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The face never lies.

A study on the production of syntactic non-manual markers of LIS in spoken Italian in bimodal bilingual individuals.

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A mia mamma.
Infinite volte grazie.

INDEX

ABSTRACT

Bimodal bilinguals are bilinguals whose languages exist in two different articulatory modalities: a sign language and a spoken language (Lillo-Martin, 2016). Even though it is particularly interesting, the research developed in this field is scarce and mainly focused on specific syntactic and lexical aspects of this linguistic phenomenon, namely the linear order, code-switching, and code-blending (cfr. Emmorey et al. 2005; Emmorey et al. 2008; Donati & Branchini, 2009; Branchini, 2011; Donati & Branchini, 2013; Branchini & Donati, 2016; Lillo-Martin, 2016; Rinaldi et al. 2021). To the best of our knowledge, only two studies have investigated the potential influence of the suprasegmental elements that characterize sign languages over spoken language in a bimodal bilingual context. Pyers & Emmorey (2008) focused on bimodal bilingual individuals of American Sign Languages (ASL) and English. Rigo & Dal Cin (in preparation) focused on bimodal bilingual individuals of Italian Sign Language (LIS) and Italian. With the purpose of investigating the suprasegmental linguistic influence of LIS over spoken Italian in bimodal bilingual individuals, this thesis can be considered as the continuation of the abovementioned pilot study. The present study focuses on the analysis of the production of NMMs (Non-Manual Markers) of LIS concurrently with the vocal production of wh-questions, conditional sentences, and polar questions. In LIS, *wh*-questions are mainly characterized by furrowed eyebrows, squinting eyes, body lean, and head tilt, which are produced simultaneously to the whole sentence or only simultaneously with the *wh*-element (Cecchetto, Geraci & Zucchi, 2006). As regards to conditional sentences, they are mainly characterized by raised eyebrows and head and body movement, which occur over the whole conditional sentence or only over the if-sign. Similarly, polar questions are always mainly accompanied by raised eyebrows, eyes wide open and head and body lean (Bertone, 2011; Branchini & Mantovan, 2020).

The general research questions are whether bilingual LIS/Spoken Italian would produce more linguistic facial expressions than monolingual Italian speakers, and if so, whether these facial expressions are the result of direct crosslinguistic influence from LIS, in the form of true NMMs in Italian spoken language.

Two main groups of participants were involved in this study: a group of bimodal bilingual individuals who use LIS nearly every day, which was in turn divided in two different groups (a group of CODA bimodal bilinguals - Children of Deaf Adults - and a group of bimodal bilingual individuals who were not born from deaf parents), and a group of Italian

monolingual individuals who were not familiar with LIS. The three groups were videorecorded while completing six experimental tasks, three of them with audiorecorded context, which elicited three linguistic structures: wh-questions, conditional sentences, and polar questions. Additionally, *wh*-questions and conditional sentences were also elicited through the use of pictures created for this specific purpose, whereas polar questions were produced completing the famous *Guess Who?* game. The data were collected through individual Zoom videocalls and were transcribed, coded, and analyzed in ELAN. The results showed suprasegmental linguistic influence of LIS over spoken Italian in bimodal bilingual individuals in the form of more linguistic NMMs such as furrowed eyebrows during the production of wh-questions, raised eyebrows and head and body movements during the production of conditional sentences and polar questions, confirming what resulted from the previous studies (Pyers & Emmorey, 2008; Rigo & Dal Cin, in preparation). In conclusion, the results of the present study clearly revealed the presence of LIS linguistic influence over spoken Italian in bimodal bilingual individuals, opening the debate over the limits of crosslinguistic influence in bilingualism and, in particular, on the permeability of adult native languages once another language is acquired, a phenomenon broadly termed as L1 attrition (Schmid & Köpke, 2017).

Notational conventions

Following common conventions, the examples in Italian Sign Language (LIS) are glossed in capital letters. Glosses that appeared in Italian in the source reference have been reported in their original language, but they have also been translated to English. Moreover, the following notational conventions have been used:

$_1SIGN_3$: subscript numbers indicate points in the signing space used in verbal agreement and pronominalization. Subscript "1" is used to indicate the first person, subscript "2" is used to indicate the second person, and "3" is used for a sign directed towards all the other loci.

IX_1 : it indicates a pointing sign towards a locus in space. Subscripts are used as explained above.

Lines above the glosses specify the scope (i.e. onset and offset) of a specific non-manual marker of Italian Sign Language. In order to indicate non-manual markers of LIS, the following abbreviations have been used:

wh: specific non-manual markers of LIS for *wh*-questions;

cond: specific non-manual markers of LIS for conditional sentences;

y/n: specific non-manual markers of LIS for polar questions;

neg: specific non-manual markers of LIS for negation;

re/rb: raised eyebrows;

fe/fb: furrowed eyebrows;

bl-f: body lean forward;

hs: head shake;

hn: head nod;

sq: squinted eyes;

cd: chin down.

INTRODUCTION

Bimodal bilinguals are bilinguals whose languages exist in two different articulatory modalities: a sign language and a spoken language (Lillo-Martin, 2016). Up to the present days, the research developed in this field has mainly focused on specific syntactic and lexical aspects of this linguistic phenomenon, namely linear order, code-switching, and code-blending (cfr. Emmorey et al. 2005; Emmorey et al. 2008; Donati & Branchini, 2009; Branchini, 2011; Donati & Branchini, 2013; Branchini & Donati, 2016; Lillo-Martin, 2016; Rinaldi et al. 2021). As a matter of fact, only two studies distance themselves from this line of investigation, i.e., the ones developed by Pyers & Emmorey (2008) and Rigo & Dal Cin (in preparation). These two studies tried to investigate the potential influence of the suprasegmental elements that characterize sign languages over spoken language in a bimodal bilingual context, the so called Non-Manual Markers (NMMs) of sign languages. In particular, whereas the study of Pyers & Emmorey (2008) concentrated on the possible influence of American Sign Language (ASL) over English language, the one of Rigo & Dal Cin (in preparation) addressed its attention to the bimodal bilingual subjects of Italian Sign Language (LIS) and Italian.

Taking as reference the pilot study carried out for LIS and Italian, this thesis wants to further investigate the influence that NMMs of LIS appear to have on Italian in bimodal bilinguals, trying to comprehend if these bimodal bilingual subjects produce grammatical facial expressions concurrently with the vocal production of *wh*-questions, polar questions, and conditional sentences. This study, which involved a total of thirty participants divided in three different groups (a group of late bimodal bilinguals, a group of Children of Deaf Adults, and a group of monolinguals), will be discussed in detail in Chapter 4 of this thesis. Before reaching the centerpiece of this work in Chapter 4, the reader will be accompanied to it through three previous introductory chapters.

In Chapter 1, a general introduction to bilingualism and its processes will be given to the reader. The features of the linguistic structures of interest will be presented in Chapter 2. Chapter 3 will introduce the details of the previous studies on the topic, acting as the springboard to the central research developed for this thesis.

CHAPTER 1

Bilingualism and its processes

In this chapter, an overview of the main concepts concerning bilingualism and its processes is offered. In particular, section 1 will present an introduction to the topic of bilingualism, with a particular focus on the definition of the phenomenon and the different types of existing bilinguals. Section 2 will offer an overview on Cross-Linguistic Influence (CLI) and the processes of bilingualism, whereas section 3 will offer an introduction to the phenomenon of bimodal bilingualism.

1. Bilingualism: an overview

Bilingualism is a phenomenon that has always existed in human history. Bilingualism arises as a result of contacts between people, cultures, and languages. These contacts are characterized by one constant factor, which is the influence they have on the speech behavior and the languages of the people involved: as a matter of fact, it is very difficult to find a society that is genuinely monolingual (Hoffmann, 1991: 1; Ruth, 2010: 2).

As regards the specific definition of this phenomenon, it has not been easy to formulate a generally accepted definition of bilingualism (Liddicoat, 1991: 1). Bloomfield (1933: 56) defined bilingualism as the "native-like control of two languages". Unfortunately, this definition did not take into account those people who speak more than one language but do not have native-like control of one or both of their languages. In order to reflect accurately the reality of the ability of people to use languages, the definition of bilingualism given by Bloomfield (1933) needed to be modified (Liddicoat, 1991: 2). Trying to bridge the gaps of the definition given by Bloomfield (1933), Haugen (1953) elaborated a definition of bilingualism which considered the existence of a large number of people who speak more than one language but who do not exhibit native-like control in both languages. For this reason, Haugen (1953: 7) suggested that bilingualism would begin at the exact point where a speaker of one language could produce complete, meaningful utterances in the other language. Diebold (1961) has even suggested that bilingualism could start when a person begins to understand utterances in a second language but is unable to produce utterances (Liddicoat, 1991: 2). As can be inferred, bilingualism has meant different things to different people (Liddicoat, 1991: 1). Nowadays, the definition that seems to better explain the terms "bilingualism" and "bilingual" is the one given by Grosjean (2008: 10): "Bilingualism is the regular use of two or more languages (or dialects),

and bilinguals are those people who use two or more languages (or dialects) in their everyday lives". Grosjean (2008) proposes the so-called "bilingual (or wholistic) view of bilingualism", which promotes the idea that the bilingual individual is an integrated whole that cannot be decomposed into separate parts: the bilingual is provided with a unique and specific linguistic configuration. Furthermore, Grosjean (2008) claims that the co-existence and constant interaction of the two languages in the bilingual individual produces a different but complete language system (Grosjean, 2008: 13-14). According to this view, bilinguals are also considered to have developed competencies (in the two languages and possibly in a third system that is a combination of the first two) which are based on their needs and those of the environment: as a matter of fact, bilinguals use the two languages (separately or together) for different purposes, in different contexts and with different people (Grosjean, 2008: 14).

1.1 Types of bilingualism

Bilingual individuals can be organized into different categories depending on the linguistic, cognitive, developmental, and social dimensions (Moradi, 2014: 148). Bilinguals can be classified according to the age of acquisition of the languages (early and late bilinguals, section 1.1.1), according to the context and manner of acquisition (simultaneous and sequential bilinguals, section 1.1.2), and also to the relationship between fluency and proficiency (balanced and dominant bilinguals, section 1.1.3).

1.1.1 Early and late bilingualism

According to the age of exposure to the two (or more) languages, bilinguals can be categorized into early and late bilinguals (Moradi, 2014: 148). Early bilingualism is defined as the acquisition of more than one language in the preadolescent phase of life, whereas late bilingualism is defined as the acquisition of one language after the critical period (especially during adolescence or adulthood) (Baetens Beardsmore, 1986: 28; Moradi, 2014: 148-149). Furthermore, early bilinguals are mainly regarded as having a native-like linguistic competence in both languages, whereas most late bilinguals are regarded as non-native speakers of the second language acquired (L2). As a matter of fact, late bilingualism is a successive bilingualism that occurs after the acquisition of a first language (L1): in this situation, bilinguals often use their experience with the L1 to learn the L2 (Moradi, 2014: 149).

1.1.2 Simultaneous and sequential bilingualism

On the basis of the distinction given in the previous section, another interesting categorization of bilinguals needs to be introduced: simultaneous and sequential bilinguals. According to Tabors (1997) simultaneous bilingualism occurs when a child is exposed to two languages at the same time, from birth, and this often produces a situation of strong bilingualism. Sequential bilingualism occurs in situations where, in early childhood, a child who has already partially acquired a first language learns a second language: since the child begins learning a second language when he has already figured out the rules of a first language, this usually results in the origin of a situation of bilingualism that may affect the learning of the second language (Goodman, 2007: 221; Moradi, 2014: 149).

1.1.3 Balanced and dominant bilingualism

The dichotomy between balanced and dominant bilinguals is based on the relationship between the fluency and proficiencies of the languages that bilinguals master. Bilinguals who acquire similar degrees of proficiency and mastery in both languages (and so are equally fluent in two languages) are defined as balanced bilinguals. On the contrary, bilinguals who are more proficient in one language than in the other(s) are called dominant bilinguals (Karbalaei, 2010: 275; Moradi, 2014: 149).

2. Cross-Linguistic Influence (CLI) and the related processes of bilingualism

In bilingual individuals the different languages coexist and interact (Kartushina et al., 2016: 155). The interaction of the different languages processed within the same mind causes a phenomenon called **Cross-Linguistic Influence (CLI)**: CLI can be defined as the different manners in which one language system can affect another language system within an individual (Serratrice, 2013: 4; Duran, 2016: 10). The term "Cross-Linguistic Influence" has been coined by Sharwood Smith (1983) and Kellerman & Sharwood Smith (1986) and contains other phenomena such as transfer, interference, avoidance, borrowing, and all the L2-related aspects of language loss (Duran, 2016: 10).

Cross-Linguistic Influence can be **quantitative** (when the differences between bilinguals and monolinguals in language A can be found in numerical terms and can be attributed to the co-existence of a language B in the bilingual environment) or **qualitative** (when a phenomenon is observed in the comprehension or the production of a language A is not attested in monolingual speakers of the same language) (Serratrice, 2013: 4). An example

of a quantitative difference between bilinguals and monolinguals can be found in the study of Serratrice (2007) who, thanks to a comprehension task with English-Italian bilingual and Italian monolingual children, found that both groups of children were more likely than Italian adult monolinguals to accept an overt third person pronoun as co-referential with a subject antecedent. As regards examples of qualitative differences between bilinguals and monolinguals, they can be found in the order of verb and complements, in subject-verb inversion, and in the position of clitics in restructuring context (Serratrice, 2013: 5).

2.1 Effects of Cross-Linguistic Influence (CLI)

Research on CLI in the domains of bilingualism, second language acquisition, and multilingualism has resulted in a number of crucial findings. The studies carried out from the 1940s to the 1960s (see Fries, 1945; Weinreich, 1953; Lado, 1957; Vildomec, 1963), for example, focused on the comparison of the grammatical systems of the L1 and the L2 and the predictions of errors due to differences between the two systems. It was expected that in the areas where the structures of the L1 and L2 differed, language learners would have difficulties due to negative transfer from the L1. One of the most relevant contributors in these years is Weinreich (1953), who analyzed different types of cross-linguistic influence, which he called "interference": Weinreich (1953) placed emphasis on the negative interference that one language could have in the acquisition of a new one (Duran, 2016: 31). In some situations, for example, bilinguals and learners of an L2 can be led to erroneous conclusions by connecting new words to already existing equivalents in the L1 or in previously learnt languages, without considering the fact that they could have different permissible grammatical contexts, they can belong to different word classes, they could be false friends or they might not be equivalents at all (Duran, 2016: 53-54). Other negative transfer phenomena that could happen are the underproduction or the overproduction of a particular structure, the production of errors such as borrowings (e.g. lexical borrowings whereby new items are added to the lexicon), shift (e.g. semantic extension whereby lexical items in L1 are vested with the meanings of their L2 translation equivalents), restructuring transfer (e.g. rules of the L2 which are incorporated into the grammar of the L1), L1 attrition (e.g. acceptance of syntactically deviant L1 sentences under the influence of L2 constraints), and misinterpretations during comprehension (Pavlenko, 2000: 179; Duran, 2016: 11).

CLI does not only show negative effects, but its consequences can also be positive. One of the most important positive effects of CLI regards the fact that it leads to an acceleration in language acquisition: differences between the languages do not only lead to difficulties but can

also make structures easier to acquire (Duran, 2016: 31-32). For example, acceleration effects are attested in bilingual German and English-Romance children, who seem to better acquire copula realizations in English (see Liceras, Fernández Fuertes & de la Fuerte, 2011) and determiner realizations in German (see Kupisch, 2006). In both studies, bilingual children benefit from the acquisition of grammatical properties in the other language: one language seems to have a booster effect on the other one (Arnaus Gil & Müller, 2020: 1).

Another interesting thing about the interaction between languages regards the direction of the influence between languages: it is not only the first language that can influence the second language, but also the second language can affect the native one. In particular, the L1 can influence L2 production via **forward transfer**, and an L2 can affect L1 production via **backward transfer** (Kartushina et al., 2016: 1). As a matter of fact, even though the research that has been developed during the years has mainly focused on how the native language influences the second language, there is growing evidence that the experience with an L2 can also affect different levels of L1 processing (Kartushina et al., 2016: 2). What has been previously introduced in this section - the effects that a language can have on another one - can be considered valid also when talking about the influence of a L2 on a L1: the effects of a non-native language on the L1 can be positive (e.g. richer L1 semantics and syntax), negative (e.g. L1 loss, L2 accent during L1 speech), or neutral (effects of the L2 on the L1 that simply amount to differences and that do not cause positive or negative effects) (Cook, 2003; Kartushina et al., 2016: 2). Furthermore, on the basis of the linguistic level that is examined, the impact of the L2 on the L1 can be detected earlier or later in learning: at lower lexical and phonetic processing levels, for example, the influence of the L2 on the L1 is recognizable already after a short period of immersion in an L2-speaking country (Kartushina et al., 2016: 2).

2.2 Factors that determine the appearance of Cross-Linguistic Influence (CLI)

To date, the analysis of different variables that determine the appearance of CLI has been widely studied, and some language-related elements that determine the appearance of lexical and grammatical CLI have been identified. According to Gabrys-Barker (2006), CLI can appear in four different situations. First, CLI can occur when the language learner has not acquired a lexical item of the target language, which might be due to insufficient access to target input. CLI can also appear when the learner has acquired a target language item that cannot be accessed at the moment of performance: according to Ecke (2015), in this case, the target word might be automatically replaced by an item from a non-target language. Finally, the last two situations where CLI could appear are related: as a matter of fact, CLI could appear

when the learner has not acquired sufficient rules or when these rules cannot account for the totality of language processes (Duran, 2016: 32-33).

In addition to the above-mentioned factors, CLI can also be caused by linguistic, psycholinguistic, social, sociolinguistic, and individual variables. Following the classification presented by Jarvis & Pavlenko (2008), these variables can be gathered in five categories:

1) **linguistic and psycholinguistic factors**, which include cross-linguistic similarity, area of language acquisition, use, frequency, recency, salience, markedness, prototypicality, and linguistic context (Duran, 2016: 35). This group refers to the ways in which CLI is affected due to source and target language features (Duran, 2016: 36);

2) **cognitive, attentional, and developmental factors**, which include all the factors related to the processes involved in the storage and processing of new knowledge about language and to the ability that each learner has of acquiring a new language (Duran, 2016: 37). These factors are related to the developmental and universal processes of language acquisition, to the cognitive language abilities of the subject, to the level of maturity of the subject, and to his or her attention and awareness of language (Duran, 2016: 35);

3) **factors related to the language experience and knowledge**, which include everything that regards the language experience and the knowledge that the language learner has acquired during her or his language history (e.g. age of the subject at the language exposure, the length, the frequency, and the intensity of language exposure, the length of residence, the level of proficiency and the number and order of acquired languages) (Duran, 2016: 35-36);

4) **factors related to the learning environment** (Duran, 2016: 36);

5) **factors related to language use** (Duran, 2016: 36).

Another interesting hypothesis on the occurrence of CLI in bilinguals is the one of Hulk & Müller (2000), who claim that syntactic CLI occurs for internal reasons and not because of external factors such as language dominance. Hulk & Müller (2000) claim that CLI occurs primarily and only if two conditions exist. Firstly, the researchers claim that CLI occurs at the interface between two modules of grammar: the interface between pragmatics and syntax, the area which has been claimed to create problems in L1 acquisition, namely the C-domain. Then,

syntactic CLI occurs only if language A has a syntactic construction which may seem to allow more than one syntactic analysis and, at the same time, language B contains evidence for one of these two possible analyses. In other terms, there has to be a certain overlap of the two systems at the surface level.

3. Bimodal bilingualism

As has been explained in section 1, bilingualism is the capacity for two (or more) languages. When the two languages exist in two articulatory modalities, a sign language and a spoken language, the phenomenon is called **bimodal bilingualism** (Lillo-Martin et al., 2016: 720). As for the case of bilingual children who acquire two spoken languages, the linguistic proficiency of bimodal bilingual children depends on many factors, which include the age of exposure to the languages, the linguistic background of the children (including the hearing status of their parents), the socio-cultural environment, and the attitude of their parents towards bilingualism (Rinaldi et al., 2021: 2).

Unlike unimodal bilingual individuals (who produce both languages through a single output channel, the vocal tract), in bimodal bilingual individuals the two languages involved are conveyed through two autonomous channels: whereas the spoken language is perceived through the acoustic channel and produced through the vocal tract, the sign language is perceived through the visual channel and produced by the movement of the hands and the body (Emmorey et al., 2008: 43; Donati & Branchini, 2013: 95; Rinaldi et al., 2021: 2). This independence of the two linguistic systems involved in bimodality gives bimodal bilinguals the possibility to switch languages sequentially as unimodal bilinguals typically do, or to produce signs and spoken words at the same time (Rinaldi et al., 2021: 2; Donati & Branchini, 2013: 95). More precisely, the phenomenon by which both unimodal bilinguals and bimodal bilinguals can produce mixed utterances with the two languages sequentially alternating in the sentence is called **code-mixing**. Unlike unimodal bilinguals, bimodal bilinguals can also mix the two languages simultaneously: bimodal bilinguals do not need to stop talking in order to sign, or vice-versa, but they could do both the operations at the same time (Donati & Branchini, 2013: 95). This phenomenon of simultaneous code-mixing has been called by Emmorey et al. (2005: 667) with the name of **code blending**. In bimodal bilinguals, the words and the signs produced simultaneously can convey the same meaning (e.g. the word "dog" is produced along with the sign "DOG"), or they can convey different meanings (e.g. the word "dog" is produced along with the sign "TO SLEEP"), thus producing supplementary information (Rinaldi et al., 2021: 3).

In the field of international research in the production of bimodal bilinguals, great attention has been given to the phenomenon of code blending. Among the most relevant studies, the ones of Emmorey et al. (2005), Emmorey et al. (2008), Donati & Branchini (2013), Branchini & Donati (2016), Lillo-Martin et al. (2016), Rinaldi et al. (2021) can be found. With respect to the Italian context (bimodal bilinguals exposed to Italian Sign Language (LIS) and spoken Italian), the studies carried out by Donati & Branchini (2013) and Branchini & Donati (2016) deserve particular attention. The researchers analyzed the linguistic production of some hearing children of deaf parents (CODA[1]), dividing the sentences containing code-blends produced by the participants into three different types.

The first type of utterances consisted of correct and complete utterances in one linguistic modality which contained few elements of the other modality. Furthermore, as can be seen in the examples in (1) and (2), the production of two simultaneous language strings followed respectively the word orders prescribed by either LIS or Italian (Branchini & Donati, 2016: 10). In the example in (1), both strings follow the word order of Italian; in the example in (2) both strings follow the word order of LIS.

(1) Italian: Una   bambina   va   allo   zoo
    LIS: GIRL   GO   ZOO
    "A girl goes to the zoo."

[Branchini & Donati, 2016: 11]

(2) Italian: Zio   zia   vero   Roma   abita
    LIS: UNCLE   AUNT   REAL   ROME   LIVE
    "My uncle and aunt actually live in Rome."

[Branchini & Donati, 2016: 10]

The second type of utterances involved the production of two language strings displaying different word orders, the ones prescribed by the two languages (Donati & Branchini, 2016: 11). The production in (3), for example, shows negation in preverbal position

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[1] The acronym CODA stands for *Children of Deaf Adults* and identifies an hearing person who has deaf parents and who, consequently, grows up in two cultures and with two languages (Van den Bogaerde & Baker, 2016: 2).

in the Italian string and in post-verbal position in the LIS string. Furthermore, the LIS string is marked by the negative non-manual markings, which are produced over the negation sign.

(3) Italian: Non   ho   capito

                                           <u>   neg</u>

LIS: UNDERSTAND   NOT

"I don't understand."

[Branchini & Donati, 2016: 11]

The third type of utterances was characterized by mixed linguistic productions that involved only one syntactic derivation (like in Type 1), but where the two sentences were not autonomous and they contributed together to form the unique and complete utterance (Branchini & Donati, 2016: 21). An example of this third type of utterance is given in the example in (4), where Italian contributes the subject and LIS contributes the predicate.

(4) Italian: Io

   LIS: WIN

   "I win."

[Branchini & Donati, 2016: 22]

As can be inferred from the previous lines, there is the presence of some interactions between the two languages of a bimodal bilingual individual. In addition to the studies on code-mixing and code blending, other studies have been carried out in order to look at how sign language might be active during the production of the spoken language in bilingual bimodal individuals. Among them, the studies of Pyers & Emmorey (2008) and of Rigo & Dal Cin (in preparation) on the interaction between the facial expressions of sign language with the spoken language grammatical constructions can be found. An accurate analysis of these two studies will be done in Chapter 3.

CHAPTER 2

Interrogative sentences and conditional sentences
in Italian and Italian Sign Language

In this chapter, some general properties of interrogative and conditional sentences in Italian and Italian Sign Language (LIS) are discussed. As can be imagined, the linguistic research in the field of syntax offers an extensive overview of these constructions, which are rich in details and formal analyses. Since the aim of this chapter is not to offer a complete and detailed description of these phenomena but to provide the instruments to understand the study described in Chapter 4, the following sections will concentrate on the main features of the linguistic constructions of interest. I start from the description of declarative sentences in both Italian and LIS and continue with a description of interrogative sentences and conditional sentences. Furthermore, in the section dedicated to LIS some further fundamental features of this language will be presented.

1. Declarative sentences in Italian

Declaratives are probably the most common type of sentence in any given language, and they are the dominant sentence type in human communication. Declarative sentences are usually used to make assertions and, more simply, to give information (Quer et al., 2017: 629).

(5) Filù guarda la luna.
    "Filù looks at the moon." [2]

[Donati, 2008: 199]

As can be seen in the example in (5), in Italian the order Subject - Verb - Object (SVO) is considered to be the normal order - the unmarked order - for declarative sentences (De Santis, 2021: 26). The prosodic features of this type of sentence are usually neutral or descending unless a specific part of the sentence is stressed for information structure or emphatic reasons (Fava, 1988; Quer at al., 2017: 630).

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[2] The English translation in (5) and most of the translations in the following sections have been made by the author.

2. Interrogative sentences in Italian

Interrogative sentences are specific grammatical forms which are specialized to elicit information from the addressee, to ask whether a certain state of affairs holds, and to report a doubt (Quer et al., 2017: 630; Branchini & Mantovan, 2020: 469). Two types of interrogative sentences can be identified: polar questions, like the one in (6), and *wh*-questions, like the one in (7).

(6) Filù guarda la luna?
    "Does Filù look at the moon?"

(7) Cosa guarda Filù?
    "What is Filù looking at?"

[Donati, 2008: 206]

Polar questions are those questions to which the expected answer is *yes* or *no*. Therefore, the response variables are two: one that confirms the content of the sentence, like the one in (8a), and one that denies it, as shown in (8b) (Fava, 1988; Quer et al., 2017: 630).

(8) a. Sì. (Filù guarda la luna)
       "Yes. (Filù looks at the moon)"
    b. No. (Filù non guarda la luna)
       "No. (Filù doesn't look at the moon)"

In Italian, both polar questions and declarative sentences show the same linguistic order of the elements, namely SVO. Graphically, the only information that permits to distinguish the two types of sentences is the question mark "?". In spoken language, the interrogative force is given by a rising interrogative intonation (D'Achille, 2003: 182).

The questions like the one in (7) elicit a more refined answer than *yes* or *no* because they are used to ask the addressee to fill in some specific missing information. In Italian, as in many other languages, they contain a set of interrogative words or phrases called interrogative pronouns, such as *chi*, *cosa*, *quando*, *dove*, *come*, *perché* etc. Since in English, all the interrogative pronouns have in common the morpheme *wh-* (*what*, *where*, *who*, *when*, etc.), these questions are internationally known as *wh*-questions (Quer et al., 2017: 630-631).

Two types of *wh*-interrogatives can be identified: subject interrogatives (9) and object interrogatives (10). In subject interrogatives the *wh*-element plays the role of subject, so it is generated in subject position and then it moves in Spec-CP position. Since this movement does

not alter the order of the elements of the sentence, which remains SVO, this movement is defined as a vacuous movement. On the contrary, in object interrogatives the *wh*-element plays the role of the object of the sentence, that means that it is generated in object position and then it moves in Spec-CP, thus creating a non-canonical order of the elements in which the subject is in postverbal position (OVS) (Guasti et al., 2012: 187-189).

(9) Chi acchiappa i fantasmi?
    "Who catches the ghosts?"

(10) Chi colpiscono i bambini?
    "Who do the children hit?"

[Guasti et al., 2012: 215-216]

2.1 Cleft Interrogatives

Among the group of *wh*-questions, another interesting type of questions emerges: cleft interrogatives. Lambrecht (2001: 467) and Roggia (2009: 14-15) define a cleft construction as a complex sentence structure consisting of a main clause headed by a copula or a presentative element followed by their argument and by a subordinate clause: collectively, main clause and subordinate clause express a very simple clause, which can be expressed as a single clause without a change in truth conditions. Comparing a cleft sentence (12) with the equivalent canonical clause (11), it can be inferred that the clefting has some consequences on the informative structure of the sentence. As a matter of fact, although the two examples in (11) and (12) are truth-conditionally equivalent, they nonetheless show some differences: whereas the example in (12) conveys the existence presupposition that "exists something that scares", in the example in (11) this presupposition is not available. Instead, in sentence (12) the element *la nebbia* is emphasized and focused, giving the idea that the fog is the only element that can truly scare the person who is talking. Again, the focusing of the element happens against the background of a context which is presupposed (Roggia, 2009: 23; Garassino, 2014: 103).

(11) La nebbia mi fa paura.
    "The fog scares me."

(12) È la nebbia che mi fa paura (non la pioggia).
    "It is the fog that scares me (not the rain)."

[Roggia, 2009: 19]

The example in (13) shows a canonical *wh*-question, like the one described before. The example in (14), on the other hand, shows a question characterized by a complex structure formed by a copulative sentence and by a subordinate clause introduced by *che* (Roggia, 2009: 52). These constructions are known as cleft interrogatives.

(13)   Chi hai incontrato in biblioteca ieri?
       "Who did you meet yesterday in the library?"

(14)   Chi è che hai incontrato in biblioteca ieri?
       "Who's the person that you met yesterday in the library?"

[Roggia, 2009: 52]

The relationship between the two interrogatives in (13) and (14) is the same as the one between the canonical sentence in (11) and the cleft sentence in (12), since it is characterized by semantic equivalence and by the presence of a cleft element. In particular, in the example in (14) the function of cleft element is played by the interrogative phrase, which can be a pronoun as in (14), an interrogative adverb as in (15a) or a nominal or prepositional phrase ad in (15b) and (15c) (Roggia, 2009: 52-53).

(15)   a. Quando è che Luca torna dall'Australia?
          "When is Luca coming back from Australia?"

       b. Con chi è che vai in vacanza?
          "Who are you going on holiday with?"

       c. In quale scaffale è che hai messo i miei libri?
          "On which shelf did you put my books?"

[Roggia, 2009: 53]

Nevertheless, differently from the pair of affirmative sentences, the interrogative sentences seem to be more similar than the affirmative ones: the syntactic clefting in *wh*-questions produces a smaller change at the level of informative structure compared to the affirmative sentences. As a matter of fact, the function of the syntactic clefting in affirmative sentences consists of isolating an element of the sentence in regard to a presupposed background, whereas a canonical non-cleft interrogative already partially fulfills this function. It can be inferred that the difference between cleft interrogatives and non-cleft interrogatives cannot depend on the focusing mechanism of the cleft element, but it must be searched in other deeper aspects of the

structure (Pinelli, 2017: 24). In particular, Roggia (2009) proposes the following explanation: whereas the sentences like the one in (14) presupposes a higher degree of certainty as regards the fact that somebody has been seen in the library, in the example in (13) the speaker is just informing himself or herself about who has been seen in the library: here, there is a minor degree of presupposition. Finally, Pinelli (2017: 24) claims that cleft interrogatives and canonical interrogatives would differ also at the prosodic and pragmatic level.

3. Conditional clauses in Italian

The conditional clause is a linguistic construction which is part of the group of dependent clauses. It consists of two clauses: a superordinate clause, the *apodosis* or consequent, and a dependent clause, the *protasis* or antecedent. The *apodosis* expresses a condition whose fulfillment or non-fulfilment is relevant to the degree of reality assigned to the *protasis* (Barattieri, 2006: 40; Quer et al., 2017: 639). Herczeg (1976: 9) claims that the conditional clause specifies the necessary condition for the realization of an action, a state or a fact in the main clause, as seen in example (16).

(16) Se la sveglia si accende, Gianni si sveglia.
"If the alarm turns on, Gianni wakes up."

[Barattieri, 2006: 41]

Even though in the example in (16) both *apodosis* and *protasis* are simple sentences, they can also appear in the form of complex sentences as in the examples (17) and (18). The example in (17a) shows coordination in the *apodosis* and in the *protasis* (17b), whereas the example in (18) shows that the entire conditional sentence can appear as a dependent clause to another clause.

(17) a. Se non piove e non nevica, la prossima estate avremo siccità.
"If it doesn't rain and it doesn't snow, next summer there will be drought."

b. Se Gianni si sveglia in orario, porterà il fratello a scuola e andrà a fare la spesa.
"If Gianni wakes up on time, he will take his brother to school and he will go shopping."

(18)   Gianni dice che se piove prende l'ombrello.
       "Gianni says that he will take the umbrella if it rains."

[Barattieri, 2006: 40]

As can be inferred from the examples above, in Italian a canonical conditional construction is usually led by the functional element *se*, which is put before the *protasis* (Mazzoleni, 1994: 18). Even though *se* is considered to be the subordination element par excellence, other elements of subordination can be used: *qualora*, *nel caso che*, *a condizione che* represent some examples (Salmeri, 2011: 225).

Furthermore, an interesting feature of canonical conditional clauses in Italian is the reversibility. Speakers of Italian produce conditional sentences both in the order *protasis - apodosis*, like the example in (19a) and in the order *apodosis - protasis*, like in the example in (19b) (Barattieri, 2006: 44).

(19) a. Se la Germania avesse vinto, l'Europa sarebbe in mano ai nazisti
        "If German won, Europe would be in the hands of nazis."

     b. L'Europa sarebbe in mano ai nazisti, se la Germania avesse vinto.
        "Europe would be in the hands of nazis, if German won."

[Barattieri, 2006: 44]

From the semantic perspective and on the basis of their hypothetical value and connection with the reality, conditional constructions can be divided into four main groups: factual conditionals (section 3.1), counterfactual conditionals (section 3.2), non-predictive conditionals (section 3.3), and concessive conditionals (section 3.4). Furthermore, Italian expresses conditional value also through pseudo-coordination (section 3.5).

3.1 Factual conditionals

Factual conditionals are conditional sentences which express a real possibility, a hypothesis that could really happen. In Italian, they are characterized by the indicative mood in both the *apodosis* and the *protasis* when referring to a certain condition, by the imperfect subjunctive and the simple conditional when referring to a possible condition (Mazzoleni, 1994: 20; Salmeri, 2011: 225). In (20a - d) some examples of conditional sentences in the indicative mood can be seen. More precisely, the examples in (20a - d) are all in the indicative mood and

show the fact that different combinations of tenses can be used in order to form these structures. In (20a) both the *apodosis* and the *protasis* are in the present tense, in (20b) they are in the future tense, in (20c) the *apodosis* is in the present form and the *protasis* is in the future form, and in (20d) the *apodosis* is in the future, whereas the *protasis* is in the present.

(20) a. Se ho la possibilità, l'estate prossima vado in Giappone.
      b. Se avrò la possibilità, l'estate prossima andrò in Giappone.
      c. Se ho la possibilità, l'estate prossima andrò in Giappone.
      d. Se avrò la possibilità, l'estate prossima vado in Giappone.
        "If I have the opportunity, next summer I will go to Japan."

<div align="right">[Salmeri, 2011: 226]</div>

The example in (21) shows the example of a sentence that refers to a possible condition, which is characterized by the imperfect subjunctive mood in the *protasis* and by the simple conditional in the *apodosis*.

(21) Se piovesse molto forte, uscirei con l'ombrello.
     "If it rained very hard, I would go out with the umbrella."

<div align="right">[Mazzoleni, 1994: 21]</div>

3.2 Counterfactual conditionals

Counterfactual conditionals are constructions that convey a sense of certain falsity of the prepositional contents of *apodosis* and *protasis*. In standard Italian, this type of conditional is created through the temporal agreement of imperfect subjunctive and the conditional tense. Nevertheless, the counterfactual reading is not given only by morphosyntax. As a matter of fact, in order to give the construction a counterfactual interpretation, other indications are necessary: counterfactuality can be defined as a complex semantic product in which morphosyntax, prepositional content of *apodosis* and *protasis*, and linguistic and extralinguistic contexts cooperate together (Mazzoleni, 1994: 23; Barattieri, 2006: 43). The difference between a canonical sentence in *casus possibilis* like the one in (22) and a counterfactual sentence like the one in (23) is shown below.

(22) Se piovesse forte, prenderei l'ombrello.
      "If it rained hard, I would take the umbrella."

(23) Se fossi un marziano, avrei le orecchie verdi.
      "If I was a Martian, I would have green ears."

[Barattieri, 2006: 43]

Even though the tenses used in (22) and (23) are the same (imperfect subjunctive - simple conditional), the first sentence also allows a non-counterfactual interpretation if it is inserted in a specific extralinguistic context (Barattieri, 2006: 43).

3.3 Non-predictive conditionals

The types of conditionals introduced in the previous sections form the group of predictive conditionals, since there is a relationship between the two clauses of the sentence (Quer et al., 2017: 639). In the case of non-predictive conditionals, this does not happen, since *protasis* and *apodosis* neither follow each other in time nor stand in a cause-consequence relation (Kortmann, 2001: 178).

(24) Se domani piove, cancelliamo la partita.
      "If tomorrow it's raining, let's cancel the match."

[Kortmann, 2001: 177]

As can be inferred from the example in (24), in these sentences the conditionality does not appear in the domain of the proposition but in other domains, such as the discourse structure or the speech act (Quer et al., 2017: 639-640).

3.4 Concessive conditionals

Concessive conditionals are really similar to canonical conditional sentences since they share the usage of verbal tenses and of the factual or counterfactual value. These clauses are usually introduced by *anche se* ("even if" in English), a particle that ensures that the condition expressed by the *protasis* does not influence the consequence expressed by the *apodosis* (Branchini & Mantovan, 2020: 612).

(25) Anche se fosse rischioso, investirei i miei risparmi nel mercato azionario.
      "Even if it was dangerous, I would invest my savings in the stock market."

[Mazzoleni, 2001: 789]

3.5 Imperative-and-Declarative structure

There are times in which the relationship cause-consequence is not expressed by a superordinate *apodosis* which contains a subordinate *protasis* introduced by *se*, but it is expressed by the sequence of two sentences apparently coordinated through elements of connection, like the sentence in (26a) or disjunction (like the sentence in 26b) (Renzi et al., 2001).

(26)   a. Fallo e te ne pentirai.
     "Do it and you'll regret it."

    b. Mangia o ti metto in castigo.
    "Eat or I'll punish you."

[Renzi et al., 2001]

As can be seen in the examples above, these constructions express conditionality with an imperative clause followed by a declarative: for this reason, they are called "Imperative-and-Declarative" constructions. Comparing an "Imperative-and-Declarative" with the corresponding conditional, it can be seen that the two sentences get almost the same interpretation.

(27)   Continua così e verrai bocciato.
    "Keep that up and you will fail."

(28)   Se continui così, verrai bocciato.
    "If you continue like this, you will fail."

[Donati et al., 2017: 123]

Differently from the canonical conditional sentences, pseudo-coordinated sentences do not allow the reversal of *protasis* and *apodosis*.

(29)   a. *e ne ne pentirai, fallo!
    *"you will regret it, do it!"

    b. *o ti metto in castigo, mangia!
    *"Or I'll punish you, eat!"

[Renzi et al., 2001]

4. Declarative sentences in Italian Sign Language

As already mentioned at the beginning of this chapter, declarative sentences are used to express statements and to give information. Declarative sentences in LIS follow the order Subject - Object - Verb (SOV) of the elements, as the example in (30) shows. Since LIS verbs express agreement with their arguments through spatial movement, the sentence below is expressed in LIS by signing AMARE moving from the position in space where GIANNI was signed to the position in space where MARIA was signed (Cecchetto et al., 2006: 6).

(30) GIANNI MARIA AMARE
"Gianni ama Maria".

GIANNI MARIA LOVE
"Gianni loves Maria."

[Cecchetto et al., 2006: 6]

As for declaratives in Italian, the prosodic features of these sentences are usually neutral unless a precise part of the sentence is stressed for emphasis (Quer et al., 2017: 288). Thus, this means that they are usually characterized only by affective non-manuals.

5. Non-Manual Markers (NMMs) of LIS

The languages in the visual-manual modality, such as LIS, are characterized by complex grammars that include non-manual features which are necessary for the interpretation of signed utterances. These features, which contribute to the language system, are expressions that are not performed with the hands, but involve movements of the body and the head, and facial expressions (Herrmann, 2013: 33). More precisely, talking about Non-Manual Markers (NMMs) means talking about all the expressions that go together with the production of manual signs and contribute actively to the construction of the sentence: as a matter of fact, in most cases NMMs have a distinctive function. Furthermore, they have been compared to intonation in oral languages (Bertone, 2011: 28; Branchini, 2014: 22). Observing NMMs, it can be noted that they convey both emotional states and grammatical information. As regards the transmission of grammatical information, NMMs convey phonological, morphological, and syntactic features. Phonologically, NMMs take part in the construction of minimal pairs or contribute to the definition of a distinctive element, such as the shade of a colour. Morphologically, NMMs contribute to the marking of the thematic roles of the verb, to its modification and to its meaning, and to the creation of the grades of adjectives. Syntactically,

NMMs convey the meaning and the function of some types of sentences, such as interrogatives and conditionals (as can be seen in the following sections). In this case, the NMMs are coextensive to the articulation of the sentence or they are expressed in a precise spot of the sentence. As a matter of fact, syntactic non-manual features are obligatorily linked with the corresponding syntactic construction and exhibit strict rules as regards their scope and spreading, which is obligatory, or else the sentence would be ungrammatical. Furthermore, NMMs have a clear onset and offset (Bertone, 2011: 29-30; Herrmann, 2013: 46-47). Scope and timing are exactly the two elements that give the possibility to distinguish grammatical facial expressions from affective facial expressions, since their production is transmitted via the same articulators. In other words, whereas grammatical non-manual features are characterized by sudden and exact onset and offset, affective non-manual features are more gradual and vague (Herrmann, 2013: 37).

6. Interrogative sentences in Italian Sign Language

The general main features of interrogatives, such as their use and the different types of interrogative sentences in which they can be categorized, are the same as in oral Italian (see section 2): the difference between Italian and LIS obviously lies in the structure of the sentence and in its features, which are presented below.

6.1 Polar interrogatives in LIS

Polar interrogatives in LIS display the same structure as declarative sentences, and the two types of sentences differ only in the presence of specific non-manual markers. This can be clearly seen in the examples in (31) and (32), which are only distinguished non-manually: whereas the interrogative in (32) is characterized by yes/no non-manual marking (namely raised eyebrows), this element is absent in the declarative in (31) (Bertone, 2011: 230; Branchini & Mantovan, 2020: 470).

(31) IX$_3$ CINEMA ANDARE
"Lui andrà al cinema".

IX$_3$ CINEMA GO
"He will go to the cinema"

$$\underline{\hspace{4cm}\text{y/n}}$$
(32) IX₃ CINEMA ANDARE
"Lui andrà al cinema?"

$$\underline{\hspace{3cm}\text{y/n}}$$
IX₃ CINEMA GO
"Will he go to the cinema?"

[Branchini & Mantovan, 2020: 470]

Raised eyebrows are not the only non-manual marker that occurs with this type of interrogative sentence. NMMs of polar interrogatives also include eye contact with the addressee, a change in head and body orientation (especially at the end of the sentence), head nod, and head shake. These NMMs usually occur over the entire clause, except for the case of interrogatives containing the YES^NO sign, which are characterized by the occurrence of the NMMs only with the production of this specific sign. As a matter of fact, polar interrogatives can be distinguished from declaratives also thanks to the presence of the sign YES^NO in sentence final position, as shown in (33) (Bertone, 2011: 230; Branchini & Mantovan, 2020: 471).

$$\underline{\hspace{3cm}\text{y/n}}$$
(33) IX₂ PIZZA VOLERE SI^NO
"Vuoi la pizza?"

$$\underline{\hspace{3cm}\text{y/n}}$$
IX₂ PIZZA WANT YES^NO
"Do you want pizza?"

[Branchini & Mantovan, 2020: 471]

The most evident NMMs illustrated for polar interrogatives during this section can be seen in the picture below (**Figure 1**).

Figure 1. NMMs of LIS in polar interrogatives (Branchini & Mantovan, 2020: 471).

6.2 *Wh*-interrogatives in LIS

As previously explained in section 2 of this chapter, *wh*-interrogatives request the addressee to give an articulate answer that provide some specific missing information and are characterized by an interrogative pronoun pronounced at the end of the sentence (Quer et al., 2017: 630-631; Bertone, 2011: 230; Branchini & Mantovan, 2020: 473). This type of questions, of which an example can be seen in (34a-b), are usually characterized by furrowed eyebrows. This non-manual marker can occur over the entire sentence, as in (34a), or just over the interrogative sign, as in (34b). Furthermore, as in the case of polar interrogatives, *wh*-interrogatives are characterized by the forward movement of the chest and the head (Bertone, 2011: 230). All these NMMs can be seen in **Figure 2** at the end of the section.

$$\text{(34) a.} \quad \text{A: } \overline{\text{IX}_2 \ \text{LAVORARE} \ \text{DOVE}}^{\text{wh}}$$

(34) a.   A: IX₂ LAVORARE DOVE   ‾‾‾‾‾‾‾‾‾‾‾‾ wh
            B: IX(loc)[proximal]
            "Dove lavori? Qui."

                  ‾‾‾‾‾‾‾‾‾‾‾‾ wh
            A: IX₂ WORK WHERE
            B: IX(loc)[proximal]
            "Where do you work? Here."

                    ‾‾‾ wh
      b.   A: IX₂ LAVORARE DOVE
            B: IX(loc)[proximal]
            "Dove lavori? Qui."

                  ‾‾‾ wh
            A: IX₂ WORK WHERE
            B: IX(loc)[proximal]
            "Where do you work? Here."

[Branchini & Mantovan, 2020: 473]

Interestingly, this type of interrogatives can also be conveyed without *wh*-signs. This happens when the specific interrogative meaning can be inferred from the context and, in this case, the utterance is marked as interrogative by the presence of the specific interrogative NMMs (Branchini & Mantovan, 2020: 476). An example of this interrogative is provided below.

```
            wh
(35)   A: ORA
        B: SETTE
     " Che ore sono? Le sette."


            wh
     A: TIME
     B: AT_SEVEN
     "What time is it? Seven o'clock."
```

[Branchini & Mantovan, 2020: 473]

Figure 2. NMMs of LIS in *wh*-interrogatives (Branchini & Mantovan, 2020: 473).

6.2.1 Doubling of the *wh*-sign and cleft questions

In LIS, it is common to find content interrogatives characterized by two copies of the same *wh*-sign, as in the example in (36). The example in (36) is contextualized: *wh*-duplication is allowed only by existential presupposition. It is possible and sounds natural only if the question presupposes that there is someone or something that is the answer to this question (Branchini et al., 2015: 56). The NMMs of this structure can occur together with the *wh*-sign only, or they can spread over the whole clause (Branchini & Mantovan, 2020: 478).

(36) A school inspector knows that in that specific class there is a pupil who is allergic to pasta, he even knows the name, but he has never seen him. The inspector enters into the class and asks the teacher (who also knows about that pupil):

```
    wh……………………………………    wh
 CHI  PASTA  MANGIARE  VIETATO  CHI
 "Chi (di loro) non può mangiare la pasta?"
```

<u>   wh</u>…………………………………<u> wh</u>

WHO PASTA EAT FORBIDDEN WHO

"Who (of them) must not eat pasta?"

[Branchini et al., 2015: 56)

The presence of existential presupposition creates a similarity between these constructions and the cleft ones, since they usually convey logical presupposition (see section 2.1). As a matter of fact, the structures with double identical *wh*-signs operate as cleft sentences (Branchini et al., 2015: 57).

7. Conditional sentences in LIS

As for Italian, conditional sentences in LIS are subordinate sentences and can be divided in factual conditionals (section 7.1), counterfactual conditionals (section 7.2), non-predictive conditionals (section 7.3), and concessive conditionals (section 7.4). Furthermore, Imperative-and-Declarative structures can also be found in LIS (section 7.5). Before explaining the features of the different types of conditional sentences, some shared features need to be presented. First, all conditional sentences are characterized by raised eyebrows, head and body movement, eye blink, signing pause, and head nod, even though the occurrence of these NMMs and their distribution varies on the basis of the type of sentence taken into account. The most evident NMMs of conditional sentences can be seen in **Figure 3**.

Figure 3. NMMs of LIS in conditional sentences (Branchini & Mantovan, 2020: 611).

Generally, the non-manual marker extends over the entire conditional sentence or only over the manual marker SE "if" (Barattieri, 2006: 62-65; Branchini & Mantovan, 2020: 606). More precisely, the conditional meaning in LIS can be conveyed either with the usage of a specific sign equivalent to the Italian conditional complementizer *se* "if", as in (38) and (39), or without the integration of a sign, as the example in (37) shows. Regardless of the use or not of the sign

SE, the presence of the specific NMMs is indispensable. NMMs can be coarticulated to the signs in three different ways: the example in (37) shows the spreading of the non-manual marking over the entire conditional clause in absence of the sign SE, whereas the examples in (38) and (39) show the two possibilities of extensions of NMMs when there is the sign SE.

$$\overline{\quad\quad\text{cond}\quad\quad}$$
(37) ATTENTO, IMPARARE DI-PIÙ
"Se si sta attenti, si impara di più".

$$\overline{\quad\quad\quad\text{cond}\quad\quad}$$
ATTENTION, LEARN MORE
"If you pay attention, you'll learn more."

[Bertone, 2011: 232]

$$\overline{\quad\quad\quad\quad\quad\quad\quad\quad\text{cond}\quad}$$
(38) SE MATEMATICA BRAVO IX$_{2P}$ IX$_{1P}$ BRAVO$_{superlative}$ IX$_{1P}$
"Se tu sei bravo in matematica, io sono bravissimo".

$$\overline{\quad\quad\quad\quad\quad\quad\text{cond}\quad}$$
IF MATH GOOD IX$_{2P}$ IX$_{1P}$ GOOD$_{superlative}$ IX$_{1P}$
"If you are good at Math, I am the best."

$$\overline{\text{cond}\quad}$$
(39) SE   UOMO QUELLO VIGILE GIANNI MULTARE FATTO
"Se quell'uomo era un vigile dava la multa a Gianni".

$$\overline{\text{cond}\quad}$$
IF   MAN THAT TRAFFIC POLICEMAN GIANNI FINE DONE
"If that man was a traffic policeman, he would have fined Gianni."

[Barattieri, 2006: 62-63]

Furthermore, another interesting feature of conditional sentences regards the impossibility of switching the conditional clause for the main clause, as this would render the sentence ungrammatical. The following examples (40a-b) show the contrast between the grammatical sentence and its respective ungrammatical version.

<div align="center">cond</div>

(40) a. (IX_{2P}) VENEZIA   ANDARE (IX_{1P}) ROMA ANDARE

   "Se tu vai a Venezia, io vado a Roma".

<div align="center">cond</div>

   (IX_{2P}) VENICE   GO   (IX_{1P}) ROME GO

   "If you go to Venice, I'll go to Rome."

<div align="center">cond</div>

   b. * (IX_{1P}) ROMA ANDARE (IX_{2P}) VENEZIA   ANDARE

      "Io vado a Roma, se tu vai a Venezia".

<div align="center">cond</div>

   * (IX_{1P}) ROME GO   (IX_{2P}) VENICE   GO

      "I'll go to Rome, if you go to Venice."

<div align="right">[Brunelli, 2009: 120]</div>

7.1 Factual conditionals

In factual conditionals, the condition expressed by the subordinate clause is realistic and possible. The NMMs used to mark the *apodosis* in factual conditionals are raised eyebrows (re), chin down at the end of the *apodosis* (cd), a signing pause and eye blink between *apodosis* and *protasis* and, optionally, body lean forward (bl-f) over the *apodosis*. As regards to the *protasis*, it is not marked by specific NMMs (Branchini & Mantovan, 2020: 607). In (41) an example of factual conditional in LIS is shown.

<div align="center">cd</div>
<div align="center">bl-f</div>
<div align="center">re</div>

(41) PROTESTA CONTINUARE_VA_VA POLITICI POLIZIA INCONTRARE

   "Se la protesta continua, i politici incontreranno la polizia".

<div align="center">cd</div>
<div align="center">bl-f</div>
<div align="center">re</div>

PROTEST CONTINUE_VA_VA POLITICIAN POLICE MEET

"If the protest continues, the politicians will meet the police."

<div align="right">[Branchini & Mantovan, 2020: 607]</div>

7.2 Counterfactual conditionals

Opposite to factual conditionals, in counterfactual conditionals the event described in the *apodosis* is unrealistic, very unlikely, or impossible. The NMMs of this type of conditionals are the same used in factual conditionals, namely raised eyebrows, chin down at the end of the antecedent clause, a signing pause and eye blink between the antecedent and the consequent clause, and body lean forward (Branchini & Mantovan, 2020: 611). The sentence in (42) shows an example of counterfactual conditional in LIS.

<div align="center">

cd

bl-f

re
</div>

(42)   IX$_1$ PRESIDENTE   FRANCIA   PRESIDENTE$_a$ IX$_a$ GIAPPONE   IX$_1$
        INCONTRARE$_a$
        "Se fossi il presidente della Francia, vorrei incontrare il presidente giapponese".

<div align="center">

cd

bl-f

re
</div>

IX$_1$ PRESIDENT FRANCE   PRESIDENT$_a$ IX$_a$ JAPAN IX$_1$ MEET$_a$
"If I were the French president, I would meet the Japanese president."

<div align="right">

[Branchini & Mantovan, 2020: 611]
</div>

7.3 Non-predictive conditionals

Non-predictive conditionals appear to be similar to canonical conditionals, but actually in this sentence the *apodosis* does not specify any condition. Once again, the NMMs of this conditional sentence are the same as for the conditional sentences in the previous sections (section 7.1 and section 7.2). The sentence in (43) shows an example of non-predictive conditional in LIS.

<div align="center">

cd

bl-f

re
</div>

(43) IX$_3$ $_3$INVITARE$_1$ IX$_3$ ARRABBIATO PIÙ-NON
    "Se lo invito, lui non sarà più arrabbiato".

```
                cd
               bl-f
                  re
```
IX₃ ₃INVITE₁ IX₃ ANGRY ANYMORE

"If I invite him, he won't be angry anymore."

[Branchini & Mantovan, 2020: 614]

7.4 Concessive conditionals

Concessive conditional clauses like the one in (44) are constructions in which the truth of the proposition expressed by the *protasis* does not affect the truth of the *apodosis*. Concessive conditionals show the same NMMs as the ones described above.

```
                        cd
```
(44) ANELLO ₃DONARE₁ IX₁ UGUALE ACCETTARE NO

   "Anche se mi desse un anello, non lo accetterei".

```
                cd
```
RING ₃DONATE₁ IX₁ SAME ACCEPT NOW

"Even if she/he gave me a ring, I wouldn't accept it."

[Branchini & Mantovan, 2020: 612]

7.5 Imperative-and-Declarative structures

Pseudo-coordination is a valid strategy also in LIS. As in spoken languages, this structure is composed by an imperative clause marked by squinted eyes (sq), raised eyebrows (re), and repeated head nod (hn). After the imperative clause, a declarative clause appears. An example of an Imperative-and-Declarative sentence is shown below in (45).

```
                      rb+sq+hn
```
(45) COMPORTARE MALE B-INDEX CINEMA NO

   "Comportati bene e tu non andrai al cinema".

```
                rb+sq+hn
```
BEHAVE BAD B-INDEX CINEMA NOT

"Behave bad and you will not go to the cinema."

[Donati et al., 2017: 135]

8. Summary of the NMMs

In order to help the reader, the most important details have been approximately reorganized in the following table. **Table 1** offers a recap of all the NMMs of interrogative and conditional sentences in LIS.

Table 1. NMMs of LIS.

Polar interrogatives	*Wh*-interrogatives	Conditional sentences
- Raised eyebrows - eye contact with the addressee - eyes wide open - change in head and body orientation - head nod - head shake	- Furrowed eyebrows - forward movement of the chest - forward movement of the head	- Raised eyebrows - head and body movement - signing pause, head nod and eye blink between the main sentence and the subordinate sentence

CHAPTER 3

The influence of NMMs of a sign language on a spoken language: background literature on the topic

The present chapter is dedicated to the research literature on what is the main topic of the research carried out for the purpose of this thesis, namely the influence that NMMs of a sign language can have on spoken language. As has already been introduced in Chapter 1, bimodal bilingualism has been extensively studied during the years, giving rise to a great overview of the interaction between a sign language and a spoken language (cfr. Emmorey et al., 2005; Emmorey et al., 2008; Donati & Branchini, 2013; Branchini & Donati, 2016; Lillo-Martin, 2016; Rinaldi et al., 2021). In particular, as regards LIS, the studies conducted by Donati & Branchini (2013), Branchini & Donati (2016) and Rinaldi et al. (2021) for code-mixing and code-blending deserve particular attention (for further discussion, see Chapter 1, section 3). Nonetheless, the abovementioned studies mainly focused on the syntactic domain and the lexical production, and none of them broached the topic of the influence that NMMs could have on the spoken language. Only two pilot studies have investigated this topic so far. One study investigated the influence of NMMs of ASL on English, whereas the other one investigated the same kind of influence between LIS and Italian. The study which focused on ASL and English has been conducted by Pyers & Emmorey (2008) and is discussed in section 1, whereas the study which focused on LIS and Italian has been conducted by two students at Ca' Foscari University of Venice, Rigo & Dal Cin (in preparation), and it is discussed in section 2.

1. The study of Pyers & Emmorey (2008)

The first ones to study the influence of the NMMs of a sign language on the spoken language have been Pyers & Emmorey (2008). The researchers focused their study on the influence that American Sign Language (ASL) has on English by investigating whether bimodal bilinguals who are conversing with English monolinguals produce ASL grammatical facial expressions while producing specific parallel syntactic structures in spoken English (Pyers & Emmorey, 2008: 531). By analyzing that, the researchers tried to discover if the morphosyntactic elements from two languages could be integrated with a syntactic representation and if this integration could have occurred to the level of articulation. In addition to that, Pyers and Emmorey (2008) examined the strength of this syntactic integration and the degree of language control by

studying whether ASL grammatical facial expressions were produced even when bimodal bilinguals interacted with non-signing English speakers. Finally, the researchers investigated the possibility for native-English-speaking non-signers to produce ASL-like facial expressions (Pyers & Emmorey, 2008: 532).

Pyers & Emmorey (2008) involved in the study a group of twelve hearing native ASL-English bilinguals (9 women and 3 men; mean age = 32.5 years, SD = 8.8) who came from Deaf signing families and defined themselves highly proficient in both languages, with an average in proficiency equal to 6.5 (SD = 0.5) for ASL and to 6.7 (SD = 0.6) for English on a 7-point fluency scale. These participants reported using ASL for a good part of their day, with an average of 44% (SD = 20%). Bilingual participants were then compared with a group of eleven native English-speaking non-signers (8 women and 9 men; mean age = 29.73, SD = 4.1) (Pyers & Emmorey, 2008: 532).

Given the information that they were participating in a study in the production of some specific sentence types in English, participants were asked to tell a listener (an English-speaking partner unaware of the goal of the research) what they would have done in six hypothetical situations. In order to arrive prepared for the test, participants were given the hypothetical situations in advance. Furthermore, they were also instructed to obtain a defined number of pieces of information (nine, to be precise) from their partner. Participants were told to ask questions in order to get familiar with the partner and the situation, even though the real aim of this procedure was to elicit *wh*-questions. Finally, bimodal bilingual participants did not know that their conversational partners knew ASL. In order to obtain a baseline measure of consistency for production of the grammatical facial expressions in ASL, after completing the English condition the bimodal bilinguals repeated the interview with a Deaf native-ASL-signing partner unaware of the aim of the study. Bilinguals asked the same questions and discussed the same hypothetical situations as in the English condition. Finally, the two above-mentioned interactions were recorded with a camera. In particular, in the first interaction there was just one camera that framed the faces of the bimodal bilingual participants, whereas the second condition involved also a second camera that framed the head and the torso of the signer, in order to record the potential production of signs (Pyers & Emmorey, 2008: 532-533).

The data were transcribed into a database and analyzed by both the researchers and a rater who was blind to each participant's type in order to raise the level of reliability. During the analysis, the facial expressions produced by the participants during the speech were coded for onset and type (raised or furrowed brows) and only the facial expressions that accompanied unambiguous conditionals and *wh*-questions were included in the analysis. More precisely, in

order to calculate the onset of facial expressions, a subtraction of the clause onset from the time of expression onset was made: in this way, obtaining a negative value indicated that the expression began before the onset of the clause, whereas a positive value indicated the opposite situation (Pyers & Emmorey, 2008: 533).

The results provided clear evidence that bimodal bilinguals produce ASL NMMs while speaking English. **Table 2**, taken from Pyers & Emmorey (2008: 533), shows that bimodal bilinguals produced more English clauses with ASL-appropriate facial expressions than nonsigners. Furthermore, both groups produced more ASL grammatical facial expressions for conditional clauses than for *wh*-questions. As regards the onset of the expressions, the researchers found that in conditional sentences the onset of the raised brows was closer to the onset of the spoken conditional clause for bimodal bilinguals (M = 215ms, SD = 308ms) than it was for nonsigners (M = 785ms, SD = 705ms). Unfortunately, the same analyses could not be done for *wh*-questions, since the data collected from the nonsigners were insufficient to allow it. Furthermore, the researchers conducted a more precise analysis by analyzing the facial expressions produced by bimodal bilinguals while speaking English with the expressions they produced when signing ASL. The results of this additional analysis can be seen in Table 2, where there is clear evidence that bimodal bilinguals produced more ASL NMMs in ASL than in English. Once again, participants produced significantly more ASL-appropriate facial expressions with conditionals than with *wh*-questions (Pyers & Emmorey, 2008: 533-534).

Mean Proportion of English and American Sign Language (ASL) Sentences Produced With ASL-Appropriate Facial Expressions

Group and condition	Conditionals with raised brow		Wh-questions with furrowed brow	
	M	SD	M	SD
Nonsigners	.48	.39	.05	.06
Bimodal bilinguals				
English condition	.79	.30	.37	.30
ASL condition	.97	.07	.85	.22

Table 2. Mean Proportion of English and American Sign Language (ASL) Sentences Produced With ASL-Appropriate Facial Expressions (Pyers & Emmorey, 2008: 533).

As can be inferred from the table, the results confirmed the production of ASL facial grammar while speaking English. What distinguished in a clear way the fact that participants were

producing linguistic facial expressions rather than affective facial expressions was the onset of these expressions. Furthermore, from a quantitative point of view, the results showed that the bimodal bilingual group produced twice the number of raised eyebrows in English conditional sentences than non-signers. More precisely, the results indicated a higher production of raised eyebrows marking conditional clauses than furrowed brows marking *wh*-questions. The researchers explained these quantitative differences claiming that bimodal bilinguals have difficulties inhibiting the grammatical elements of the non-selected language, since they consistently produce code blends in which signs and speech are produced simultaneously. Differently from unimodal bilinguals, bimodal bilinguals have less practice inhibiting the production of a non-selected language (Pyers & Emmorey, 2008: 534-535).

2. The pilot study of Rigo & Dal Cin (in preparation)

A second study on the influence that NMMs can have on a spoken language has been conducted by Rigo & Dal Cin (in preparation). Rigo & Dal Cin, two students at Ca' Foscari University in Venice, conducted a pilot study which aimed at analyzing whether an influence from NMMs of Italian Sign Language on Italian could be detected. In particular, they focused their study on three types of clauses, namely *wh*-questions, polar questions, and conditional sentences.

The study involved 10 participants, who formed two groups: a group of bimodal bilinguals (Group BB) and a control group of non-signer monolinguals (Group M). Group BB consisted of 5 participants that used LIS nearly every day mostly for work and/or family reasons, who were aged between 26 and 33. Four participants were sequential bilinguals, whereas one of them was a CODA (Child of Dead Adults). Group BB was compared with 5 monolinguals aged between 19 and 25, who were not familiar with LIS.

Since the research was carried out during the Covid-19 pandemic, the experimental session occurred on the online platform Zoom. In order to collect the data of interest, participants were involved in an individual semi-structured conversation with the interviewer, which was divided into three different tasks: a guided cloze task, a pictures description task, and the *Guess Who?* game. The guided cloze task, which was specifically designed to elicit wh-questions, involved the reading of a text with some gaps: in order to obtain the missing information, the participant was forced to ask a *wh*-question. The pictures description task, which aimed at the elicitation of conditional sentences, involved the description of some pictures. In order to elicit polar questions, the *Guess Who?* game was employed. This game consists of guessing a hidden character by means of asking Yes/No questions. The data collected were edited with the program Quick Media Player and analyzed with the program

ELAN. Data have been coded in three steps. Firstly, a general analysis of the facial expressions of the participants was conducted: this first analysis aimed at collecting the total number of facial expressions produced by the participants during the test. A second more detailed analysis of the collected facial expressions produced by the participants was conducted. This analysis permitted identifying which of these expressions were grammatical and which ones could simply be considered as emotional expressions. Finally, an analysis of the expressive habits of the participants was conducted. This further analysis aimed at understanding the expressive tendencies and the expressive patterns of the participants, giving the researchers the possibility to confirm the correctness of the data collected.
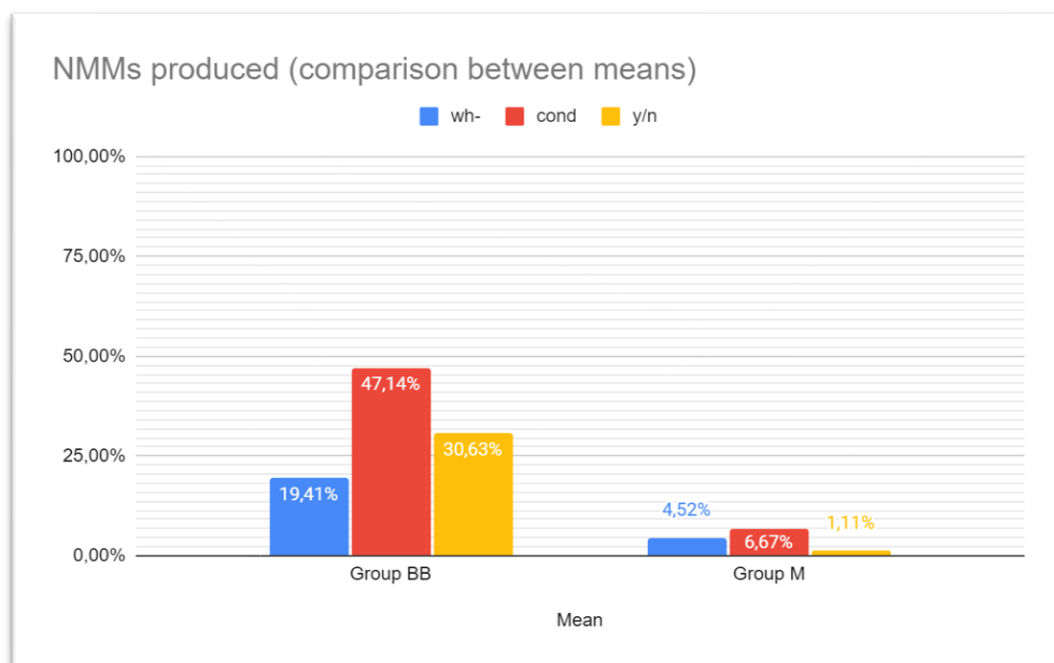
Diagram 1. Comparison between means of NMMs produced by Group BB and Group M (Rigo & Dal Cin, in preparation).

The results of the study showed a general higher production in facial expressions and body movements for bimodal bilinguals than non-signer monolinguals (M=39,84% for Group BB and M=26,25% for Group M), (see **Diagram 1**). Furthermore, from a more specific analysis, it emerged that bimodal bilinguals produced a higher percentage of expressions that were classifiable as NMMs than the other group. As can be seen in the diagram above, the bimodal bilingual group produced an average percentage of NMMs equal to 19,41% for *wh*-interrogatives, 47,14% for conditional sentences, and 30,63% for polar interrogatives. The non-signer monolingual group showed noticeably less percentages of production of NMMs. The control group showed average rates of production equal to 4,52%, 6,67%, and 1,11% for *wh*-

interrogatives, conditional clauses, and polar interrogatives, respectively. Clearly, the results demonstrated the linguistic influence of LIS on Italian in bimodal bilingual subjects. In conclusion, Rigo & Dal Cin (in preparation) proposed an explanation of the production of those facial expressions that showed features that could make them consider as grammatical in monolingual subjects (namely those facial expressions produced by monolinguals that corresponded to the grammatical ones typical of LIS and that gave no reasons to exclude them from the group of NMMs, even though it was impossible they were really grammatical facial expressions). Two hypotheses have been formulated: the first one claimed that the NMMs produced by monolinguals could be spontaneous facial expressions that hearing monolinguals modulate to accompany emotional states, such as doubt or curiosity; the second one proposed NMMs to be a natural part of human language, which are inhibited in hearing monolinguals since they mostly develop the vocal channel to convey suprasegmental information (tone of voice, intonation).

The study conducted by Rigo & Dal Cin (in preparation) plays an important role in this thesis, since it served as a starting point for the research presented in Chapter 4.

CHAPTER 4

A study on the production of syntactic non-manual markers of LIS in spoken Italian in bimodal bilingual individuals

The research that is presented in the following pages is inspired by the studies described in the previous chapter (see Pyers & Emmorey (2008) and Rigo & Dal Cin (in preparation)). In particular, it is the continuation of the pilot study conducted by Rigo & Dal Cin (in preparation) on the influence that NMMs of LIS have on Italian. Since the results obtained by this pilot study seem to lay the foundation for important and interesting considerations on the influence of a sign language on a spoken language and on cross-linguistic influence, the decision to further investigate this topic has been made. The present research tries to give an answer to the same research questions posed in the previous study (see points *a*, *b* and *c* below), except for one new research question (see point *d* below).

   a) Do bimodal bilinguals of Italian and LIS produce more facial expressions than monolinguals?

   b) Can the facial expressions produced by bimodal bilinguals be considered as proper NMMs?

   c) Do monolinguals produce linguistic facial expressions? If so, how can we explain this phenomenon?

   d) Within the bilingual groups, is there a difference in the production of NMMs between the bimodal bilingual group and the CODA group? If so, how can it be explained?

1. Participants

Three groups of participants have been involved in the research, for a total of thirty participants. The first experimental group (group BB, Bimodal Bilinguals) was made up of ten hearing Italian - LIS bimodal bilinguals (9 females and 1 male) aged between 25 and 46 (average age = 32.5). These participants were not native users of LIS, but they were specialists in the language since they used it every day or nearly every day for work or study and/or in circumstances of private life, such as with a deaf signing friend or a deaf signing family member. The second experimental group (group CODA, Children Of Deaf Adults) involved ten CODAs (8 females and 2 males) aged between 27 and 42 (average age = 32.5). As can be inferred from the name of the group, these participants were native LIS users since they were

raised by deaf signing parents. These two groups were compared to a control group, which involved ten Italian participants who had no competence in LIS at all. The control group was made up of people aged between 21 and 42 (average age = 26.5) who did not know LIS (6 females and 4 males), indeed sometimes they did not even know what LIS was. All the thirty participants were born and lived in Italy, but they showed to have a different perception as regards the language they considered to be their First Language (L1). Aside from the Control Group (Group M, Monolinguals), which obviously confirmed to consider Italian as First Language, the other two groups showed an important and interesting difference: whereas all the participants of Group BB considered Italian as their L1, almost all the participants of Group CODA considered LIS or both LIS and Italian as their native languages. **Tables 3-5** show in a more detailed and schematic way what was introduced above, whereas the table containing all the information about the participants can be found at the end of the thesis, specifically in Appendix A.

Group BB				
Participant	Age	Years of exposure to LIS	Frequency of use of LIS	Language considered as First Language (L1)
S1	25	10 years	Every day	Italian
S2	25	8 years	Every day	Italian
S3	27	7 years	Every day	Italian
S4	44	4 years	Nearly every day	Italian
S5	28	5 years	Every day	Italian
S6	31	13 years	Nearly every day	Italian
S7	29	11 years	Every day	Italian
S8	32	10 years	A few times in a week	Italian
S9	38	15 years	Every day	Italian
S10	46	19 years	Every day	Italian

Table 3. Participants of Group BB.

Group CODA				
Participant	**Age**	**Years of exposure to LIS**	**Frequency of use of LIS**	**Language considered as First Language (L1)**
S11	35	From birth	Every day	LIS
S12	29	From birth	Every day	LIS
S13	27	From birth	Every day	LIS
S14	29	From birth	Every day	LIS
S15	28	From birth	Nearly every day	Italian
S16	39	From birth	Every day	Italian and LIS
S17	42	From birth	Every day	Italian and LIS
S18	27	From birth	Every day	Italian and LIS
S19	38	From birth	Every day	Italian and LIS
S20	33	From birth	Every day	Italian and LIS

Table 4. Participants of Group CODA.

Control Group				
Participant	**Age**	**Years of exposure to LIS**	**Frequency of use of LIS**	**Language considered as First Language (L1)**
S21	25	None	Never	Italian
S22	25	None	Never	Italian
S23	25	None	Never	Italian
S24	21	None	Never	Italian
S25	22	None	Never	Italian
S26	31	None	Never	Italian
S27	26	None	Never	Italian
S28	24	None	Never	Italian
S29	42	None	Never	Italian
S30	24	None	Never	Italian

Table 5. Participants of Group M.

2. Procedure and materials

Since the present research was carried out during the Covid-19 pandemic, the experimental sessions occurred on the online platform Zoom, and the tests were administered as PowerPoint presentations. All the sessions were videorecorded. Participants were involved in an individual semi-structured conversation with the interviewer (whose camera was switched off in order not to influence the collection of the data), which was divided into six different moments, each of them characterized by the completion of a specific task. In order to collect the data, six structured tasks were created. Two of the six tasks elicited *wh*-questions, two elicited conditional sentences, and the last two had the objective to elicit polar questions. In the

following sections, the materials used and their procedure will be discussed. In particular, in section 2.1 the materials created to elicit *wh*-interrogatives will be introduced, whereas sections 2.2 and 2.3 will present the materials used to elicit conditional sentences and polar interrogatives. Finally, section 2.4 will discuss the methods used to analyze the data collected during the experimental sessions.

The materials used to collect the data can be found at the end of this thesis, in Appendix B.

2.1 Elicitation of *wh*-questions

In order to elicit *wh*-questions, two different tasks were specifically created by the author. The first one involved the usage of twelve pictures supported by the narration of a short context (section 2.1.1), while the second one involved the use of six recorded contexts (section 2.1.2).

2.1.1 Picture-elicitation task[3]

The picture-elicitation task involved the usage of twelve pictures depicting two characters, which were either animate or inanimate. The pictures were shown to the participant one at a time with one of the two characters hidden up and were accompanied by the narration of a short context, which encouraged participants to ask a question in order to discover who was the hidden character / object. After the participant produced the question, the complete picture was shown to him or her, thus discovering which was the answer to the question. The task led the participants to produce *wh*-questions. An example of this procedure is shown below. In particular, **Figure 4a** shows an example of the picture during the first step, whereas **Figure 4b** shows the same image during the second step, thus when participants discovered the answer to their question. Furthermore, in (46) the context associated with **Figure 4a-b** is displayed. Finally, the context in (46) also gives the example of the target answer.

---

[3] The picture-elicitation task created for the purpose of this research has been developed taking as inspiration the test used by Guasti et al. (2012) to investigate the production of subject and object *wh*-questions.
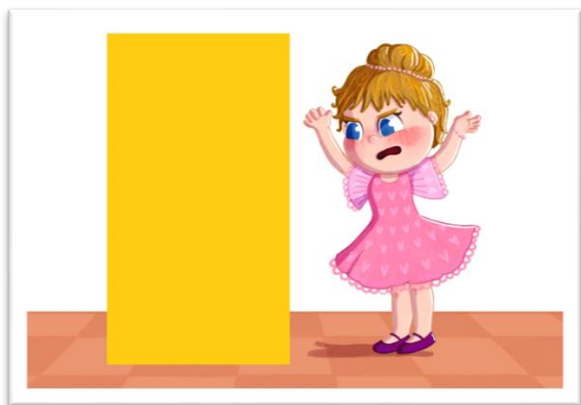
Figure 4a. Example of picture used to elicit *wh*-questions.

Figure 4b. Example of picture used to elicit *wh*-questions.

(46)   Experimenter: Emma is mad at someone. I know who angered her. Ask me!

Participant: Who made Emma angry?

Experimenter: Her boyfriend!

There were four items that elicited a subject *wh*-question with *who*, such as in **Figure 4a-b**; four items that elicited *wh*-questions with *what* (see **Picture 5a-b** and the example in 47); and four items that elicited the production of other *wh*-questions with *where, how, why* and *which* (see **Pictures 6a-b** and the example in 48).

Figure 5a. Example of picture used to elicit *wh*-questions.

Figure 5b. Example of picture used to elicit *wh*-questions.

(47)   Experimenter: Boby the dog is about to snatch something and I know what it is.
Ask me!

Participant: What is Boby going to snatch?

Experimenter: A poor little bird that is singing on the branch of a tree!

Figure 6a. Example of picture used to elicit *wh*-questions.

Figure 6b. Example of picture used to elicit *wh*-questions.

(48) Experimenter: Sam and Lucas are going somewhere and maybe I can tell you where. Ask me!

Participant: Where are they going?

Experimenter: They are going to the cinema!

2.1.2 Elicitation through recorded contexts[4]

In order to elicit *wh*-questions, participants were administered a second experimental task which was characterized by the listening of six recorded situations like the one in (49). As can be inferred by reading the transcription in (49), the situations told in the recordings were incomplete and led the participants to complete them by asking a question. This question could be in the form of a total *wh*-question, or also a cleft interrogative; both types were considered appropriate and analyzed in the results. Cleft interrogatives in LIS are characterized by the doubling of the *wh-* element, a feature that enhances the possibility to produce more extended NMMs (see Chapter 2 for more information on the topic). Thus, we further question whether participants would produce more NMMs with cleft interrogatives, in comparison to *wh*-interrogatives. Coming back to the procedure of the experimental session, the recordings were introduced to the participants with a visual aid in order to help them maintain concentration, as it is shown in **Figure 7**.

(49) Miss Luisa works as a janitor in a primary school. Luisa has just been asked to run into the fifth-year class because there's a pupil who doesn't feel well and needs to be taken to the infirmary. Luisa doesn't know who the pupil that feels sick is, so she enters the house and immediately asks the teacher…

---

[4] This task has been developed taking as inspiration the work carried out by Branchini et al. (2015).

Target answer: Who (of them) does feel sick?
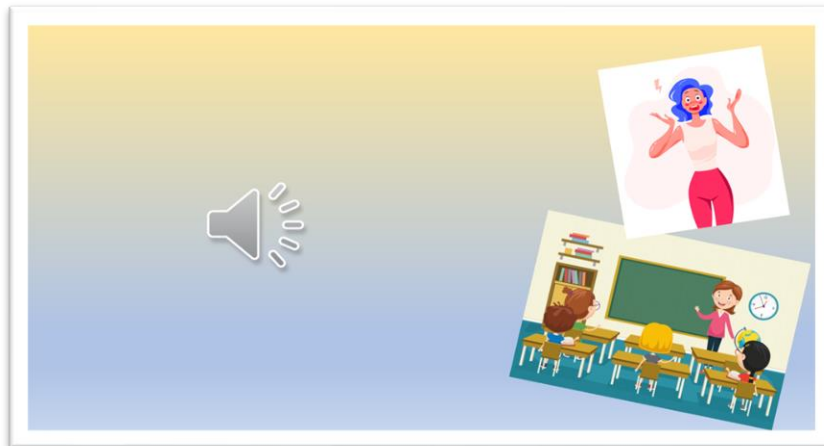
Figure 7. Example of visual aid showed to the participant.

2.2 Elicitation of conditional sentences

As before, I developed two tasks that elicited the target structure, in this case, conditional sentences. The first task involved the usage of ten pictures (section 2.2.1) and the second one involved the use of six recorded contexts (section 2.2.2).

2.2.1 Picture-elicitation task

In order to elicit conditional sentences, ten pictures were used. Four of the pictures were the ones used by Rigo & Dal Cin (in preparation) for their study (one of these pictures is **Figure 8a**). Furthermore, for the purpose of this study, other six pictures were created and added to the previous four. An example can be seen in **Figure 8b**.
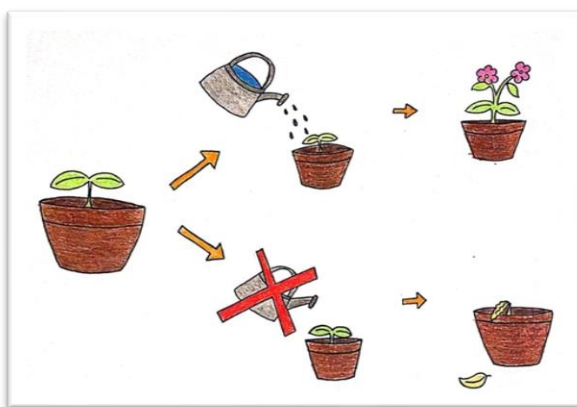
Figure 8a. Example of picture used to elicit conditionals.   **Figure 8b.** Example of picture used to elicit conditionals.
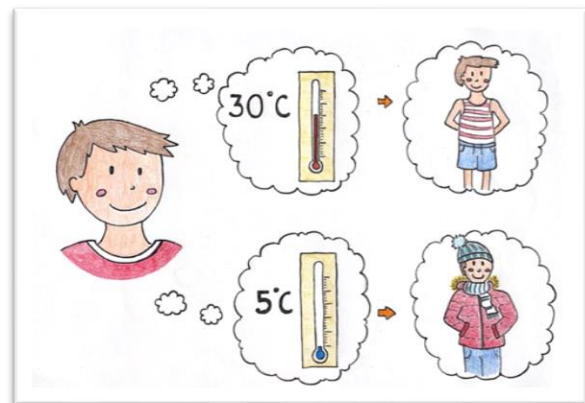
The pictures used in this task were characterized by the representation of a main character and two possible consequences related on the basis of two different hypothetical situations. The pictures were accompanied by a hint from the experimenter, who asked the participant one of the following questions: "What would you say looking at this picture?" (in the case of a picture like **Figure 8a**) or "What is Marco thinking about?" (in the case of a picture like **Figure 8b**). Following these steps, the participants were led to describe the situation and the two hypothetical consequences, thus producing at least one conditional sentence. An example of a possible response for context depicted in Figure 8a is presented in (50).

(50) If you water the plant, it will grow. If you don't water the plant, it will die.

2.2.2 Elicitation through recorded contexts

Task 2 for conditional sentences involved the listening of six recorded contexts, this task was similar to the one described for *wh*-questions in section 2.1.2. The only difference regarded the fact that, at the end of the recordings, participants were not led to ask a question, but they were asked to answer a question. An example of these contexts is presented in (51). Finally, as in the previous recorded task, the recordings were supported by a visual aid (see **Figure 9**).

(51) I am sitting in a train and the ticket inspector asks me for the ticket. Will I be fined?
    Expected answer: It depends. If I have the ticket, I won't be fined.
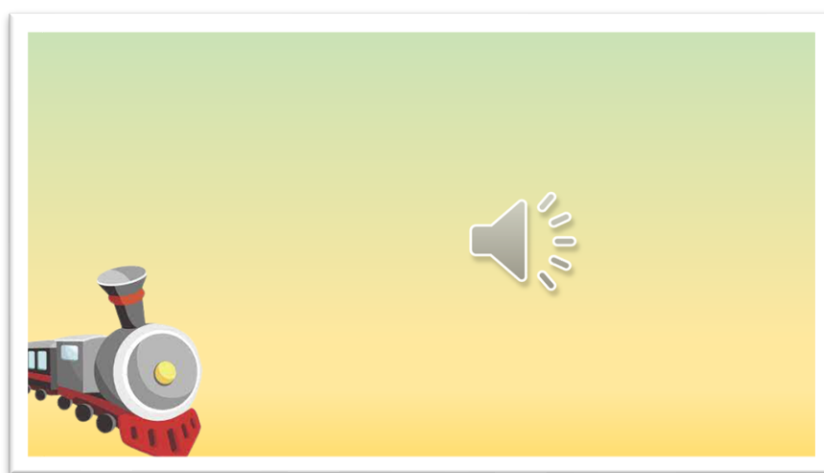
Figure 9. Example of visual aid showed to the participant.

2.3 Elicitation of polar questions

As for the previous linguistic structures, polar interrogatives were also elicited through two different tasks. The first one involved the use of the famous *Guess Who?* game (section 2.3.1), while the second one involved the use of six recorded experimental contexts (section 2.3.2).

2.3.1 Guess Who? game

In order to elicit polar questions, participants played with the interviewer a few rounds at the famous *Guess Who?* game. The aim of the game is to guess the Mystery Person on the opponent's card by asking one question per turn. Since the rules of the game oblige the players to ask questions that must be answered with "yes" or "no", this task offered the opportunity to elicit polar questions. The game table used for the task was the original one, which can be seen in **Figure 10**[5]. Finally, in (52) some target polar questions can be found.

Figure 10. Table of the *Guess Who?* game.

(52) a. Is she a woman?
 b. Is he bald?
 c. Does he wear glasses?

2.3.2 Elicitation through recorded contexts

Finally, the participants were asked to listen to six recorded contexts like the one transcribed in (53), which led them to ask a polar question. As in the previous structures, the recordings were supported by visual aids (see **Figure 11**).

(53) Michele and Anna are classmates. Like every Monday morning, the two friends enter the classroom and prepare the material for the first lesson of the day, the English lesson. Finally the teacher enters the classroom and exclaims: "Separate the desks, today there is the English test!". Michele was really surprised, he wasn't expecting that! He turns himself towards Anna and asks her…

---

[5] The game table used for this task includes all the characters of the original board game owned by Hasbro.

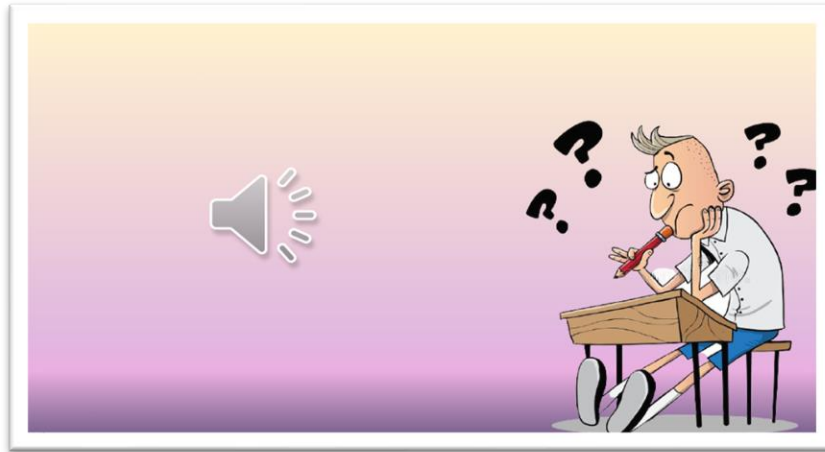Target answer: Did you know that today was the day of the test?!

Figure 11. Example of visual aid showed to the participant.

2.4 Coding of the data

The recordings made during the experimental sessions have been edited with the program iMovie and they have been analyzed in different steps and layers, each of them with the aim of a different analysis, with the programs VLC Media Player and ELAN. First of all, before editing the video of the experimental session, the entire recording was observed to have a first general idea about whether the participant understood the tasks, about the participant's attitude towards the task and the interviewer, and his or her expressivity, either facial and communicative. Later, the videorecording of the experimental session was edited and divided into six separate videos, one per task. All the sentences were transcribed, and the respective expressions produced were identified. All the facial expressions produced together with the linguistic structure of interest were analyzed as either linguistic or emotional. During this layer of analysis, the classification between linguistic and emotional expressions was made on the basis of the specific rules and features of NMMs described in Chapter 2. A second layer of analysis coded for the expressive habits of the participant. This further analysis aimed at understanding the expressive tendencies and the expressive patterns of participants, giving to the researcher the possibility to confirm the correctness of the data collected.

In all the three groups the analysis of the data followed the same procedure. First of all, for each task the number of target sentences has been calculated. As can be imagined, the targeted response was not always elicited: sometimes participants asked yes/no questions instead of a *wh*-question or *vice versa*, or they produced a statement instead of a hypothetical sentence. Even though these non-target productions could also have offered data for the

analyses, it has been decided not to consider them: for each task only the linguistic constructions that the task intended to elicit have been taken into account. On the basis of the target responses, the number of sentences containing general facial expressions or NMMs has been identified, and the percentages of facial expression vs. NMMs in the target constructions were calculated. In order to calculate the percentage of NMMs produced, only facial expressions that corresponded for type, onset and offset to the proper NMMs of each linguistic structure were taken into account. Thus, facial expressions produced along with *wh*-questions were considered as valid NMMs only when they corresponded to furrowed eyebrows and when they involved the forward movement of the chest and of the head. In addition to that, they were taken into account only when they exactly respected the scope that they usually have in LIS (when they appeared over the entire *wh*-question or when they appeared only over the *wh*-word), showing the same onset and offset that they usually show when a deaf person produces the same structure in LIS. Scope, onset and offset were carefully observed also when analyzing conditional sentences and polar questions. During the analysis of facial expressions in conditional sentences and polar questions, only raised brows, head and body movements and head nod were taken into account. Furthermore, for conditional sentences also signing pause and eye blink were considered, whereas for polar questions also head nod and eyes wide open were taken into account. All the other facial expressions produced by the participants were not considered NMMs and they were excluded from this specific analysis.

3. Results

The results obtained in this study will be presented in the sections below. In particular, section 3.1 will introduce the results as regards the general trend of expressiveness in the participants, section 3.2 will introduce the results for Group BB, section 3.3 will introduce the results for Group CODA, and section 3.4 will show the results obtained from the analysis of Group M.

3.1 General facial expressiveness of the groups

The first results extrapolated from the data collected concerned the general degree of facial expressiveness of the participants. The analysis of facial expressiveness is both interesting and important, especially in order to better understand the results obtained for participants as regards the influence of NMMs of LIS on Italian. **Diagram 2** shows the average percentages of facial expressiveness for the three groups involved in the research, namely the two bimodal bilingual groups (Group BB and Group CODA) and the control group (Group M). Looking at the diagram, it can be seen that Group BB is the one which produced the highest percentage of facial expressions, with an average percentage of expressiveness equal to 50.96% (SD = 0.20). The second place belongs to Group CODA, which shows a level of general facial expressiveness equal to 43.07% (SD = 0.24). Finally, Group M appears to be the one with the lowest level of expressiveness (28.43%; SD = 0.25).
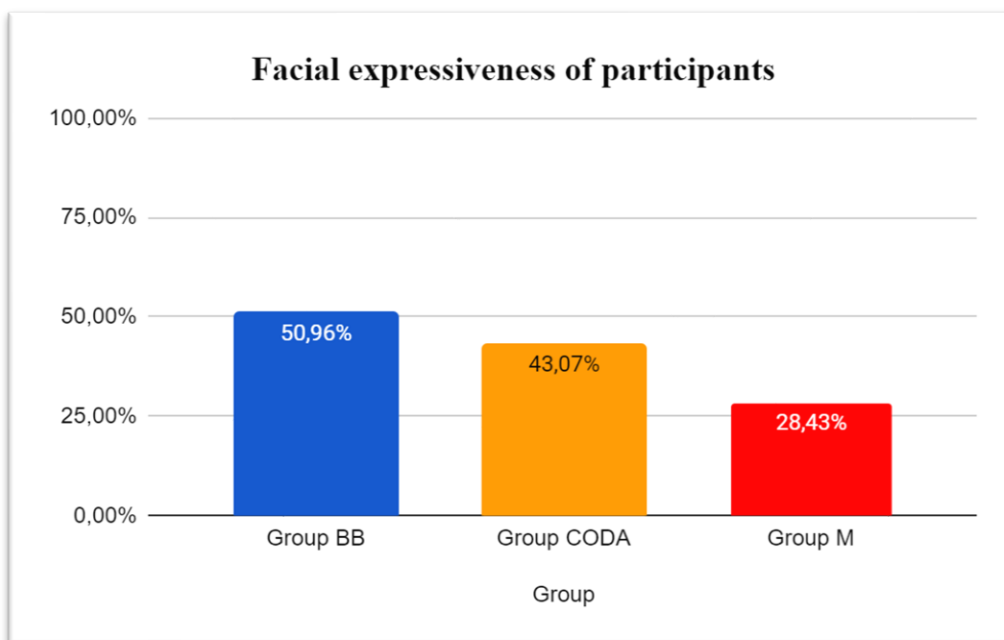
Diagram 2. Facial expressions produced by the participants of the three groups.

3.2 Group BB

Table 6 gathers the results obtained from the analysis of the bimodal bilingual group (Group BB). On the basis of the total number of target sentences produced, bimodal bilinguals produced the 28.27% (SD = 0.14) of sentences containing facial expressions that could be considered as NMMs. Among the three linguistic structures, the one in which the participants produced the highest number of NMMs are *wh*-questions, with a percentage of 32% (SD = 0.23). On the other hand, polar questions resulted to be the structures in which less NMMs were produced (26%; SD = 0.14), but it must be noted that their percentage does not distance itself from the percentage produced for conditional sentences (29.24%; SD = 0.16). Setting aside the total number of sentences produced and taking into account only the number of sentences where general expressions were produced, the results appear a bit different. In this case, the highest percentage of production of NMMs can be attributed to conditional sentences (69%; SD = 0.31), but polar questions still remain the constructions with the lowest number of NMMs produced (46%; SD = 0.19). As regards the whole group BB, the percentage of production of NMMs on the basis of the total number of general facial expressions produced corresponds to 55.51% (SD = 0.16). Finally, it must be noted that in some tasks three participants (S1, S5, and S7) produced no NMMs.

Participant	NMMs on the basis of sentences produced				NMMs on the basis of general facial expressions produced			
	Wh-questions	Conditional sentences	Polar questions	Total	Wh-questions	Conditional sentences	Polar questions	Total
S1	0%	9,09%	25%	9,61%	0%	40%	60%	27,77%
S2	38,88%	41,66%	23,07%	36,36%	58,33%	71,42%	30%	55,55%
S3	37,50%	31,25%	15,38%	28,88%	85,71%	71,42%	40%	68,42%
S4	11,76%	26,66%	27,27%	20,93%	66,66%	100%	75%	81,81%
S5	41,17%	0%	14,28%	19,56%	70%	0%	18,18%	34,61%
S6	33,33%	27,77%	50%	26,41%	54,54%	100%	50%	63,63%
S7	0%	26,08%	6,66%	12,50%	0%	100%	25%	50%
S8	75%	53,33%	50%	59,18%	75%	66,66%	64,28%	69,04%
S9	46,66%	44,44%	23,07%	37,83%	53,84%	66,66%	37,50%	51,85%
S10	33,33%	32,14%	29,16%	31,42%	35,29%	69,23%	58,33%	52,38%
Average	**32%**	**29,24%**	**26%**	**28,27%**	**50%**	**69%**	**46%**	**55,51%**

Table 6. Results for Group BB.

3.3 Group CODA

Table 7 offers an overview of the results obtained from the group of CODAs (Group CODA). On the basis of the total number of target sentences produced, CODA participants produced an average of 18.29% (SD = 0.14) sentences containing facial expressions that could be considered as NMMs. Differently from group BB, the linguistic structure in which CODAs

produced the highest number of NMMs is polar questions, with a percentage of 24.06% (SD = 0.15); whereas the structure in which they produced the lowest percentage of NMMs is *wh*-questions (17%; SD = 0.23). Once again, taking into account the number of expressions produced by CODAs, the average percentages of NMMs change a little. First of all, the average percentage of NMMs produced on the basis of the sentences produced containing facial expressions amounts to 37.57% (SD = 0.22). As regards the single structures, conditional sentences appear to be the structures with the largest average percentage in the production of NMMs (50%; SD = 0.41) and *wh*-questions still remain the structure with the lowest percentage (31%; SD = 0.32). Finally, as happened in Group BB, some participants did not produce NMMs while speaking Italian. This is the case of S11, S13, S15, and S20. Particular attention needs to be paid to S15, who did not show expressions that could be considered as NMMs in any of the sentences produced (this participant produced hardly any facial expression at all, though).

Participant	NMMs on the basis of sentences produced				NMMs on the basis of general facial expressions produced			
	Wh-questions	Conditional sentences	Polar questions	Total	Wh-questions	Conditional sentences	Polar questions	Total
S11	0%	0%	33,33%	14,70%	0%	0%	45,45%	16,12%
S12	75%	66,66%	40%	25,00%	46,15%	80%	50%	54,54%
S13	11,76%	0%	0%	4,44%	16,66%	0%	0%	16,66%
S14	11,76%	16,66%	15%	14,28%	50%	100%	42,85%	53,84%
S15	0%	0%	0%	0%	0%	0%	0%	0%
S16	5,55%	21,42%	26,66%	17,02%	14,28%	50%	50%	38.09%
S17	18,75%	23,52%	28,57%	22,50%	30%	27,14%	40%	40,90%
S18	38,46%	36,36%	43,75%	52,50%	55,55%	100%	50%	59,25%
S19	11,76%	23,52%	20%	18,18%	100%	80%	33,33%	61,53%
S20	0%	12,50%	33,33%	14,28%	0%	66,66%	40%	35,29%
Average	**17%**	**20%**	**24,06%**	**18,29%**	**31%**	**50%**	**35,16%**	**37,57%**

Table 7. Results for Group CODA.

3.4 Group M

Table 8 shows the results for the control group (Group M). Already from the very first glance, a considerable difference from the two bimodal bilingual groups in the average percentages can be observed. On the basis of the total number of target sentences, the control group produced an average percentage of NMMs equal to 1.30% (SD = 0.02). This time the structure that shows the highest percentage is the conditional one, with an average percentage of 3% (SD = 0.02). As regards the lowest percentage, the control group shows an average production of NMMs equal to 1.14% (SD = 0.02) in polar questions. Shifting the attention to the part of the table where NMMs are calculated on the basis of general facial expressions, an interesting reversed situation can be observed. The highest percentage of NMMs can be found for polar questions (5%; SD = 0.11), whereas *wh*-questions and conditional sentences show the same

average percentage of 3% (with a standard deviation equal to 0.08 for *wh*-questions and equal to 0.06 for conditional sentences). All structures considered, the total percentage of sentences containing NMMs is around 4.52% (SD = 0.07).

Participant	NMMs on the basis of sentences produced				NMMs on the basis of general facial expressions produced			
	Wh-questions	Conditional sentences	Polar questions	Total	Wh-questions	Conditional sentences	Polar questions	Total
S21	0%	0%	5,88%	1,81%	0%	0%	33,33%	12,50%
S22	11,11%	0%	0%	4,16%	25%	0%	0%	12,50%
S23	0%	4%	5,55%	3,27%	0%	20%	16,66%	18,18%
S24	0%	0%	0%	0%	0%	0%	0%	0%
S25	0%	0%	0%	0%	0%	0%	0%	0%
S26	0%	0%	0%	0%	0%	0%	0%	0%
S27	0%	0%	0%	0%	0%	0%	0%	0%
S28	0%	0%	0%	0%	0%	0%	0%	0%
S29	0%	0%	0%	0%	0%	0%	0%	0%
S30	5,55%	5%	0%	3,77%	0%	5,26%	0%	2%
Average	2%	3%	1,14%	1,30%	3%	3%	5,00%	4,52%

Table 8. Results for Group M.

4. Discussion

First of all, the results confirm a greater expressiveness of the bimodal bilingual participants as compared to monolingual participants (50.96%; SD = 0.20 for Group BB and 43.07%; SD = 0.24 for Group CODA vs. 28.43%; SD = 0.25 for Group M). The results also provide clear evidence that the NMMs of LIS influence bimodal bilingual hearing individuals when speaking Italian, confirming the results of the studies conducted by Pyers & Emmorey (2008) and Rigo & Dal Cin (in preparation).

The diagrams below gather together and summarize the results introduced in the previous sections, displaying them in a clearer way. In particular, **Diagram 3** displays the average production of NMMs of the three groups on the basis of the total number of sentences produced, while **Diagram 4** exhibits the same production of NMMs of the three groups on the basis of the total number of sentences containing facial expressions. Even though the number of sentences containing NMMs does not change, it is important to analyze it in relation to both these groups of sentences, since they can offer a different point of view on the same result.
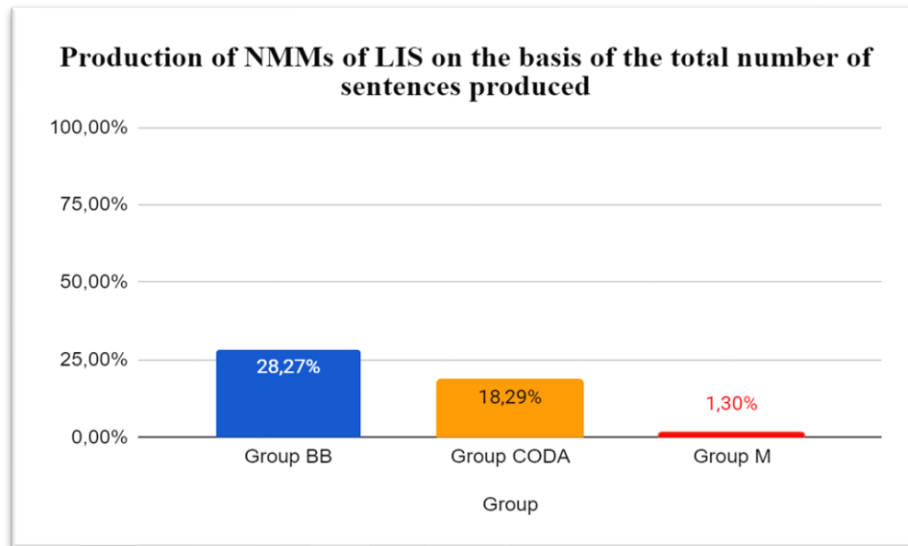
Diagram 3. Production of NMMs of LIS on the basis of the total number of sentences produced.
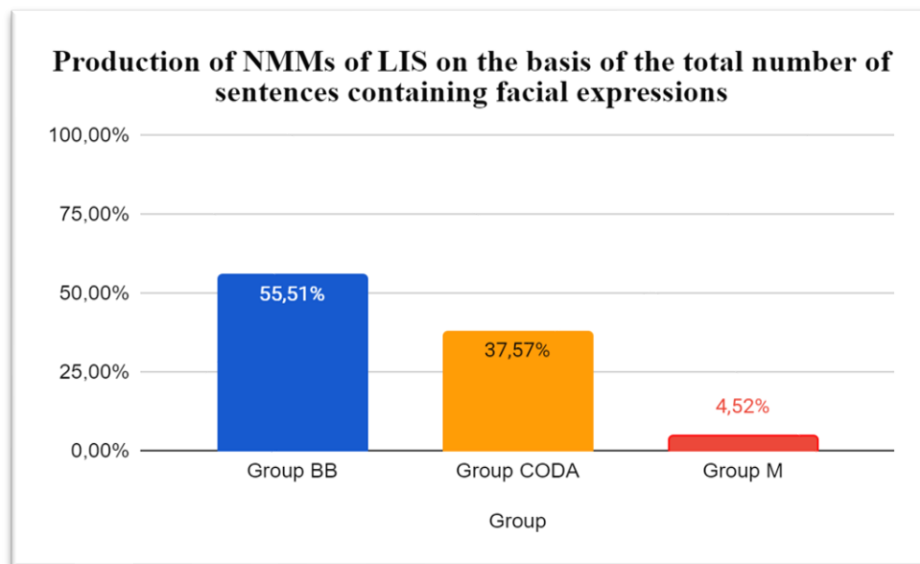

Diagram 4. Production of NMMs of LIS on the basis of the total number of sentences containing facial expressions.

Let's consider Group BB, which is clearly the group most affected by this type of linguistic influence of LIS. Taking into account only the percentage of NMMs calculated on the basis of the total of sentences produced, which is equal to 28.27% (SD = 0.14), it could seem quite low and unimportant. Actually, shifting the attention on the same group in the other diagram, it can be seen that the situation appears different. As a matter of fact, the percentage of NMMs calculated on the basis of the sentences containing facial expressions grows up to 55.51% (SD

= 0.16), appearing much more significant. The same reasoning can be done for the second group, Group CODA, and its percentages equal to 18.29% (SD = 0.14) and 37.57% (SD = 0.22). Differently from the previous one, the control group does not show such a strong difference in its percentages between the two estimates (1.30%; SD = 0.02 / 4.52%; SD = 0.07). This difference between the two bimodal bilingual groups and the control groups operates as a first proof of the presence of the linguistic influence in analysis in bimodal bilingual individuals. In addition to this, another proof of this influence lies in the difference that appears in the production of NMMs between the two bimodal bilingual groups and the control group. As a matter of fact, whereas the percentages resulted from the data analyzed for the Group BB (28.27%; SD = 0,14 / 55.51%; SD = 0.16) and the Group CODA (18.29%; SD = 0.14 / 37,57%; SD = 0.22) clearly show consistent production of NMMs of LIS while speaking Italian, the same cannot be claimed for the control group. With a production of 1.30% (SD = 0.02) and 4.52% (SD = 0.07), Group M clearly shows a very little production of facial expressions that can be considered as NMMs, giving support to the idea that LIS influences spoken Italian in bimodal bilingual individuals. Even though it is scarce, this percentage in the production of NMMs for the control group inevitably raises a question: why should a person who does not even know what LIS is produce NMMs and how would it be possible? The answers to this query could be the one given by Rigo & Dal Cin (in preparation), who found a suitable hypothesis for this evidence. This hypothesis claims that the NMMs produced by Group M could be spontaneous facial expressions driven by emotional states, like doubt, curiosity, or anger.

In addition to that, another trait that immediately draws the attention is the difference in the production of NMMs between the two bimodal bilingual groups: CODAs produced less NMMs than the other bimodal bilingual group. This result could appear as a surprise since CODAs are bimodal bilinguals that have been exposed to LIS since birth and have always used it, but it could also appear as an expected behavior if observed from another perspective. The fact that CODAs were born and raised in a bimodal bilingual situation could be the triggering factor for this lower influence in comparison to the other bimodal bilingual group: since they have raised in this bilingual environment, they could be able to better separate the two languages, limiting the mutual influence between the two languages. However, this is just a proposal and the diagram below (**Diagram 5**), which displays the variance in the production within the group, suggests that this is a delicate matter that should be further investigated (especially if compared with **Diagram 6**, which shows the variance within Group BB).
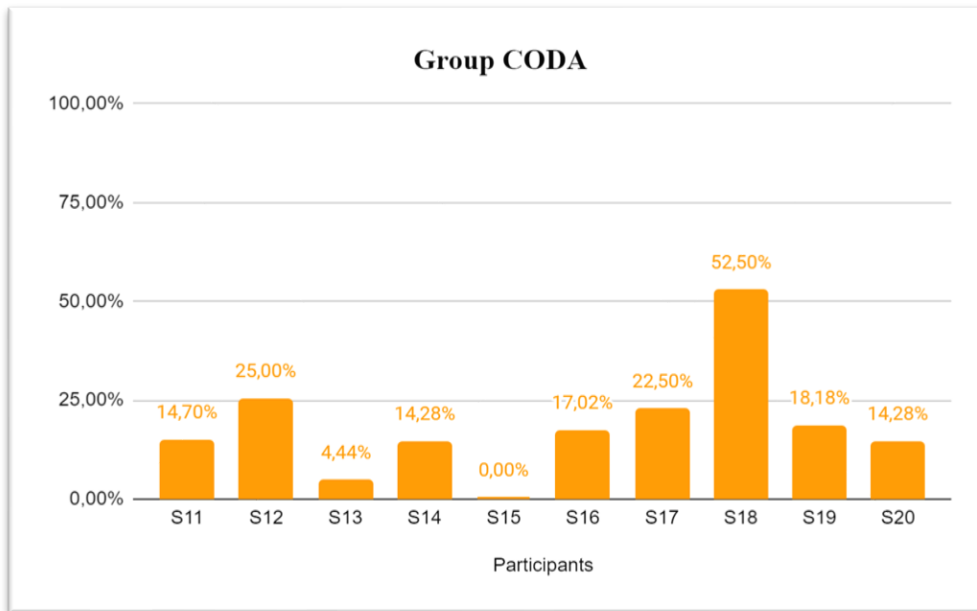
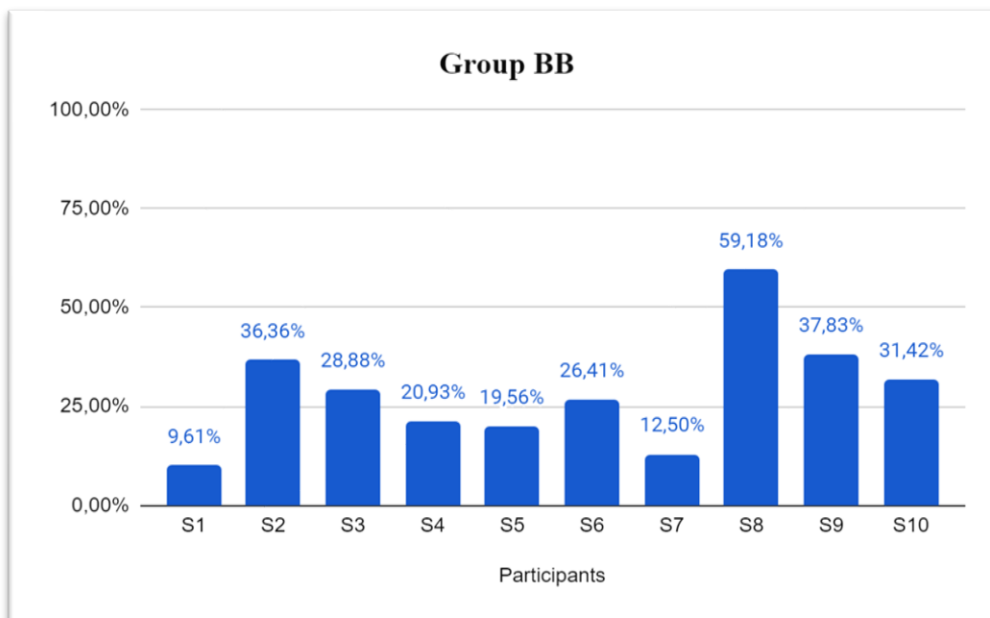**Diagram 5.** Production of Group CODA.

Diagram 6. Production of Group BB.

Another interesting observation that emerges from the results regards the linguistic structure that conveys the highest number of grammatical facial expressions, namely conditional sentences. Looking at the diagrams below (**Diagram 7** and **Diagram 8**) and comparing them, it can be seen that both bimodal bilingual groups produced more grammatical facial expressions in the conditional sentences (68.54%; SD = 0.31 for Group BB and 50%; SD = 0.41 for Group CODA). This production agrees with the results of Rigo & Dal Cin (in preparation), who

observed the same asymmetry. However, differently from the previous study, this asymmetry has not been observed for the monolingual group, who instead conveyed more grammatical facial expressions when producing polar questions (see **Diagram 9**).
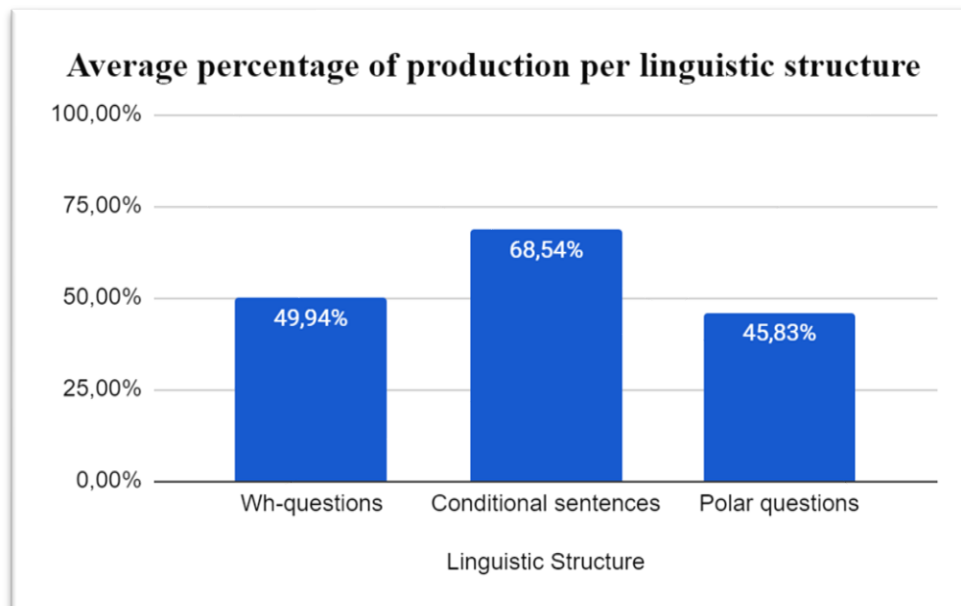
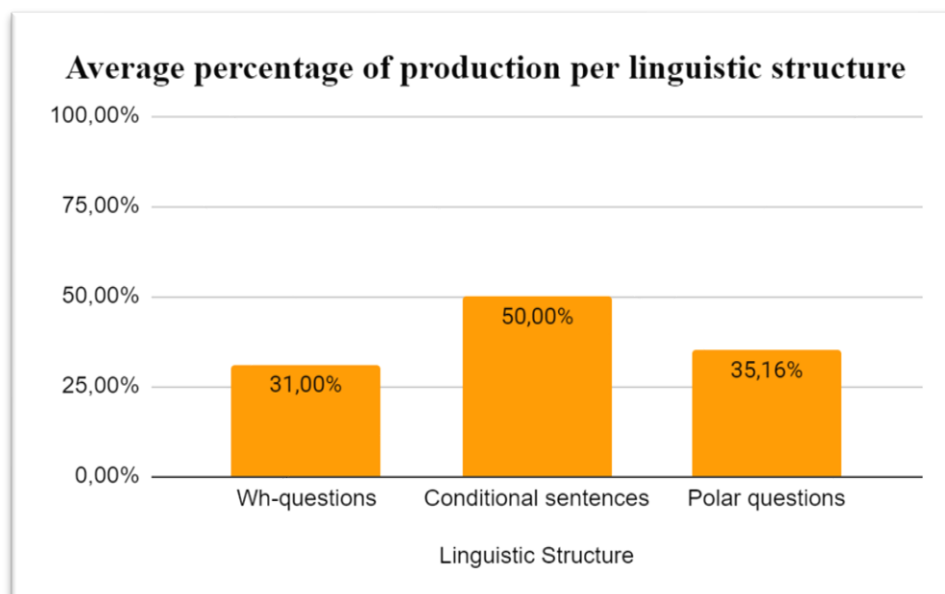**Diagram 7.** Average percentage of production per linguistic structure for Group BB.

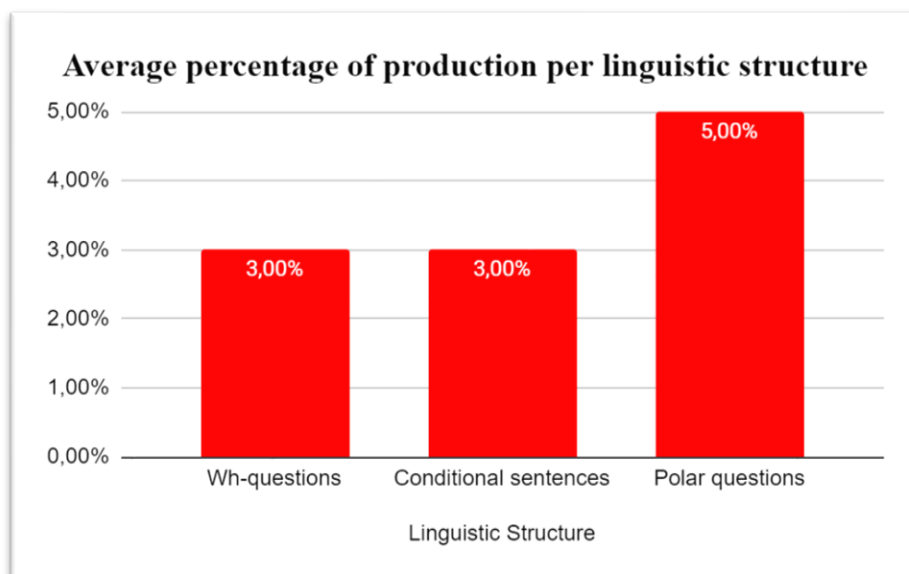**Diagram 8.** Average percentage of production per linguistic structure for Group CODA.

Diagram 9. Average percentage of production per linguistic structure for Group M.

According to Rigo & Dal Cin (in preparation), the higher production of (grammatical) facial expressions in conditional sentences and polar interrogatives could be justified by the fact that speakers typically raise their brows to interact with other people. This is just an assumption that cannot explain the asymmetry. Further analyses are required.

To sum up, all the research questions raised at the beginning of this chapter have found their answer. First of all, this study confirms that bimodal bilinguals of LIS and Italian produce more general facial expressions than monolinguals. A great part of the general facial expressions produced display all the features needed to consider them as real NMMs of LIS. In some cases, the participants of the control group produced facial expressions that showed features typical of the NMMs of LIS. In order to justify this behavior, a hypothesis developed by Rigo & Dal Cin (in preparation) have been proposed. Finally, a difference between Group BB and Group CODA in the production of NMMs of LIS was attested. In particular, the results showed a lower influence of LIS over spoken Italian in CODAs than in the other bimodal bilingual participants and an attempt was made in order to justify this behavior.

5. Further technical observations

The study presented in these pages can be considered, along with the research conducted by Rigo & Dal Cin (in preparation), as a pilot study in the field of the influence that LIS can have over spoken Italian. For obvious reasons, this study was conducted only by a single person - the graduand - but the ideal would be to carry out this kind of research together with other

researchers, at least another one. As a matter of fact, the analyses that have to be realized require a great amount of demanding work, since they involve the watching of the same videos again and again. In order to analyze the materials collected, it is necessary to be very focused and to have much time available to analyze the same video at different moments, in order not to see imaginary facial expressions that are not really produced by the participant or, on the contrary, in order to have the appropriate concentration that allows the researcher not to let the facial expressions escape. Furthermore, to be meticulous, the ideal would be to carry out this research with professional software packages that helps in the identification and recognition of the facial expressions of interest. Finally, a further improvement that could be taken into account for the future research on this topic regards whether the participant should show up or not during the experimental session. Differently from what had been done by Rigo & Dal Cin (in preparation), in this research it was decided not to show up the experimenter to the participants in order not to inadvertently risk influencing his or her production. However, not showing up to the participants, there was the feeling that they were not always totally instinctive and spontaneous, since they just interacted with the voice of the experimenter. This fear was also confirmed by one of the bimodal bilingual participants, who claimed to feel a little bit unmotivated by the fact that there was no possibility of seeing the experimenter during the experimental session.

CONCLUSION

Taking as inspiration the studies developed by Pyers & Emmorey (2008) for ASL and Rigo & Dal Cin (in preparation) for LIS, the research presented in this thesis wanted to further investigate the existence of the influence of the suprasegmental elements of LIS over spoken Italian. Starting from the presentation of the phenomena of bilingualism and its processes in Chapter 1, with a particular attention given to the phenomena Cross-Linguistic Influence (CLI), the thesis presented the main features of the analyzed structures (*wh*-interrogatives, conditional sentences and polar questions) in both LIS and Italian (Chapter 2). In Chapter 3, the studies conducted by Pyers and Emmorey (2008) for ASL and by Rigo & Dal Cin (in preparation) for LIS were analyzed. These two studies are the only ones which investigated the influence that the NMMs of a sign language have on a spoken language. The study by Rigo & Dal Cin (in preparation) was the pilot study on which this thesis is based. As a matter of fact, the study presented during Chapter 4 wanted to examine more in depth the influence previously investigated by Rigo & Dal Cin (in preparation). In order to do that, three groups of participants (a group of late bimodal bilinguals, a group of CODAs, and a control group of Italian monolinguals) were involved in the study and were administered six linguistic tasks appositely created for the purpose. The experimental sessions were video-recorded and analyzed carefully. Results show that both bimodal bilingual groups (with an average rate of expressiveness equal to 50.96%; SD = 0.20 and 43.07%; SD = 0.24) appeared to be considerably more expressive than the control group, which showed an average percentage of facial expressions equal to 28.43% (SD = 0.25). Delving into the expressive production of the participants, a more interesting result appeared: the two bimodal bilingual groups produced more expressions that could be considered as grammatical than the monolingual group. With average percentages of 28.27 (SD = 0.14) and 18.29% (SD = 0.14) for the grammatical expressions produced on the basis of the total number of sentences produced and with average percentages of 55.51% (SD = 0.16) and 37.57% (SD = 0.22) of NMMs produced on the basis of the total of sentences produced containing facial expressions, the two bimodal bilingual groups confirmed the results of Rigo & Dal Cin (in preparation). Furthermore, following the hypothesis formulated in the previous study, an explanation to the production of grammatical expressions of the monolingual group was described. Then, the results displayed an interesting trend in the production of NMMs of LIS over spoken Italian. A difference emerged between the two bimodal bilingual groups: the late bimodal bilingual group seems to be more influenced by LIS

than the group of CODAs. The possible explanation to this result can be found in the early exposure to LIS of CODA participants, who would assimilate LIS to the point that they can unwittingly separate it from the other spoken mother language, namely Italian. Finally, the results partly confirmed the asymmetry noticed by Rigo & Dal Cin (in preparation) in the production of the grammatical facial expressions, with a higher percentage of NMMs produced when uttering conditional sentences (for Group BB and Group CODA) and polar questions (for Group M). Further analyses need to be carried out on this interesting aspect.

In conclusion, the results obtained in this study clearly reveal the presence of the influence of the NMMs of LIS over spoken Italian, which appears with a partial overlapping between languages enabled by the different modalities through which the two languages are conveyed, namely the visual-manual modality and the vocal-acoustic modality. Looking at these results from a more extended point of view, they represent the proof of the existence of Cross-Linguistic Influence among languages in different modalities and of the possible partial attrition of the L1.

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# APPENDIX A:
Background information of the participants

Participants' background information

Participant	Age	Sex	Region of birth	Region of residence	Years of exposure to LIS	Frequency of use of LIS	Reason for using LIS	Deaf parents	Which language do you consider as your L1?	Do you consider yourself as bilingual?
S1	25	M	Veneto	Veneto	10 years	Every day	For work and study purposes. At home, with friends and acquaintances.	No	Italian	Yes
S2	25	F	Veneto	Veneto	8 years	Every day	For work and study purposes. With friends and acquaintances.	No	Italian	Yes
S3	27	F	Friuli Venezia Giulia	Veneto	7 years	Every day	For work purposes.	No	Italian	No
S4	44	F	Lombardia	Abruzzo	4 years	Nearly every day	Fo study purposes. With friends and acquaintances.	No	Italian	No
S5	28	F	Lombardia	Emilia Romagna	5 years	Every day	For work and study purposes. With friends and acquaintances.	No	Italian	No
S6	31	F	Veneto	Veneto	13 years	Nearly every day	For work and study purposes. With friends and acquaintances.	No	Italian	Yes
S7	29	F	Veneto	Veneto	11 years	Every day	For work purposes. With friends and acquaintances.	No	Italian	Yes
S8	32	F	Marche	Marche	10 years	A few times in a week	For work and study purposes.	No	Italian	No
S9	38	F	Friuli Venezia Giulia	Friuli Venezia Giulia	15 years	Every day	For work and study purposes. With friends and acquaintances.	No	Italian	Yes
S10	46	F	Veneto	Veneto	19 years	Every day	For work purposes. At home, with friends and acquaintances.	No	Italian	Yes
S11	35	M	Lombardia	Lombardia	From birth	Every day	For work and study purposes. At home, with friends and acquaintances.	Yes	LIS	Yes
S12	29	F	Lazio	Lazio	From birth	Every day	For work purposes. At home, with friends and acquaintances.	Yes	LIS	Yes
S13	27	F	Campania	Lazio	From birth	Every day	For work and study purposes. At home, with friends and acquaintances.	Yes	LIS	Yes
S14	29	F	Lazio	Lazio	From birth	Every day	For work purposes. At home, with friends and acquaintances.	Yes	LIS	Yes
S15	28	M	Puglia	Lazio	From birth	Nearly every day	For work purposes. At home.	Yes	Italian	Yes
S16	39	F	Lazio	Lazio	From birth	Every day	For work purposes. At home, with friends and acquaintances.	Yes	Italian and LIS	Yes
S17	42	F	Umbria	Umbria	From birth	Every day	For work purposes. At home, with friends and acquaintances.	Yes	Italian and LIS	Yes
S18	27	F	Lazio	Lazio	From birth	Every day	For work and study purposes. At home, with friends and acquaintances.	Yes	Italian and LIS	Yes
S19	38	F	Veneto	Veneto	From birth	Every day	For work purposes. At home.	Yes	Italian and LIS	Yes
S20	33	F	Lazio	Lazio	From birth	Every day	For work and study purposes. With friends and acquaintances.	Yes	Italian and LIS	Yes
S21	25	M	Veneto	Veneto	None	Never	Any	No	Italian	No
S22	25	M	Veneto	Veneto	None	Never	Any	No	Italian	No
S23	25	F	Veneto	Veneto	None	Never	Any	No	Italian	No
S24	21	F	Veneto	Veneto	None	Never	Any	No	Italian	No
S25	22	M	Veneto	Veneto	None	Never	Any	No	Italian	No
S26	31	F	Sicilia	Veneto	None	Never	Any	No	Italian	No
S27	26	F	Veneto	Veneto	None	Never	Any	No	Italian	No
S28	24	F	Veneto	Veneto	None	Never	Any	No	Italian	No
S29	42	F	Sicilia	Veneto	None	Never	Any	No	Italian	No
S30	24	M	Lazio	Lazio	None	Never	Any	No	Italian	No

APPENDIX B:
Materials

Task 1[6].

The pictures created for the first task, the one that aimed at the elicitation of *wh*-questions, are displayed below. The pictures already presented in Chapter 4 (section 2.1.1) are not inserted in this section.

1.
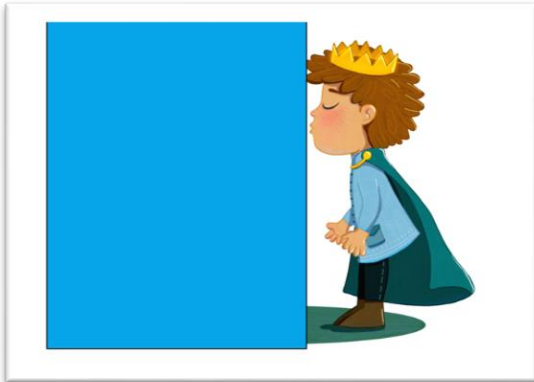
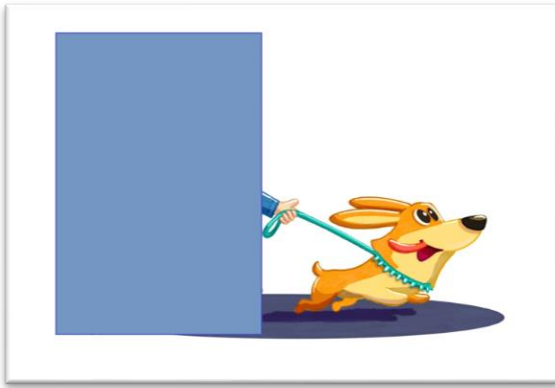The prince is kissing someone and maybe I know who this person is. Ask me!

2.

Carlo is eating something really good and maybe I know what it is. Ask me!

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[6] All the pictures inserted in these pages and the ones in section 2.1.1 in Chapter 4 were drawn by the artist artgirl_.
Here is the link to her works: https://it.fiverr.com/artgirl_

3.

Someone is walking the dog Boby and maybe I know who. Ask me!

4.

Sara is reading her favorite book and I know which one it is. Ask me!

5.
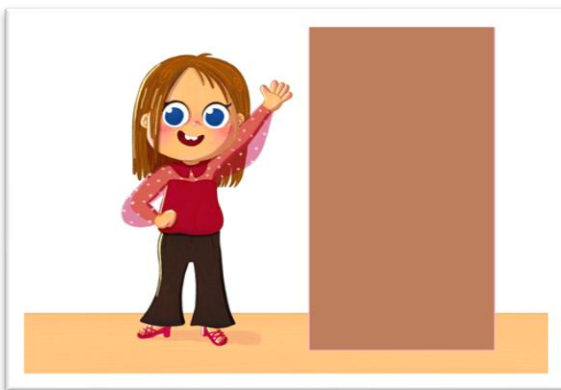
Today Lisa is very happy and maybe I know why. Ask me!
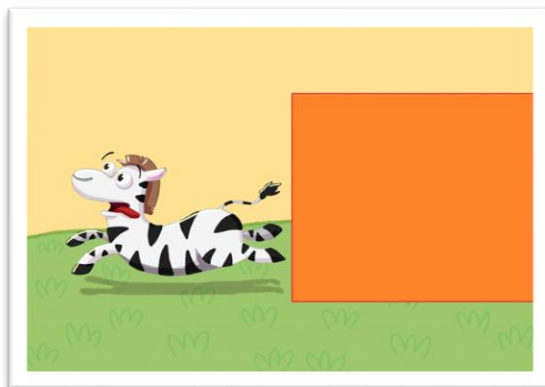
6.

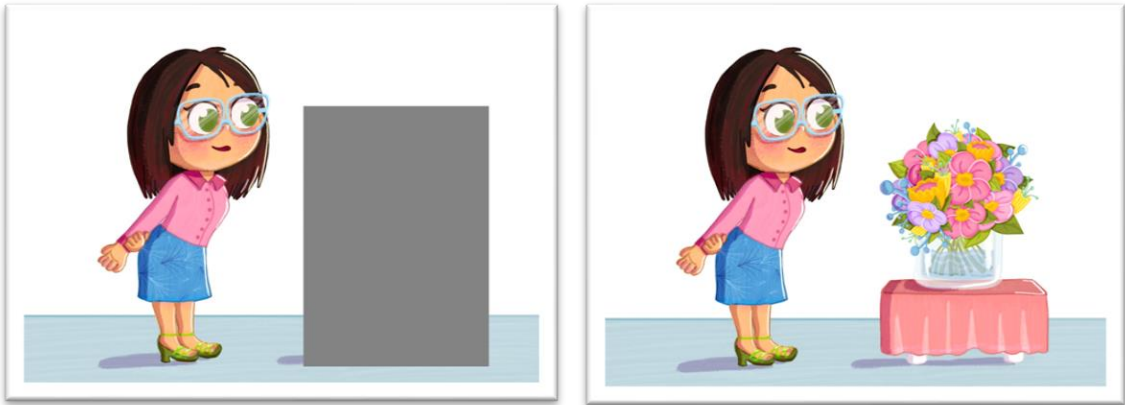Every day Simon goes to school in the same way. I know how Simon goes to school. Ask me!

7.

Matteo is sad and worried since he has just made a mess and I know what happened. Ask me!

8.

Someone is chasing the zebra and I know who it is. Ask me!

9.

Laura is observing something very carefully and I know what it is. Ask me!

Task 2.

Below the transcriptions of the recordings used to elicit *wh*-questions can be found (except for the recording already presented during Chapter 4, section 2.1.2).

1. A short time ago, a brawl broke out into a pub in the city center. The owner of the pub called the police and told the policemen that one of the clients witnessed the event. The officers told the owner not to let anyone leave the pub and that they would arrive there to question him. Once there, the policemen need to understand who is the witness among so many clients, so they rapidly move close to the barman and they ask him…

2. Alice works as an entertainer at a summer camp and she is organizing a day at the pool. Alice remembers that among her children there is someone who is afraid of water, but she doesn't remember who it is. For this reason, Alice enters the classroom where there are all the children and asks them…

3. Jason has four children. This afternoon, while he was going shopping, he left the children at home alone. Before leaving the house, Jason pleaded with his children not to watch TV. Once back at home, Jason realizes that the warning light of the television is on and that means that someone has disregarded him. Jason, very angry, enters the room of his children and asks them…

4. Samuela is organizing the birthday party for his son Manuel. She is making some appetizers that she will offer to the guests. Samuela knows that among Manuel's friends there is one who is intolerant to gluten, but she doesn't remember who he is. After thinking about this for a long time, Samuela calls Manuel and asks him…

5. Marisa has worked all day and now she is very tired and angry: today, since she was late, she forgot her lunch at home. Her only solace is the awareness that, once at home, she can enjoy the pizza left over the day before. Once at home, Marisa runs to the fridge and discovers that someone has already eaten her pizza. Marisa, on the edge of a breakdown, turns to her family and asks in a disconsolate way…

Task 3.[7]

All the following pictures were accompanied by one of these two questions asked by the interviewer "What is Marco thinking about?" or "What would you tell me looking at this picture?". In this section are not inserted the pictures already presented in Chapter 4 (section 2.2.1). Finally, some of the following pictures are the ones already used by Rigo & Dal Cin (in preparation) in their study.

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[7] All these drawings were made by Martina Cozzolino.
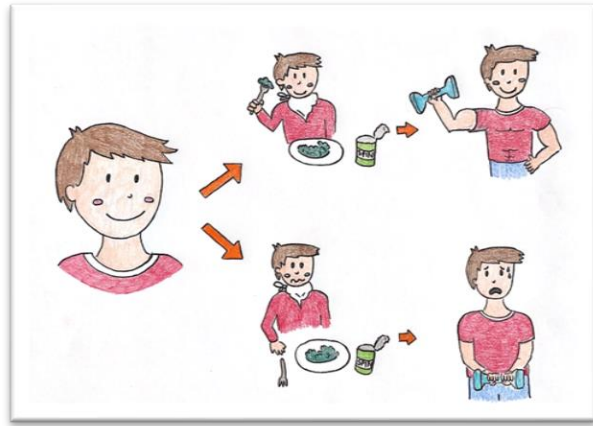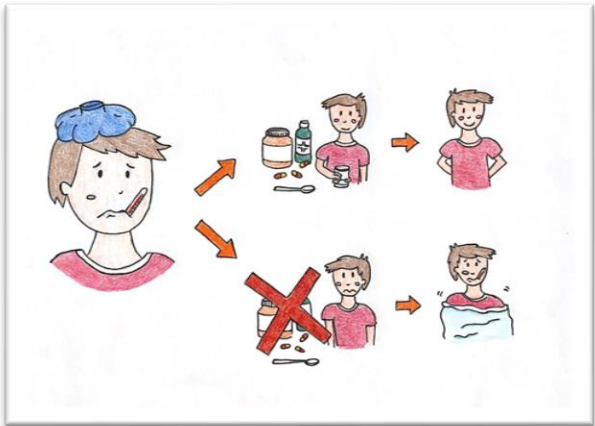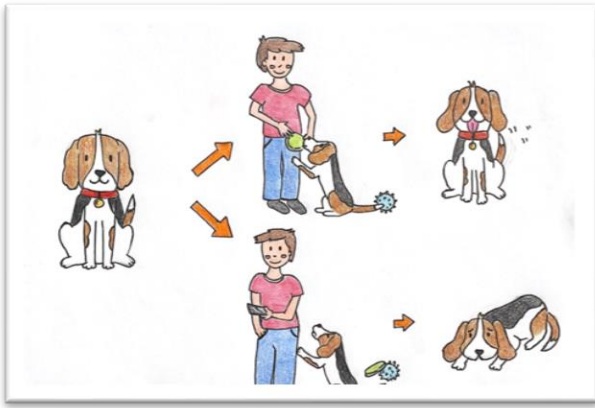
Task 4.

Below the transcriptions of the recordings used to elicit conditional sentences can be found (except for the recording already presented during Chapter 4, section 2.2.2).

1. Anna is carrying a basin full of water near a power outlet. Does she need to be careful? Why?

2. Marco has the temperature. Marco is acting up because he doesn't want to take the medicine. Marco's mum needs to convince him to take the medicine, what does she say to him?

3. Elena wants to start university, but she has to pass the admission exam. Yesterday Elena took this exam, is she now sure to enter university?

4. You have just messed up. You broke the crystal ornament which your mum was really bound to. Your brother witnessed the scene and you already know how this situation will end: as soon as your mother comes back home, your brother will run to her to snitch. For this reason, you must convince him to keep the secret. You know that your brother has always wanted your bike… what could you tell him? How could you convince him not to tell this secret to your mum?

5. Carla and her son Davide went to Gardaland. Davide wants to ride roller coasters, but there's a rule to do that: the child has to be taller than 1.50m, the children shorter than 1.50m can't ride roller coasters. Can Davide ride roller coasters?

Task 5.

The table used for this task has already been introduced in Chapter 4, section 2.3.1.

Task 6.

Below the transcriptions of the recordings used to polar interrogatives can be found (except for the recording already presented during Chapter 4, section 2.3.2).

1. Marta and Luca are comfortably sitting on the plan that is taking them to Zanzibar: their holidays have just started. Luca is reading a book, while Marta is making a mental list of all the things that she should have done before leaving to make sure she hasn't forgotten anything. Marta has watered the plants, she has lowered the blinds… and the door?! Marta doesn't remember if she locked the door! She told Luca to lock it, but she's not sure he has locked it. Marta is upset, she turns to Luca and asks him…

2. Pamela is a busy woman and this is the reason why she is always accompanied by her assistant Amalia, who keeps in mind all her appointments. At the moment Pamela is drinking a coffee at her desk and, absorbed in her thoughts, she is planning her afternoon. Suddenly a doubt comes to her mind: she doesn't remember if her appointment at the hairdresser's is today. Pamela turns to Amalia to get confirmation, so she asks her…

3. Tomorrow Jennifer is getting married and today she is busy with the final preparations for the ceremony. Since she's very busy, she gave her sister Kety a very important duty: she would have to pick up the party favors for the guests. By now it is evening, Jennifer has been busy all day and finally she comes back home, and she finds her sister laying on the sofa. She doesn't see the party favors anywhere and she is overwhelmed by a bad sensation. Jennifer, worried, turns towards her sister and asks her…

4. Paolo and Matteo are working on a work project. The two men are at a good point, they feel ready to show the first part of the work to their chief. Matteo offers himself as a volunteer to send an email to the chief but he is not sure that, in the meantime, Paolo hasn't already sent it. For this reason, he turns towards the colleague and asks him…

5. Francesco and his wife Alessia are not at home. The day has been sunny and hot for all the day but now, suddenly, it starts to change; the sky fills up with dark clouds and there are thunders from a distance. Alessia starts to get worried for her house, since she doesn't remember if she has closed all the windows or if she left them open. For this reason, she turns to Francesco and asks him…