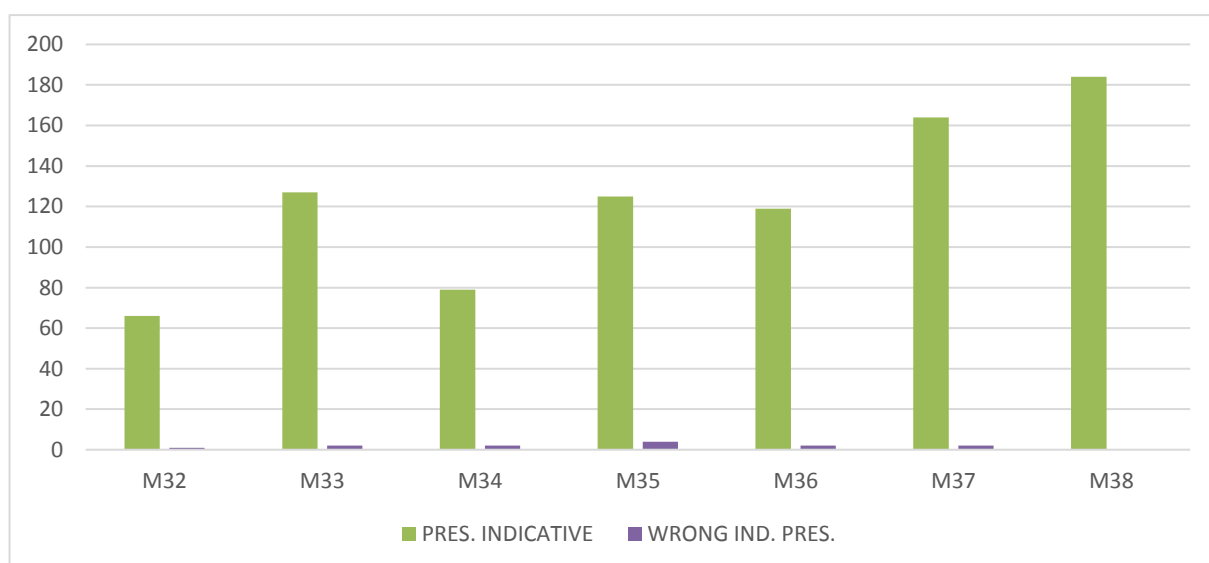
4.5 Auxiliaries BE and HAVE

In this chapter, data on auxiliaries are reported and discussed. Recent studies have stated that Italian children in early language acquisition associate unaccusative and defective verbs to the auxiliary BE, while transitives and unergatives to the auxiliary HAVE. When they start to

use auxiliaries, they have already clear the aktionsart and the structure of the embedded verb (Lorusso, 2015).

The data taken into consideration refer to the total corpus of utterances recorded and transcribed from month 32 to month 38. This choice gives us the possibility to examine 209 sentences containing auxiliaries. The number of unergatives, unaccusatives and transitives has been counted and analyzed in terms of errors. The data have been compared to those reported by Lorusso in his study of four Italian monolingual children aged between 18 and 36 months (Lorusso, 2015). Lorusso's study examines the distribution of forms with auxiliaries across verb classes as unergatives, unaccusatives and transitives.

The data collected for E. show that she correctly assigns the proper auxiliary to each verb class. No errors were reported. No compound tense appears at month 32. Compound tense production starts at month 33 and follows a linear development. One single error is reported in the choice of auxiliary with the reflexive verb *farsi* "make oneself", see chapter 4.4, example 3.

Children tend to use more compound tensed forms with unaccusatives and transitives, and only 3% of unergatives are associated to an auxiliary morphology (Lorusso, 2015). These data are similar to the results obtained in our study. E. employs correct auxiliary morphology for transitives and unaccusatives more often than for unergatives. Unergative verbs are associated to correct auxiliary morphology and emerge in only 5% of the total number of verb forms.

Table 13 Distribution of forms with auxiliaries across verb classes for Italian children aged between 18 and 36 months (Lorusso, 2015)

	Forms with auxiliary
Unaccusatives	89 (15%)
Transitives	233 (12%)
Unergatives	9 (3%)

Figure 12 Distribution of forms with auxiliaries across verb classes for Italian children aged between 18 and 36 months (Lorusso, 2015)
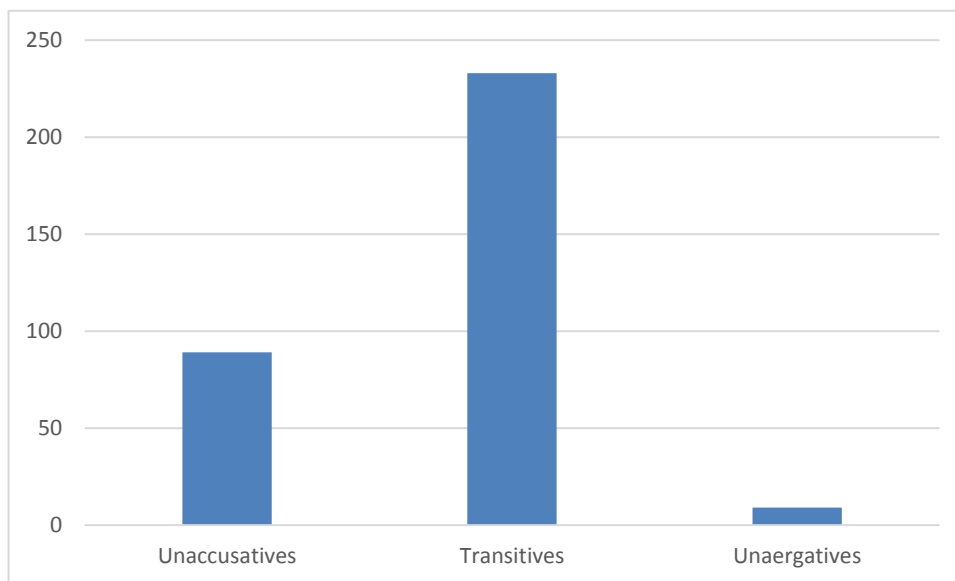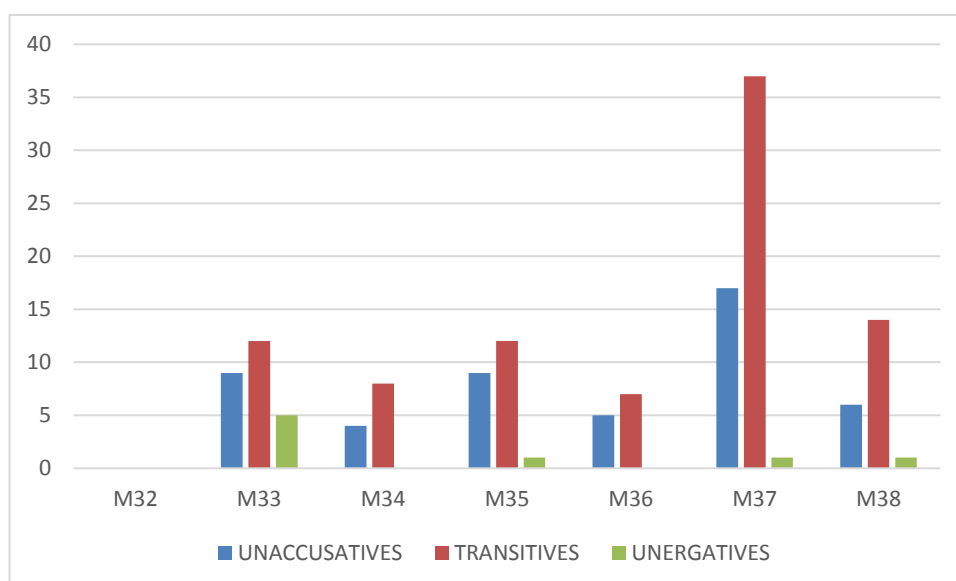

Table 14 E.'s distribution of forms with auxiliaries across verb classes from month 32 to month 38

	M32	M33	M34	M35	M36	M37	M38	Total percentage
Unaccusatives	0	9	4	9	5	17	6	34%
Transitives	0	12	8	12	7	37	14	61%
Unergatives	0	5	0	1	0	1	1	5%

Figure 13 E.'s distribution of forms with auxiliaries across verb classes from month 32 to month 38

The study on E. reveals that the use of the copula mostly increases according to the increase of the MLUW, while the same does not happen for the auxiliaries. These results are similar to those found by Caprin & Guasti, (Caprin & Guasti, 2009). The only exception is recorded during month 37 where an increase of the auxiliary BE is detected and at month 38 where HAVE scores higher than the COPULA.

Table 15 E.'s development of COPULA, BE and HAVE according to her MLUW

	M32	M33	M34	M35	M36	M37	M38
MLUW	5,9	8	9,3	7,5	8,4	11,9	9,9
Copula	4	4	5	4	7	3	3
Be	0	2	1	1	0	5	2
Have	4	4	5	4	7	3	3

Figure 14 E.'s development of COPULA, BE and HAVE according to her MLUW
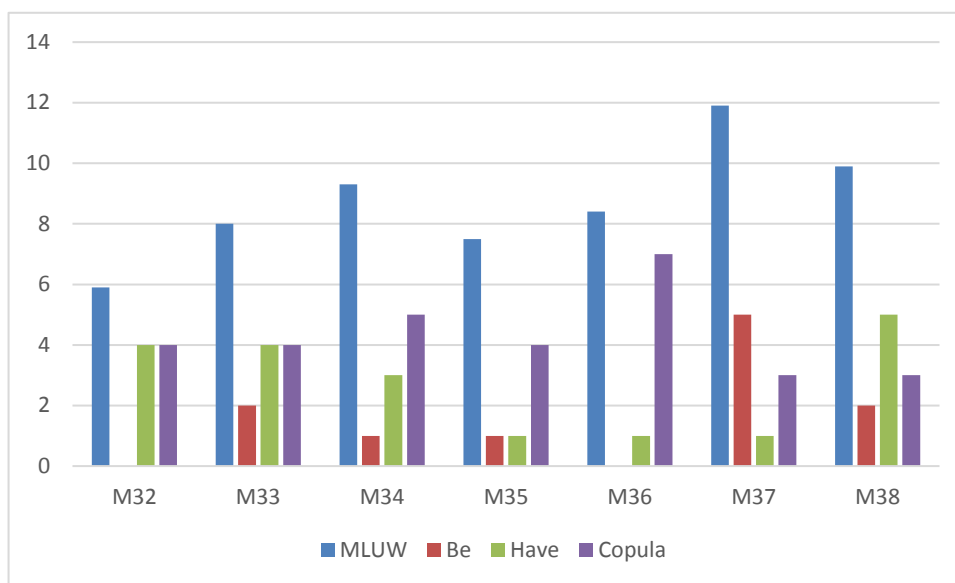
4.5.1 Omission of auxiliaries

Previous studies have shown that Italian monolingual children tend to omit the auxiliary HAVE more than BE, this probably because HAVE selects transitive predicates with external argument. Moreover, HAVE appears later than BE in Italian monolingual children (Lorusso, 2015).

The data collected in this study confirm that E. tends to omit the auxiliary HAVE more than BE. Moreover, BE is omitted more as an auxiliary than as a copula. The data collected for E. on the omission of BE as an auxiliary and as a copula agree with Caprin & Guasti, saying that children in very early stage are able to distinguish the features only of a single verb as for copulas, and not of two verbs as in biclausal auxiliary construction (Caprin & Guasti, 2009).

Table 16 E.'s omission of HAVE and BE from M32 to M38

	Auxiliary Have	Auxiliary Be	Copula Be
Omission	10	6	2

Figure 15 E.'s omission of HAVE and BE from M32 to M38
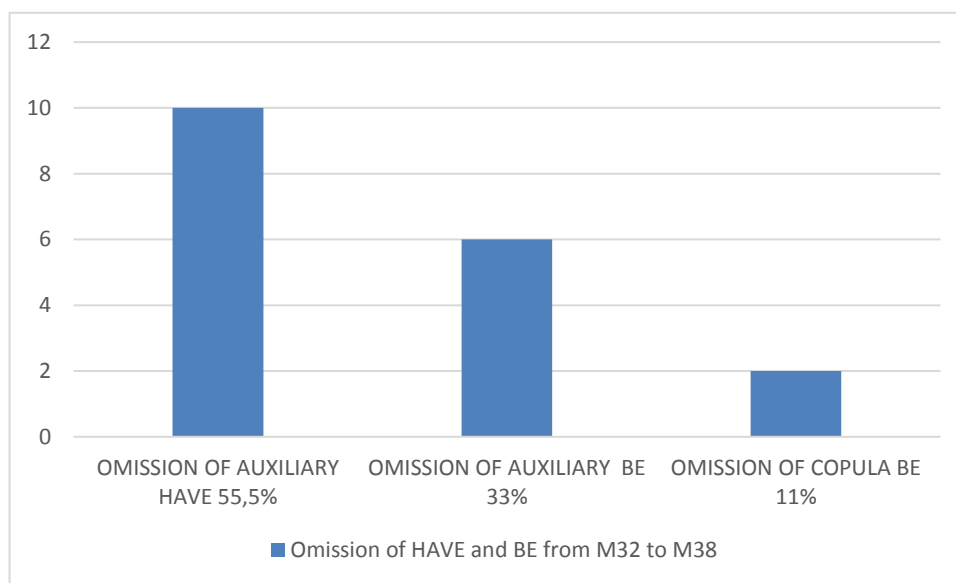
4.6 Development of modal verbs

This part of the study shows that E. employs modal verbs for the first time at the age of 32 months. Data for the first appearance of modal verbs in Italian monolingual children are not available. To estimate if early acquisition of modal verbs in E. in terms of age is normal, her results have been compared to those of English monolingual children. Spontaneous production of modal verbs in English monolingual children emerges at the age of two-and-a-half years, in a deontic mode (Kuczaj & Maratsos, 1975).

At month 32 and 33 the modal verb *potere* "can" is the most used, according to the data collected. While at month 32 and 33 there is a minimized discrepancy between the use of *volere* "want" and *potere*, the trend changes completely from month 34 where *volere* starts to be the most employed modal verb (see table 17).

Dovere "must" is on the contrary the modal verb employed least often and it appears for the first time at month 33 (see table 17).

All modals collected from month 32 to month 38 are employed in a deontic modality, no epistemic modality is present in E. at this age. This confirms that children aged 3 do not distinguish the difference in strength of modal verbs (Bascelli & Barbieri, 2002).

The modal verb *sapere* expressing ability does not appear in the corpus of sentences since E. never used it.

It would be interesting to investigate if the non-appearance of *sapere* is due to language mixing. This uncertainty arises from a sentence where the choice of the modal verb *potere* is not correct. Ability in Italian is indeed expressed using the modal verb *sapere* "to know", while in Norwegian it is expressed by the modal verb *kunne,* "can", "potere". In the following sentence, E. employs *potere* instead of *sapere* to express ability:

a. Papa' non ce la faccio, non *posso* farlo
   Daddy (I) not this can do, not (I) can-PRES do it
   Daddy (I) cannot do this, (I) cannot do it

Sentence a. is syntactically and morphologically correct but the modal verb chosen by E. in Italian is not semantically correct and recalls Norwegian semantics.

Table 17 Development of modal verbs in the total corpus from month 32 to month 38

	M32	M33	M34	M35	M36	M37	M38
VOLERE	1	8	9	33	28	27	28
POTERE	2	9	1	5	5	6	19
DOVERE	0	1	1	4	2	10	6
TOT MODAL VERBS	3	18	11	42	35	43	53

Figure 16 Development of modal verbs in the total corpus from month 32 to month 38
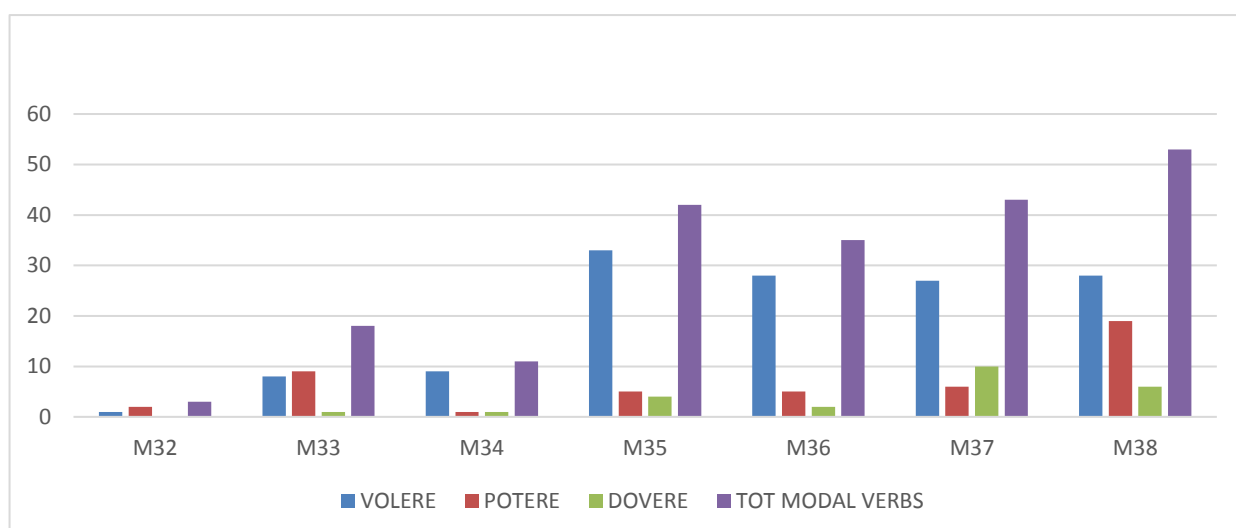
4.7 Determiners

This subchapter reports E.'s development of articles. All sentences of the total corpus recorded from month 32 to month 38 have been considered and the articles analyzed. This allowed a larger data set to be created.

Singular articles are used correctly from month 32. The most frequent article is the definite feminine singular *la,* followed by the undefined masculine/feminine singular *un/un'* and the definite masculine singular *il.* These three articles are acquired from month 32. It is essential to notice that it is not possible to distinguish if *un/un'* is employed as feminine or masculine since the difference is detectable only in written Italian.

Plural articles are acquired later, the definite masculine plural *gli* appears from month 33 and only from month 35 all plural articles are acquired. The results of this study confirm those collected for Italian monolinguals by Caprin & Guasti, (Caprin & Guasti, 2009). E.'s development seems to be similar to that of Italian monolinguals.

Table 18 Percentage of use of each single article in the study on E. from month 32 to month 38

|	M32	M33	M34	M35	M36	M37	M38	Tot%
Il	2	19	13	14	14	44	26	22%
Lo	1	4	0	2	2	3	2	2,5%
La	5	38	12	33	11	26	17	24%
Gli	0	6	0	0	1	2	2	2%
Le	0	2	5	1	7	7	3	4%
Un	3	19	10	11	26	27	38	23%
Uno	0	1	0	0	2	4	1	1%
Una	2	12	0	14	9	13	20	12%
I	0	0	2	4	6	7	6	4%
L'	3	3	4	3	0	7	5	4%
Dei	0	0	0	0	0	1	0	0,1%
Delle	0	0	0	0	0	0	0	0%
Degli	0	0	0	0	0	0	0	0%
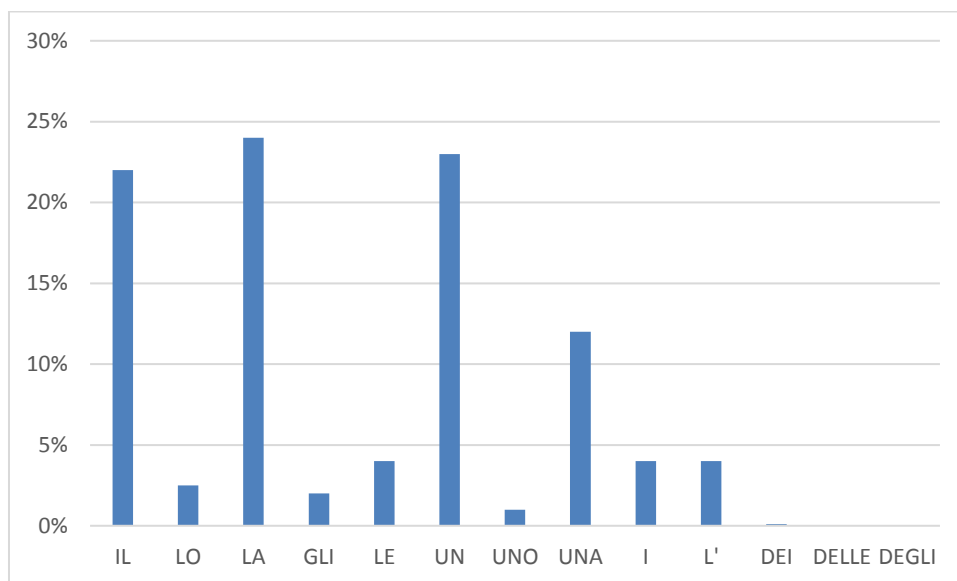
4.7.1 Comparison between E.'s MLUW and her development of article use

In this section, the average number of articles produced in E.'s 100 longest sentences is reported. The number of articles has been calculated in each utterance. The total number of articles was then calculated for each group of 14/15 utterances. The result was then divided by 14, (15 for month 36 and 38) to get the mean number of articles per month, see table and figure below.

Table 19 E.'s development of articles according to her MLUW

	M32	M33	M34	M35	M36	M37	M38
MLUW	5,9	8	9,3	7,5	8,4	11,9	9,9
Mean n. of articles	1,3	7,3	3,3	5,8	5	9,9	7,9

*Figure 18 E.'s Development of articles according to her MLUW*
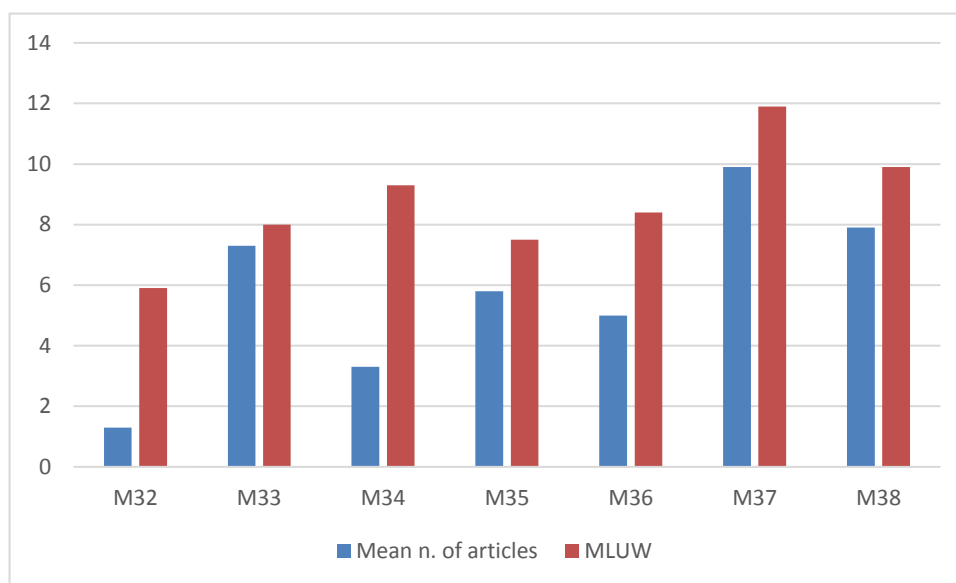
Article use increases according to MLUW values, but still some differences are detected at month 34 and 36. During month 34 and 36 in fact, a slower increase in the use of articles is reported, while MLUW increases regularly. No omission or errors are detected at month 34, while one omission is recorded at month 36. Analysis of the utterances recorded at month 34 and 36 show the emergence of correct sentences where the use of articles is not necessary, this could explain the reduced number of articles.

Nine article omissions are reported and one error in the choice of article is detected at month 32, see table and figure below.

Table 20 Distribution of E.'s article errors and omissions from M32 to M38

	M32	M33	M34	M35	M36	M37	M38
Omissions	2	2	0	2	1	0	1
Errors	1	0	0	0	0	0	0

Figure 19 Distribution of E.'s article errors and omissions from month 32 to month 38
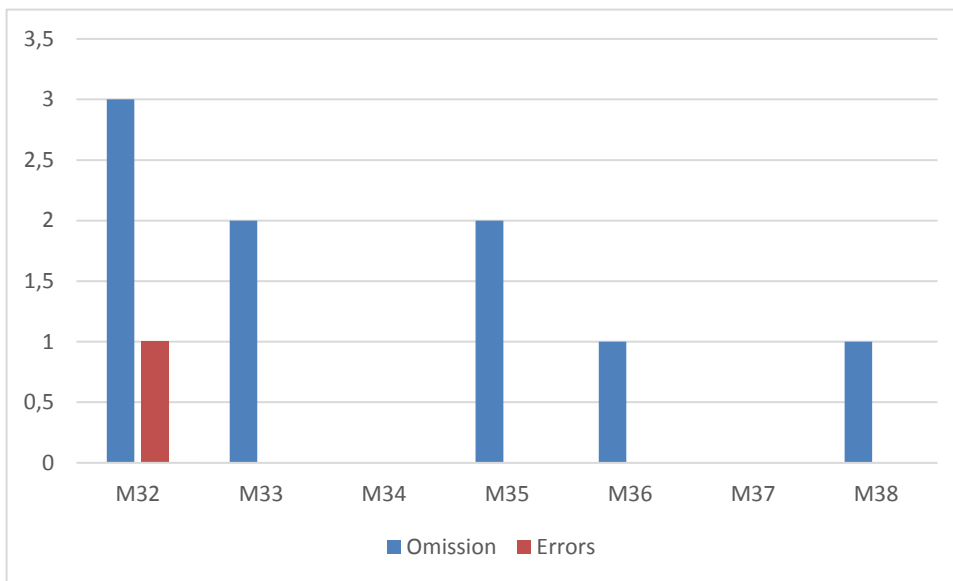
A qualitative study of systematic patterns for article omission (such as a major omission at the beginning of an utterance than after the verb or inside the clause) could yield further insight into the exact nature of this event.

5 Conclusion

The results from the study on the CDI show that the values of E.'s comprehension are lower at 12 and 13 months of age, but that they increase from month 14, and are in line with those of Italian monolinguals. Although comprehension seems to be weak, the comparison of E.'s results to those of Italian monolinguals shows that she lies on a higher percentile for production than for comprehension. The methodological limitation of this study is that it is confined by the specific entries that constitute the Norwegian CDI. E. could have heard and understood many other words which are not present in the Norwegian CDI. A quantitative study of input could probably be helpful to understand the asymmetry between comprehension and production in E.

Further studies on a qualitative comparison between receptive vocabulary and productive vocabulary could explain the nature of the relationship between them in bilingual acquisition (Houwer, Bornstein, & De Coster, 2006).

The data obtained through the analyses of the MLUW show a regular and gradual evolution of morphology, syntax and grammar in line with Italian monolinguals of the same age living in Italy. E. follows a regular path in Italian grammar acquisition, despite the fact that she is bilingual and attends a Norwegian kindergarten. This leads us to state that E.'s level of grammar is neither weak nor abnormal.

As for verb morphology, E. shows a development similar to that of Italian monolinguals analyzed by Caprin & Guasti, (Caprin & Guasti, 2009). Present indicative, past indicative, imperative and gerund have emerged from month 32. The analysis of the data collected show that past indicative, infinitives and imperatives increase as a function of the MLU.

The major number of errors in verb morphology is found in the use of infinitives. The error in this case is due to the omission of the modal verb or the preposition preceding the infinitive. These omissions support previous studies on infinitives and findings on the production of infinitives due to the omission of a preposition or a modal verb (Guasti, 1993/1994), (Caprin & Guasti, 2009).

Errors in past indicative and present indicative are mostly related to the choice of wrong morpheme in irregular verbs belonging the second conjugation.

The data collected for the use of auxiliaries and copula show that E. assigns the proper auxiliary to each verb class (unaccusative, unergative, transitive). Compound tense production starts at month 33 and follows a linear development. Our study is in line with the data showing

that Italian children employ correct auxiliary morphology for transitives and unaccusatives more often than for unergatives (Lorusso, 2015).

The study on E. reveals that the copula increases as a function of the MLUW, while the same does not happen for the auxiliaries. This finding confirms the study by Caprin & Guasti, (Caprin & Guasti, 2009).

The study reports a higher omission of the auxiliary HAVE than BE. BE is omitted more often as an auxiliary than as a copula. The results agree with the study about auxiliary verb selection (Caprin & Guasti, 2009), (Lorusso, 2015).

The data collected in this study confirm that E. tends to omit the auxiliary HAVE more than BE. Moreover, BE is omitted more as an auxiliary than as a copula. The data collected for E. on the omission of BE as an auxiliary and as a copula agree with the previous studies on the use of BE in early Italian (Caprin & Guasti, 2009).

All modals collected in the study are characterized by a deontic modality, no epistemic modality is present in E. from month 32 to month 38. This is in line with the study carried out on Italian children's understanding of epistemic and deontic modal verbs (Bascelli & Barbieri, 2002).

The most frequent recorded articles acquired from month 32 are the definite feminine singular *la,* the undefined masculine/feminine singular *un/un'* and the definite masculine singular *il.*

Plural articles are acquired later. Only from month 35 are all plural articles acquired. The results of this study concerning articles confirm those collected for Italian monolinguals (Caprin & Guasti, 2009).

In conclusion, this study focused on the acquisition of Italian by a bilingual child living in Norway to investigate the development of her language acquisition compared to Italian monolinguals of the same age. The linear growth of the data from the CDI predicted the vocabulary development at 2;6 years of age. No delay in language acquisition has been detected.

E.'s regular morphosyntactic development recorded by the MLUW is similar to that of Italian monolinguals and the data collected for verbs in terms of mode, tense, auxiliaries HAVE and BE and copula, modals and determiners are in line with those obtained in several recent studies on early language acquisition in Italian children.

The results collected in this study are interesting because they do not confirm the belief of a delayed in early vocabulary acquisition of bilinguals in comparison to monolinguals. Further research will go in the direction of the investigation on what are the main factors inferring this kind of inline development.

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