

Lexical Variation in Italian Sign Language¹

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Italian Sign Language, or LIS, is a language rich in lexical differences. One person might sign AUGUST by passing a thumb across their brow; someone else might articulate it as two hands fanning the signer. There is anecdotal evidence that lexical variation is especially rich in the month and color signs; this thesis seeks to record and catalog the variations collected from 12 signers during a reunion at the Tommaso Pendola School in Siena, Italy. The similarities and differences among variants for a single concept/sign (for instance, RED) are discussed.

The background of LIS and Italian deaf education is important to this research. The trends in European Deaf education are explored, starting with the Spanish monk Pedro Ponce de Leon and the French Abbé de L'Épée. The influence of the Milan Congress's decision that oralism, not the teaching of sign language, was the preferred method for teaching deaf students, and the state of deaf education in Italy are both described in order to give some sociological context to the data; the influence of oralism also accounts for the common practice of mouthing parts of Italian words as the LIS sign is being articulated.

The historical changes in the morphology and phonology of LIS are also described in order to pick out trends in the data; specifically, the tendency for signs to move from having contact on the face or hands to being signed in neutral space is mentioned.

All of these are preludes to the core of the work, which is contained in the variation charts for each month or color. Several signs are highlighted and discussed in particular because of their interesting behavior; some variants for the signs PURPLE and GREEN are mentioned because they are similar to each other. Both use initialization of the letter V as their iconic root.

The influence of the Church and other sociolinguistic factors in variant form and choice is not to be ignored; there is strong evidence that cultural references factor into the iconic roots of several signs, notably the Christmas-themed variants of DECEMBER. The data is analyzed using several statistical methods to examine sociolinguistic trends, paying particular attention to how many times a pair of interviewees uses the same sign variants. The geographic origin of the interviewees is shown to have some statistically significant effect on their lexical choices, and Tuscan interviewees are the only ones who use certain signs, for example in the case of ORANGE_B.

Overall, this thesis is an exploration of the extent that LIS varies in this specific set of signs, celebrating the beauty and complexity of the language.

1 Introduction

Lexical variation, or the phenomenon of using different words for the same meaning based on region or other sociolinguistic factors, has been a topic of conversation in my family

¹ I would like to thank Nathan Sanders for his help as my thesis advisor, Donna Jo Napoli, who helped guide my independent project in Italy that led to this research, and Rita Sala, who acted as my academic advisor and interpreter and who provided the pictures for many of the signs in this thesis. I am grateful to all of them for their continued help and guidance throughout this process. Thank you also to all of my consultants in Italy without whom this paper would not have been written.

since I can remember. Growing up in Ohio, but having New Yorker parents, I often wondered why I was the only person who called carbonated drinks *soda* while everyone else talked about this mysterious thing called *pop*, or why *pocketbook*, *purse*, *bag*, *clutch* and *handbag* all seemed to mean the same thing. Living in Siena, Italy, for my junior year abroad, I found myself looking for the same types of variation in the languages I was studying.

Italy is a country of many dialects, and each region has its own set of lexical and phonological variations. For example, even though Tuscan Italian is dialect that was chosen as the standard form when Italy was unified, there are some dialectal differences that remain. *Casa* [kasa] ‘house’ is pronounced [hasa] in Tuscany, for example, and *ganzo* is a word that the Sieneuse use to mean ‘cool’. Italian Sign Language, or LIS (*Lingua Italiana dei Segni*), is no different. There are interesting differences between the types of LIS signed in various parts of the country, and even between signers who come into contact while living in the same city. One signer might sign DECEMBER in a way that looks like the outline of a Christmas tree, but another signer might sign it with an upward repetitive motion with the hands in the I (fist with pinkie extended) or Y (both pinkie and thumb extended) handshape at the stomach.

The purpose of this thesis is to look at how and why this variation occurs in LIS, focusing on a few specific semantic areas of the lexicon with a lot of variation, primarily the signs for months and colors. These categories were chosen because there was anecdotal evidence to suggest that lexical variation was particularly rich in these areas.

It is important to note that a great deal of my year in Italy was spent preparing for my research project and collecting my data. When I came home senior year, I started to research and analyze this portion of my data in earnest. This thesis is therefore the finished product of a larger

process, that of living abroad, understanding the cultures around me, and bringing what I learned back to America to be processed.

1.1 Sociohistoric Context

This work is sociolinguistic in nature, which above all, means that this data does not exist in a void, impervious from time and space and cultural fads. Therefore a bit of historical context is necessary to understand the current shifts in LIS and their motivations and consequences. Also, the role of outside forces from the hearing world and deaf educators cannot be ignored when talking about the evolution of sign languages.

While there were certainly deaf people, and some evidence of sign language and deaf education, in Greco-Roman times and before, this historical background focuses on the history of deaf education in Europe starting in the renaissance period. Deaf education in Italy was influenced by several schools of education happening in other parts of Europe.

1.1.1 Early Deaf Education in Europe

An important forerunner of modern deaf education was the Spanish Benedictine monk named Pedro Ponce de Leon (1520-1584). He taught the children of wealthy Spanish nobles writing and articulation using a manual alphabet (Bender 1960). Ponce de Leon worked primarily with the Velasco family; after his death, Juan Martin Pablo Bonet (1579-1633) took over as the Velascos' tutor and expanded Ponce de Leon's work. He wrote what is considered to be the first book on teaching the deaf, wherein he described the manual alphabet used by Ponce de Leon and others before him.

Ponce de Leon and Pablo Bonet are important not only as deaf educators in their own right, but also because of their influence on the French educator the Abbé de L'Épée. It is said that L'Épée met two deaf sisters and decided to take over their instruction and then his practice of deaf education grew from there (Radutzky 1989, 72). He combined the teachings of Bonet's book, the *Reduccion De Las Letras Y Arte Para Enseñar A Hablar Los Mudos*, with the sign language that deaf people in Paris were using to communicate with each other (Evans 1982; Moores 1978). The Abbé de L'Épée was revolutionary not only for his use of a combined method of natural and methodological signs but also because "while not contesting the validity of teaching the spoken word, as he held that it is the most useful means for becoming a part of a hearing society, he nonetheless considers its teaching a mechanical operation, since to him deaf people reasoned and thought 'in signs'" (Radutzky 1989, 74).

L'Épée's successor, Roch Ambrose Cucurron Sicard (1742-1822) developed his methods further and finished his dictionary of French Sign Language. Sicard and those who came after him moved away from trying to teach signed French and used a more bilingual approach. What emerged from this path of education was the "French Method", which stressed the use of signs. Thomas Hopkins Gallaudet, the founder of Gallaudet University, was greatly influenced by the French Method and studied under Sicard (Radutzky 1989, 75-79; Bender 1960).

In contrast to the French Method, the path of deaf education in Germany was much more focused on oralism, the educational philosophy that deaf students should only learn how to speak and write spoken languages and not be taught sign languages formally. The reasoning behind this is complicated, but at the forefront are the beliefs that it is important for deaf students to be integrated into mainstream culture and that being able to speak, lip-read, and write the spoken language is essential for integration, and that sign languages are not complete languages and

therefore cannot be effectively used to teach and communicate. (Frasu 2011) The main figure in Germany at that time was Samuel Heineke (1729-1790), a contemporary and sworn rival of L'Epée. He started out as a private tutor and in 1778 opened a school for well-to-do deaf students. Heineke stressed the learning of speech and used whole-word reading and lip reading techniques (Radutzky 1989, 70-72). While it is debated whether or not he was a completely strict oralist, he certainly favored spoken over signed languages (Lane 1984; Moores 1978).

In the assembly hall in the Tommaso Pendola School, there are two portraits painted on the wall: one of L'Epée and one of Heineke. The two educators and their respective methods both had great influence over the trajectory of Italian schooling for the deaf. Earlier educators were certainly influenced by L'Epée. Tommaso Silvestri, who founded the first Italian school for the deaf in Rome, studied with L'Epée for six months. Upon his return to Rome, however, Silvestri took L'Epée's French method and gave it a more oralist focus (Grimaldi 1960). This was in response to Johann Konrad Amman's works on the oral method; Amman had been an influence on Heineke as well. Another important Italian deaf educator was Padre Giovan Battista Assorotti of Genova (1753-1829). Possibly a student of Sicard's, Assorotti created his own "visual-gestural" method. It is speculated that along with his French-influenced education system came a new use of natural signs and that perhaps some French Sign Language signs were creolized into LIS.

1.1.2 Milan Congress of 1880

The Milan congress of 1880 was the third of three conferences of its type which discussed the direction in which deaf education in Europe should go. Teachers from all over Europe gathered together to argue about which methodology was best to use when teaching deaf

students. In the end, oralism won out, and sign language went underground. Deaf educators who had been working in schools for years suddenly found themselves out of a job, usurped by their hearing counterparts. Since deaf education in Italy had previously combined oral and sign methods, the congress constituted a great upheaval (Lane 1984).

The congress reached its decision for several reasons. The majority of the educators of the time were connected to the Catholic Church, which pushed the idea of spoken language as a path to redemption through confession. The German method and its advanced technologies were in vogue, and with the unification of Italy a few years earlier, standardization in general was deemed important; there was no room for minority languages of any sort. In addition, a great deal of education at the time focused on turning the deaf students into manual laborers; thus a language that used the hands was seen as problematic.

The long-term result of the congress was that for the most part, signing and LIS were no longer important parts of the curriculum. Some methodological signs were used, but students were often punished for signing in class, and some even had their hands tied behind their backs to prevent any signing. Girls were particularly discouraged from signing, more so than their male counterparts. Thus the majority of a deaf child's exposure to LIS happened in secret, in the dormitories or playground, instead of in the classroom (Carozza 1994, 190). This did differ from institution to institution; in the Via Nomentana School in Rome, for instance, older pupils remember that they were permitted to clarify directions in signs and sign amongst each other outside of the classroom (Pinna et. al. 1994, 199). But for the most part, LIS was not looked upon favorably, especially as a primary education tool.

1.1.3 Ente Nazionale Sordi (ENS)

The beginning of the 20th century brought about some important changes. The instruction of deaf children became obligatory in Italy between 1923 and 1928 (Pizzuto 1986). At this time, the secular and religious deaf organizations of Italy were joining forces. One particular result of this union was the creation of the ENS (*Ente Nazionale Sordi* ‘National Organization of the Deaf’) in the 1930s. This allowed for a new space in which deaf people could communicate and socialize freely outside of the confines of the school (Carozza 1994, 190).

The ENS was to be a social club and organization for Deaf culture and advancement. It also provided additional tutoring and courses to deaf students who wished to get higher education diplomas. Thus an alternative source of education for the average deaf student, one where there were deaf teachers and different rules about signing in the classroom, was created (Carozza 1994, 191)

Even though the schools are vital to sociolinguistic variation in LIS, the role of the ENS as a location for signers to meet and share lexical and phonological differences should not be ignored. Even though each city may have its own chapter of the ENS, large gatherings might result in unification and standardization of some aspects of LIS. As the majority of deaf children continue to go to mainstream schools, it is the ENS and its afterschool programs that introduces the average deaf child to Deaf culture and LIS (“Due Passi Nella Storia...”²).

In the late 20th century, new educational reforms in Italy resulted in the closing of most residential deaf schools. Despite their many problematic educational methods, served as important places for deaf children to meet and form a community. In 1977, law 517 declared that all disabled students, including deaf students, were allowed to attend public students alongside

² History of the ENS article from ens.it

hearing children. Although the intention was to give all students the same right to public education, the result was the abolishment of special classes for deaf students where they could learn in environments created to suit their needs (Carozza 1994, 191-192).

Nowadays, most deaf students go to mainstream schools and have interpreters or teacher's aides who come in occasionally to supplement their "regular" education. One of the unfortunate aspects of the educational reform law is that there is only one disabled student allowed per classroom, which means that interpreters and deaf educators are spread thin, and there are fewer opportunities for young deaf students to meet deaf peers and form a community ("Legge 4 Agosto 1977, N. 517.").

A community of deaf children is especially vital for the transmission of LIS and Deaf culture in school. As Johnston and Shembri (2007, 30) point out in their book on Australian Sign Language, "an important difference between deaf communities and other linguistic minorities is that, in most cases, the language is not passed from parent to child, but often from child to child, or is learned by children from adults outside the family." Deaf schools were the center of the transmission of sign language, whether on the playground or in the classroom (in non-oralist schools). These schools created their own communities and their own variations of LIS. Because of this particular structure of the Deaf community, geographic location does not have the same influence on sociolinguistic variation as with spoken languages. In the heyday of the residential schools, students had to travel far away from their families and hometowns to go to school. They built their own community separate from their geographic origins, and sometimes the influence of that school community remained stronger than the geographical influences of their eventual place of residence as adults. With the mainstreaming efforts of the late 20th century, there has been a shift in this sociolinguistic community.

1.1.4 The Tommaso Pendola School

The school that provided the setting for this research is the Tommaso Pendola School, which sits on top of a hill that contains the oldest part of Siena. It was founded in 1828 by its namesake, Tommaso Pendola, a monk who had studied in Siena when the Siennese government granted him and another teacher, Stanislao Grottanelli de Santi, permission to start a school for the deaf. The school expanded and eventually the building in which the Siena School is housed became the girls' dormitory, with the boys' dormitory across the street. After Pendola's death, the school was renamed the *Regio Istituto Pendola per i Sordo-Muti in Siena* 'the Royal Institute for Deaf-Mutes in Siena'. The school had ties to the monarchy after the unification of Italy in 1861, and a flag with the royal insignia hangs in the museum of the school. The school was declared to be a public institution by Vittorio Emanuele III in 1927, and the school continued to be active as a boarding institution until the 1970s. In its current form, the Tommaso Pendola School houses the ENS, as well an after-school program for deaf students and the Mason Perkins Deafness Fund, which is held upstairs in conjunction with the Siena School for the Liberal Arts. There is also a historical museum that preserves parts of the school as they once were when it was fully operational; there are desks and old equipment for lip-reading and vocalization exercises, a royal flag, and an extensive library of publications on deaf education and the ENS magazine.

Given the role of the ENS as a facilitator of Deaf culture and education in Italy, it is unsurprising that the ENS was the main driving force behind the reunion of the Tommaso Pendola School, during which I conducted my research. People came from all over north and central Italy to attend this reunion. Amidst the throngs of alumni and the pictures from

generations of yearbooks that papered the walls, my teacher and I interviewed several people in order to learn about lexical variations.

1.2 Linguistic Background on LIS

As with any other language, the shape of LIS as a language has changed over time. There have been a few important investigations into historical change in LIS and the LIS lexicon. Ellen Radutzky (also known as Elena Radutzky when publishing in Italy) spent years collecting LIS signs and their variants in order to create a dictionary and study phonological shifts in the language. Years later, the LIS corpus project expanded on her efforts and went around Italy collecting data from signers. Both of these investigations are discussed in this section.

1.2.1 Ellen Radutzky's *La Lingua Italiana dei Segni: Historical Change in the Sign Language of the Deaf People in Italy*

In her NYU doctoral dissertation, Radutzky gives an extensive history of European deaf education (see section 1.1) and then looks at the way that LIS has changed historically, using Nancy Frishberg's work on historical change in ASL as a basis for comparison. Much of what Radutzky found in LIS corresponds with Frishberg's findings in ASL; many of these historical changes have to do with ease of articulation. Ease of articulation is the concept that over time, a sign will evolve so that the new form takes less energy for the signer to create. This can be seen in the way that certain signs shift over time. For example, symmetry is an important part of historical change in both ASL and LIS. There is a tendency for the handshape, movement, and orientation of the palm to become more symmetrical over time (Radutzky 1989, 193).

Centralization is another phenomenon that seems to occur in both LIS and ASL, whereby signs that previously were articulated in the corners of the visual plane tend to move towards the

center (see section 1.2.2's discussion of neutral space). The hollow of the neck is considered to be the evolved focal point for many signs. Fluidity is another concern in historical change that seems closely connected to ease of articulation. What was once a stop to grasp another body part in a sign may become a brush or a tap (Radutzky 1989, 130).

As tendencies connected to ease of articulation change the form of signs, a general shift occurs from iconic signs to more opaque ones. As influence from other Deaf cultures increases, there might be more of a tendency towards the use of fingerspelling and initialization (Frishberg 1976, Radutzky 1989)

There are many other small changes that occur with respect to handshape, movement, location and orientation of signs (a dissertation's worth, one might say), and historical change is not the main focus of this thesis. But knowledge of some of these historical shifts does help in the analysis of the data collected for this project. Signs that are articulated with asymmetrical handshapes, obvious contact, or that take place on the edges of neutral signing space can be analyzed as more "old-fashioned". This can give important sociolinguistic information about the lexical choices of the signer or explain the reason for the occurrence of two very similar variants. See section 2.7 for discussion of sociolinguistic influence in the data and section 2.5's discussion of the sign BLACK's similar variants as evidence of one particular shift in handshape mentioned by Radutzky, from straight fingers to bent fingers (Radutzky 1989, 148).

1.2.2 LIS Corpus Project

The scope of this project was limited by my own resources and ability as a student. If I were a professor with many colleagues and funding at my disposal, I would have tried to create something like the LIS Corpus Project, which was undertaken by Carlo Geraci, Katia Battaglia,

Anna Cardinaletti, Carlo Cecchetto, Caterina Donati, Serena Giudice, and Emiliano Mereghetti, and collected interviews from signers in ten major cities around Italy in order to examine sociolinguistic variation. Their primary focus was on phonological variation and/or diachronic change in specific signs. These signs were chosen in order to look more closely at phonological changes in LIS and their proposed connection to three main processes of articulatory simplification:

- Loss of contact: signs articulated with some contact on some body part may also be articulated without contact
- Movement towards neutral space. Signs articulated on the body (not necessarily involving contact) may be located in neutral space
- Handshape assimilation, operating in two distinct domains: (a) the non-dominant hand of two-handed signs assimilated the handshape of the dominant hand; (b) in compounds, the handshape of one stem partially or totally assimilated to the handshape of the other stem (Geraci et. al. 2011).

The project looked for these proposed processes of articulatory simplification in their data, labeling the forms that have contact and are signed at the periphery of the signing space (i.e., the older variants) as the “primitive form[s]” and the variants that had undergone the shift as the “derived form[s]”. Many of these variations co-occurred, and it is important to remember that phonological change cannot be viewed as a process that targets single features or phonological parameters (Geraci et. al. 2011, 543). Figures 1 and 2, taken from the LIS corpus project, illustrate how some of these shifts appear, using both the primitive and derived forms of the sign GOOD (which in this case shows the shift to no contact)



Figure 1. Primitive form of GOOD: contact of the thumb on the side of the cheek/chin



Figure 2. Derived form of GOOD: no contact of the thumb on the cheek/chin. Contact is optional.

The historical shifts in LIS were important to keep in mind as my own data was being analyzed, and the work of Ellen Radutzky and the LIS corpus project provided excellent information. Although both projects worked on a much larger scale than my own research, and although I read about it only after my data had already been collected, there are certain marked similarities in our methodologies (see section 1.3).

1.2.3 Mouthing, Loan Words, and Italian Influence

When working with a language that is not yet recognized by the government as an official language of the country, it is especially important to not question the validity of that language. In the case of LIS, it is obvious from the historical background given earlier that

proving sign language's place in the world of deaf education is an ongoing struggle. Therefore talking about Italian's influence on LIS is a delicate subject. LIS is certainly not just signed Italian; there are obviously many complexities to the structure and form of LIS that prove its status as a language in its own right. But in a culture where the teaching of Italian was and still is a main part of any deaf student's education, there is bound to be influence from Italian on LIS.

The most visible influence is the use of the mouth while signing, which falls into two categories: *mouthings* and *mouth gestures*. *Mouthing* is to the repetition of a whole or partial word in the relevant spoken language; a *mouth gesture* is an additional phonological aspect of the sign that includes the mouth. These are not connected to words but instead convey other types of meaning. The mouth gesture of sticking out one's tongue can give negative semantic meaning when combined with a sign, for example DISLIKE in LIS (Boyes Bream and Sutton-Spence 2001). What was seen in this data set was mostly *mouthing*. While signing, all of the people interviewed in this project mouthed some or all of the words that were elicited in the lexical variation portion of their interviews. Some signers also vocalized these Italian words, while some just made the shapes with their mouths. All of these instances occur simultaneously with the articulation of a sign. The mouthings were not always perfect representations of the Italian words; often just the first part of the word was articulated.

There are some specifically relevant observations about mouthing and mouth gestures that are important to note when analyzing why and when mouthing occurs in a certain set of data. The first is that mouthing happens more frequently with nouns. Since this research project focuses exclusively on nouns, mouthing is expected to be more frequent in my data set than in one concentrating on verbs. Secondly, sociolinguistic variation can be seen in mouthing, since different dialects are mouthed differently (Boyes Bream and Sutton-Spence 2001, 3). This is

evidence of the influence of oral traditions and lip-reading/speech programs, which are in turn influenced by the spoken language of the instructors and speakers around the signer. Third, there is sociohistorical precedence in countries where mouthing is more popular; that is, where the oral tradition in education is strong, signers tend to use mouthing for loan words and neologisms in lieu of fingerspelling and in general (Ajello et al. 2001, 9). Mouthing can also often be used to add extra semantic meaning to the sign, or to specify something. In German Sign Language one can sign ROOM and mouth *wohzimmer* ('living room') to provide extra lexical information as to which room is referred. (Ajello et al. 2001, 4).

1.3 Methodology

This research is the result of over a year's worth of preparation. Before I could begin to study LIS as a linguist, I first needed to learn the basics of the language itself. So I took an introductory class in LIS at the Siena School for the Liberal Arts. The class had two components: the language instruction, which was in an immersion setting with a deaf instructor, and a sociological component, in which we learned about Deaf culture and the history of deaf people in Italy.

The data used for this research project was all collected the spring of 2011. The two primary supervisors for that independent project were Donna Jo Napoli, who served as a supervisor through the process and with whom I kept in email contact throughout the semester, and Rita Sala, who had been my Deaf culture professor the semester before and who served as an academic guide in Italy. It was with Rita Sala's help that I devised the elicitation process we eventually used to collect the data. She also interpreted for me and conducted the elicitation interviews.

Together, we created the following elicitation method using the following elements, which can be found in their entirety in Appendix B-E:

- A written statement, in Italian and English, which stated my purpose as a student and linguist, gave a bit of my own background, and described what I wanted from my interviewees
- A flexible list of questions that Rita was to ask, in LIS, to the interviewees
- Visual prompts and lists of words in Italian, which included color charts, pictures of the *contradas*³ for use in the Palio Project, and a list of months and words relating to the Palio⁴

These materials, in addition to a larger statement about my purposes and hopes for this project, were submitted for IRB approval, which was granted.

The actual interview process occurred during a reunion for alumni of the Tommaso Pendola School. Rita and I arrived and interviewed people who were willing to talk to us about the Palio and/or wanted to give us their variations of the months and colors. I stayed behind the camera and tried to minimize my involvement as to not influence the level of signing happening; Rita asked introductory questions to collect background information on the interviewees and to put them at ease. Everyone answered number and color sign requests, even those who did not also know Palio words. The interviews lasted from five to twenty minutes, depending on the

³ A *contrada* is a district of the city of Siena (there are 17 in total). Each *contrada* has its own emblem, colors, and headquarters. The members of the *contradas* are those who live in each district. They organize social events in their headquarters and march around the city on certain days of the year dressed in costumes in their colors. Since each *contrada* competes separately to win the Palio, there are specific rivalries and alliances between districts.

⁴ I was also conducting some research on the Palio and Siennese Deaf Identity for an independent project that semester. The Palio is a horse race in which *contrada* competes. It's a big part of Siennese culture, and so I wanted to see how Siennese identity and Deaf identity intersected in this particular ritual. The fact that I was also asking questions about the Palio changed the shape of the interviews, because I was essentially collecting data for two separate projects at the same time.

stories that the interviewees told about the Palio. Below, in Table 3, demographic information is given for the interviewees' age, gender and geographic location:

Table 3: Demographic Chart of Interviewees.

Interview #	Age	Gender	Where they came from
1	51	M	Siena
2	67	M	Siena
3	62.5 ☺	F	Paduli Benevento*
4	48	M	Perugia*
5	72	M	Mantova ◇
6	59	M	Catania
7	60	F	Padova
8	24	F	Torino
9	52	M	Viterbo*
10	60	M	Campo basso
11	64	M	Grossetto
12	64	M	Fermo/Siena

*currently lives in Siena

◇ also lived in Milan and Perugia

In the end, over three hours of footage was recorded for the combination of the two projects. These interviews were then organized using ELAN software. Sections that contained months, colors, or numbers were selected and annotated; afterwards, the time frame of each relevant sign was found and marked with the gloss of the sign and the variation number.

There were some setbacks and limitations to the collection of this data, as well as some personal aspects of the experience that should be mentioned. See Appendix A for this discussion.

2 Discussion and categorization of data

Once all of the data was analyzed in ELAN, I organized it according to month or color. I described the location, handshape, and movement of each sign, using the number and letter system of LIS as a guideline for identifying the handshapes. Each variant was given a letter name

and, when necessary to distinguish inside subgroups, a number. Subgroups are marked by the use of the same letter; for example, RED_{A1} and RED_{A2} are similar enough that they were cataloged as related in my data. The complete set of charts for the variants can be found in Appendix F. Appendix G has the LIS fingerspelling alphabet for reference. The number system of LIS, which is also used as a reference for handshape, is unlike that of ASL in that the numbers 7 to 10 are articulated on both hands (for example, the number 7 is articulated with all five fingers on one hand and the thumb and forefinger of the second hand). Although there are some shorthand notations created in order to describe sign language more concisely and specifically, I decided to go with the prose descriptions in order to keep the information clear for the layperson. Pictures of many of the signs taken by/of Rita Sala or drawings from the LIS dictionary (Radutzky 2001) are used to provide further clarification.

The variants have the number of the interviewees who use them marked on the right-hand column. Variations on these color and month signs found in Radutzky's 2001 LIS dictionary are folded into the variant charts; this is marked in the user column with a letter R. Any information on the regions of the variants given by the dictionary is included in the prose descriptions and is discussed in section 2.6.⁵

2.1 Distinguishing among Variants and Sub-Variants.

Lexical variation is hard to look for without coming across many examples that straddle the border between phonological and lexical difference. Since the primary objective is to record, not to pass judgment on, these signs, I often erred on the side of caution and cataloged any slight differences in location and handshape as separate variants. These variants are then placed into

⁵ The regions where Radutzky's variants come from are marked with two-letter abbreviations: Genova (GE), Torino (TO), Perugia (PG) and Rome (RM). "TO AN" appears once and most likely refers to Torino and Ancona.

subgroups when they seem to have a unifying handshape, location, movement, or iconic root. As the process of analysis progressed further, it became increasingly evident that any type of variation, no matter how slight, should be cataloged as a subgroup if not a whole new variant itself. A good precedent for this high level of distinction is shown in the LIS dictionary used for this research, which shows the very similar variants of RED as separate entries.

2.1.1 Repetition

One consideration that went into categorizing a sign as a different variant is if the variation “mattered” linguistically in a way that made a difference in its interpretation. For example, some signs varied as to whether they were articulated once or repeated several times. From my own background knowledge of the way that signs are articulated in citation form, repetition can often occur to emphasize something, indicate plurality, or simply be a part of a sign’s citation form. Since these signs are given in their citation form, that is, when they were elicited, they were listed in order, not asked for in the context of a larger sentence, it makes sense that some would be repeated for clarity.

However, not all the repetition can be accounted for simply because of the citation form. In some cases, such as the difference between the first interviewee’s signs for BLUE (Figure 4) and LIGHT-BLUE, the only distinction that was made was that the sign, a flick of the middle finger and thumb in neutral space with the palm facing towards the viewer, was given once for BLUE and repeated for LIGHT-BLUE. Thus it seems that in some cases, repetition is contrastive and therefore any repetition must be recorded and differences cataloged as variants/subvariants.



Figure 4: BLUE_A: the middle finger touches the thumb and flicks back up (once).

Because of prior research into LIS and its phonological shifts over the past few decades, (see section 1.2), I know that a general shift from contact on the body to neutral space is occurring. Thus when recording the variants, sometimes I paid extra attention to whether or not there was contact. While this phonological shift is important, and there are some cases in which some variants of the same color or month can be explained by this shift, it is hard to determine the difference between a sign that *almost* touches a signer on the body and one that *actually* does.

2.2 Some Basic Groups

Although these variations were not split into strict variant/subvariant categories, there were some groupings that did become apparent. These groups of variations seemed to all focus on one unified handshape, location or movement that seemed to be the key icon/root of the group of signs. Initialization, or the practice of using a fingerspelled letter as the distinctive handshape

for a sign, (and an example of a way that sign languages borrow from spoken languages) was one clear connection between groups of variants.

The first example of this is the group of signs for the month JULY which all use an L handshape since the Italian word for ‘July’ is *luglio*. Not all of the variants for JULY used this initialization, but a group of them did, and they all varied slightly in their movement

Table 5: Variant Chart for JULY_{B1-4} (*luglio*)

B1	L initial, wiggle top of L with index finger (top of index finger moves up and down, from vertical to horizontal, repeatedly (a little less than 90 degrees))	4, 9, 10?
B2	Circular L instead of wiggly top	5, 12
B3	L initial and wiggle ,but at cheek	6
B4	L initial, but bounced 90 up and down from wrist	11



Figure 6: L shape of JULY_{B1}. The index finger moved upwards and downwards in a wiggling motion.

Other signs had variations that seemed almost identical to each other; they only differed in one element. Often that element was location. There were some signs that were articulated

either on the hand or the forearm, such as variations SEPTEMBER_{A1} and SEPTEMBER_{A2}, or at similar areas of the face or body, such as in the OCTOBER_A grouping. Because of the phonological shifts occurring in LIS, there may be trends to notice here. For example the movement of SEPTEMBER from forearm to wrist is explained as a larger “Macro to Micro” shift whereby the place of articulation moves down from the upper arms. Thus not splitting these similar variants up would be ignoring these potentially important differences.

It is, of course, important to note once again that even the tiniest difference in handshape, location, or movement can be the key to distinguishing between two very different lexical items. This can become especially confusing with the months and colors precisely because some of the handshapes and movements seem to occur across the boundaries of the categories/concepts I asked for in the interviews.

2.3 Similarities Across Signs

Many signs exhibited similarities not only within their own word but across semantic boundaries. For instance, in Radutzky 2001, there were some cases in which a sign such as MARCH was also a variant for JUNE. Similar repeated iconic handshapes, such as the ones occurring in initialization, also caused groups of signs to form across boundaries. Sign pairings that especially stood out are discussed in the following sections.

2.3.1 GREEN and PURPLE

Two colors that had numerous variants that used initialization were PURPLE (*viola* in Italian) and GREEN (*verde* in Italian). Since these signs both use the letter V (which is made with the index and middle finger sticking up and spread apart) to initialize their sign, movement should be all the more important to distinguish the two, as to not paint your house green instead

of purple. These are the comparative charts for the initializing variants for PURPLE and GREEN:

Table 7: Initializing Variant Chart for PURPLE_C (*viola*)

C1	Hold V shape below eye, with fingers pointing towards face, then rotate to show a V towards viewer	4
C2	Similar to GREEN _{B2} –a bit more circular	5,6, 10
C3	Like C1, but more in neutral space than below eye	7
C4	Slightly bent sideways V coming down from forehead	8
C5	Start with V/palm facing viewer, and rotate so that back of hand faces viewer	9
C6	Start with V shape, first finger on cheek near chin, pulling V back so that back of hand is facing viewer	11

Table 8: Initializing Variant Chart for GREEN (*verde*)

A1	Two fingers tapped at chin (straight)	1,6
A2	Two fingers tapped at chin (bent)	9, R
B1	Bent V scratched down from mid cheek	2,4, 7, 10, 11
B2	V waved in circle in neutral space—but then maybe corrects self and points to cheek as possible place of articulation—like B1	3
B3	V out from cheek (and up)	5
D	Hand in loose V shape, thumb tapped at chest	12

Some problems occur here. Homophony is certainly possible, and not unlikely in the case of so many variants for similar categories of lexical items. In fact, both signs have variants that consist of the V shape moved in a circular pattern in neutral space. This kind of homophony is slightly more problematic than say, BLUE and LIGHT-BLUE (see Section 2.1.1) being articulated in the same way, or RED and PINK (see. Section 2.3.3) These signs are linked

semantically in a way that PURPLE and GREEN are not; this is especially true of BLUE and LIGHT-BLUE, wherein the lexical distinction exists only in certain languages, Italian among them (Hebrew and Russian are two others that come to mind). But for PURPLE and GREEN, the tragicomic possibilities of mixing the two up are endless. For those aware of this homophony, some puns must have been made.

So how do signers get around this particular brand of confusion? Well, for the most part, the signers who used V-initialized signs for GREEN did not use the same movement for their sign for PURPLE. It should also be mentioned that while almost all of the variants of GREEN have a V handshape, PURPLE_{A1} is a fairly popular variant that features a completely different handshape, whereby the eye is framed with the first finger and thumb in a square; this has the icon-base of a black eye (Figure 9). In fact, even some of the V-handshape variants of PURPLE make reference to the eye as a location for the beginning of the sign, as in PURPLE_{C1} (Figure 10).



Figure 9: PURPLEA1: the index finger and thumb frame the eye; this handshape is moved out in horizontal space and back again, so that the thumb and index finger tap the cheek multiple times (this is a sign with repeated action)



Figure 10: PURPLEC1: the index finger and the middle finger are in the V handshape. The sign starts with the V touching the signer right under the eye and then sweeps out, changing the orientation of the hand so that the palm goes from facing the signer to facing the viewer. The sign ends by showing the viewer a V handshape in neutral space

Since almost all of the GREEN variants use some sort of V handshape, the similarities are dealt with in two ways. The non-V-handshape variants of PURPLE are used (interviewees 1, 2, 3, 4, 13) or the location differs. Interviewee 4, for example, uses GREEN_{B1} and then uses PURPLE_{C1}, a variant that starts at the eye and takes the V shape out to face the viewer (Figure 10). The possible case of homophony, GREEN_{B2} and PURPLE_{C2} (see Figure 11), was never given by the same interviewee.



Figure 11: PURPLE_{C2}: The V handshape is moved around in a circle, starting near the face

Thus each signer used distinctive signs for PURPLE and GREEN; but to the viewer who signs a different set of variants, confusion can occur. This can be solved with extra specification given by way of mouthing (see section 2.8).

2.3.2 APRIL and AUGUST

Another area where homophony occurs was for the months. Both APRIL and AUGUST have variants that involve fanning oneself with both hands (AUGUST_{B1} and APRIL_{B2}). No signer uses both of these variants in the same interview. APRIL_{B1} involves one hand fanning the signer; this *is* used in the same interview as someone who used AUGUST_{B1} (interviewee 4, to be precise), which gives additional evidence that the one-hand/two-hands difference is not only a historical phonological shift but also a way to mark lexical distinctions.

2.3.3 RED, WHITE and PINK

The signs RED, WHITE, and PINK have some fascinating interactions within their variants. Unlike most other color signs, many of the variants of PINK seem to be compound signs, using the handshape of WHITE with the location and movement of RED:

Table 12: Complete Variant Chart for RED (*rosso*)

A1	1 finger pulled outwards from lip/chin (TO AN)	1,4, 7, 8,9, 10, R
A2	One finger across lip non-dominant side to dominant side (PG)	2, R
A3	Similar to A1: 1 finger flick lip down—finger starts higher than lip and curls after contact. Repeated, and with straight finger. (b)	2, R
A4	1 finger sideways motion flapping lip	3,11, 12
A5	1 finger flapping at lip—bent finger	5

Table 13: Complete Variant Chart for WHITE (*bianco*)

A	Flick middle finger at cheek (open hand)	1,2,4,6
B	Circle with loose closed/pinched 5 hand on cheek	3
C1	Open F hand on cheek	5,9, 12
D	Open 5 hand going into pinched hand starting at upper chest and pulling away	7, 10 ⁶ , R
E	Closed 5 hand with palm facing towards signer passing across the face, moving 90 degrees from horizontal to vertical (TO)	8, R
C2	OR/F hand at cheek flicking outwards	11
C3	F handshape at eye level, going out to neutral space (GE)	R

Table 14: Complete Variant Chart for PINK (*rosa*)

A1	Third finger pointing in (like WHITE _D) across lip (like RED _{A2})	1
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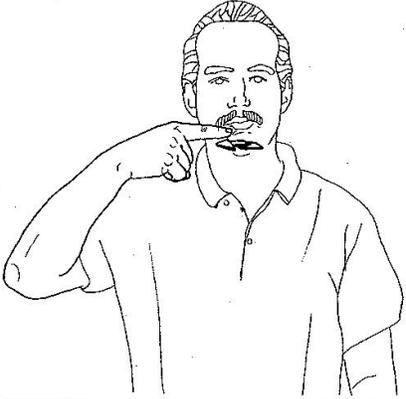
⁶ Ends in pinched f hand, not complete pinched hand

B	L shape sweeping from neck	2, 12
C	Open 5 shape wiggling across open mouth	3
A2	Middle finger pulled down and out, like RED _{A1} , but with WHITE _A handshape (TO)	4, 8, 9, R
A3	Same as RED _{A5}	5
	Like A2, but pulled out sideways, not down	11
A4	Sideways 3 handshape from lip—F handshape also offered	6
A5	Third finger touching lip and then swung out to 5 handshape, showing vertical palm to viewer (still combo of RED _{A1} and WHITE _A)	7, R
A6	First finger touches lip like RED _A variants, but moves out horizontally from mouth	10

The WHITE_A handshape, which consists of an open 5 hand with the middle finger and pointing in (the sign looks similar to BLUE_A but is articulated at the cheek), is combined with the basic movement present in all variants of RED, where the hand starts at the lip and moves outwards. The variation that occurs in RED and the PINK_A variants mostly has to do with how the hand moves out from the lip; the first finger used in RED can go across the lip, down once, down repeatedly, and be articulated without contact, so that the finger is wiggling near the mouth but more in neutral space. Figures 15-17 show the possible variations of movement for RED. In Figure 15, the variant RED_{A2} is shown. This sign starts at the lip, but the orientation of the finger is horizontal. The finger moves from one side of the mouth to the other (see the arrows on the drawing's lip). In Figure 16, which shows RED_{A2}, the hand once again has only the index finger extended, but it is oriented vertically. The fingertip touches the lip and then moves downwards once; the finger goes from fully extended to bent, the tip curling inwards. This is very similar to RED_{A3}, where the index finger is also oriented vertically. The key difference between these two signs is that the finger starts slightly above the lip and instead of pulling the finger out and down,

the index finger flaps at the lip, curling and touching the lip repeatedly. The hand stays near the mouth instead of going out into neutral space.

204.3 $G_{V<} \cup > * >$



ROSSO (PG) "I pomodori maturi devono essere rossi." Vedi il primo sinonimo a pag.200.3, il secondo, usato a Torino, a pag.202.1.
Cat. Gramm.: agg., sost.
Sinonimi: $G_{TA} \cup \downarrow f * v f \cdot$, (TO) $G_{TA} \cup \downarrow v f l$
Varianti:

Figure 15: RED_{A2}: the index finger is horizontal, and moves across the lip

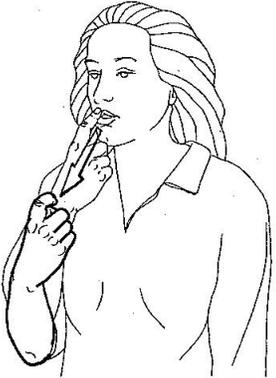
G	B H G (\bar{G} G _d \bar{G}) g	piatte e piane
202.1 $G_{TA} \cup \downarrow v f l$		ROSSO (TO AN) "Quando fa freddo il mio naso diventa rosso." Vedi il sinonimo, usato a Perugia, a pag.204.3 e le varianti alle pag.200.3 e 201.1.
Cat. Gramm.: agg., sost.		Sinonimi: (PG) $G_{V<} \cup > * >$
Varianti: $G_{TA} \cup \downarrow v r * v r \cdot$, $G_{TA} \cup \downarrow v f * v f \cdot$		Varianti:

Figure 16: RED_{A1}: the index finger is oriented vertically; it starts at the lip and moves downwards, curling as it does so.

piatte e piane	B H G (G̃ Gd G) g	G
ROSSO "La bandiera italiana è bianca rossa e verde. Vedi la variante nella pagina precedente.	G _{TΛ} ∩ √ F * √ F •	201.1
Cat. Gramm.: agg., sost.		
Sinonimi:		
Varianti: G _{TΛ} ∩ √ F * √ F •		

Figure 17: REDA3: the index finger is vertical, and it starts just above the mouth, moving downwards to brush the lip and curl into the hand. This action is repeated.

I was curious to see if this compounding meant parallels in direction of movement between PINK and RED. The handshape of WHITE did not always determine the handshape used in PINK; besides the V1 handshape, an open F handshape (where the index finger and thumb pinch together, creating a circular shape, and the remaining fingers are extended) or pinched fingers (all five fingers are extended and then meet, looking like they are about to pinch something) were used at the cheek; some of these were circled and some were flicked as well. There was less variation in handshape in PINK and RED; thus I will narrow my focus to their parallels.

It seems that those who use the outwards-and-down RED_{A1}, use the same movements with PINK (4, 8, 9, for RED_{A1} and PINK_{A2}) with the WHITE_A handshape, with the exception of interviewee 7, who used PINK_{A5}. Hers was an interesting case in that she has an elegant style to her signing, using her painted nails expressively and with more flourishes than others. This might be a physical distinction equivalent to having food in your mouth or a stage accent in spoken languages. It could also be closer to the citation/dictionary form, since the entries in Radutzky's

LIS dictionary provide both variants of PINK separately. See Figures 18 and 19 for the different movements that the WHITE_A handshape makes after leaving the lip. In Figure 18, the hand moves out and down, the middle finger curling inward; in Figure 19, the hand changes orientation, moving down and swinging around to face the viewer.

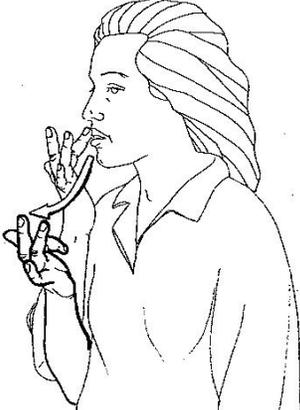
3 5	L 3 5 4 3 V H I Y S	estensioni
274.1	3 5 T A * U 1 F	ROSA (TO) "Il rosa si ottiene mescolando il rosso col bianco." Vedi la variante a pag.273.2.
		Cat. Gramm.: agg., sost.
		Sinonimi: -
		Varianti: 3 5 T A * U > ω

Figure 18: PINKA2: the middle finger is pointed inward, more horizontal than the rest of the fingers. It touches the lip. The hand then moves out, away from the signer's body, and downwards. The middle finger curls in further towards the palm.

ROSA “Il rosa è il mio colore preferito.” Vedi la variante, usata a Torino, a pag.274.1.	273.2 $\frac{3}{5} \tau \wedge * \cup > \omega$
Cat. Gramm.: agg., sost.	
Sinonimi:	
Varianti: (TO) $\frac{3}{5} \tau \wedge * \cup \perp f$	

Figure 19: PINK_{A5}: The middle finger is extended farther than the rest of the fingers. It starts by touching the lip and then the hand changes orientation, swinging out and around so that the palm faces the viewer.

Interviewee 1, however, clearly uses RED_{A1} with a downwards motion for RED, brushing his third finger *across* and not *down from* the lip. A similar case happens with interviewee 10, who uses RED_{A1} but uses PINK_{A6}, which does not use the WHITE_A handshape but instead uses an index finger, paralleling the handshape of the RED variants. Thus there are not universal parallels to be posited here, but there still seems to be some sort of trend occurring, whereby the movement used in RED sometimes determines the movement used in PINK.

2.4 Diverse Variants

So far the discussion has been focused on the interaction between variants and their similarities. But there were a few signs that had variants that seemed to differ not only in their phonological elements but in their roots/iconic stems, and not only one or two different root images occurred, but many diverse variants. JANUARY and SEPTEMBER were the months with the most differences between the variants; BROWN and GRAY were the colors that exhibited the most variation. The presence of these very diverse-looking variants shows once

again that this is truly lexical variation being presented here; more than just articulation “accents” is at work. See the appendix for the full list of signs and their diverse variants.

2.5 Dominant variants

Although all of the signs exhibited a remarkable amount of variation, there were some that had nearly 1:1 ratios between numbers of variants and numbers of interviewees, whereas others had a sign that was clearly favored by a majority of the signers. It is difficult to determine what made these signs so much more standardized; perhaps it has to do with ease of articulation, or at least ease of remembering the signs. MAY is one such dominant variant. The variants for MAY are given in Table 20.

Table 20: MAY (*maggio*) Variation Chart

A1	Hands crossed at chest (sometimes repeated taps) (RM)	1, 3,4,5,6,7,9, 10, 11, 12, R
A2	Hands not crossed but tapped on chest(one higher than the other	2
B	Semi-closed 5 hand at lip (+contact) moved away, fingers folded over and down to create a shape mid finger joints tapped at chin	8
C	Repeated b hand tapped at chin(GE)(a)	R
D	4 finger M shape pointing down—kind of looks like MARZO _{A1} (GE) (b)	R

B	$B (\bar{B} B_b \hat{B}) H G g$	piatte e piane
102.1	$B_T + B_T \times [] \emptyset$	<p>MAGGIO (RM), MARIA, MADONNA "Il mese di maggio è il mese dei matrimoni." Vedi i sinonimi, di MAGGIO, usati a Genova, alle pag.326.2 e 96.3.</p>
		<p>Cat. Gram.: n. propr., sost Sinonimi: (C) $4_{V.L} \emptyset^{V*}$, (GF) $B_{bT} \wedge^{**}$ Varianti: -</p>
102.2		

Figure 21: the Dominant Variant MAYA1 : hands are crossed at the chest, all five fingers extended but close together. In the upper right hand corner are the meanings for the sign given by the dictionary (maggio, means 'may' *Maria* means 'Mary' *Madonna* is literally 'my lady' but refers to the Virgin Mary)

Table 20 lists another variant used by Radutzky for MAY, but almost all of the interviewees use MAY_{A1}. This may be because of the distinctive nature of the sign; it is articulated on the chest and uses both arms, making it easy to see from far away and easy to remember as well. There are diverse theories for why a sign or a word has high frequencies of use compared to others; it could have to do with how simple the sign is to articulate or how often a sign of that meaning is needed in conversation (Haspelmath and Sims 2010). Its semantic connection to MARY/VIRGIN MARY might have to do with the catholic tradition that May is the month of Mary; this connection might be a way to remember the sign for the month and make it popular. See Section 2.7 for further discussion of religious influence on the data.

Not all dominant variants seem rooted in their location the way that MAY_{A1} seems to be anchored in the chest. Some other signs could easily be moved in terms of their location on the

body or their handshape, but for the most part were still articulated similarly in almost every interview. BLACK is a good example of this; the dominant variant(s) are articulated in the same place on the forehead. At first glance, it seems as if there is one dominant variant: V fingers pulled across the forehead non-dominant shoulder to dominant shoulder. But after examining the separate entries in the LIS dictionary, it became clear that a distinction is made between a straight V and curled V handshape. The data was re-examined and the variant chart adjusted accordingly. In fact, when I went back to the data, a third, also very similar, variant emerged, wherein the V shape starts out straight and snaps into a bent V shape at the end of the sign's articulation. Thus instead of one variant, what ends up occurring is a cluster of variants that are very closely related.

Table 22: Variant Chart for BLACK

A1	Pull <i>bent</i> first two fingers across forehead, non dominant side to dominant side	1, 2, 5, 10, 11, 12 R
A2	Pull <i>straight</i> first two fingers across forehead, non-dominant side to dominant side	6, 7, R
A3	first two fingers across forehead, non-dominant side to dominant side, which are straight across forehead and then become bent after passing face	4, 8, 9
B	Open non-dominant 5 hand and thumb crossing palm	3
C	Curved V pulled down cheek (same as Verde _{B1}) (PG)	R
D	Fist raised at eye level moving down to rest arm horizontally in neutral space (TO)	R

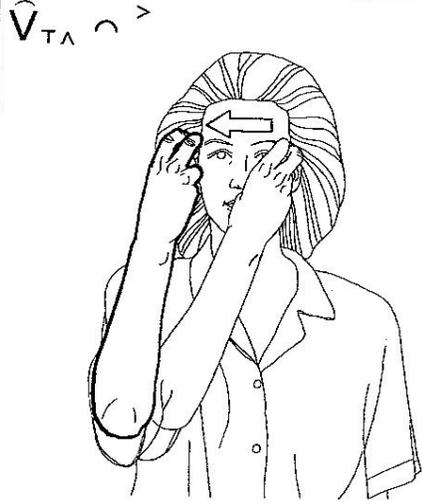
<p>NERO "Di notte, senza luna, il cielo è nero." Vedi il primo sinonimo, usato a Perugia, a pag.797.1, il secondo, usato a Torino, a pag.636.1 e la prima variante a pag.358.1.</p>	<p style="text-align: right;">795.2</p> 
<p>Cat. Gramm.: agg., sost.</p>	
<p>Sinonimi: (PG) $V_{T\Lambda} * \bar{3}^V$, (TO) $A_{ST\Lambda} \emptyset^{V\perp D}$</p>	
<p>Varianti: $V_{T < * \curvearrowright}$, $\bar{H}_{T\Lambda} \curvearrowright$</p>	

Figure 23: curved V handshape BLACK_{A1}: a V handshape with curled fingers is pulled across the forehead.

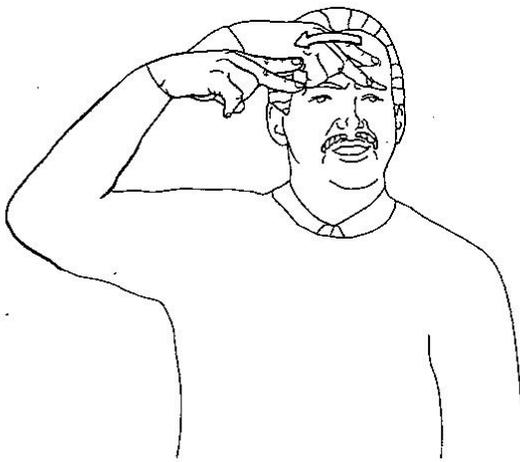
<div style="border: 1px solid black; padding: 2px; width: 30px; margin: 0 auto;">V</div>	<p>L ⁵³ 5 4 3 V Ψ I Y S</p>	<p>estensioni</p>
<p>358.1 $V_{T < * \curvearrowright}$</p> 	<p>NERO "Mi piacciono i vecchi film in bianco e nero." Vedi il primo sinonimo, usato a Perugia, a pag.797.1, il secondo, usato a Torino, a pag.636.1 e la prima variante, a pag.795.2.</p>	
<p>Cat. Gramm.: agg., sost.</p>		
<p>Sinonimi: (PG) $V_{T\Lambda} * \bar{3}^V$, (TO) $A_{S\perp\Lambda} \emptyset^{V\perp D}$</p>		
<p>Varianti: $\bar{V}_{T\Lambda} \curvearrowright$, $\bar{H}_{T\Lambda} * \curvearrowright$</p>		

Figure 24: straight V handshape BLACK_{A2}: a straight V handshape is pulled across the forehead

The initial lack of distinction between the two BLACK variants shows that one can never be too careful or too specific as a researcher and recorder. Although film is (obviously) an excellent medium to use in collecting sign language data, there are things that one can miss on

screen that may be clearer in real life. There may be slight variations in some of the signs given by the interviewees that I missed or categorized as less significant. Thus compiling a huge dictionary of signs must be a painstaking and immensely important endeavor.

2.6 Dictionary Entries/ Prestige Variants

In trying to see which of these signs really were dominant, it seemed appropriate to include the variants from Radutzky 2001, a LIS dictionary, in the larger list and see if they overlapped with the ones found herein. Surprisingly (or perhaps not so surprisingly, given the great diversity of variation already observed) there were sign variants in the dictionary that none of the 12 interviewees used. Radutzky offers regional variants for several signs on the list; there are four entries for BLUE, for example. See page 20, footnote 4, for the regions and their abbreviations. The Genovan and Perugian variants were often the ones that none of the interviewees use; this is probably due to the fact that there was only one person from Perugia (interviewee 4) and none from Genova. This gives good evidence to support the theory that the variants are geographically linked; if the dictionary had had a Tuscan city's variant section, maybe there would be more overlap. See Section 3 for further analysis of the overlap patterns of the Radutzky variants.

2.7 Religious and Cultural Influences on the Data

The Church has traditionally been an important part of deaf education in Italy, and indeed a vital cultural presence in Italy in general. No matter how religious or secular Italians identify as today, the fact remains that the Pope does live around the corner, and Italy is a historically highly Catholic country. Moreover, the Church ran the majority of the deaf residential schools, including of course the Tommaso Pendola School. Thus I was especially

interested in some of the sociocultural influence that the Church has had on the lexical variants for some of the months and colors. The months in particular show influence from the Church. Some of the interviewees added in a sign for EASTER (*pasqua*) in between APRIL and MAY when listing the months. It was unclear if EASTER could be used interchangeably with the months surrounding it. The Italian word *pasqua* was clearly mouthed while the sign was articulated. The variants of EASTER are shown in Table 25.

Table 25: Variant Chart for EASTER (*pasqua*)

A	Hands flapping like wings	2
B	Hands clasped together moving back and forth like prayer	2, 3 ⁷
C	Fist with thumb extended up near 1 st finger (T shape) moved outwards from center)	R

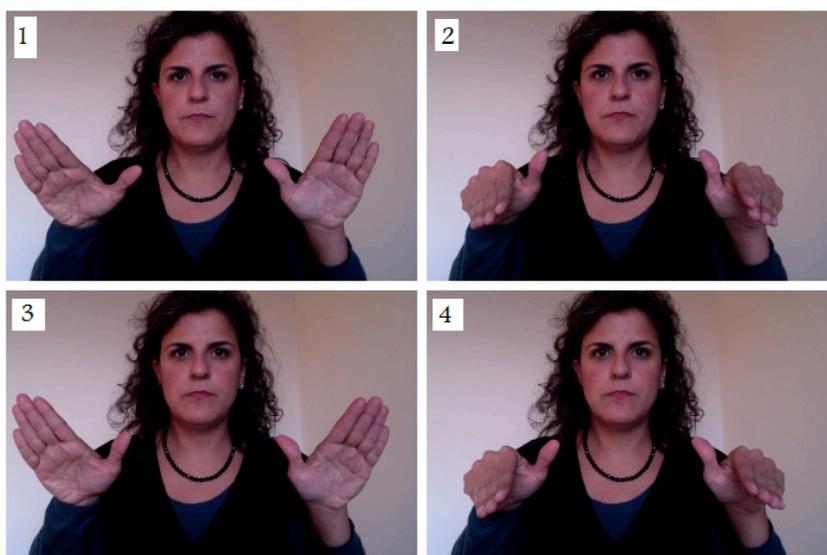


Figure 26: EASTER_A: the hands, with palms facing the viewer, are placed at shoulder height. The fingers except for the thumb bend down and come back up repeatedly, mimicking the movement of wings.

⁷ This sign was given after MAY, whereas the others were given after APRIL—this makes it unclear whether EASTER connected to MAY or APRIL as a possible substitute for the month sign.



Figure 27: EASTER_B: both hands face each other, palms pressed together. Both hands rock back and forth on their wrists, moving repeatedly towards and then away from the signer.

DECEMBER is of course another month with lots of religious iconic roots to the variants; a sign outlining a Christmas tree is the most popular variant; DECEMBER_{A1} and DECEMBER_{A2} are the ones that outline the shape of the Christmas tree; in DECEMBER_{A2}, the sign is embellished by using a different handshape. While DECEMBER_{A1} uses the plane closed-finger 5 handshape to outline the tree (see Figure 28), in DECEMBER_{A2}, the use of a handshape with middle finger and thumb meeting, other fingers extended makes it look as if there were ornaments hanging from the tree branches (see Figure 29).



Figure 28: DECEMBER_{A1}: the sign starts up at the top of the “tree”, pinching outwards with four fingers extended and close together. The hands move symmetrically away from each other, pulling to create the image of the tiered branches of a Christmas tree. The hands get farther away from each other as they move downwards, creating a conical shape.

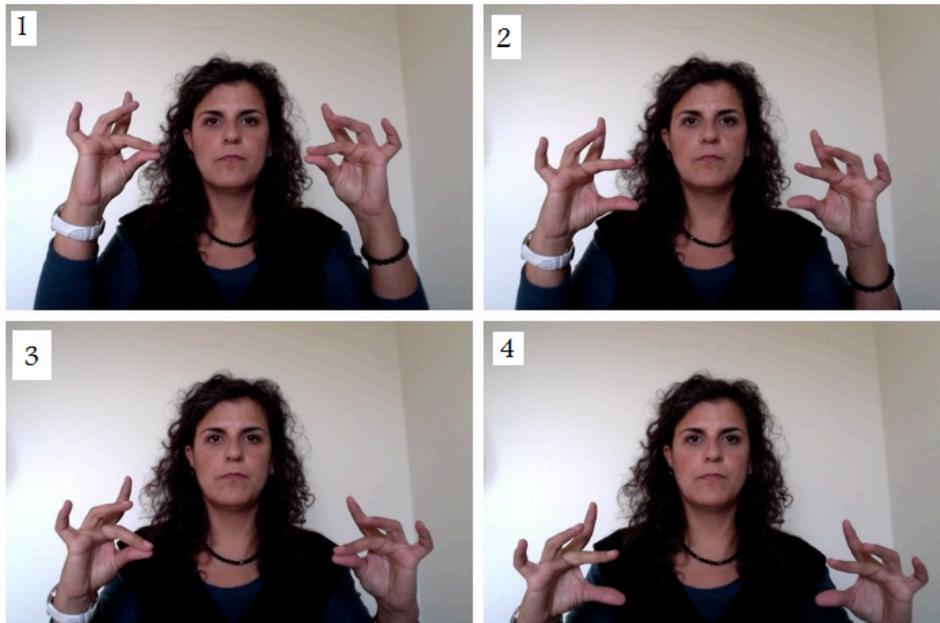


Figure 29: DECEMBER_{A2}: the same movement is used here as in DECEMBER_{A1}. The hands start at the face and repeatedly move outwards, moving down and farther away from each other as the sign progresses. In this case, instead of a flat pinched handshape, the 5 hand is open, with the middle finger and thumb extended so that they touch each other. The middle finger and thumb start out apart, come together in the middle of the signing area, and then move to the periphery in a pinching motion. The fingers come apart again to repeat the motion further down.

Other variants have iconic roots connected to Christmas in other ways. DECEMBER_{D1} and DECEMBER_{D2} refer to babies (rocking hands as in the sign BABY, etc.) as a likely reference to baby Jesus. Other variants might also make religious reference to Christmas in more opaque ways. Table 30 lists the complete variants of DECEMBER.

Table 30: Variant Chart for DECEMBER (*dicembre*)

A1	Christmas tree shape with all fingers	1,2,3,4,9, 11, 12
B	Open 5 shape with contact on nose (second hand mimicking motion underneath optional (?))	2
C1	Upwards rowing Y shapes at stomach	4
D1	Thumbs sticking out one hand under another ‘rocking baby’	4
E1	Two closed pinched 5 hands moving towards each other in opposite directions one higher than the other—like WINTER	5
C2	Like C1, but Y shapes go outwards alternately instead of upwards (RM) (b)	6, 7, R
A2	Like a1, but instead of all closed fingers, little “Christmas ornaments” created with thumb and middle finger repeated as ‘tree’ gets wider/hands get further apart	8
F	Flat horizontal hands, thumbs pointing out to viewer, one higher than the other, both rocking back and forth at chest	10
G	Both hands pinkie out (I handshape), first hand going down right onto fist of non-dominant hand	R
D2	Rock baby with pinkie out handshape (RM) (a)	R
E2	Fists moving in and out towards each other—like E1 but different handshape	R

In spoken Italian, the word *dicembre* 'December' is sometimes replaced with *Natale*, the Italian word for Christmas that refers directly to the birth of Jesus. A larger question, which is probably too large to be addressed here, is how one's religious affiliation (observant, secular, catholic, non-catholic) might inform one's choice of variant.

This brings us to the question of choice. Many of the interviewees knew more than one variant of the same color or month and were prepared to share them with us. In an environment where knowing diverse variants of the same sign is important to avoid confusion and communicate with people from other regions of Italy, what factors go into one's choice to use one variant over the other in daily use?

This is where one's connection to the Church may come into play, or one's age, region of origin, or other sociolinguistic factors. In particular, age might have something to do with the choice to use more religious variants. DECEMBER has religious connotations in almost all of its variants, so it's not the best example to use. The variants for PASQUA were given by interviewees 2 and 3, some of the older interviewees, and here lies a possible pattern. While traditionally, older people tend to be more religious, this is not always the case, and someone's age cannot accurately predict their religious involvement. However, religious instruction in school has changed over time; switching from a residential school run by priests and nuns to a state school or a public school where religion might play a lesser role in the instruction of the students means that religious references to months and colors might be less common. The days of the week might be a good place to look for more evidence of this pattern; older variants of

SUNDAY probably reference religion, while newer ones might have initialization or references to numbers.

The political implications of a sign might also become a factor in whether or not it is chosen; as Lucas et. al. (2001) explain in their study of sociolinguistic variation in ASL, there are some signs for countries or ethnic groups that are prejudiced and outdated, and so younger signers tend to avoid them. One example given is the sign for JAPAN, which used to be signed by making a J and then pulling at the edge of one eye; this obviously racist sign was replaced more recently with a borrowed sign JAPAN from Japanese Sign Language, which outlines the shape of the Japanese islands. A similar politically motivated shift happens in the use of the “horns” handshape, which used to be the letter U in the old LIS manual alphabet but is no longer used officially; The “horns” handshape is “also under a morphological pressure to change from a sign which has pejorative connotations (cuckold, devil, Jew) and is therefore another candidate for change” (Radutzky 1989, 155).

2.8 Spoken Italian Influence in This Specific Data

As mentioned in Section 1.2.3, the strong oralist tradition in Italian deaf education has made mouthing a visible part of many LIS signer’s process. The majority of the signs in the data I collected were articulated while the equivalent Italian word was mouthed; in some cases, this mouthing was what distinguished two similar signs from each other. The discussion of the data has shown that there is a lot of variation occurring, whether it is lexical or phonological, and since some of the variants are trickily similar within or across the semantic categories given (colors, months, etc.) any extra information that one can glean from the signer as to the meaning of the sign is helpful. Although each signer’s own vocabulary is constructed as to not use variants that look too homophonous, signers from different regions may run into difficulties in

communicating with each other. In the case of PURPLE and GREEN, for example, it might be very difficult to use semantic clues from the context of the sentence to decide whether the signer is referring to one color or the other if he or she is talking about, say, shirts. Therefore watching for specific mouthing cues might be very helpful to signers from different regions of Italy or who went to different deaf residential schools.

This in turn means that since these signers are using Italian as an extra level of information, or additional specificity/context, the confusing and unusual variants of each color or month can be kept in the signer's vocabulary without much issue. In some ways, the strong oralist tradition has preserved all of this variation. Standardization is another complicated and controversial issue, and it seems that LIS has avoided some standardization efforts by using the mutual second language of the majority of its signing population. With the push for legitimacy of LIS, the move away from residential schools, and a greater ease of communication between signers in far-flung parts of Italy due to increased technological advances, some of these unusual variants might fall by the wayside. In fact, the trends found by the LIS corpus project show that as younger signers choose national variants over local ones, standardization is already occurring. It's not my place to decide whether this is good or bad; it does, however, mean that recording the more unusual variants given by the older signers (and since I did my interviews at a reunion for students of a residential school, the majority of my signers were in their 50s and 60s) is all the more valuable as they might not all survive standardization.

2.9 What Does It All Mean?

Why is there so much variation in LIS? It probably has to do with isolation. These deaf residential schools are scattered about Italy, and each one had their own combination of

methodological and natural signs that were used. The use of Italian mouthing and oralism kept these signs from being standardized earlier, and the variants remain. This variation is an interesting piece of evidence about the dialectical differences that have occurred due to the cultural isolation of various geographic regions of Italy. It's also a testimony to how hard it was for the Deaf community to unite on a national level before the ENS's creation and the advances of technology, and a fascinating bit of evidence about the influence of hearing deaf educators on the language of their students. It's also just very pretty. Looking at these signs and the depth of their variation has been a joy. Although increased recognition for LIS on a national level is imperative, its side effect will undoubtedly be more standardization. While this is not necessarily a bad thing, it means that recording the older, more unusual variants of LIS is crucial while those who use them are still around. Thus this project aims toward preservation without also aiming for prescriptivism.

3. Sociolinguistic Analysis of the Data

An important aspect of lexical variation is how this variation is caused by sociological factors such as age, gender, and geographic location. In this section, I show that the geographic origin of the signers has an effect on how many signs interviewees use in common. Age and gender did not have enough variation to show significant patterns of sign grouping. However, general trends such as the use of iconic vs. arbitrary signs are also analyzed in this section, as they offer interesting insights into some of the historical shifts described in Radutzky's dissertation.

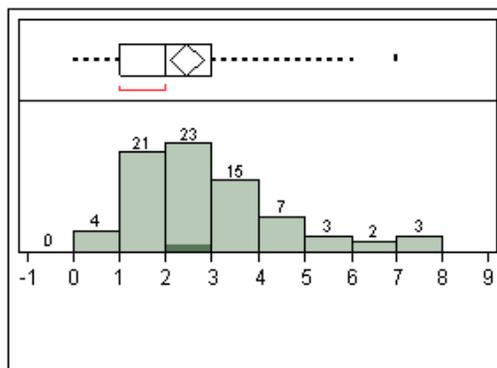
3.1 Overview

The data on each month and color were examined to see which interviewees used which signs. The term "variant overlap" is used here to describe the instances in which two separate

Using this data, it is possible to generate several statistical models that demonstrate the average number of times two interviewees use the same signs, as well as other tests. In order to examine the distribution of this data, it was analyzed using the JMP statistical programming software. The distribution of the overlap counts for the months and colors can be seen in Figure 33.

Distributions Overlap Months

Distributions
Overlap Count for Months



Distributions
Overlap Count for Colors

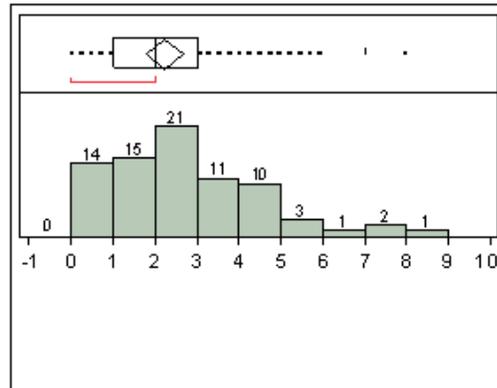


Figure 33: Months and Colors Overlap Count distributions. The bottom row is the number of variant overlaps shared by interviewees, and the height of each bar is the number of times that count occurred. The mean for months is 2.41 and the standard deviation is 1.62. The mean for colors was 2.22 and the standard deviation is 1.79

A one-way ANOVA test was used in order to determine if there is a statistically significant difference between the mean for months and the mean for colors. The resulting p-value is 0.48 which was too high to be statistically significant, as it was much greater than 0.05. Thus there is no important difference between the variant overlap for months and the variant overlap for colors, so the remaining statistics are calculated over the total variant overlaps for

months and colors combined. The visual representation of this ANOVA test can be seen in Table 34.

One-way Analysis of overlap count 1 By category

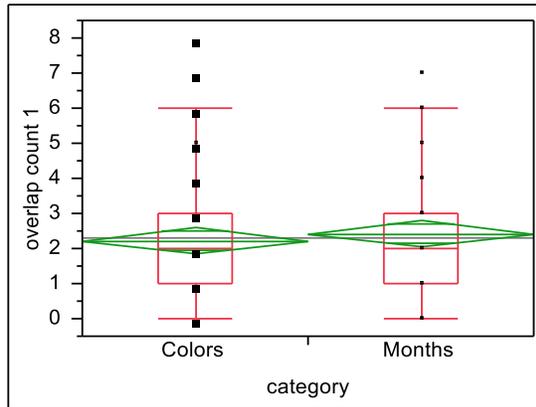


Table 34: ANOVA test for statistical significance of difference. The figure illustrates the distribution of overlap count for months and colors; the T-test shows the likelihood of statistical significance: since the probability is higher than .05 in all cases, it is unlikely that the difference between the two means of the variant overlaps is due to something other than chance.

3.2 Implications of the Distribution of the Data

The mean for variant overlaps of the combined categories is 4.6, there was a definite skew to the distribution of the data. There are many pairs of interviewees who only use a few of the same overlaps (one or two or none at all) and then a few outliers with lots of overlaps. The two signers who use the same variants of signs with the highest frequency are interviewees 2 and 4. At first glance, these two do not have as much in common demographically as would be expected. Interviewee 2 is older than interviewee 4 and a native Sieneese, whereas interviewee 4 is from Padova, and younger. One would expect that interviewee 2 and 3, who are a married couple, would have the highest overlap, but a few lurking factors get in the way.

The first, and most important, is that both interviewee 2 and interviewee 4 gave multiple variants for several signs. This skews the data, but it also puts them both in the same position as people who pride themselves in their extensive knowledge of LIS and the Italian Deaf community. Both interviewees are active in the ENS in Siena and gave especially extensive information about the Palio and Sieneese culture when asked during other parts of their interviews that were used for the Palio project (see Section 1.3 for explanation of this project). Interviewee 3, on the other hand, is also very much involved in the ENS but spoke Italian more than she signed; she relied more on her Italian skills than on her LIS. This might mean that the sociolinguistic influence that Siena might have had on her could be focused on her Italian rather than her LIS.

Although examining sociolinguistic variation by gender can be a very fruitful endeavor, there are too many men and not enough women in this data set to be able to examine this more closely. Instead, the analysis focused on geographic location of origin.

3.3 Geographic location

This section focuses on the sociolinguistic factor that had the most variation and statistical significance: geographic location. The complexities and limitations of this particular data set are described. By showing the distribution of this data, one can see that the majority of signers were Tuscan and that this creates a concrete group of signers who make similar lexical choices in contrast to those from outside Tuscany. There is a statistically significant difference between the Tuscan signers and the rest of the interviewees; however, whether an interviewee is born in Siena or Tuscany or whether they moved to the area later is not statistically significant.

Since the interviewees who live in Tuscany do form a group, it is valuable to look at the variants used exclusively by this group. Since these are signs that the Tuscan signers use but do not appear in the Radutzky dictionary, this data constitutes a preliminary analysis of lexical items included in a Tuscan LIS dialect.

3.3.1 Geographic Distribution of Interviewees

Even though the majority of the signers are from Siena or other parts of Tuscany, some people traveled from all over Italy to come to this reunion. The interviewees were divided into categories of geographic origin: Sienese, other Tuscans, people from north of Siena and people from south of Siena (with their cities of origin in parenthesis). This was to isolate the Tuscan signers from the rest and see if the other groups had significant overlaps in common. Some interviewees appear twice; first in their region of origin and then in the Siena column, as they were born/raised somewhere else but currently live in Siena. When looking just at city of origin, 17% were from Siena, 17% were from other parts of Tuscany, 25% were northern, and 41% were southern. When the people who were born in Siena and those living in Siena currently were combined, the total of Sienese people changed to 50% and an addition 8% were Tuscan (but not Sienese).

Table 35: Interviewees categorized by geographic region. Note: the * sign at the end of some interviewee's numbers indicate that they are currently living in Siena (hence their appearing twice on the chart)

Siena	Tuscany	north of Tuscany	south of Tuscany
1	11 (Grossetto)	7 (Padova)	4 (Perugia)
2	12 (Fermo)	8 (Torino)	6 (Catania)
12*		5 (Mantova)	9 (Viterbo)
4*			10 (Campo Basso)
9*			3 (Paduli Benevento)
3*			

Besides tipping the scales towards having more Sieneese signers, does it make a difference if a signer was born in Siena or if they moved there as an adult or commuted to and from Siena while they were going to the Tommaso Pendola School? This question can be answered by using several one-way ANOVA tests.

First, it is important to determine that the mean overlap between the larger pool of interviewees is significantly different from the mean overlap of the Tuscan signers (this includes those who were born in Siena, those who live there currently, and those who are from other parts of Siena). An ANOVA one-way test was done and the p-value was 0.0004*, which is very strong evidence that the Tuscan signers do tend to use the same lexical variants and form a coherent group. The results of this test can be seen in Figure 36.

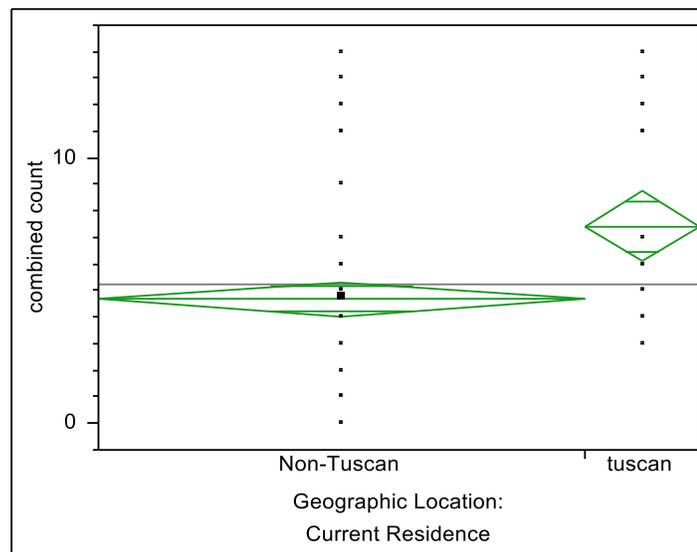


Figure 36: ANOVA test for Tuscan Residents vs. Whole Group. P-Value = .0004*.

Second, those who were born in Siena and other parts of Tuscany might form a group that has a statistically significantly higher mean than the group of interviewees—the p-value for the difference between the “Born in Tuscany” group vs. the whole was 0.08, which is above the

critical value of 0.05, but not by much. The small sample set of those born in Tuscany makes this hard to determine definitively. The results of this ANOVA test can be seen in figure 37.

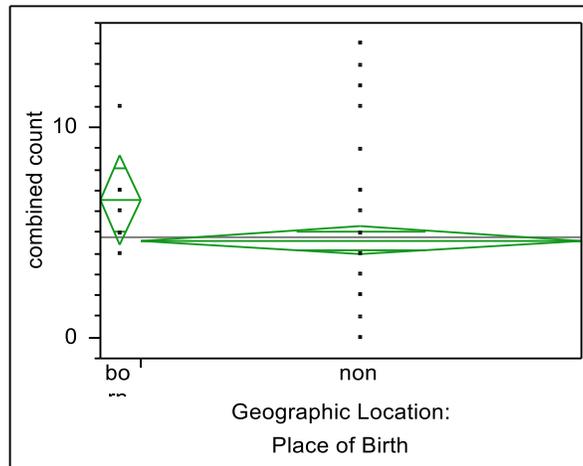


Figure 37 ANOVA test for Born in Tuscany vs. the Whole Group. p-value = 0.08

The third ANOVA test that clears this ambiguity up and answers the original question of whether being born in Siena/Tuscany makes a difference pits those born in Tuscany against those who are generally Tuscan, having moved there later on in life. This last ANOVA test shows that there is not a statistically significant difference between the two groups, as the p-value is 0.74.

The results of this final ANOVA test can be seen in Figure 38

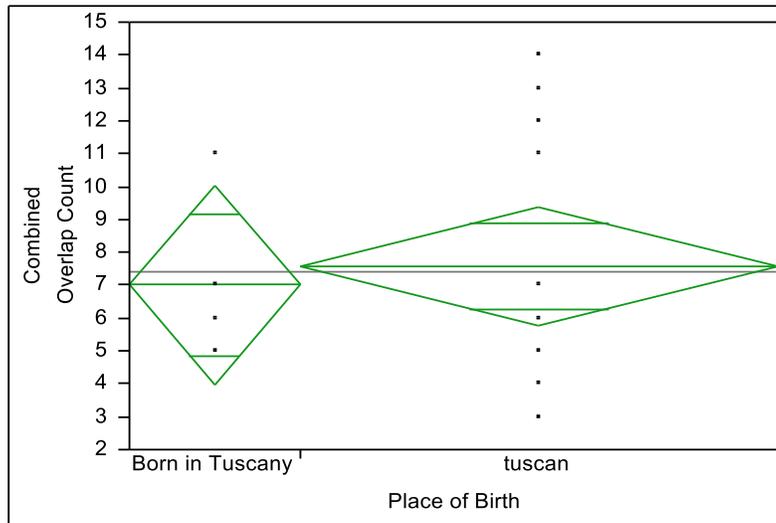


Figure 38: ANOVA for Born in Tuscany Vs. Generally Tuscan. P-value= .74

Although the results of the test show that there is not a statistical significance to the difference between those who are native Tuscans and transplants, some important background evidence should be considered in terms of the social differences between these two groups. Besides the linguistic implications of outside influence, there are also some important social differences to be mentioned. Siena has a reputation for being a close-knit community wary of outsiders. In an anthropology class I took in Siena last year, one of my teachers explained that she had a hard time fitting in during her middle school years in Siena because she moved to the city from a nearby town at the age of 11 and she was not considered a “proper” Siennese person. Thus including those interviewees who live in Siena now will be a valuable way to see what local signs they may have picked up (for often a speaker or signer who moves to another region will eventually pick up lexical and phonological aspects of the local dialect—I know that during my stay in Siena, my Italian accent had certain Tuscan influences: I once pronounced *coca cola* as [hoha hola], to the delight and amusement of my host parents), even though it is still important

to make the distinction between native Sienese and those who moved there later to see if the social implications of not being born in Siena carry over to lexical choice in a concrete way.

3.4.2 Tuscan Signs

Are there certain signs that the Tuscan interviewees use? If so, do they have any characteristics in common? The first step in determining the answers to these questions is to decide what constitutes a “Tuscan sign” and how to distinguish it from the other variants given for the months and colors.

The most obvious way to decide if a sign is local to Siena or Tuscany is to find out if any variants of the signs are used by those in the “live in Siena” and “Tuscan” groups: interviewees 1, 2, 3, 4, 9, 11 and 12. This subset of Tuscan signers does seem to use a lot of the same variants. 1, 2, 4 and 9 have especially high overlap rates both overall and with each other. For the purposes of this analysis, only the signs these Tuscan signers use but not the ones that show up in the dictionary will be considered local signs; those that overlap with the Tuscan signers and Radutzky are considered national variants within the scope of this paper.

Looking across the variant tables for each month and color, it appears that many of the popular/dominant variants have lots of overlap because the majority of the singers living in Siena or other places in Tuscany use them. Nonetheless, it was still hard to find a sign that ALL of the 7 signers placed in the Sienese/Tuscan category use but is not also used by people from other geographic locations. There was only one sign variant that all of the Sienese/Tuscan signers used, which was DECEMBER_{A1}, (see Figure 28), which is articulated by creating the points of the leaves of a Christmas tree with symmetrical pinching hands that move downwards in the signer’s space. What can be observed more often is that two or three dominant Tuscan signs are

seen where the group seemed split on which sign they use. And in the case of almost every month or color, there were some interviewees who were the only ones using their variant. Thus it seems that there are a few variants of each month and color that could be considered the “Tuscan” variants, not just one variant for every category.

Other notable variants that many of the Sienese/Tuscan signers use:

- FEBRUARY_{A1} in which the signer uses a V handshape that is placed at eye-level and pulled from the eye backwards sideways from the eye (used by 1, 2, 3, 4, 9, and 11). This sign also has a double-handed variant (given by 2).
- JUNE_{A1} has alternating 1 handshapes that start in the middle of the signer’s chest and move upwards. This variant is used by interviewees 1, 2, 4 and 9, with an alternate subvariant JUNE_{A2} in which the signer uses thumbs instead of index fingers to point alternately upwards.
- ORANGE_B, is used by every Tuscan signer except interviewee 1. In this sign all five fingers are bent into a claw and the hand is passed across the mouth.
- Oftentimes when the group was split on which sign to use, the variants had some characteristics in common: for example, both variants A and B of LIGHT-BLUE use an open 5 handshape with an extended middle finger, which has been referenced before as connected to PINK and WHITE. It’s the handshape used in the WHITE_A variant and seems to have some semantic connotations of lightening, since PINK and LIGHT-BLUE can be seen as whiter versions of RED and BLUE.

- One last example of predominant Tuscan variants can be seen in $BROWN_{A1}$ and $BROWN_C$. a curled V shape over the nose is used for $BROWN_{A1}$ (1,4, and 9) and 3,4,11, and 12 all use $BROWN_C$, which very interestingly, is made by rubbing the web of each hand together (see figure 41) and looks sort of like the BSL sign for FUCK.

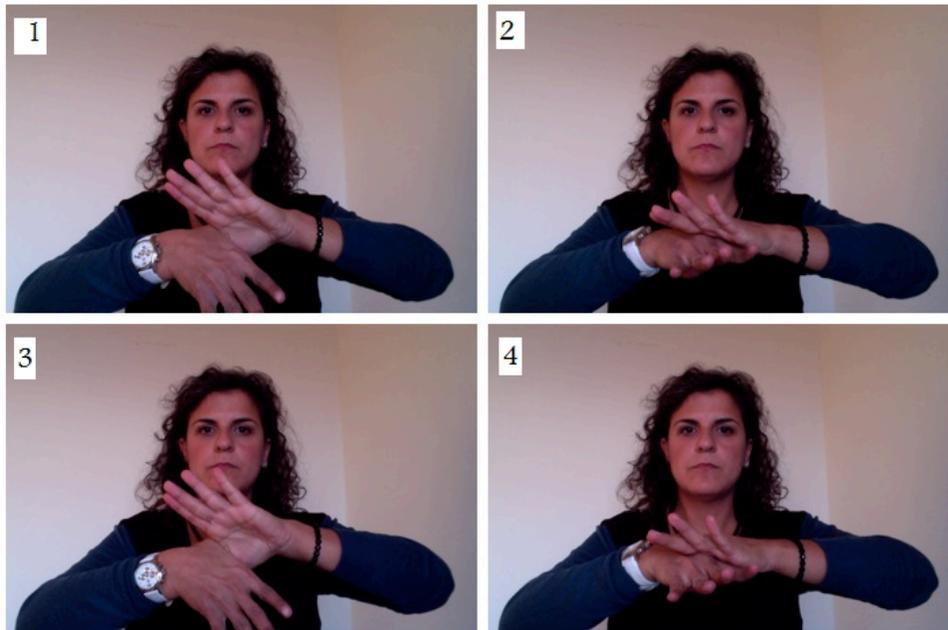


Figure 39: $BROWN_C$. This variant is made by moving the hands up and down in opposite directions, coming together and moving apart while hinged at the web between both index fingers and thumbs.

It's hard to see if these dominant Tuscan signs have overarching characteristics in common. Some of them seem to be articulated closer to the face than other variants of the same color or month; this could mean that they are more old-fashioned variants. None of the signs mentioned in this discussion overlap with the variants given in the Radutzky dictionary. There are, however, some signs that Radutzky cites that are also used by Tuscan signers. These are signs I would consider national variants because they are used by Tuscan signers, but also by

signers from other regions and are mentioned in the dictionary. There are not very many of these examples, but they certainly exist. MAY_A (see Figure 21) is a very popular variant that falls into this category; $YELLOW_{AI}$ is another one, articulate by brushing the index finger across the chin of the signer from their non-dominant side to their dominant side (see appendix F for full $YELLOW$ variant chart and descriptions).

3.3.3 Other Regions

Now that the Tuscan signs have been discussed and the Tuscan signers isolated, what of the other groups? It's not so easy to determine if there are any others. "northern" and "southern" are broader categories spanning larger geographic areas than just "Tuscany" or "Siena". Plus there are fewer people in these categories and none of them are from the same cities. But some variants had overlap for some but not all of the Northerners or Southerners. The following are some notable examples of trends that could be occurring. It is my hope that future research can test the hypothesis that these are indeed representative of northern and southern LIS lexical variation.

Northern signs: Interviewees 8 and 5 are both from the North and use two signs in common, $BROWN_D$ and $GRAY_C$. $BROWN_D$ is formed by putting one fist on top of the other and rotating the top one in a grinding motion. $GRAY_C$ is articulated by rubbing the thumb against the other fingers of a pinched 5 hand with the fingers pointing upwards, as if one was twirling or sprinkling something. Interestingly, interviewee 8 gave this variant as one of several possible signs for $GRAY$. Both signs involve more tactile contact than some of the other variants for their color.

Southern Signs: The pool of interviewees who come from cities south of Siena is larger than the one for the northerners, but many of the signers are currently live in Siena. Interviewees 3, 4, 6, 9 and 10 come from the south; 3, 4 and 9 now live in Siena. This means that often those who live in Siena have more overlap with other Tuscan signers than with other people in their “south of Siena” category.

There are two signs that only southern signers seem to use. The first is used by interviewees 6 and 10, the signers who have the least Tuscan influence out of this pool. They both use NOVEMBER_F, which they give as a clawed hand passing back and forth over the mouth. They have overlap at other areas, but those signs are also given by people from other areas of the country. Interviewees 4, 9, and 10 all use JULY_{BI}, which was discussed in Section 2.2 and is articulated by creating an L shape with the thumb and index finger, other fingers down, and moving the index finger up and down from vertical to horizontal in a sort of wiggling motion.

It is important to note some of the cultural background that could result in Northern or southern LIS signers retaining or discarding their local lexical variations. Moving up from the south of Italy is a common practice for people today due to the relative economic prosperity of the north and center of the country. There is often a stigma associated with being southern and much prejudice against the south. This may have to do with some signers’ use of Tuscan variants and not southern variants; asking these interviewees about issues of southern identity may give more information on those lexical choices. Also, there are people from very diverse parts of Italy that were grouped together because their cities fell south of Siena. Perugia, for example, where interviewee 4 is from, is a lot closer to Siena than some of the other cities and shares many cultural similarities. Interviewee 4 and interviewee 9 (who is from Viterbo), are both men from

cities in regions bordering Tuscany and both currently live in Siena. As a result, they have one of the highest overall overlap counts, using 11 signs in common. See Appendix J for the full overlap count chart.

3.3.4. Conclusions for Geographic Location

Geographic location was one of the more diverse demographics I could analyze from this data. It seems that variant usage is indeed informed by the part of Italy that one lives in, and the diversity in places of origin brought some variant diversity into the mix as well. But even the signers who live and grew up in the same place do not always use the same signs.

3.4 General trends

There are a few additional patterns that are worth examining sociolinguistically. These patterns cannot be classified as being trends across age, gender or geographic location lines, but they are important nonetheless because they offer possible insights into how one's LIS usage may be changed by the environment. The three categories that will be focused on in this section are iconic vs. arbitrary signs, fingerspelling and initialization, and frequency of mouthing.

3.5.1 Iconic vs. Arbitrary Signs

As a sign language develops, the signs used become less iconic and more opaque as frequency of use and ease of articulation create forms for the signs that are no longer directly connected to any sort of image of what they represent. Tests for arbitrariness of LIS have been done (Radutzky 1989) to show that LIS is not so transparent in its iconicity that someone with no knowledge of LIS can understand all the signs shown to them. This was an important experiment

conducted to prove LIS's status as a proper language like any other, worthy of recognition by the Italian government and the international linguistic community.

Moving towards more opaque signs from more iconic ones is still a process, and the numbers and colors are interesting examples of signs that are semantically linked to certain icons. Perhaps looking at which signers use less iconic signs can give clues as to how progressive their version of LIS is.

Looking at iconicity in months and colors is an interesting task because months and colors are man-made categories that can't always be represented concretely. Colors are easier when they appear in easily recognizable contexts; RED, for example references the lip in all the variants given here. This is not so much a transparent sign as a semi-opaque one—a connection has to be made from the iconic root to the referent, which in this case is the color of the lip (RED).

In section 2.7, the very iconic DECEMBER_A is discussed (see figures 28 and 29). The other variants of DECEMBER are less iconic but are mostly semi-transparent. This means that with a bit of cultural context, their iconic roots can be seen. The C, D, F and G variants of DECEMBER make some sort of reference to babies, with rocking motions or touching the stomach, and DECEMBER_E is the same as the LIS sign for WINTER, which is made by moving one's hands back and forth toward and away from each other as if shivering from cold.

Some of the variants of AUGUST, instead of referencing the cold, reference the heat with variants that involve fanning the signer's face. AUGUST_{B1}, AUGUST_{B2}, and AUGUST_E all involve hands fanning. AUGUST_{A1}, and AUGUST_{A2} also seem to reference heat by including

movements that cross the brow, as if wiping sweat from the forehead. All these more iconic variants are highlighted in Table 44:

Table 44: Variant Chart for AUGUST. Variants discussed in this section are highlighted in yellow

A1	Thumb swept from right to left across forehead (hand closed)	1
B1	Two closed 5 hands fanning face/chest	2, 3,4,5
C	Hands creating horizontal plane in air (like swimming)	2
D	Point finger to neck (under jawline)	4
E	Flat palms crossing each other back and forth (fanning)	6,7, R
F	F handshape at neck (GE)	R
A2	Like V1 but with 3 handshape swept across brow	8
F	Fist placed under/at chin	9
B2	Touched mouth, and then did B1	11
G	Closed horizontal hand tapping under chin	12

By examining these iconic variants, one can see that they are still prevalent in many signers' LIS vocabularies, but that there are also popular variants that are more opaque in their meaning. Moreover, as cultural symbols that these signs reference become less important as time goes on, some of these iconic signs might become less obvious.

A Return to Fingerspelling and Initialization

Mouthing and the use of the manual alphabet are two main ways that lexical borrowing occurs in sign languages (Battison 1978). The use of fingerspelling as a way to borrow spoken

Italian words is not quite as common in LIS as it is in ASL, but there are certainly places where the influence of the manual alphabet can be seen in the LIS lexicon. The use of initialization, which has already been discussed in Section 2.3.1 in reference to some variants of PURPLE and GREEN. These variants use the V handshape to initialize the V that begins *viola* ‘purple’ and *verde*, ‘green’.

The use of numbers to indicate months versus the use of initialization was something I posited could be a sign of difference for more progressive signers. I had learned the signs OCTOBER and NOVEMBER as wiggling downward numbers. By this I mean that the sign had the handshapes of EIGHT (looks like 5 fingers extended on one hand and the first three on the left) and NINE, (5 fingers extended on one hand and every finger but the thumb on the other hand) which were moved back and forth horizontally in a wiggling motion even as they moved downwards in neutral space. This variant, NOVEMBER_D, was given by only one interviewee, number 4. The more popular variant for NOVEMBER, NOVEMBER_A, used initialization, referencing the letter N (for the Italian word *novembre*) which was created with the two first fingers extended pointing down, pressed together, moving downwards repeatedly. This sign was used by signers with a variety of backgrounds (interviewees 1, 8, 9, 11, and 12) and is mentioned in Radutzky’s dictionary.

Despite there not being specific evidence to show that progressive signers consistently use initialization over other types of signs, when there are instances of colors or months that have variants using initialization, those variants (or variant groups) are popular. The V-initializing variants of PURPLE are used by 9 of the interviewees and Radutzky, and the V-initializing variants of GREEN are used by 8 of the interviewees. NOVEMBER_A, mentioned above as the N-initializing variant of NOVEMBER, is the most popular of the variants for that month with 5

interviewees and Radutzky. This leads me to hypothesize that the popular use of these initializing variants means that the use of initialization is becoming an important way to borrow spoken Italian words in LIS; perhaps this shows a shift in the way that lexical borrowing occurs in the language.

Frequency of Mouthing

The use of initialization or fingerspelling as a way to borrow Italian words is often contrasted with the use of mouthing. Even though all of the interviewee mouthed the equivalent Italian words for the months and colors while signing, there were differences amongst the signers in terms of how clearly the mouthing was articulated; that is, whether the words were also vocalized, whether just part of the word or whole thing was mouthed, etc. Since the use of mouthing often has to do with the strength of the oral education given to the signer, it seemed appropriate to try to analyze the use of mouthing for correlations of age. Do older and more old-fashioned signers use more complete and/or mouthing? It seems likely that there are other factors that get in the way.

Here the situation in which the data was recorded becomes an important variable. Some of the later interviews had louder background noise and therefore hearing how much the interviewees were vocalizing their mouthings as they signed was sometimes difficult. The following table (Table 45) is an imperfect rendering of the degree that the mouthings were vocalized and articulated completely:

Table 45: mouthing vocalizations and completion

Interviewee	Age	Vocalize?	Articulate whole word?
1	51	Yes	Yes
2	67	No	Sometimes
3	62.5 ☺	Yes	Yes
4	48	Sometimes	Yes
5	72	Yes	Yes
6	59	Yes	Sometimes
7	60	No	Yes
8	24	No	Yes
9	52	Sometimes	Yes
10	60	No	Yes
11	64	No	Yes
12	64	No	Yes

Because this was an interview setting with hearing people present and the interviewees were asked for specific nouns and had the Italian words in front of them, it is unsurprising that during these sections of the interviews almost everyone articulated the Italian words completely. It was interesting to see, however, that those who did not vocalize their mouthings often seemed to make sure that their lips could be read while signing.

As for who vocalized their mouthings, interviewees 1,3, 5, and 6 were the ones who were most vocal. This too, is not completely unbiased data. Aside from sound problems, there were times that Rita told the interviewees that they did not need to vocalize or try to speak Italian in an attempt to get a form of LIS that was closer to what native (and deaf) LIS signers would use among themselves. But these people seemed to vocalize naturally along with their mouthing and signing.

Looking at their ages, even though there were some older signers who did not vocalize, those who do vocalize more completely are among the older set. The oldest signer, interviewee 5, is among this group. The rest are in their 50s and 60s. The younger signers (4 and 8, for example) do not seem to be among this group. Therefore it is likely that there may be some connection between age and vocalization.

Besides factors due to atmosphere and register, the degree to which one vocalizes is dependent on education. The older signers probably vocalize more because they grew up with strictly oralist education; however, how much a signer adheres to what they were taught has a lot to do with their own feelings of identity and ability. Interviewee 2, who was very knowledgeable about the Palio and who gives tours at the Tommaso Pendola School's museum, explains in his tour that he was reprimanded as a student because he was profoundly deaf and therefore was bad at some of the vocal exercises. Those who may have some abilities to hear and therefore were people for whom oral education was more effective may be the ones vocalizing as well as mouthing.

If it is true that older LIS signers tend to mouth and vocalize more, does that mean that there is a stigma against vocalizing and mouthing among younger LIS signers? There is not

enough evidence to determine this, but it's an interesting and important question to ask as we try to consider what factors go into the use of mouthing in LIS.

4 Conclusion

Many a researcher has gone into the field with a hypothesis in tow worrying to themselves “but what if I don't find anything?” Thus it is wonderful if overwhelming to discover how much variation there is in LIS, even in such as small subset of the language. The sheer number of variations for each sign is interesting in itself, but some fascinating things are occurring within the set of variants for every color or month. Some signs vary slightly, but those variations are important enough to make a difference; BLUE_A and LIGHT-BLUE_A vary in only the repetition of the handshape and movement of the sign. Other signs have clusters of variants that center around a certain handshape but differ in movement and location. This can cause some potential confusion, such as in the V initializing variants of PURPLE and GREEN, or can highlight some interesting aspects of how two semantic meanings can combine to create a third in the trio of RED WHITE and PINK. Some signs had lots of variants that looked nothing like each other, and almost every person interviewed gave something different; other signs had clear “winners” in the war of frequency. Each time the data was reanalyzed, new distinctions and associations seemed to jump out.

The introduction serves to give some context to this variation. In these signs and their variants, it is possible to see the history of LIS and the education of deaf people in Italy. All of the people interviewed went through the residential school system; they were exposed to oralism-heavy educational philosophies and cultural influence from the Catholic Church. In analyzing some of the sociolinguistic distribution of the data, I could see that place where a

signer lives influences his or her lexical choices. Moreover, the signer's age, education and degree of deafness could all be factors that determine how much they vocalize the Italian words they mouth. The data did not have a wide enough sample to examine age and gender more closely, but it is certainly possible that those factors have some weight in the lexical choices of LIS signers giving variants of number and color signs as well.

There is still so much that can be done with this data. There are 12 interviewees analyzed here, but more people were interviewed and they might use completely different variants, or tip the scales in several "popularity contests" for frequency. There is also some amazing footage of the old methodological sign system for numbers used by the Tommaso Pendola School. Far from being doomed to have not found anything, I am both blessed and cursed with an abundance of data. It is my hope that someday the remaining bits and pieces of information that could not be analyzed here will have their moments in the limelight.

Bibliography

“Due Passi Nella Storia...” *Ente Nazionale per La Protezione E L'assistenza Sordi ONLUS*. ENS.

Web. 11 March. 2012. <<http://www.ens.it/chi-siamo/organigramma/storia>>.

“Legge 4 Agosto 1977, N. 517.” *HandYlex.org*. Legge 4 Agosto 1977, N. 517., 2009. Web. 5

Dec. 2011. <<http://www.handylex.org/stato/1040877.shtml>>

Ajello, R, L. Mazzoni, and F. Nicolai. “Linguistic Gestures: Mouthing in LIS” Boyes Bream, Penny, and Rachel Sutton-Spence, eds. The Hands are the Head of the Mouth.

Washington DC: Seiten, Signum 2001 1-19.

Battison, Robbin M. Lexical Borrowing in American Sign Language. Washington DC: Linstok Press, 1978

Bender, R. The Conquest of Deafness. Cleveland, Ohio: Press of Western Reserve University, 1960

Boyes Braem, Penny and Rachel Sutton-Spence “Introduction” Penny Boyes Bream and Rachel Sutton-Spence, eds. The Hands are the Head of the Mouth. Washington DC: Seiten, Signum 2001.

Carrozza, Serena. “The History of Sign Language in Italian Education of the Deaf.” Carol J Erting, Robert C. Johnson, Dorothy L. Smith, and Bruce D. Snider, ed, The Deaf Way: Perspectives from the International Conference on Deaf Culture. Washington D.C.: Gallaudet University Press, 1994, 186-193.

Ceil, Lucas, Robert Bayley, and Clayton Valli. Sociolinguistic Variation in American Sign Language. Washington DC: Gallaudet University Press, 2001.

- ELAN 4.1.2 Linguistic Annotator computer program. Max Planck Institute for Psycholinguistics, Nijmegen, The Netherlands. Available online at: <http://www.la-mpi.eu/tools/elan/>
- Evans, L. Total Communication: Structure and Strategy. Washington, D.C: Gallaudet College Press, 1982.
- Frasu, Amy. "Deaf Education Options Guide: Auditory-oral Education Approach." *Deaf Linx: Resources and Guides for the Deaf Community*. 1998. Web. 05 Dec. 2011. <<http://www.deaflinx.com/DeafEd/OptionsGuide/Oralism.html>>.
- Frishberg, Nancy. Arbitrariness and iconicity: Historical change in American Sign Language. *Language*, 51:3, 1975. 696-719
- Geraci, Carlo et. al. "The LIS Corpus Project: a Discussion of Sociolinguistic Variation in the Lexicon" Sign Language Studies Vol II No. 4 Summer 2011
- Grimaldi, A. Storia dell'educazione dei sordomuti. Bologna: Scuola Professionale Tipographica Sordomuti, 1960
- Haspelmath, Martin, and Andrea D. Sims. Understanding Morphology. London: Hodder Education, 2010
- Johnston, Trevor, and Adam Shembri. Australian Sign Language (Auslan): An introduction to sign language linguistics. New York: Cambridge University Press, 2007
- Lane, Harlan. When the Mind Hears: a History of the Deaf. New York: Random House, 1984
- Moore, D. Educating the Deaf. Boston: Houghton Mifflin Company, 1978

- Pinna, Paola, Laura Paglieri Rampelli, Paolo Rossini, and Virginia Volterra. "Written and unwritten history of a Residential School for the Deaf in Rome, Italy" Erting, Carol J., Robert C. Johnson, Dorothy L. Smith, and Bruce D. Snider, ed. The Deaf Way: Perspectives from the International Conference on Deaf Culture. Washington D.C. 1994, 194-202
- Pizzuto, E. Gallaudet Encyclopedia of Deaf People and Deafness. J. van Cleve. New York: McGraw-Hill Books, 1986. 105-109
- Radutzky, Elena. Dizionario Bilingue Elementare della Lingua Italiana dei Segni. Rome: Edizioni Kappa, 2001.
- Radutzky, Ellen J. La Lingua Italiana dei Segni: Historical Change in the Sign Language of Deaf People in Italy. New York: NYU, 1989.

Appendix A: discussion of limitations and personal aspects of methodology

This thesis has been in the works in one way or another for a couple of years now. When I chose the Siena School for the Liberal Arts as my study abroad program, their Deaf Studies department was one of the most important factors. I spent my first semester learning LIS and Italian, getting acclimated to the country and to the city of Siena, and just absorbing everything about my environment I could. When my spring semester approached, I realized that I had to focus my efforts into deciding on a topic for my independent project and my eventual thesis. As mentioned before, lexical variation has always been a pet topic for me, and so I went ahead and looked at that aspect of LIS. My independent project, for which data was collected at the same time as for this thesis, concerned the Palio and its connection to Sienese Deaf Identity, analyzed through the lens of linguistic knowledge of the Palio/Contrada culture by members of the Sienese Deaf community.

As for the limitations; even though Rita, my interpreter, and I managed to collect interesting data that gives very important information about lexical variation in LIS and its connection to Sienese Deaf identity, this was a project limited by many factors. Conducting two research projects at once was not easy, but it would have been nearly impossible for me to collect the data separately, as getting together a large group of LIS signers who had possible Sienese influence on their signing for multiple interviews is not an easy task, and trying to conduct additional interviews my senior year, once I had returned to Swarthmore, would certainly not have been feasible.

I had not been studying LIS long enough to conduct the interviews myself, and the ideal situation would have been to find a Deaf elicitor. But since that would have required extra funds and time not available to us, we decided that Rita should be the one to conduct the interviews. She was also the most familiar with my purposes for the project and therefore was able to improvise extra follow-up questions not in the script. While I tried to keep my active presence to a minimum during these interviews, I did not leave the room entirely, and that could have influenced our results.

Time, scale, and budget constraints also meant that interviewing hundreds of people was out of the question. These 19 interviewees give plenty of variation in amongst themselves, and other corpus projects provide comparative data.

Appendix B: Statement of intent

I am a linguistics student at Swarthmore College studying in Italy for the year. I am studying LIS and would like to do a research project on the differences between signs in various areas in Italy and also LIS signs that may be unique to Siena. The Palio is something special about Sieneese culture and so I'd like to do short interviews and ask for the LIS signs for words concerning the Palio. I'd also like to ask a few questions about your memories and experiences of the Palio. The interview will then be filmed so that I can analyze the signs you use for these terms. I hope that this research will be used to show how important and interesting LIS is and to understand more about the way that Deaf in Siena feel about the Palio. The interview should take about 15-20 minutes and I promise to not use your face or name in anything I publish. The research will be used for my school work at Swarthmore College and the Siena School only. If you have any questions, you may contact me at asilverswartz@gmail.com or through the Siena School for the Liberal arts at info@sienaschool.com. You do not have to participate if you do not want to; this is purely voluntary. If there are any questions you cannot or do not want to answer that is perfectly fine.

Sono una studentessa di linguistica Americana e studio alla Università Swarthmore College, ma quest'anno studio in Italia. Studio LIS e vorrei fare una ricerca

sui segni diversi nelle varie regioni d'Italia. Vorrei anche scoprire i segni che sono specifici del LIS senese. Il Palio è qualcosa di speciale della cultura senese, e allora vorrei fare delle brevi interviste e chiedere quali sono i segni in LIS sul Palio. Poi vorrei fare qualche domanda sui vostri ricordi e esperienze del Palio. L'intervista sarà registrata e così posso analizzare la ricerca e i segni che voi usate. Spero che questa ricerca potrebbe essere usata per mostrare al mondo accademico che LIS è importante e interessante come lingua, e anche per capire meglio come la comunità Sorda a Siena interagisce con il Palio. Ci vorranno 15-20 minuti per ogni intervista e prometto di non usare i vostri nomi o nomi in qualsiasi cosa che scrivo o pubblico. La ricerca sarà usata solamente per il mio lavoro accademico a Swarthmore College e il Siena School for the Liberal Arts (ISLA). Se Lei ha domande si può contattarmi a asilverswartz@gmail.com o con l'ISLA a info@sienaschool.com. Lei non deve partecipare se non vorrebbe; questa intervista è completamente volontaria. Se ci sono domande che Lei non potrebbe o non vorrebbe rispondere non c'è nessun problema.

Appendix C: introductory questions

Intro Questions

- Quanti anni ha?
- Da dove viene?
- Se Lei è di Siena o vive a Siena, di quale contrada appartiene?
 - Da quanto tempo sei a Siena?
- Where did you grow up and where do you live now?
- (other icebreaker questions about the reunion if necessary)

Appendix C: Color chart used to elicit color signs



Bianco



Nero



verde



Rosso



Blu



Azzuro



Arancione



Giallo



Rosa



Marrone



Viola



Grigio

Variant	Description	Users
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Appendix E: follow-up questions

Altre domande:

- For the people at the reunion: did you just study here, or did you live in Siena after school?
- Are you interested in the Palio? Do you go often?
- Lei sa qualche scherzi sul palio o le contrade?
- The best or worst Palio you ever saw
- A memorable Palio experience
- Quali sono le parole di offesa che le persone usano per parlare di una contrada nemica?
- Are there any words that you think LIS speakers in Siena use that other Deaf people in Italy don't use?

Appendix F: Variation Charts

The full-length charts for each month and color and their variations can be found here.

JANUARY (*gennaio*)

A	Index and thumb in square moving 90 degrees from face (starting at nose)	1, 2, 3, 9 ⁸ ,
B	Two fists next to each other pinkie-thumb near chest as if carrying heavy weight	2
C	Hand in S shape moving up 90 degrees to “thumbs’ up” gesture. Same as ANNO	4
D	“glasses shape” circled around in neutral space (no movement from face) with shape laying horizontal, not vertical	5
E	Clawed 5 hand circling cheek	6,7
F	Two sideways closed 4 hands (with thumbs behind fingers) moving back and forth towards each other—like WINTER. See DECEMBER _{E1}	8
H	Fist under chin	11, 12
I	Clawed 5 hand straight or circular at ear/eye level (sort of like JANUARY _F but different location)	R
J	Square ‘baby c shape’ [fist with first finger and thumb extended] moved in circle in neutral space. Same as JUNE _I	R

FEBRUARY (*febraio*)

A1	Repeated V shape pulling back sideways from eye (1-handed)	1,2, 3,4, 9, 11
A2	Double V from both eyes	2
B	Circular curled v shape brushing nose (like BROWN _{A1})—alternative placement of the 2/V shape?	5
C1	C shape around nose pulling out “long nose” to a point/fist in neutral space	6
D	First finger coming down onto thumb in pinching shape in front of face	7

⁸ Articulated a bit lower than nose

E	Clawed hand with fingers pointing towards face back and forth in front of lower face	9
A3	Repeated pinching 'whiskers' at mouth/nose (both hands)	10
F	Flat closed 5 hand moving in sideways circular motion about chest*	12
G	3 handshape pulled back from forehead to above ear (RM) (a)	R
H	Open 5 handshape moved in a circle around lower face	R
C2	Open c hand pinching repeatedly from mouth to end in fist; similar to Gennaio _G (RM) (b)	R

MARCH (*marzo*)

A	Four fingers on upper chest	1,
B1	3/5 handshape waved above head	2,3,5,8, 10, 11
B2	Curled open 5 handshape waved above head like rain	2
C	Wiggle horizontal first finger up and down in front of nose	4
B3	3 shape circled around mouth (palm out to viewer)	6
D	2 fingers pinching under chin	7
E	1 finger pointing horizontally and down across neutral space	8
F	Wiggling fingers horizontally across space near mouth*	12
B4	Hand at chin, palm on face, closed 3 handshape going into A handshape	R
G	Same as JUNE _{C3}	R

APRIL (*aprile*)

A1	Fist with thumb sticking out of top shaken from top to bottom	1,2, 4, 10, 12
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A2	Moves hand back and forth instead of up and down	3
B1	One hand fanning self	4, 9
C	Thumb on nose wiggle other 4 fingers (like DECEMBER _B)	5
D	Two 3 handshapes circling each other (bicycle-like motion)	6,7, R
B2	Two hands fanning self	8, 11
E	One hand with one finger crossing and lowering over other 1 finger hand (GE)	R

EASTER (*pasqua*)

A	Hands flapping like wings	2
B	Hands clasped together moving back and forth like prayer	2, 3 ⁹
C	Fist with thumb extended up near 1 st finger (T shape) moved outwards from center)	R

MAY (*maggio*)

A1	Hands crossed at chest (sometimes repeated taps) (RM)	1, 3,4,5,6,7,9, 10, 11, 12, R
A2	Hands not crossed but tapped on chest(one higher than the other	2
B	Semi-closed 5 hand at lip (+contact) moved away, fingers folded over and down to create a shape mid finger joints tapped at chin	8
C	Repeated b hand tapped at chin(GE)(a)	R
D	4 finger M shape pointing down—kind of looks like MARZO _{A1} (GE) (b)	R

⁹ Given after Maggio—connected to Maggio and not Aprile?

JUNE (giugno)

A1	Alternating 1 handshapes pointing upwards (repeated)	1,2, 4, 9
B	Thumb tapping chin (mouthing)	3
C1	Thumb pointing at chest, hand in fist, + contact on upper chest moving diagonally downwards	4, 7
D	Two fists grinding in circular motion on top of each other (dominant hand on top)	5
E	Two fists with fingers pointing towards each other, held together and rocking back and forth	6
C2	Like C1 but moved across instead of downwards	7
F1	One finger pointing at neck	8
G	Like Luglio A, but hand circling <i>over</i> fist instead of under	10
H	One finger sliding and hooking over curve of nose	11
F2	Same as Luglio A	11
A2	Same as A1, but with thumbs instead of 1 fingers	12
I	Square “baby c’ shape moved in circle in neutral space (same as GENNAIO _J)	R
C3	Closed fist tapped on opposite side of chest from hand and then to closer chest side/shoulder (very similar to C2) (RM)	R

JULY (luglio)

A1	Dominant open hand (5 handshape) circling under a fist	1,2,3,4, 8, R
B1	L initial, wiggle top of L (index finger)	4,9, 10?

B2	Circular L instead of wiggly top	5, 12
B3	L initial and wiggle ,but at cheek	6
A2	Like A1, but flat sideways palm instead of fist	7
B4	L initial, but bounced 90 up and down from wrist	11

AUGUST (*agosto*)

A1	Thumb swept from right to left across forehead (hand closed)	1
B1	Two closed 5 hands fanning face/chest	2, 3,4,5
C	Hands creating horizontal plane in air (like swimming)	2
D	Point finger to neck (under jawline)	4
E	Flat palms crossing each other back and forth (fanning)	6,7, R
F	F handshape at neck (GE)	R
A2	Like V1 but with 3 handshape swept across brow	8
F	Fist placed under/at chin	9
B2	Touched mouth, and then did B1	11
G	Closed horizontal hand tapping under chin	12

SEPTEMBER (*settembre*)

A1	Dominant hand in I and L shape (pinkie and index finger) tapping non-dominant hand with palm down (animal head/ 'horns' shape)	1, 9
A2	'Horns' but on forearm	2,4,7, 11, R

B	V shape brushing across closed O fist. Like OCTOBER _B	3
C1	F/OR shape tapping on top of vertical closed fist	5
D	Dominant hand behind head, showing off elbow (see data for explanation)	6
E	2 closed 2 shape on either hand; dominant 2 hand brushes fingers from knuckle to fingertip	8
C2	F/OR shape tapping on another F/OR shape (similar to V4)	12
F	Both 1 fingers extended, first finger from dominant hand taps other hand (GE)	R

OCTOBER (*ottobre*)

A1	OR (index and first finger making o shape, other fingers extended) at nose	1,11
A2	Like A1, but at chin	7,8,
A3	Like A1, but in neutral space	9, 10, 12
A4	Circled F/OR hand at lips (RM)	R
B	2 handshape waved above O shape/open fist (was almost articulated as 2 underneath fist)	2,5 (-contact)
C	Wiggling downward 8 sign	4,6
D	Alternating up and down f/or hands—vertical F hand to horizontal F (GE)	R

NOVEMBER (*novembre*)

A	Repeated first two fingers pointing downwards (GE)	1,8,9, 11, 12, R
B1	2/N sign inside hole of O shape (wiggled slightly)	2

C	Clawed 5 hands coming in and downwards like rain (slightly different motion from MARCH)	2
B2	V shape brushing across closed O fist (like OCTOBER _B and SEPTEMBER _B)	3
D	Wiggling downward 9 sign	4
E	Both hands out, fingers extended, and then pulled in, as if pulling something in	7
F	Clawed hand at chin	6 ¹⁰ , 10
G	Tap bent 1 finger at nose and move back (RM) (a)	R
I	Double curved 5 hands grabbing back into claw (RM) (b)	R

DECEMBER (*dicembre*)

A1	Hands outlining Christmas tree shape with all fingers	1,2,3,4,9, 11, 12
B	Open 5 shape with contact on nose (second hand mimicking motion underneath optional (?))	2
C1	Upwards rowing Y shapes at stomach	4
D1	Thumbs sticking out one hand under another ‘rocking baby’	4
E1	Two “mangia” hands moving towards each other in opposite directions one higher than the other—like WINTER	5
C2	Like C1, but Y shapes go outwards alternatingly instead of upwards (RM) (b)	6, 7, R
A2	Like a1, but instead of all closed fingers, little “Christmas ornaments” created with thumb and middle finger repeated as ‘tree’ gets wider/hands get further apart	8
F	Flat horizontal hands, thumbs pointing out to viewer, one higher than the other, both rocking back and forth at chest	10

¹⁰ (offered with an alternate ending of changing that hand into an outwards pointing—or is that another variant?)

G	Both hands pinkie out (I handshape), first hand going down right onto fist of non-dominant hand	R
D2	Rock baby with pinkie out handshape (RM) (a)	R
E2	Fists moving in and out towards each other—like E1 but different handshape	R

WHITE (*bianco*)

A	Flick middle finger at cheek (open hand)	1,2,4,6
B	Circle with loose closed/pinched 5 hand on cheek	3
C1	Open F hand on cheek	5,9, 12
D	Open 5 hand going into pinched hand starting at upper chest and pulling away	7, 10 ¹¹ , R
E	Closed 5 hand with palm facing towards signer passing across the face, moving 90 degrees from horizontal to vertical (TO)	8, R
C2	OR/F hand at cheek flicking outwards	11
C3	F handshape at eye level, going out to neutral space (GE)	R

BLACK (*nero*)

A1	Pull <i>bent</i> first two fingers across forehead, non dominant side to dominant side	1, 2, 5, 10, 11, 12 R
A2	Pull <i>straight</i> first two fingers across forehead, non-dominant side to dominant side	6, 7, R
A3	first two fingers across forehead, non-dominant side to dominant side, which are straight across forehead and then become bent after passing face	4, 8, 9

¹¹ Ends in pinched f hand, not complete pinched hand

B	Open non-dominant 5 hand and thumb crossing palm	3
C	Curved V pulled down cheek (same as Verde _{B1}) (PG)	R
D	Fist raised at eye level moving down to rest arm horizontally in neutral space (TO)	R

GREEN (*verde*)

A1	Two fingers tapped at chin (straight)	1,6
A2	Two fingers tapped at chin (bent)	9, R
B1	Bent V scratched down from mid cheek	2,4, 7, 10, 11
B2	V waved in circle in neutral space—but then maybe corrects self and points to cheek as possible place of articulation—like B1	3
B3	V out from cheek (and up)	5
C1	Non dominant hand in fist, dominant hand at wrist of first hand, starting in open 5 shape and collapsing fingers one by one to make a fist ('waterfall' style)	8
D	Hand in loose V shape, thumb tapped at chest	12
E	b/closed 5 handshape pointed out to viewer and then brought around and to lips (PG)	R
C2	Arms crossed, dominant hand doing waterfall from 5 hand to fist at elbow of other hand (like C1 but different place of articulation) (TO)	R

RED (*Rosso*)

A1	1 finger pulled outwards from lip/chin (TO AN)	1,4, 7, 8,9, 10, R
A2	One finger across lip R-L (PG)	2, R

A3	Similar to A1: 1 finger flick lip down—finger starts higher than lip and curls after contact. Repeated, and with straight finger. (b)	2, R
A4	1 finger sideways motion flapping lip	3,11, 12
A5	1 finger flapping at lip—bent finger	5

BLUE (*Blu*)

A	Flick outwards (once) using middle finger and thumb	1, 9
B	1 Finger flicked backwards across cheek (puffed cheeks)	2,3,4
C1	Open 5 hand going into pointing 1(outwards)	4
C2	Open 5 to closed fist like catching something—similar to the sign for UNDERSTOOD	5
D	3 handshape with thumb on cheek going to V/2 handshape in neutral space (outwards movement)	6
E	First finger and thumb pinch outward from cheek (mouthing)	7, R
F	Fist with fingers pointing towards viewer, wrist rotates to turn palm towards signer, all the while with handshape going from fist to having one finger extended(up)	8
G	First hand and thumb pinch open pop to l shape facing back (squinting eyes to open eyes) (TO)	R
H	F hand to open hand (GE)	R
I	5 handshape circled twisting sideways from chin (PG)	R
J	Fist with fingers facing outwards moving down and flicking first three fingers out	11
K	Fist at upper chest moving downwards and opening to spread 5 hand	12

LIGHT-BLUE (*azzurro*)

A	Repeated middle finger flick (different mouthing from BLUE _A)	1,2 (mouthed azzuro), 4, 9
B	Middle finger stroking temple (other fingers open)	3, 12
C	5 open hand to closed fist, catching (up to down, not R-L or L-R like CAPITO—but otherwise close to BLUE _{C2})	6
D	Open 5 hands starting with fingers facing each other and then rotating each hand outwards 90 degrees (like LIGHT)	7
E	Open hand, middle finger extended, crossing forehead (with contact)	8
F	Open 5 hand spread fingers shaken back and forth/twisted	10
G	Two open five hands out horizontally, palms down, moved back and forth	11

ORANGE (*arancione*)

A	5 dominant hand scratching at back of non-dominant hand	1,5,6, 7, 10
B	Clawed hand across mouth	2,3,4, 11, 12
C	F handshape (last 3 fingers extended) with first finger and thumb wrapped around non dominant wrist, move back and forth	8
D	Wavy clawed 5 hand in neutral space ¹²	9
E	Alternating square ‘glasses’/’baby c’ shapes going horizontal to vertical 2 handed (a)	R
F	Interlaced fingers, both hands bending toward each other so that palms end up parallel (b)	R

¹² Could have been compromised by holding paper in other hand

YELLOW (*giallo*)

A1	1 finger pulled across neck/chin	1(-contact?) , 2(+contact), 4(+contact), 7, 8(+), 9, 10,12, R
A2	A1 but circular/repeated	3, 11
B	BRAVO 3 handshape near eye—outwards	5
C	First finger and pinkie sticking out in ‘horns’ handshape, wipe first finger along side of nose and mouth downwards (trace smile lines)	6
A3	Brush finger under chin beginning farther opposite than R1 and moving outwards (very similar to A2) (TO)	R
D	‘horns’ shape brushing cheek downwards (PG)	R

PINK (*rosa*)

A1	Third finger pointing in (like WHITE _D) across lip (like RED _{A2})	1
B	L shape sweeping from neck	2, 12
C	Open 5 shape wiggling across open mouth	3
A2	Middle finger pulled down and out, like RED _{A1} , but with WHITE _A handshape (TO)	4, 8, 9, R
A3	Same as RED _{A5}	5
	Like A2, but pulled out sideways, not down	11
A4	Sideways 3 handshape from lip—F handshape also offered	6
A5	Third finger touching lip and then swung out to 5 handshape, showing vertical palm to viewer (still combo of RED _{A1} and WHITE _A)	7, R

BROWN (*marrone*)

A1	Repeated curled/bent V shape (two fingers) at nose	1,4, 9
B1	Open 5 hand with thumb brushing chin	2
B2	Open 5 hand with thumb brushing non-dominant hand	2
C	Two open 5 hands grinding at place between thumb and first finger (like BSL FUCK).	3,4,11, 12
D	Two fists(one on top of the other) in grinding motion	5, 8
A2	One bent finger instead of 2 bent fingers	6
E	Two fingers close together tapped at chin (castagna) (RM)	7, R
F	Square with first finger and thumb twisted back and forth at wrist (GE) (a)	10
G1	Middle finger pointing in, open hand brushing across palm and up(GE) (b)	R
G2	Brush pinched f hand outwards from back of hand to fingertips	R
H	Curved b shape starting by covering eye and moving to sideways hand (vertical) (PG)	R

PURPLE (*viola*)

A1	Square shape made with thumb and index finger (GLASSES/'baby c') framing eye	1,2,4
A2	Like A1, but circled around eye	12
B	Hold hands in F shape, then flick first finger and thumb outwards	3
C1	Hold V shape below eye, with fingers pointing towards face, then rotate to show a V towards viewer	4
C2	Similar to GREEN _{B2} –a bit more circular	5,6, 10
C3	Like C1, but more in neutral space than below eye	7
C4	Slightly bent sideways V coming down from forehead	8

C5	Start with V/palm facing viewer, and rotate so that back of hand faces viewer	9
C6	Start with V shape, first finger on cheek near chin, pulling V back so that back of hand is facing viewer	11
C7	V handshape vertical waved from center out	R
D	Pinkie twisted on open palm (GE)	R

GRAY (*grigio*)

A	Twist first finger under chin	1,4
B1	Open 5 moves to claw 5 once	2
B2	Double claw, shakes multiple times	3
B3	5 circling over hand	5
B4	Claw circled	6 ¹³ , 9
B5	Two claw hands facing each other circling alternately (RM)	7, R
C	hands sprinkling dust (fingers up) away from each other	5,8
D	Twist fist near face/chin	8
E	Pinched MANGIA hand shaken back and forth in neutral space, fingers pointing up	8
F1	Relaxed non-dominant hand, palm facing downwards, and first finger rubbed back and forth over length of non dominant hand	10,
F2	Relaxed non-dominant hand, palm facing downwards, and 2 fingers rubbed back and forth over length of non dominant hand	11
F3	Relaxed non-dominant hand, palm facing <i>upwards</i> , and 2 fingers rubbed back and forth over length of non dominant hand.	12

¹³ (maybe double handed, but was holding paper)

G	Alternating f hands going up and down in neutral space (GE)	R
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*=possible misinterpretation

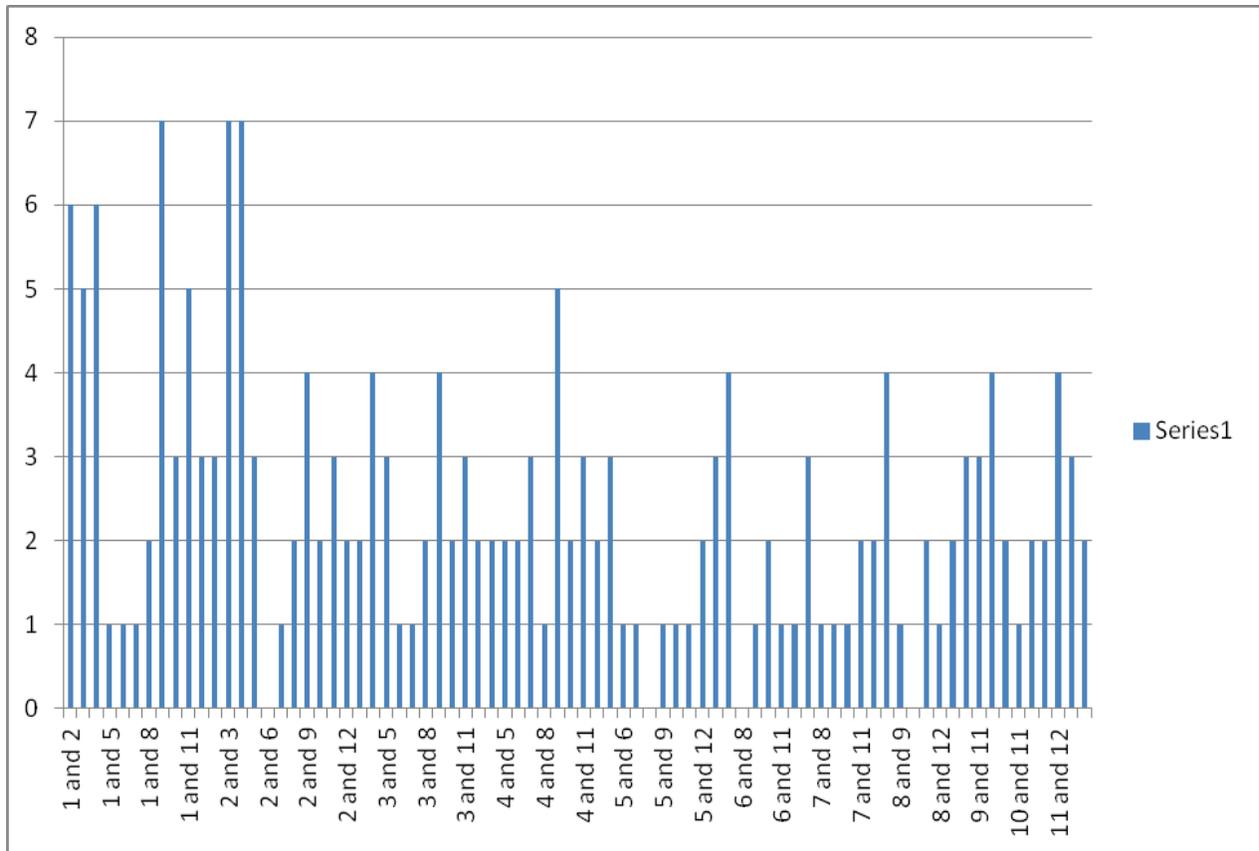
#=possible subvariant

%=see data for explanation

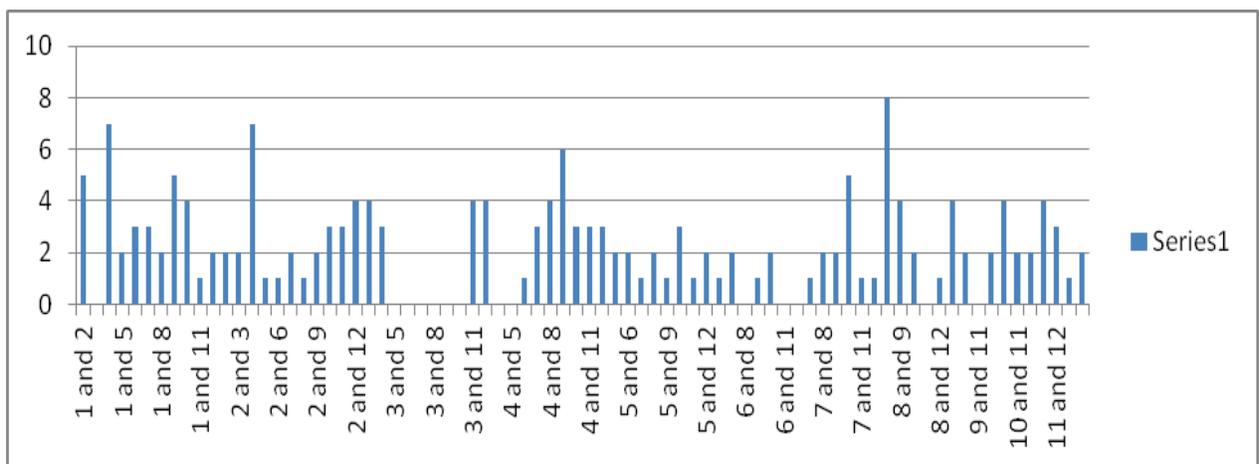
Appendix G: LIS Manual Alphabet



Appendix H: Bar graph for counts of variant overlap for Months.



Appendix I: Bar graph for counts of variant overlap for Colors.



Appendix J: Bar graph for counts of variant overlap for combined months and colors

