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Article

Sign language vitality through the lens of a pioneering interactive Atlas: a first look at the sociolinguistic profile data collected by the Sign Hub project

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Abstract

To investigate the under-researched topic of sign language vitality, the authors evaluate a set of sociolinguistic data gathered as part of the Sign Hub project. The subproject Atlas aimed to create an interactive online tool for researchers, teachers, and interpreters to compare sign languages' sociolinguistic, grammatical, lexical, and phonological features. This paper presents an analysis of ten sign languages, i.e. the first batch of socio-historical data submitted to the subproject. The authors find that nearly all of them have been subjected to oppression, and their documentation is limited. Their vitality is supported by good awareness among the hearing community and use within educational institutions, national deaf associations and local deaf clubs. Vitality is threatened by low provision of sign language media and a lack of interpreter training. The paper concludes that the Atlas has considerable utility in research on sign language vitality, which may be augmented by adding further diachronic components.

Keywords: sign languages; language atlas; linguistic vitality; language endangerment; deaf communities

1. Introduction

How many sign languages exist in the world? And in what ways are they similar or different? The scientific investigation of sign languages is very sparse compared to spoken languages, since the tradition of sign language research emerged only in the 1960s with William Stokoe's first work on American Sign Language, which demonstrated that sign languages have syntax and morphology like spoken languages (Stokoe, 1960). In Germany and many other European countries, research on local sign languages advanced with official or legal recognition of sign languages (De Meulder, Murray & McKee, 2019). For example, German Sign Language and Libras (the sign language used in Brazil) were both officially recognized as languages in 2002, a milestone that resulted in the foundation of many sign language research and teaching institutes. Research on the Uruguayan deaf community and Uruguayan Sign Language, in contrast, was conducted only recently in 2013 (Parks & Williams, 2013). This shows that the sign languages of the world are just beginning to come into view of research, and that there are many sign languages which are not investigated or known at all.

Studies on the vitality of sign languages—i.e. on the languages' safety and stability—are even scarcer. Institutions such as UNESCO (the United Nations Educational, Scientific and Cultural Organization) have been examining spoken language vitality for over 20 years (UNESCO Ad Hoc Expert Group on Endangered Languages, 2003). However, sign languages were added to this research much more recently. A survey of 15 sign languages which was undertaken with a view to adding them to UNESCO's *Atlas of the World's Languages in Danger* (Moseley, 2010) found that four of them were vulnerable and 11 were endangered, with three of these having the most critical level of endangerment (Safar & Webster, 2014; Webster & Safar, 2019). These results were based on scoring ten factors for each sign language: the proportion of signers in the reference community; generational or age group language use; domains of language use; new domains; materials for language spread and education; governmental and institutional language attitudes and policies; the use of the target sign language in deaf education; the reference community members' attitudes towards their own sign language; the type and quality of documentation; and the status of language programs.

This paper seeks to expand this research by examining the sociolinguistic data generated by a sign language survey administered as part of the Sign Hub project,[1] which involved ten partners from seven countries, namely France, Germany, Israel, Italy, Spain, the Netherlands, and Turkey. Led by Jana Hosemann and Markus Steinbach, the subproject Atlas (official name "The atlas of sign language structures") ran from 2016 and 2020, and was funded—like the whole Sign Hub project—by the European Union's Horizon 2020 research and innovation program (grant agreement 693349) (Hosemann & Steinbach, 2023).

The Atlas is a comparative documentation of the linguistic features of the sign languages of the world. Based on a broad survey that collected information about the grammatical structures of sign

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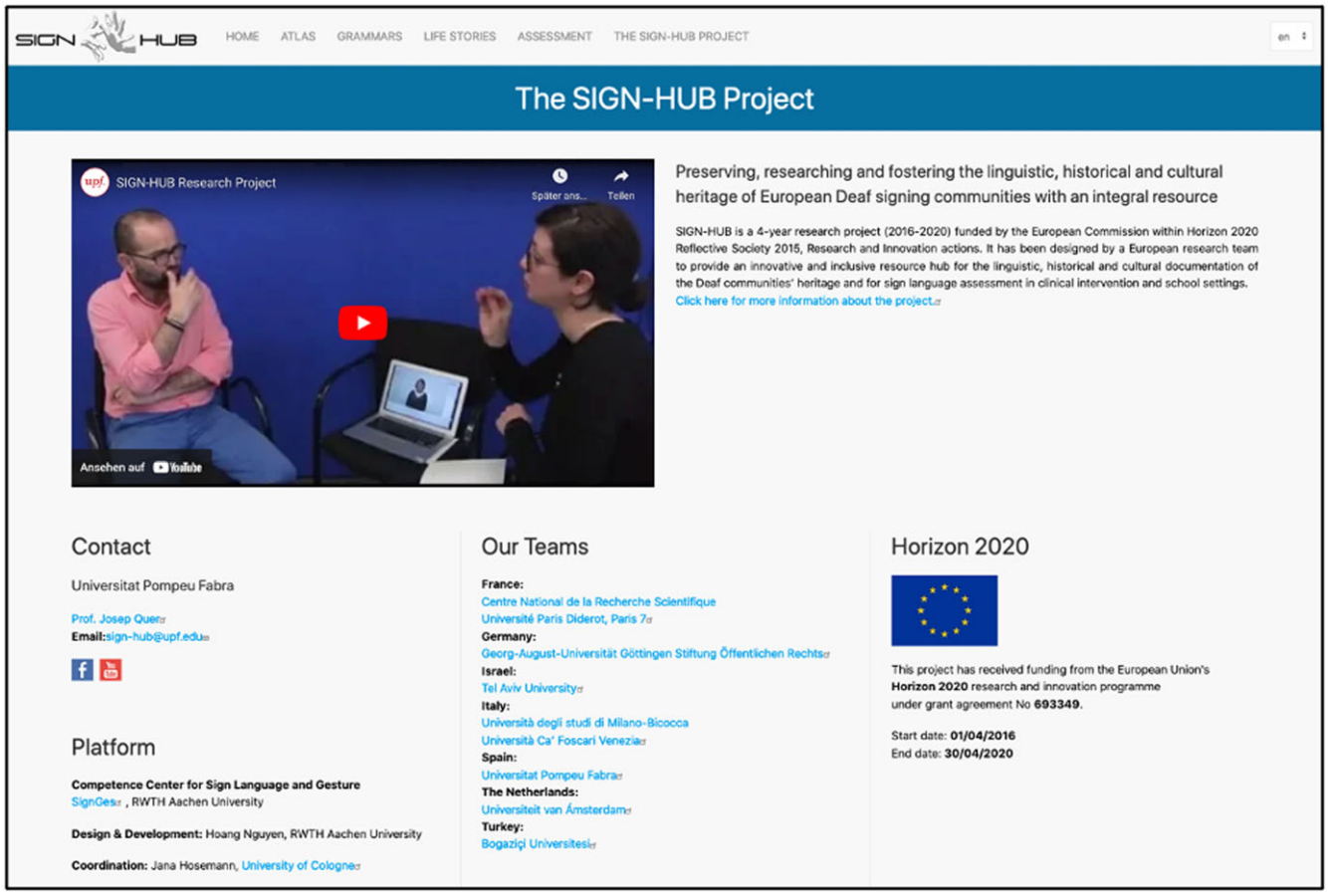

Figure 1. The website of the Sign Hub project.

languages at the levels of phonology, morphology, syntax, semantics, pragmatics, and socio-history, the Atlas is an interactive online tool for deaf, hard-of-hearing, and hearing users, such as linguists, typologists, anthropologists, sign language researchers, interpreters, and sign language teachers. The circulation of the questionnaire that collected the data continued beyond the life of the project, to continue populating this interactive digital Atlas of the world's sign languages. This is the first known attempt to put data on sign languages into an interactive atlas that permits comparisons of their linguistic structures and grammatical and socio-historical features, allowing users to quickly search for and identify, for example, all sign languages that use the eye squint as a non-manual marker for yes/no questions. However, this pioneering Atlas is only one component of the overall project, which aimed to:

> provide the first comprehensive response to the societal and scientific challenge resulting from generalized neglect of the cultural and linguistic identity of signing deaf communities in Europe [and] provide an innovative and inclusive resource hub for the linguistic, historical and cultural documentation of the deaf communities' heritage. (CORDIS, 2020)

The data considered by this paper are the survey questions and answers used by the research team to complete the sociolinguistic profiles in the Sign Hub Atlas (www.thesignhub.eu/atlas; see Figure 1). The dataset was provided to the first author in June 2022 by project members based at the University of Göttingen, one of the ten project partners, who had gathered it in 2019 and 2020. Today, the Atlas comprises data from 56 different sign languages, 29 of which are included in the socio-historical profile section.[2] The data analyzed for this paper include a subset of ten different sign languages that were available at the time of analysis. These data already appear in the interactive Atlas, along with data on other sign languages that were collected after this particular set was analyzed. Figure 2 shows an example of how the Atlas looks. It allows the user to select a socio-historical, phonological, lexical, morphological, or syntactic feature and find out which sign languages have that feature (Sign Hub, 2020; Hosemann & Steinbach, 2023).

A key priority for the Sign Hub team has been to ensure that the interactive Atlas is visually pleasing and does not display excessive amounts of text. Therefore, its design was based in part on the *World Atlas of Language Structures,* often referred to as *WALS* (Dryer & Haspelmath, 2013). *WALS* provided the starting point for the team, as it has, for example, explanations of grammatical features indicated with colored dots on a map to show which languages have certain features. However, the published work that had the greatest influence on the Sign Hub Atlas is the *SignGram Blueprint* (Quer et al., 2017). This book provided the structure of

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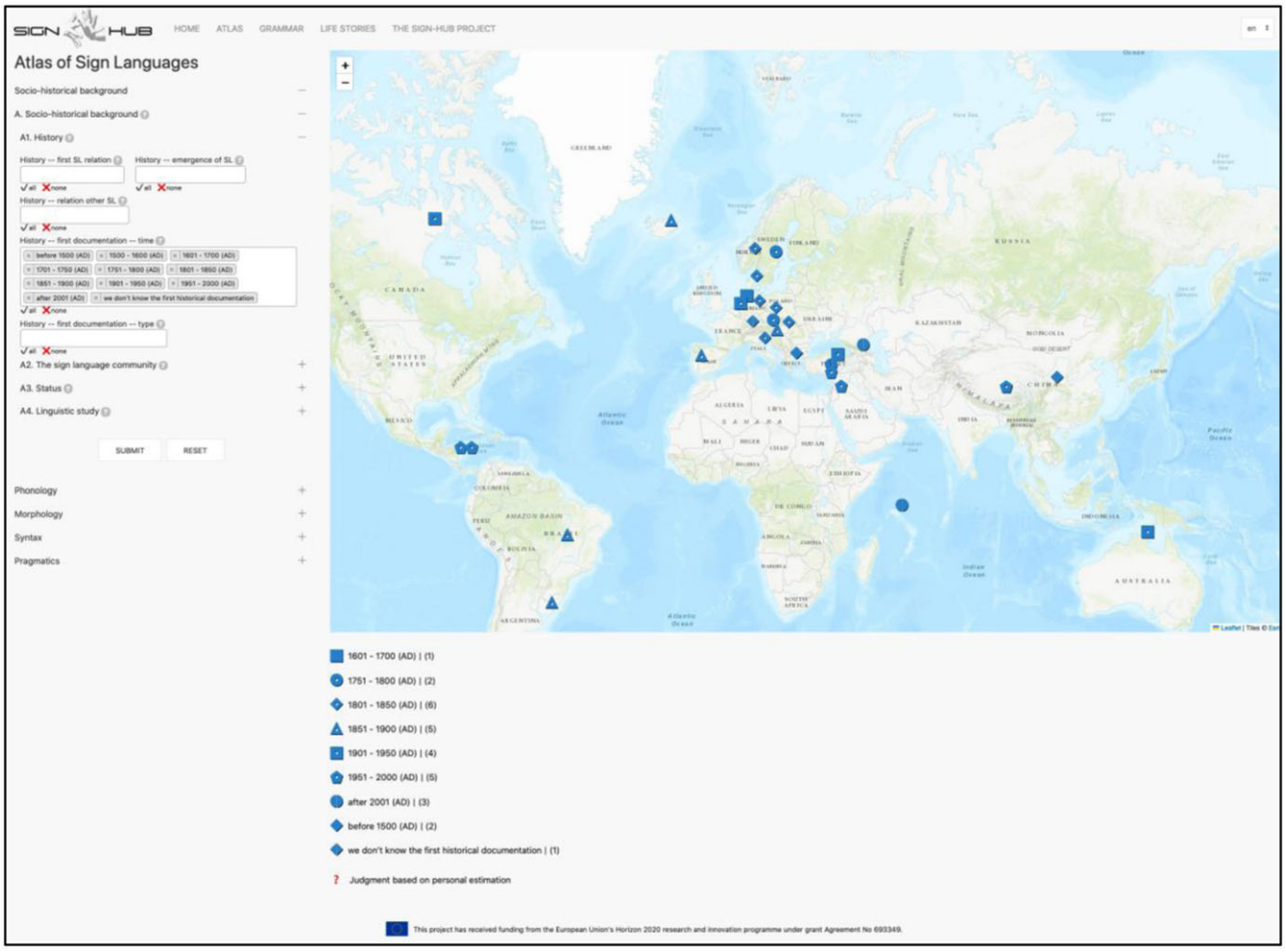

Figure 2. Example of a search in the interactive Sign Hub Atlas for the first historical documentation of all of the sign languages included thus far.

the questionnaires as well as the topics and options that appear in the Atlas, which are listed in Section 3 of this paper. Linguistic vitality scores were not a component of the Atlas; the team did not include endangered language experts, and the scope of the Sign Hub project did not encompass producing vitality or endangerment ratings.

The first author, though not a member of the Sign Hub team, has been involved for over a decade with research into sign language vitality led by Ulrike Zeshan at the University of Central Lancashire's International Institute for Sign Languages and Deaf Studies (Safar & Webster, 2014; Webster & Safar, 2019, 2020; Webster, 2022). In 2022, the Sign Hub team generously provided the author with a first look at some of the sociolinguistic data they gathered, after checking the answers for any inconsistencies.

Regarding the structure of this text, a literature review first sets out the existing research into issues around measuring sign language vitality. The data and method are discussed in Section 3, followed by a description of the results from three parts of the survey (Section 4) and a discussion of these findings, focusing on the matters that pertain the most to vitality (Section 5). Finally, a conclusion is presented in Section 6.

2. The vitality of sign languages

This section looks briefly at the literature on factors that have been found to impact on sign language vitality. These include factors which relate more to the decisions made and circumstances faced by users of the sign language, especially generational transmission, and factors that are associated with actions taken by the government and organizations, such as institutional support and language recognition and documentation.

In previous work on assessing levels of sign language vitality (e.g. Webster & Safar, 2019), some of the most significant threats were the decreasing birth of deaf children, changes in marital patterns, the geographic dispersion of sign language users, and language contact with other sign languages (Zeshan & de Vos, 2012; Braithwaite, 2019; Safar & Le Guen, 2020), as well as an increasing demand for cochlear implants in deaf children (Wrobel, 2014; Mauldin, 2016), a tendency for deaf pupils to attend mainstream schools (Johnston, 2004), and disappearance of sign languages from educational settings (McKee, 2017). The last three factors impact national sign languages while the first four have more influence on small-scale "village" sign languages (Webster &

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Safar, 2019; for further background on the concept of village sign languages, see Zeshan & de Vos, 2012). What these factors all have in common is that they disrupt the transmission of sign languages from one generation to the next, and therefore have a deleterious effect on sign language vitality.

However, sign language use by different generations or age groups can be difficult to define and measure for a variety of reasons (Webster & Safar, 2020). Obtaining an accurate estimate of the number of sign language users in a deaf community can be quite problematic because there is no standard, shared definition of "a fluent/competent sign language user" (Webster & Safar, 2020:118). The notion that sign languages are clearly-bounded entities is increasingly called into question by research into multimodality and translanguaging (Kusters, Spotti, Swanwick & Tapio, 2017; De Meulder, Kusters, Moriarty & Murray, 2019; Panda, 2020). In addition, members of some sign language communities may see their communication practices very differently to how linguistic researchers perceive them, particularly where research has been politicized, making it difficult for the signers to have their views reflected in the research (Webster & Safar, 2020; Webster, 2022). Linguists working with sign language users also encounter complexities stemming from the stark sociolinguistic differences between signers and speakers in terms of their bilingual and/or bimodal competence, which is more common in signers than speakers, and language acquisition paths, which for signers do not typically involve acquiring their first language from their parents (Quer & Steinbach, 2019). Unlike most spoken language users, sign language users have "a type of bilingualism that is neither territorial nor commonly the result of parent-to-child transmission" (Plaza-Pust, 2016:448), often due to the prejudice that many parents have against sign language, which is sometimes promoted by medical and educational professionals (Barberà et al., 2019:81; see also Mauldin, 2016). This makes transmission "the most idiosyncratic property of this language type within the context of language endangerment" (Barberà et al., 2019:80). Such issues make it much more challenging for sign language linguists to gather data that will facilitate valid and reliable findings compared to their spoken language counterparts. On the other hand, communication technology has made it easier for geographically dispersed sign language users to collaborate, advocate for their linguistic rights, and engage in empowering activities (Plaza-Pust, 2016).

Many of the factors noted above are inevitably linked with language shift, which is defined as a group of people steadily increasing their use of an adopted language while decreasing the use of their existing language (Karan, 2011). For minority sign languages in particular, this phenomenon tends to be one of the most significant factors in reducing levels of vitality. These include emerging sign languages such as Kafr Qassem Sign Language in Israel (Jaraisy & Stamp, 2022) and Yucatec Maya sign languages in Mexico (Le Guen, 2019; Safar & Le Guen, 2020), existing village sign languages such as Adamorobe Sign Language in Ghana (Nyst, 2007; Edward & Akanlig-Pare, 2021), and older deaf community sign languages such as Maritime Sign Language in Canada which dates back to the 1700s (Buchanan, 2021). Language shift can be prompted by school closures, as was the case when Maritime Sign Language users began using American Sign Language after the Halifax School for the Deaf was closed (Buchanan, 2021), and geographic dispersal, often due to marriage, as in the village of Nohkop in Mexico whose female inhabitants typically move away to live with their husbands' families and may switch from Yucatec Maya sign languages to Mexican Sign Language (Le Guen, 2019). Jaraisy and Stamp (2022:17) note that "without language contact, many emerging sign languages may not necessarily be at risk."

Research into the scoring of sign language vitality has found that these languages in general must cope with "a lack of supportive policies and the often indifferent or negative attitudes of governments and policy makers" (Webster & Safar, 2019:368). Some sign languages are altogether undocumented or under-researched, while others are unacknowledged by governments, or officially recognized in a tokenistic manner with no statutory rights, obligations, or funding to underpin them (Snoddon, 2009; Lo Bianco, 2020; Webster & Safar, 2020). Governments may recognize the sign language's name but restrict funding to interpretation and translation, for "disability access" purposes rather than under a framework of linguistic rights, thereby avoiding responsibility for funding sign language education for children and parents, for example (Snoddon, 2009). This consigning of sign languages to the "disability" realm also often causes them to be disregarded in scholarly work on language endangerment (Barberà et al., 2019). As a result, we still do not know how many sign languages exist worldwide and to what extent they are expanding or declining (Webster & Safar, 2019).

There is also a lack of agreement in some cases as to what particular sign languages should be called, and when they warrant being named as a language versus a dialect or regional variety. For example, it is unclear whether Yucatec Maya sign languages constitute several different sign languages or a single language with a range of regional varieties (Safar, 2019; Webster & Safar, 2020:117). This can then create a vicious circle, as governmental or legal recognition seldom has anything to do with sign language varieties, cultures, or traditions (Lo Bianco, 2020: 90). A related factor that exacerbates governmental indifference is the negative attitudes held in some societies toward deaf signers. Indigenous deaf people, especially those living in villages and rural areas, are often portrayed in public discourse and media as having "no language," for instance, in Mexico (Safar, 2015) and Cambodia (Moriarty Harrelson, 2017).

Writing about spoken languages, Noels, Kil and Fang (2014:620) identify sociopolitical status and institutional support as two of the three most important factors for language group survival or "ethnolinguistic vitality." By this measure, most sign languages are in a precarious position, and this is further magnified by the fact that public bodies have a much more central function in the learning of sign languages than spoken languages (Barberà et al., 2019). Even in developed countries in the 2020s, deaf people are still having to protest on national television (e.g. in the Netherlands; see Bolier, 2021:104–105) and take the government to court (e.g. in the USA; see Leigh et al., 2023:xvii) to get access to essential information in sign language.

To our knowledge, there have not been any attempts at creating sign language atlases. The authors of spoken language atlases have integrated sign languages to some extent. *WALS* reports on 38 sign languages, but only in regard to two different grammatical features. The *Ethnologue* (Eberhard, Simons & Fennig, 2023) and *Glottologue* (Hammarström, Forkel, Haspelmath & Bank, 2022) report respectively on 159 and 215 different sign languages, but not on any grammatical features. Hence, a sign language atlas including grammatical features is unique.

3. Data and method

The sign language data for the Atlas of sign language structures were generated by four extensive questionnaires, each covering a

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Figure 3. Information on Jordanian SL in the Atlas, showing the name of the content provider for social history and pragmatics (questionnaire 4).

different linguistic topic. Every questionnaire contained many different questions, each of which elicited a different grammatical feature (number of grammatical features displayed in parentheses):

- phonology & lexicon (59),
- morphology (46),
- syntax (91),
- pragmatics & socio-historical background (45).

The questions were devised by the two project leaders with reference to Quer et al. (2017). A deaf colleague advised the project leaders on certain questions, for example, how to create the visual material illustrating the possible handshapes of sign languages. However, the overall creation of the survey followed the structure and the topics of Quer et al. (2017), a blueprint "designed to guide language specialists and linguists as they write a reference grammar of a sign language" (p.c.). The *SignGram Blueprint* uses traditional (spoken language) linguistic concepts, describes them in detail, and provides guidelines for identifying and eliciting these features. Thus, the Atlas also includes many grammatical features that come from traditional linguistics. Unlike other stages of the project, the survey development stage unfortunately did not involve deaf experts, a fact that is open to criticism. This led, for example, to the use of the term "hearing impairment" in the sociolinguistic survey on "the sign language community." Deaf colleagues would—most likely—have advised us to avoid this term, because it sets a focus on something being deficient. Deaf communities in the USA and Europe typically contend that hearing status has very little to do with the abilities of a person. Additionally, the survey did not address the use of cochlear implants, which is a highly controversial topic. Creating the survey in a team with one or two deaf linguists would have given the project's leaders more insight into these topics and would have improved the survey (see Orfanidou et al., 2015). Presenting the questions in International Sign videos as well as in written English would also have provided a more robust and accessible questionnaire.

After generating the content of each questionnaire, the two project leaders asked for internal feedback within the Sign Hub team. Feedback was given on the selection of linguistic topics, the theoretically neutral description of features, and whether the presented answers actually fit the questions. Before the questionnaires were released, the project leaders ran a pilot questionnaire.

The four questionnaires were distributed among sign language experts who specialized in a specific field, so-called "content providers." These were deaf and hearing sign language researchers with high expertise in their field and in their sign language, as well as experts on a specific sign language. The project leaders found content providers for each questionnaire via their scientific network and by contacting the authors of sign language publications. Hearing content providers were encouraged to work in a team with at least one deaf person. Their names are shown in the interactive Atlas, under the heading "content provider," which appears with each sign language (see Figure 3).

The data analyzed here are the survey questions and answers for ten different sign languages supplied by the respective content providers from 2019 to 2020, which have been used by the Sign Hub team to complete the sociolinguistic profiles in the Atlas (www.thesignhub.eu). These ten sign languages (SLs) are Central Taurus SL, Cypriot SL, Czech SL, Georgian SL, Greek SL, Inuit SL, Jordanian SL, Nicaraguan SL, Seychellois SL, and Swedish SL. Since the analysis in this paper was carried out in 2022, data have since been supplied by further respondents and added to the Atlas, including on Austrian SL, Brazilian SL, Chinese SL, Croatian SL, Danish SL, Dutch SL, Flemish SL, German SL, Hungarian SL, Icelandic SL, Italian SL, Norwegian SL, Portuguese SL, Providence Island SL, Swiss-German SL, Tibetan SL, Turkish SL, Uruguayan SL, and Yolngu SL.

Some of these ten languages are rather obscure, with limited literature and small user populations (see Table 1). For example, Central Taurus SL is a village sign language that emerged spontaneously around 1970 in an isolated location in southern Turkey where there is a high incidence of deafness (Ergin, 2022:6). Seychellois SL also has a small number of users, being used chiefly on the three main islands of the Seychelles, and is influenced by French, Mauritian, and American Sign Languages (Risler, 2019). Nicaraguan SL is a very young language that was initially developed by 50 children and youth in the 1970s at a school in the country's capital, Managua (Kegl, 1994). They used an array of homesigns and gestures in their interactions, which ultimately produced a new sign language (Kocab, Senghas & Pyers, 2022:2). Georgian SL, another lesser-known sign language, is not yet an official language of Georgia but is mentioned by the government in various documents and used for instruction at three deaf schools in the country (Pfau, Makharoblidze & Zeijlstra, 2022:2). A grammar

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Table 1. Sign languages covered by the ten content providers who supplied socio-historical data to the Sign Hub survey from 2019 to 2020

Sign language	Main region(s) of use	Estimated number of users	Socio-historical content provider(s)
Central Taurus SL	Central Taurus mountain range, southern Turkey	25 deaf, 80 hearing (Ergin, 2022:6)	Rabia Ergin and Mustafa Benli
Cypriot SL	Cyprus	1,000 (Pieri & Cobb, 2019:70)	Panayiota Themistokleous
Czech SL	Czech Republic	10,000 (Lewis, Simons & Fennig, 2015)	Lenka Okrouhlíková, with consultation from Andrea Hudáková, Radka Nováková, and Naďa Hynková Dingová
Georgian SL	Georgia	ca. 2,500 (Pfau, Makharoblidze & Zeijlstra, 2022:2)	Tamar Makharoblidze and Ekaterine Nanitashvili
Greek SL	Greece	40,000 including both deaf and hearing (Sapountzaki, 2015)	Vasiliki Zacharopoulou and Klimis Antzakas
Inuit SL	Nunavut, Canada	40 (Schuit, 2015)	Joke Schuit
Jordanian SL	Jordan	15,000 (Hendriks, 2008:12)	Bernadet Hendriks
Nicaraguan SL	Nicaragua	1,500 (Kocab, Senghas & Pyers, 2022:2)	Annemarie Kocab and Ivonne Lorena Morales Ruíz
Seychellois SL	The three main islands of the Seychelles	"Very small number" (Risler, 2019)	Annie Risler
Swedish SL	Sweden	10,000 (Lewis et al., 2015)	Johanna Mesch

Table 2. Structure of topics in the Sign Hub survey (with the topics covered in this paper in italics)

Part A (questionnaire 4)	Socio-historical background
A1	*History*
A2	*The sign language community*
A3	*Status*
A4	Linguistic study
Part B (questionnaire 1)	**Phonology**
B1	Sublexical structure
B2	Prosody
B3	Phonological processes
Part C (questionnaire 1)	**Lexicon**
C1	The native lexicon
C2	The non-native lexicon
C3	Parts of speech
Part D (questionnaire 2)	**Morphology**
D1	Compounding
D2	Derivation
D3	Verbal inflection
D4	Nominal inflection
D5	Classifiers
Part E (questionnaire 3)	**Syntax**
E1	Sentence types
E2	Clause structure
E3	Coordination and subordination
Part F (questionnaire 4)	**Pragmatics**[a]
F3	Speech acts
F4	Information structure
F5	Discourse structure
F6	Reporting and role shift
F8	Signing space
F10	Communicative interaction

[a]For the section on pragmatics, not all of the topics from the *SignGram Blueprint* were used in the Atlas. The topics that were omitted are F1, reference; F2, reference tracking; F7, expressive meaning; and F9, figurative meaning. The team judged that these topics were more difficult to configure in the atlas interface, and less relevant to the aims of the project.

sketch and dictionary of Georgian SL were published in 2012 and 2015 respectively. Inuit SL is used by only a few dozen people in the vast Canadian territory of Nunavut (Schuit, 2015), and has been previously assessed as having the lowest possible level of vitality, termed as "critically endangered" (Webster & Safar, 2019). Cypriot SL has up to 1,000 users, as that is the approximate number of severely or profoundly deaf individuals living in Cyprus, which amounts to a proportionally greater deaf population than most European countries (Pieri & Cobb, 2019:70). The government recognized Cypriot SL in 2006 but has yet to offer any meaningful support for the language (Pieri & Cobb, 2019:71; for more details on this phenomenon of tokenistic recognition, see e.g. McKee & Manning, 2015, and Webster & Safar, 2020). The other four are relatively well-known national sign languages that have larger user populations of about 10,000 or more. This makes for a modest dataset and consequently limited scope in terms of findings that can be drawn, but is nonetheless a very interesting and eclectic mix of languages. As further data have been gathered since this analysis was completed, it will be straightforward to consider the findings for these ten languages against those of the other sign languages now available in the Atlas.

The topics in the six parts of the Sign Hub survey are shown in Table 2. The survey items that are examined in this paper

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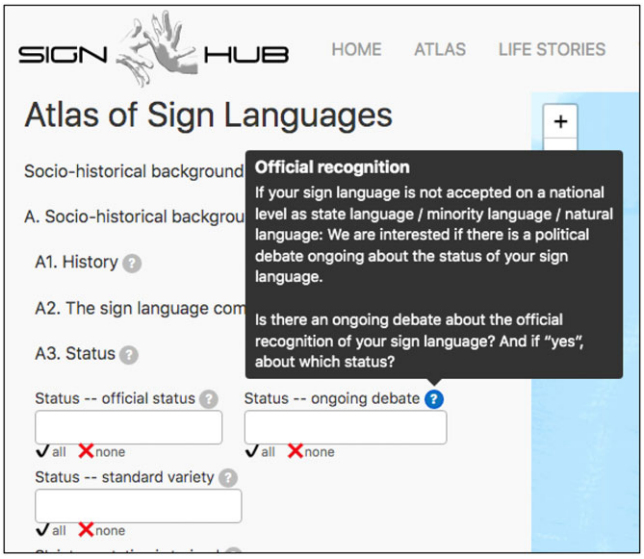

Figure 4. An explanation of the item about "ongoing debate" under the "status" topic in the interactive Atlas.

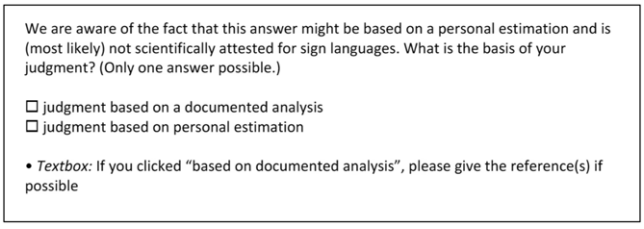

Figure 5. Text that appeared below some of the items in the questionnaire asking participants to indicate the basis for their answer.

appear on a single questionnaire document that contains two of these six main parts: Part A on socio-historical background, and Part F on pragmatics.[3] Screenshots of the relevant questions from this document are displayed individually in the next section of this paper.

4. Results

The ten respondents' answers related to the first three topics in Part A, "socio-historical background," were reviewed, and the results are described in this section before being discussed in Section 5. These three topics are history, the sign language community, and status. In the Atlas, the user can hover next to each topic and question to see what it means, i.e. what information was sought from the respondents for that item (see Figure 4).

For some of the questions, the respondents were asked to indicate whether they were basing their answer on personal estimation or analysis documented by published material (see Figure 5). Answers based on personal estimation are displayed in the Atlas with a small red question mark (see Figure 6).

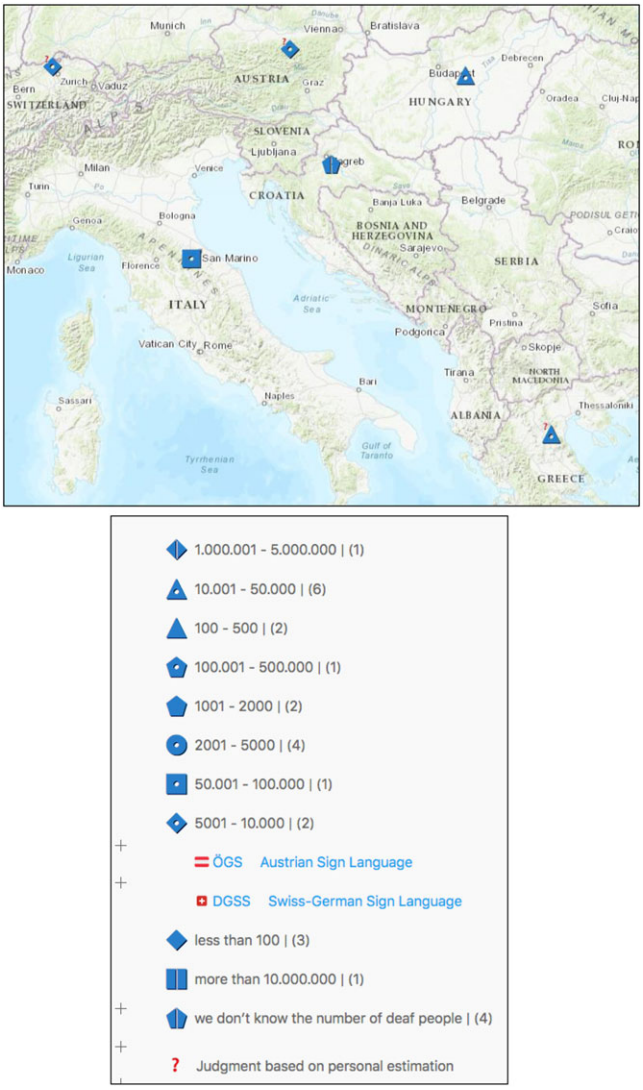

Figure 6. In these screenshots from the interactive Atlas, the user has searched for answers about the number of deaf individuals in each sign language community. The red question marks next to the symbols for Greek SL, Swiss-German SL, and Austrian SL indicate that these answers are judgments based on personal estimation, whereas the others (for Italian SL, Croatian SL, and Hungarian SL) are based on documented analyses. The legend below the map allows the user to see a list of the languages under each answer, as shown here for the range 5,001 to 10,000, which was selected by the respondents for both Austrian SL and Swiss-German SL.

4.1. A1: History

Figures 7–12 show the questions in section A1.

A majority of respondents did not know how much the first sign language is related to today's sign language, and most of them based this judgment on personal estimation; only the respondent for Swedish SL based this on documented analysis (Bergman & Engberg-Pedersen, 2010). Only two selected the option "yes, the historically first sign language is related to today's sign language," and both of them based this on documented analysis. These were the respondents for Nicaraguan SL and Czech SL, the latter of which cited several sources from the nineteenth century, including Mücke (1834), Jarisch (1851), and Kolář (1897).

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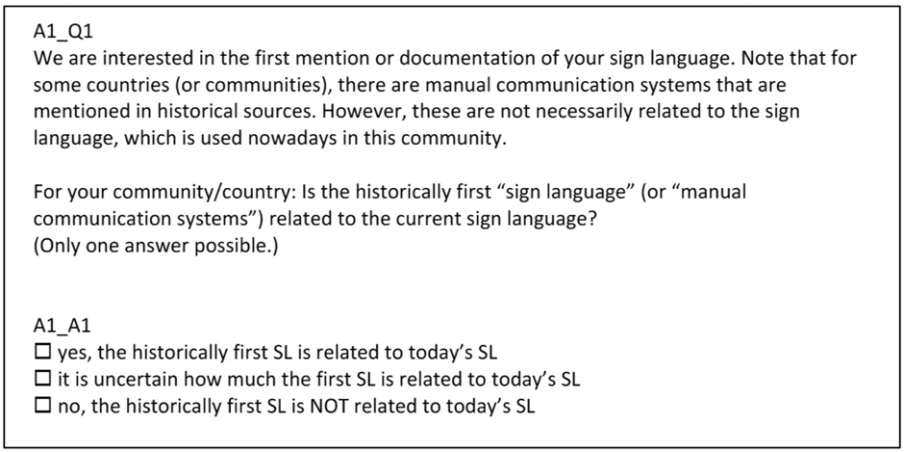

Figure 7. First question in section A1.

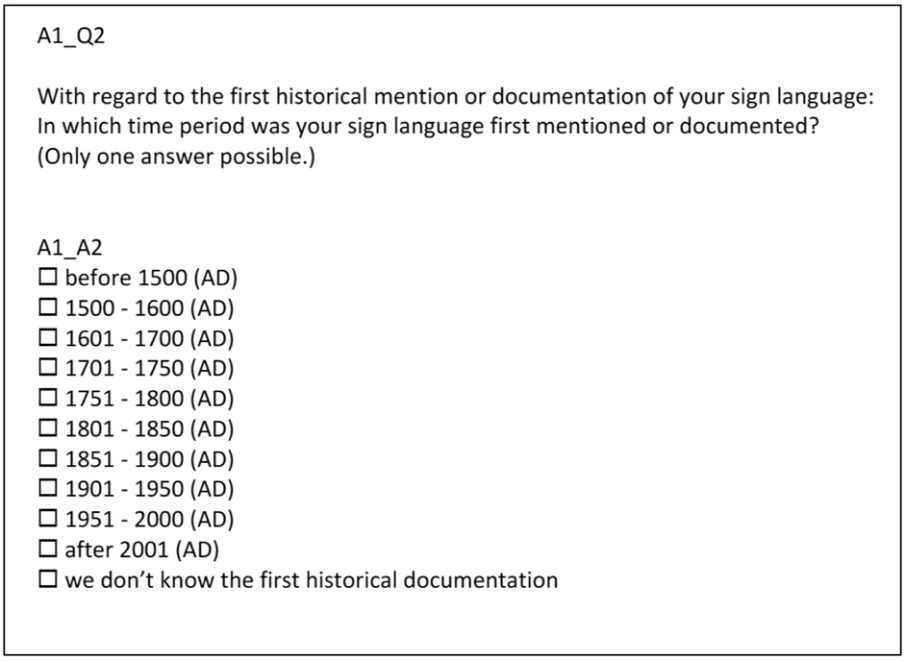

Figure 8. Second question in section A1.

With regard to the first historical mention or documentation of the sign language, three respondents chose "after 2001" and two selected "1951–2000." The four other respondents who answered this question selected earlier times, with one each ticking "1901–1950," "1801–1850," "1751–1800," and "before 1500."

As for the type of documentation that contained the "very first mention of your sign language," three respondents said video recordings of signing people (with or without text), three chose "short text [that] describes only deaf people," and two selected "longer text [that] describes deaf people and signs [or a] manual alphabet." The respondent for Georgian SL reported that there was no historical document.

For the question that asked how the sign language emerged in the community or country, five of the ten respondents said through the foundation of the first deaf school. Of the other five, two reported that it emerged through the appearance of several deaf people as a small community, two chose "through foundation of first deaf club/association," and the respondent for Jordanian SL reported that the origin was unknown.

For the question "Is your sign language historically related to another sign language," five selected "yes, but the historical relation to another sign language is vague." Two respondents (Georgian SL and Seychellois SL) reported that the relationship with another sign language was well documented, and two (Central Taurus SL and Nicaraguan SL) indicated that their sign language was not historically related to another. The respondent for Inuit SL said they did not know about any historical connections.

Regarding whether there had been suppression of the sign language and/or deaf community, only one (the respondent for Seychellois SL) said there was no suppression, but noted that there had been "an ignorance of the existence of deaf people, who remained isolated and uneducated in families." A majority (seven) of the ten respondents indicated that there had been suppression in the past. Of these, one (Inuit SL) stated that there was also now a different type of suppression in the present, which included deaf Inuit children having to use ASL interpreters.

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A1_Q3
The first documentation of a sign language or a deaf community can be of different type: It can be a text describing deaf people, a text describing certain manual signs, or a text describing the manual alphabet. For younger sign languages, the first documentation can also be a video recording of signing people.

In general, we distinguish three types of documentation:
-- no text, just pictures (drawings or photos)
-- some kind of text (with or without pictures)
-- videos (with or without additional texts or pictures)

What type of documentation is the very first mention of your sign language?
(Only one answer possible.)

A1_A3
☐ no text, only drawings of deaf people / signs / manual alphabet
☐ no text, only photos of deaf people / signs / manual alphabet
☐ short text, describes only deaf people
☐ short text, describes only signs
☐ short text, describes only manual alphabet

☐ longer text, describes deaf people and signs / manual alphabet
☐ longer text, instructs teaching of deaf children
☐ video recordings of signing people (+/- text)
☐ we don't know the first historical documentation
☐ no, there is no historical documentation of my SL

Figure 9. Third question in section A1.

A1_Q4
We are interested in the origin of your sign language. Hereby, we don't mean the evolution of sign languages in general. Instead, we want to know how your sign language emerged in your community/country and came into being.
For example, many sign languages emerged with the foundation of the first School for the Deaf in the community/country.

How did your sign language emerge in your community/country?
(Only one answer possible.)

A1_A4
☐ through mere appearance of several deaf people (small community)
☐ through foundation of first deaf club / association
☐ through foundation of first school for the deaf
☐ through another specific educational setting
☐ there are anecdotal 'myths' about the origin
☐ other origin
☐ we don't know the origin

Figure 10. Fourth question in section A1.

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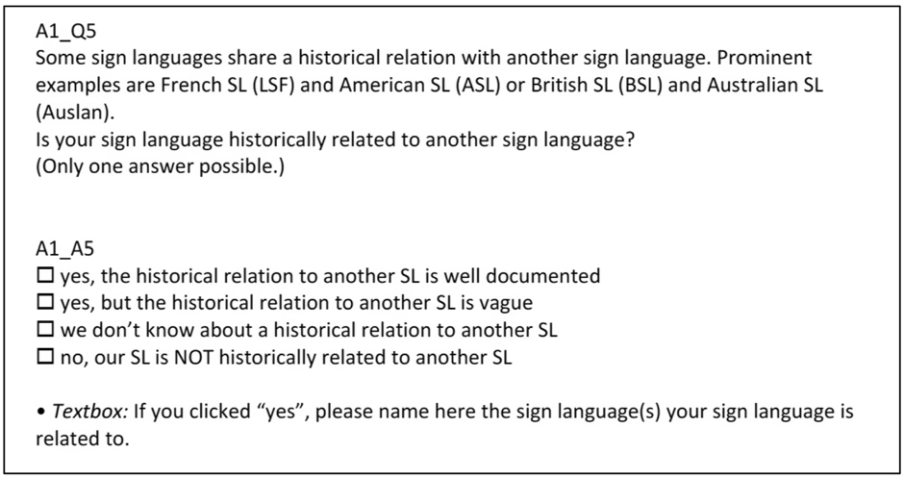
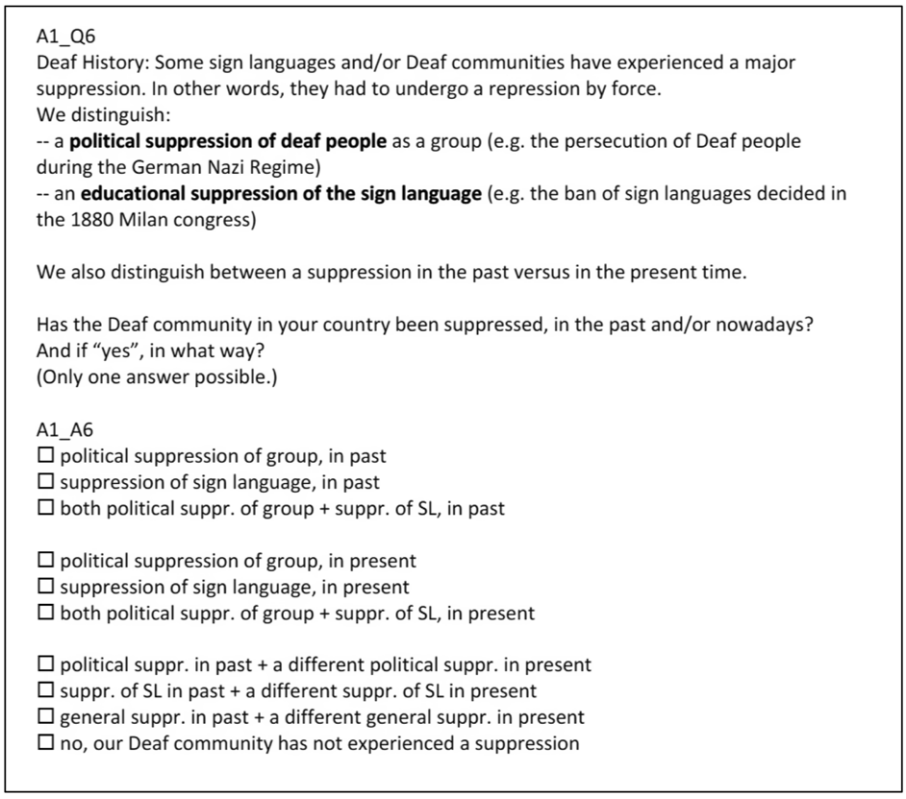

A1_Q5
Some sign languages share a historical relation with another sign language. Prominent examples are French SL (LSF) and American SL (ASL) or British SL (BSL) and Australian SL (Auslan).
Is your sign language historically related to another sign language?
(Only one answer possible.)

A1_A5
☐ yes, the historical relation to another SL is well documented
☐ yes, but the historical relation to another SL is vague
☐ we don't know about a historical relation to another SL
☐ no, our SL is NOT historically related to another SL

• *Textbox:* If you clicked "yes", please name here the sign language(s) your sign language is related to.

Figure 11. Fifth question in section A1.


A1_Q6
Deaf History: Some sign languages and/or Deaf communities have experienced a major suppression. In other words, they had to undergo a repression by force.
We distinguish:
-- a **political suppression of deaf people** as a group (e.g. the persecution of Deaf people during the German Nazi Regime)
-- an **educational suppression of the sign language** (e.g. the ban of sign languages decided in the 1880 Milan congress)

We also distinguish between a suppression in the past versus in the present time.

Has the Deaf community in your country been suppressed, in the past and/or nowadays?
And if "yes", in what way?
(Only one answer possible.)

A1_A6
☐ political suppression of group, in past
☐ suppression of sign language, in past
☐ both political suppr. of group + suppr. of SL, in past

☐ political suppression of group, in present
☐ suppression of sign language, in present
☐ both political suppr. of group + suppr. of SL, in present

☐ political suppr. in past + a different political suppr. in present
☐ suppr. of SL in past + a different suppr. of SL in present
☐ general suppr. in past + a different general suppr. in present
☐ no, our Deaf community has not experienced a suppression

Figure 12. Sixth question in section A1.

4.2. A2: The sign language community

Figures 13–21 show the questions in section A2.

Half of the respondents said that there were fewer than 5,000 deaf people living in their country. Four reported that the number was between 10,000 and 50,000. Four indicated that their selection was based on personal estimation, and five said it was based on documented analysis. The numbers of sign language users reported by each respondent were similar to their numbers of deaf people. An exception was the respondent for Greek SL, who reported that there were 10,000 to 50,000 deaf people but did not give an answer regarding the number of sign language users. Only the respondents for Nicaraguan SL and Cypriot SL chose a lower range for sign language users than for deaf people. Among the eight who answered this question, only the Czech SL respondent based it on documented analysis, with everyone else drawing from personal estimation.

With respect to awareness of the sign language among hearing people, five respondents said there was medium awareness, three said high awareness, and two said low awareness (Central Taurus SL and Czech SL). Again, almost all of them based this on personal estimation, with only one indicating that it was based on documented analysis (the Georgian SL respondent, who selected high awareness).

The respondents indicated that a range of deaf cultural activities take place in their countries and communities. The most popular cultural expression was visual art (six respondents), followed by deaf storytelling and humor (five each), theater and regular deaf cultural events (four each), poetry (three), deaf cinema and literature (two each), and finally dance, signed songs, and sport (one each).

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A2_Q1

With regard to sign language users in your community/country, we want to find out about the concrete numbers of the following groups:
(1) **Deaf people:** no hard-of-hearing people or hearing signers
(2) **Hearing-impaired:** everyone with a hearing impairment, deaf + hard-of-hearing, regardless of sign language use
(3) **Signers:** deaf, hard-of-hearing, and hearing sign language users

Approximately, how many **deaf people** live in your country?
(Only one answer possible.)

A2_A1
☐ less than 100
☐ 100 - 500
☐ 501 - 1000
☐ 1001 - 2000
☐ 2001 - 5000
☐ 5001 - 10.000
☐ 10.001 - 50.000
☐ 50.001 - 100.000
☐ 100.001 - 500.000
☐ 500.001 - 1.000.000
☐ 1.000.001 - 5.000.000
☐ 5.000.001 - 10.000.000
☐ more than 10.000.000
☐ we don't know the number of deaf people

Figure 13. First question in section A2.

A2_Q2
Approximately, how many **hearing-impaired people** live in your country?
(Only one answer possible.)

A2_A2
☐ less than 100
☐ 100 - 500
☐ 501 - 1000
☐ 1001 - 2000
☐ 2001 - 5000
☐ 5001 - 10.000
☐ 10.001 - 50.000
☐ 50.001 - 100.000
☐ 100.001 - 500.000
☐ 500.001 - 1.000.000
☐ 1.000.001 - 5.000.000
☐ 5.000.001 - 10.000.000
☐ more than 10.000.000
☐ we don't know the number of hearing-impaired

A2_Q3
Approximately, how many **sign language users** (deaf, hard-of-hearing, and hearing) live in your country?
(Only one answer possible.)

A2_A3
☐ less than 100
☐ 100 - 500
☐ 501 - 1000
☐ 1001 - 2000
☐ 2001 - 5000
☐ 5001 - 10.000
☐ 10.001 - 50.000
☐ 50.001 - 100.000
☐ 100.001 - 500.000
☐ 500.001 - 1.000.000
☐ 1.000.001 - 5.000.000
☐ 5.000.001 - 10.000.000
☐ more than 10.000.000
☐ we don't know the number of signers

Figure 14. Second and third questions in section A2.

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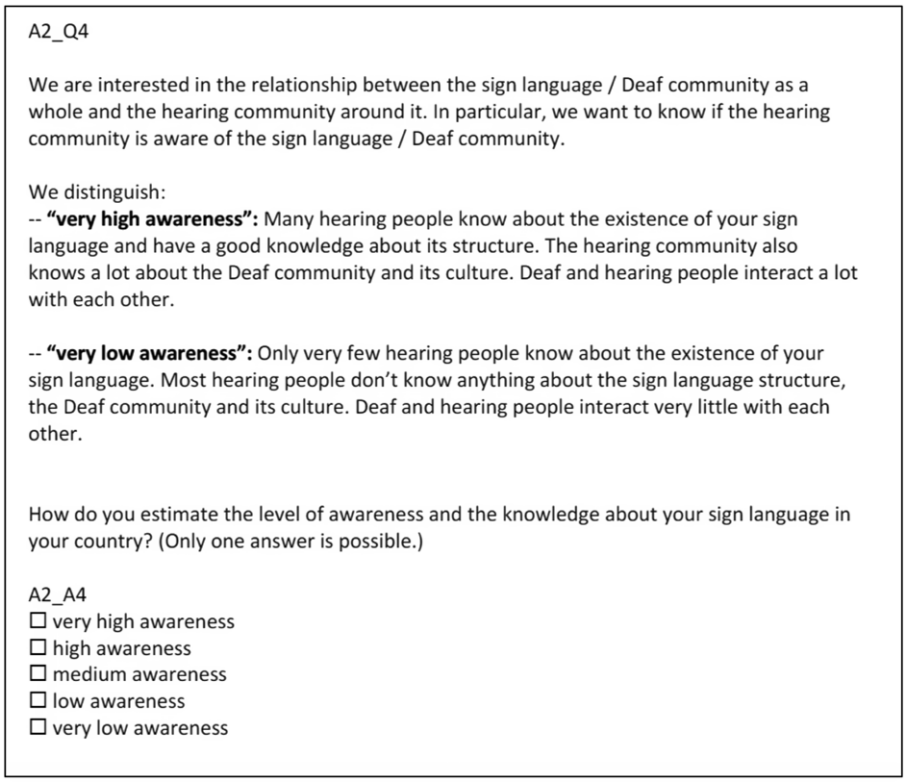

A2_Q4

We are interested in the relationship between the sign language / Deaf community as a whole and the hearing community around it. In particular, we want to know if the hearing community is aware of the sign language / Deaf community.

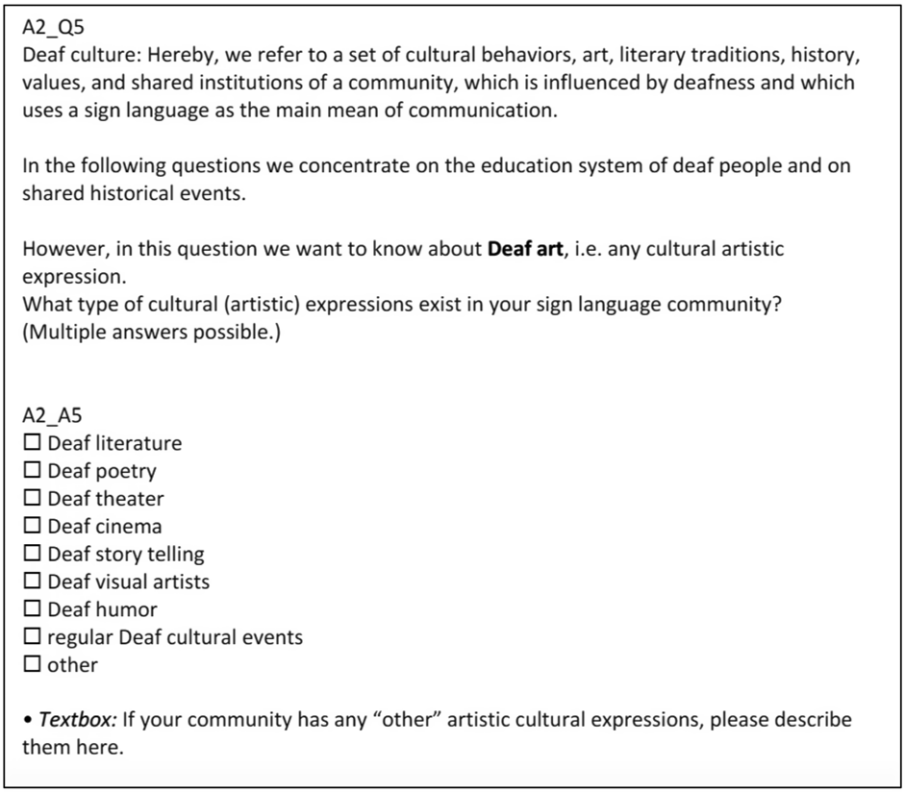
We distinguish:
-- **"very high awareness":** Many hearing people know about the existence of your sign language and have a good knowledge about its structure. The hearing community also knows a lot about the Deaf community and its culture. Deaf and hearing people interact a lot with each other.

-- **"very low awareness":** Only very few hearing people know about the existence of your sign language. Most hearing people don't know anything about the sign language structure, the Deaf community and its culture. Deaf and hearing people interact very little with each other.

How do you estimate the level of awareness and the knowledge about your sign language in your country? (Only one answer is possible.)

A2_A4
☐ very high awareness
☐ high awareness
☐ medium awareness
☐ low awareness
☐ very low awareness

Figure 15. Fourth question in section A2.


A2_Q5
Deaf culture: Hereby, we refer to a set of cultural behaviors, art, literary traditions, history, values, and shared institutions of a community, which is influenced by deafness and which uses a sign language as the main mean of communication.

In the following questions we concentrate on the education system of deaf people and on shared historical events.

However, in this question we want to know about **Deaf art**, i.e. any cultural artistic expression.
What type of cultural (artistic) expressions exist in your sign language community? (Multiple answers possible.)

A2_A5
☐ Deaf literature
☐ Deaf poetry
☐ Deaf theater
☐ Deaf cinema
☐ Deaf story telling
☐ Deaf visual artists
☐ Deaf humor
☐ regular Deaf cultural events
☐ other

• *Textbox:* If your community has any "other" artistic cultural expressions, please describe them here.

Figure 16. Fifth question in section A2.

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A2_Q6
With regard to Deaf associations and Deaf clubs: We want to get an overview which associations and groups exist in your community/country.

Do any types of Deaf associations and Deaf clubs exist in your sign language community? And if "yes", which types?
(Only one answer is possible.)

A2_A6
☐ yes, only a National Deaf association
☐ yes, only local Deaf clubs (non-specific)
☐ yes, only local Deaf clubs (specific to religion)
☐ yes, only local Deaf clubs (specific to sports/elderlies/...)
☐ yes, only National Deaf association and local Deaf clubs (non-specific)
☐ yes, only local Deaf clubs (non-spec. + spec.), but no National Deaf assoc.
☐ yes, National association and local Deaf clubs (non-spec. + spec.)
☐ no, there are no official Deaf clubs, but regular group meetings
☐ no, there are no Deaf clubs and no meetings

Figure 17. Sixth question in section A2.

A2_Q7
Now we want to concentrate on the education system for deaf adults and deaf children in your community/country. On this slide, we ask about the general education options for deaf people (children and adults). In the next slides we will have a closer look at the schools for deaf children.

We distinguish the following:
-- **"direct" education:** communication is directly in sign language
-- **"indirect" education:** sign language communication is indirectly possible via interpreters
-- **"oral" education:** only oral communication is available

What kind of education is generally accessible to Deaf people in your country?
(Please choose only one answer for each group.)

A2_A7
☐ oral higher education (e.g. university)
☐ indirect higher education (e.g. university)
☐ direct higher education (e.g. university)
☐ no higher education is possible

☐ oral secondary education (e.g. high school)
☐ indirect secondary education (e.g. high school)
☐ direct secondary education (e.g. high school)
☐ no secondary education is possible

☐ oral primary education (e.g. main school)
☐ indirect primary education (e.g. main school)
☐ direct primary education (e.g. main school)
☐ no primary education is possible
☐ any kind of official education is unavailable for Deaf people

Figure 18. Seventh question in section A2.

For the question that asked for an overview of what deaf associations or clubs existed in the respondents' countries, only two (Central Taurus SL and Inuit SL) said there were no deaf clubs or meetings. The remaining eight reported that they had both national deaf associations, and local deaf clubs.

Regarding what kind of education is possible for deaf people, five respondents said that their countries had primary education where the teachers use sign language, while two said primary education in sign language was available through interpreters. For secondary level, three respondents said this was possible directly in sign language, three said it was provided through interpreters, and one (Seychellois SL) said no secondary education was possible. The Georgian SL and again the Seychellois SL respondent said that no higher education was possible. Of the remaining six who answered the question, five said that higher education in sign language was possible through interpreters, and one respondent (Swedish SL) indicated that it was available directly in sign language.

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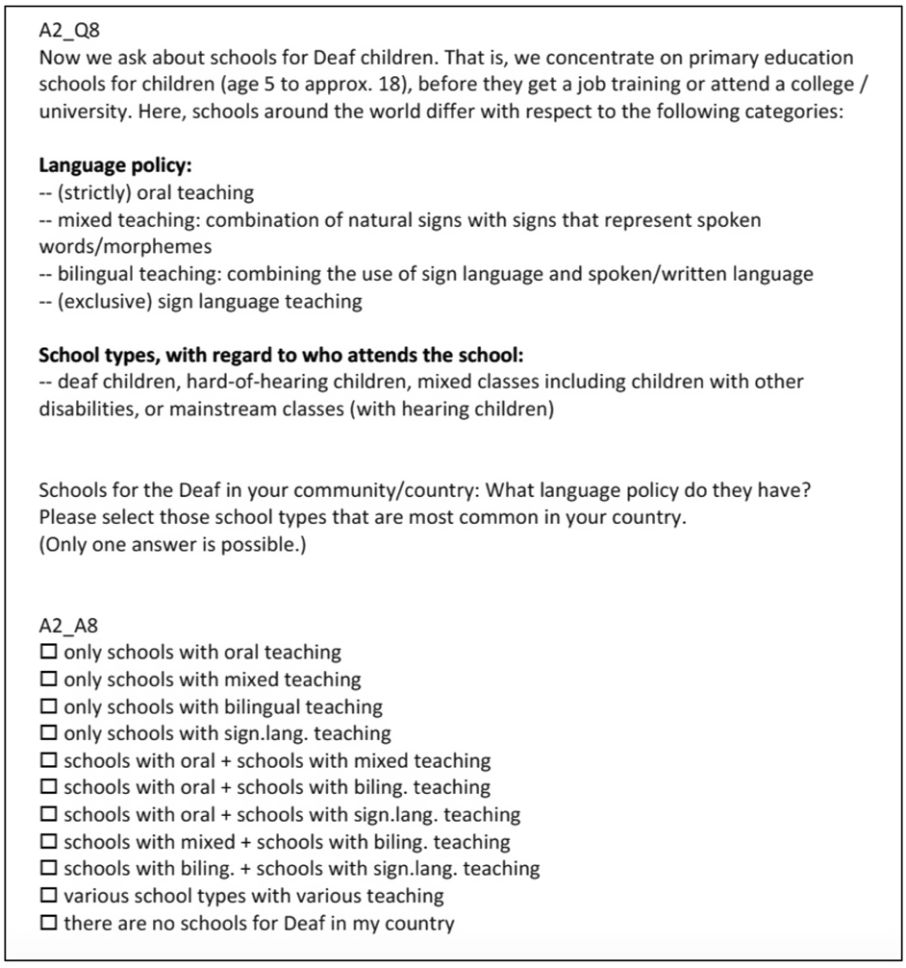

A2_Q8
Now we ask about schools for Deaf children. That is, we concentrate on primary education schools for children (age 5 to approx. 18), before they get a job training or attend a college / university. Here, schools around the world differ with respect to the following categories:

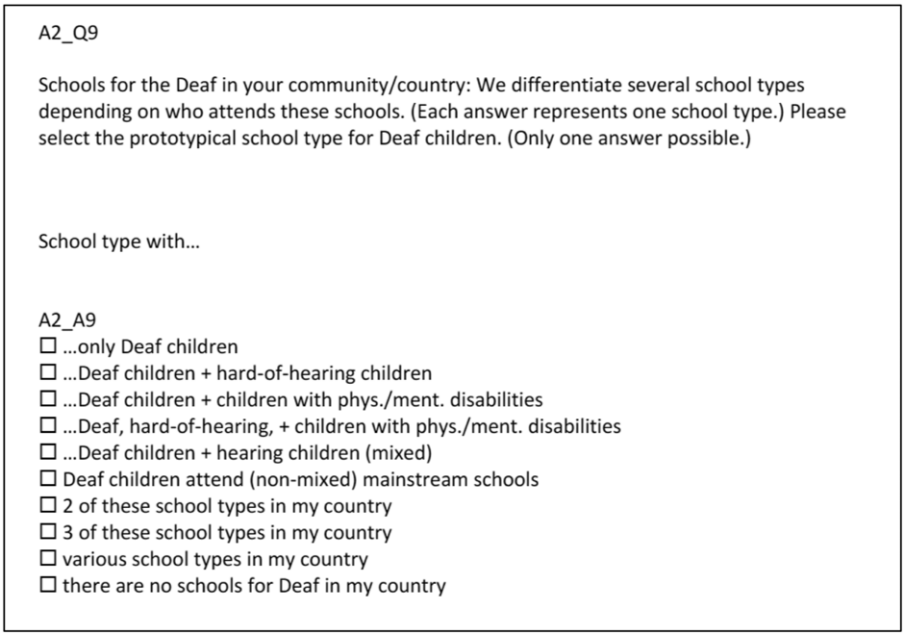
Language policy:
-- (strictly) oral teaching
-- mixed teaching: combination of natural signs with signs that represent spoken words/morphemes
-- bilingual teaching: combining the use of sign language and spoken/written language
-- (exclusive) sign language teaching

School types, with regard to who attends the school:
-- deaf children, hard-of-hearing children, mixed classes including children with other disabilities, or mainstream classes (with hearing children)

Schools for the Deaf in your community/country: What language policy do they have? Please select those school types that are most common in your country.
(Only one answer is possible.)

A2_A8
☐ only schools with oral teaching
☐ only schools with mixed teaching
☐ only schools with bilingual teaching
☐ only schools with sign.lang. teaching
☐ schools with oral + schools with mixed teaching
☐ schools with oral + schools with biling. teaching
☐ schools with oral + schools with sign.lang. teaching
☐ schools with mixed + schools with biling. teaching
☐ schools with biling. + schools with sign.lang. teaching
☐ various school types with various teaching
☐ there are no schools for Deaf in my country

Figure 19. Eighth question in section A2.


A2_Q9

Schools for the Deaf in your community/country: We differentiate several school types depending on who attends these schools. (Each answer represents one school type.) Please select the prototypical school type for Deaf children. (Only one answer possible.)

School type with...

A2_A9
☐ ...only Deaf children
☐ ...Deaf children + hard-of-hearing children
☐ ...Deaf children + children with phys./ment. disabilities
☐ ...Deaf, hard-of-hearing, + children with phys./ment. disabilities
☐ ...Deaf children + hearing children (mixed)
☐ Deaf children attend (non-mixed) mainstream schools
☐ 2 of these school types in my country
☐ 3 of these school types in my country
☐ various school types in my country
☐ there are no schools for Deaf in my country

Figure 20. Ninth question in section A2.

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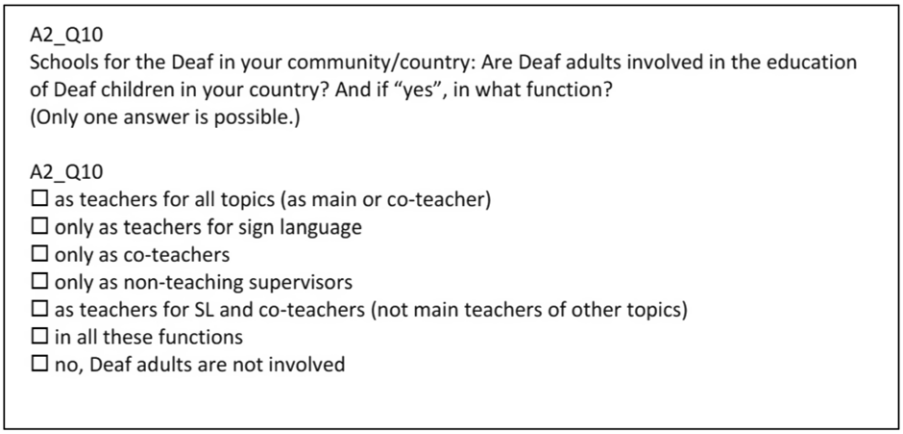

A2_Q10
Schools for the Deaf in your community/country: Are Deaf adults involved in the education of Deaf children in your country? And if "yes", in what function?
(Only one answer is possible.)

A2_Q10
☐ as teachers for all topics (as main or co-teacher)
☐ only as teachers for sign language
☐ only as co-teachers
☐ only as non-teaching supervisors
☐ as teachers for SL and co-teachers (not main teachers of other topics)
☐ in all these functions
☐ no, Deaf adults are not involved

Figure 21. Tenth question in section A2.

Four respondents said that in their community or country, there were only schools with bilingual teaching, i.e. combining sign language and written language; one indicated that there were only schools with mixed teaching, i.e. signs from a deaf community sign language mixed with signs that represent spoken words; and three reported that there were various types of schools with various kinds of teaching.

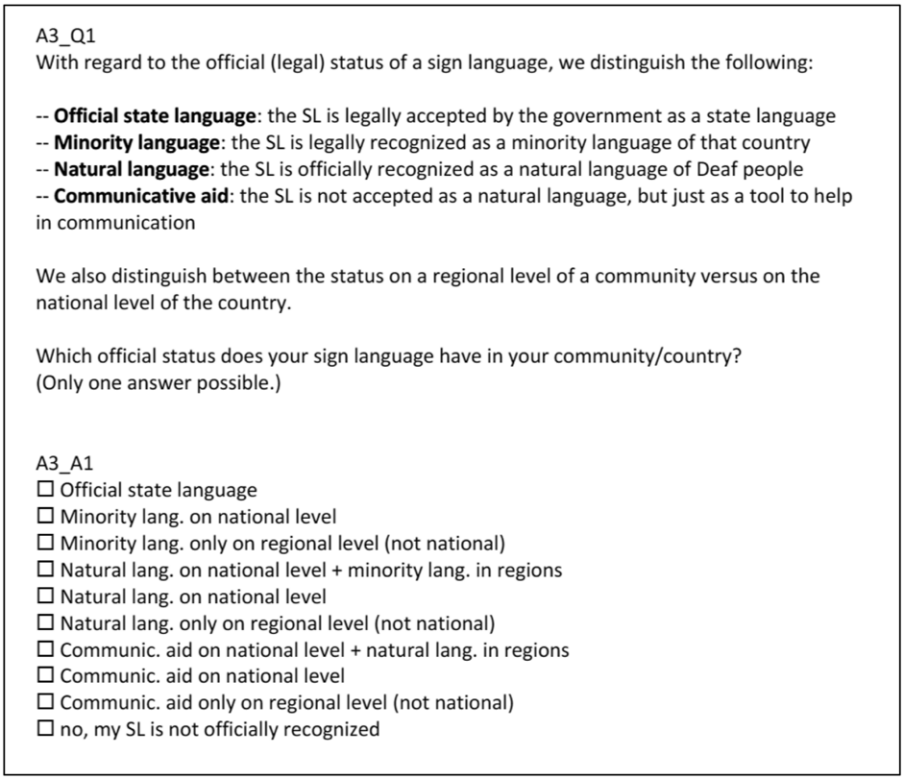
As for the nature of schools for deaf people in their community or country, three respondents reported that these institutions were only for deaf and hard-of-hearing children; four said that these schools included not only deaf and hard-of-hearing children but also those with physical or learning disabilities; and one (the Czech respondent) said that various types of schools for deaf children exist in their country.

Respondents were also asked about the role of deaf adults in the education of deaf children in their community or country. Four respondents said that deaf instructors were involved in teaching for all topics. The other four who answered this question each gave a different answer: the Seychellois SL respondent said that deaf adults were involved as teachers for sign language, and as co-teachers; the Nicaraguan SL respondent said they were involved only as co-teachers; the Georgian SL informant said they were involved only as teachers for sign language; and the Czech SL respondent said they were involved in all of the functions, i.e. as main teachers, co-teachers, non-teaching supervisors, and teachers for sign language.

4.3. A3: Status

Figures 22–27 show the questions in section A3.

Regarding the legal or official status of their sign languages, five respondents said it was officially recognized as a natural language


A3_Q1
With regard to the official (legal) status of a sign language, we distinguish the following:

-- **Official state language**: the SL is legally accepted by the government as a state language
-- **Minority language**: the SL is legally recognized as a minority language of that country
-- **Natural language**: the SL is officially recognized as a natural language of Deaf people
-- **Communicative aid**: the SL is not accepted as a natural language, but just as a tool to help in communication

We also distinguish between the status on a regional level of a community versus on the national level of the country.

Which official status does your sign language have in your community/country?
(Only one answer possible.)

A3_A1
☐ Official state language
☐ Minority lang. on national level
☐ Minority lang. only on regional level (not national)
☐ Natural lang. on national level + minority lang. in regions
☐ Natural lang. on national level
☐ Natural lang. only on regional level (not national)
☐ Communic. aid on national level + natural lang. in regions
☐ Communic. aid on national level
☐ Communic. aid only on regional level (not national)
☐ no, my SL is not officially recognized

Figure 22. First question in section A3.

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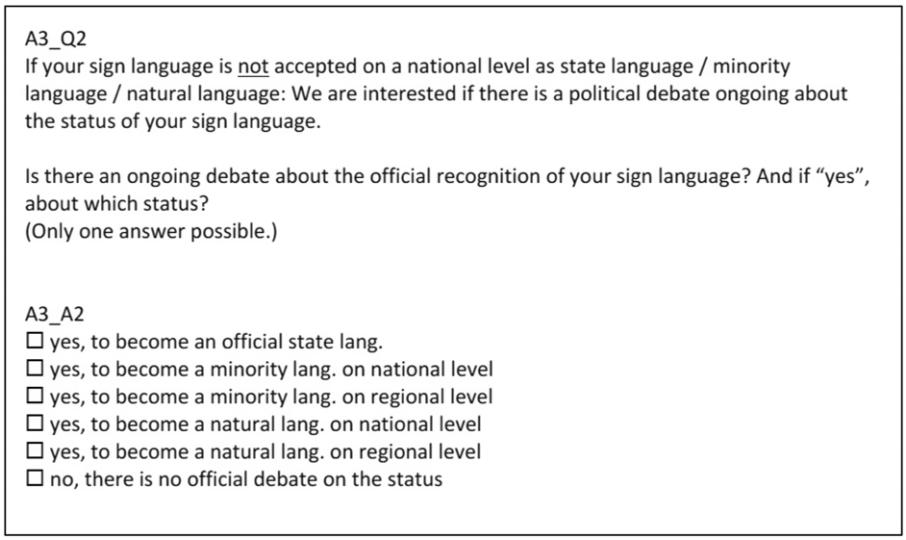
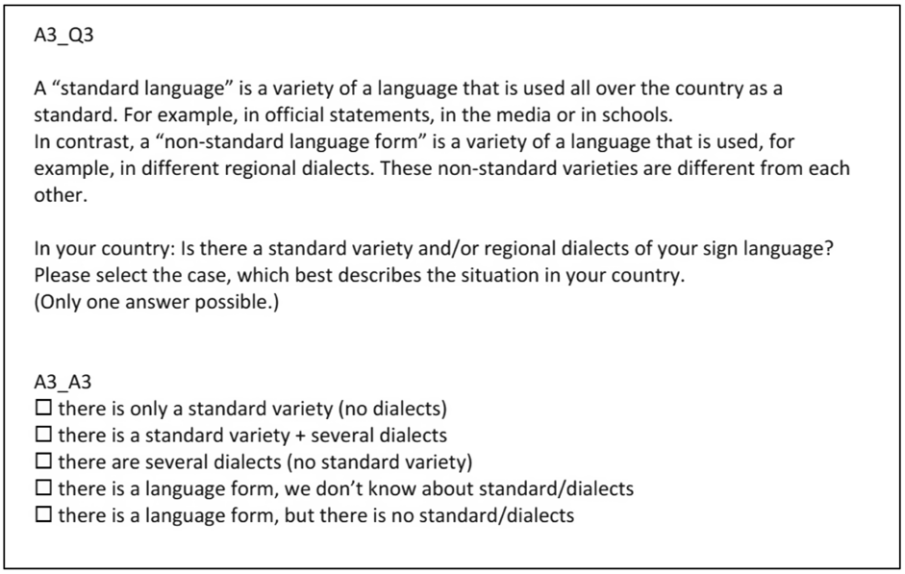

A3_Q2
If your sign language is not accepted on a national level as state language / minority language / natural language: We are interested if there is a political debate ongoing about the status of your sign language.

Is there an ongoing debate about the official recognition of your sign language? And if "yes", about which status?
(Only one answer possible.)

A3_A2
☐ yes, to become an official state lang.
☐ yes, to become a minority lang. on national level
☐ yes, to become a minority lang. on regional level
☐ yes, to become a natural lang. on national level
☐ yes, to become a natural lang. on regional level
☐ no, there is no official debate on the status

Figure 23. Second question in section A3.

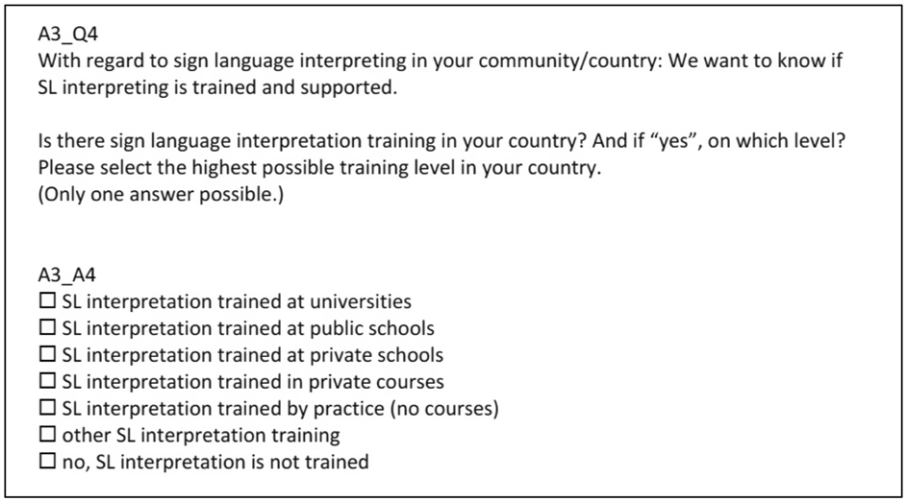

A3_Q3

A "standard language" is a variety of a language that is used all over the country as a standard. For example, in official statements, in the media or in schools.
In contrast, a "non-standard language form" is a variety of a language that is used, for example, in different regional dialects. These non-standard varieties are different from each other.

In your country: Is there a standard variety and/or regional dialects of your sign language?
Please select the case, which best describes the situation in your country.
(Only one answer possible.)

A3_A3
☐ there is only a standard variety (no dialects)
☐ there is a standard variety + several dialects
☐ there are several dialects (no standard variety)
☐ there is a language form, we don't know about standard/dialects
☐ there is a language form, but there is no standard/dialects

Figure 24. Third question in section A3.


A3_Q4
With regard to sign language interpreting in your community/country: We want to know if SL interpreting is trained and supported.

Is there sign language interpretation training in your country? And if "yes", on which level?
Please select the highest possible training level in your country.
(Only one answer possible.)

A3_A4
☐ SL interpretation trained at universities
☐ SL interpretation trained at public schools
☐ SL interpretation trained at private schools
☐ SL interpretation trained in private courses
☐ SL interpretation trained by practice (no courses)
☐ other SL interpretation training
☐ no, SL interpretation is not trained

Figure 25. Fourth question in section A3.

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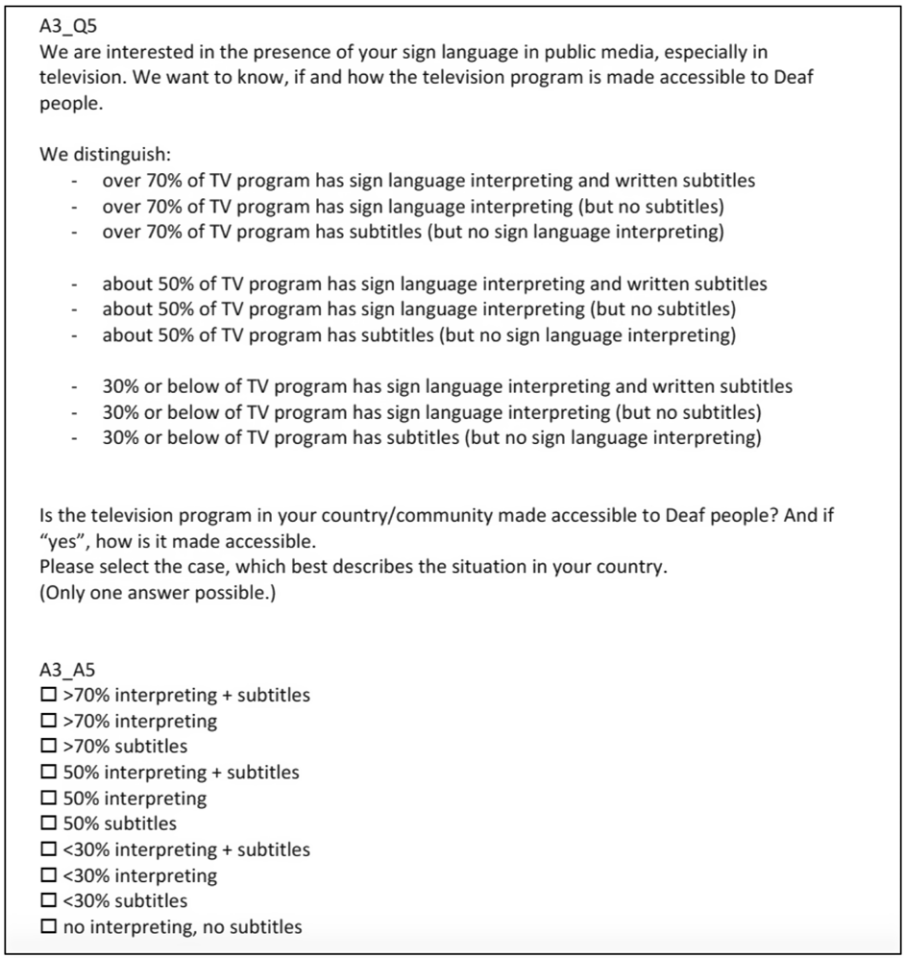

A3_Q5
We are interested in the presence of your sign language in public media, especially in television. We want to know, if and how the television program is made accessible to Deaf people.

We distinguish:
- over 70% of TV program has sign language interpreting and written subtitles
- over 70% of TV program has sign language interpreting (but no subtitles)
- over 70% of TV program has subtitles (but no sign language interpreting)

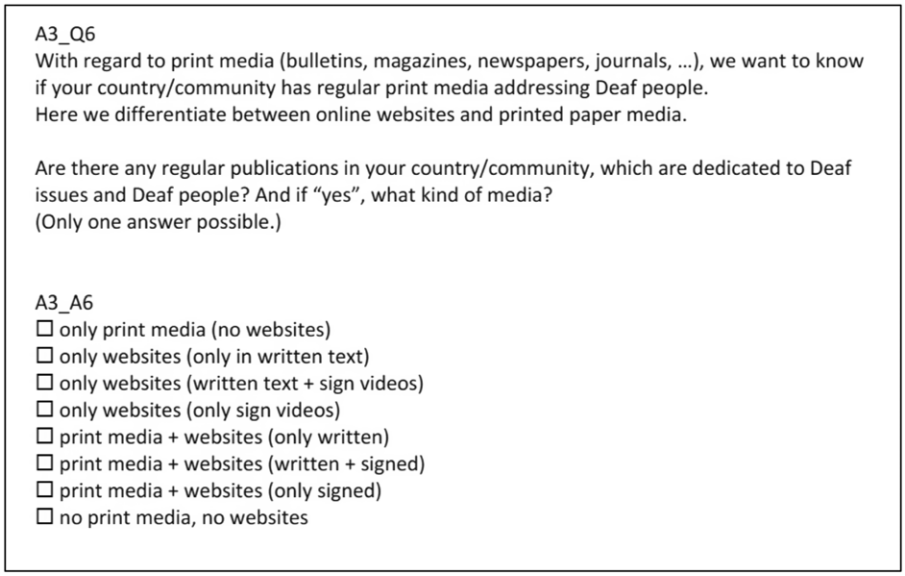
- about 50% of TV program has sign language interpreting and written subtitles
- about 50% of TV program has sign language interpreting (but no subtitles)
- about 50% of TV program has subtitles (but no sign language interpreting)

- 30% or below of TV program has sign language interpreting and written subtitles
- 30% or below of TV program has sign language interpreting (but no subtitles)
- 30% or below of TV program has subtitles (but no sign language interpreting)

Is the television program in your country/community made accessible to Deaf people? And if "yes", how is it made accessible.
Please select the case, which best describes the situation in your country.
(Only one answer possible.)

A3_A5
☐ >70% interpreting + subtitles
☐ >70% interpreting
☐ >70% subtitles
☐ 50% interpreting + subtitles
☐ 50% interpreting
☐ 50% subtitles
☐ <30% interpreting + subtitles
☐ <30% interpreting
☐ <30% subtitles
☐ no interpreting, no subtitles

Figure 26. Fifth question in section A3.


A3_Q6
With regard to print media (bulletins, magazines, newspapers, journals, ...), we want to know if your country/community has regular print media addressing Deaf people.
Here we differentiate between online websites and printed paper media.

Are there any regular publications in your country/community, which are dedicated to Deaf issues and Deaf people? And if "yes", what kind of media?
(Only one answer possible.)

A3_A6
☐ only print media (no websites)
☐ only websites (only in written text)
☐ only websites (written text + sign videos)
☐ only websites (only sign videos)
☐ print media + websites (only written)
☐ print media + websites (written + signed)
☐ print media + websites (only signed)
☐ no print media, no websites

Figure 27. Sixth question in section A3.

on a national level. Of the other three people who answered this question, the respondent for Cypriot SL said it was an official state language, the Greek SL informant said it was a minority language on the national level, and the Inuit SL respondent said it was a minority language on the provincial level (recognized in 2008 by the Nunavut Legislative Assembly).

The questionnaire also asked respondents whether there was any political debate on the status of their sign language. Four said

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there was no official debate on this. The Seychellois SL informant said there was a debate as to whether it would become an official state language, and the Swedish SL respondent said there was a debate on whether it would become a minority language on the national level. The remaining four respondents did not answer the question.

For the question about whether there is a standard variety or regional dialects of their sign language, three respondents said there were several dialects and no standard variety. Another three said there was a standard variety with several dialects, and two reported that there is a language form but they were unsure whether this amounted to a standard variety or multiple dialects. The respondent for Cypriot SL said there was only a standard variety with no dialects.

The next question was about training for sign language interpreters. Four respondents reported that they were trained through private courses, two said they were trained at universities, and one said they were trained via practice only, as there were no courses. The Seychellois SL informant said that their community's two sign language interpreters had been trained by a French SL interpreter via a development project. One respondent (Inuit SL) said that there was no training for sign language interpreters.

Respondents were also asked what efforts existed in their communities or countries to make television programs accessible to deaf people. Of the five who said that both sign language interpreting and subtitles were used, three said less than 30% of programs were made accessible, one (Swedish SL) said 50% were accessible, and one (Czech SL) said that over 70% were accessible. Of the three who said that only interpreting was used, two said that less than 30% of programs were accessible, and one (Georgian SL) said that 50% of programs were accessible. The Inuit SL respondent indicated that no sign language interpreting or subtitles were available.

With respect to print media addressing deaf people, four respondents said there were no paper-based or web-based publications targeting deaf readers. Only three said their country had both print media and websites; for two of these respondents (Czech SL and Swedish SL), the websites featured written text and sign language videos, while for the other (Nicaraguan SL), the websites only had written text. Three said that their country had websites, but not paper-based media. Of these three, two (Georgian SL and Greek SL) said their websites included both written text and signed videos, while the Seychellois SL informant reported only having signed videos.

5. Discussion

This section discusses the results of all three parts of the survey described above, with particular emphasis on parts A2 ("The sign language community") and A3 ("Status") as these are most pertinent to vitality and comparable with previous work such as that described in Webster and Safar (2019). In addition, the section looks at issues that relate to sign language vitality, which the survey does not cover.

Nearly all of the respondents indicated that there had been suppression of the sign language and/or deaf community. Such oppression is well attested in the literature (e.g. Thoutenhoofd, 2000; Bauman, 2004; Ladd & Lane, 2013) and can be identified as a factor that threatens vitality as it disrupts intergenerational transmission and increases the likelihood of language shift (Bickford, Lewis & Simons, 2015; Webster & Safar, 2019). The first historical mention or documentation of many of these sign languages was no more than about 70 years ago, indicating that the time depth of any recorded knowledge or research on them is quite limited. This is also deleterious to vitality and poses the risk that the language will dwindle or even disappear before researchers and policy-makers have a chance to initiate activities that support vitality. Indeed, half of the respondents felt that historical relationships to other sign languages were vague, underlining that research has been minimal. This kind of scholarly investigation on linguistic relationships and "families" is made more challenging and urgent in the case of sign languages by the fact that these languages change much more quickly than spoken languages, due to their atypical transmission (Reagan, 2021). The resulting lack of evidence for historical relationships may further stymie efforts to advance sign language research and advocacy.

For the majority of respondents, there was a medium or high awareness of their sign language among the hearing community, but only one respondent based this on documented analysis, so it is unclear whether this finding may be due to confirmation bias, the tendency for a person to favor or recall information in a way that validates their existing beliefs (e.g. Nickerson, 1998). Most of the sign languages are associated with both national deaf associations and local deaf clubs, which likely supports the vitality of these languages. With respect to their use in different levels of schooling, primary education is more likely than other levels to be available directly in sign language, university is more likely to be accessible through interpreters, and secondary education is fairly evenly split between the two types of provision. Schools with bilingual teaching, i.e. instruction that combines sign language with written language, appear to be prevalent, but schools for deaf children also tend to include pupils with physical or learning disabilities. Fortunately, it seems that deaf adults have significant involvement in deaf education, which contributes to language transmission and thus has a positive effect on vitality (cf. Ladd, 2011; Nankinga, 2021). Most of the sign languages are recognized in some way, and only two respondents indicated that there was political debate on their language's status. It is unclear whether this is because the issue is beyond question or because there is not sufficient awareness of the need for debate. In the earlier question about awareness among the hearing community, only two respondents said that awareness was low, so it is possible that in most of the respondents' countries, the status of their sign language is currently perceived as a fairly settled matter.

Most of these sign languages have multiple dialects, which aligns with increasing support in the literature for the validation of different regional varieties (e.g. "Yucatec Maya sign languages," Safar, 2019; Webster & Safar, 2020:117) and skepticism toward claims that a particular variety is one unified sign language. Training for sign language interpreters varied in terms of formality, with only two respondents reporting that university training courses were available in their country. This scant provision of professional interpreter training is quite concerning in the light of the growing awareness of multiple dialects in the SLs represented in the survey. Moreover, most signers in these communities only have access to a minority of television programs, with only Czech SL users enjoying access to a majority of them. Online sign language videos were available for the users of about half of the languages involved. This absence of media may have deleterious effects on linguistic vitality.

Because the survey questions were not aimed at assessing language vitality specifically, but rather at populating an interactive digital atlas of sign languages as part of a resource hub for linguistic

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and cultural documentation, some factors relating to vitality are not covered in the questionnaire items. For instance, a number of factors impacting the vitality of village languages in particular are absent, such as the extent of increased language contact with other sign languages, changes in marital patterns, geographic dispersal of sign language users, and decreases in the number of deaf children being born. Of the factors that tend to affect national sign languages more, the demand for cochlear implants is also not directly addressed in the survey, but the use of sign languages in deaf education is manifest in several of the questions. The responses to these appear to support the notion of an increasing tendency for deaf pupils to attend mainstream schools and be grouped together with non-deaf peers, which is typically harmful to sign language vitality (e.g. McKee, 2017; Webster & Safar, 2019). However, the argument that sign languages are disappearing from educational settings is somewhat refuted by the respondents, who indicate not only that bilingual teaching (Snoddon & Weber, 2021) is common in several countries but also that deaf adults play multiple roles in deaf education.

It is noteworthy that, despite most respondents reporting longstanding historical oppression (most notably since 1880, when delegates at the Milan International Congress on Education for the Deaf voted to ban the use of sign languages in schools; see Moores, 2010) and a lack of access to most television output, both of which threaten language vitality, their communities generally boast a medium-to-high awareness of the sign languages among hearing people, the provision of education through sign language with the involvement of deaf adults, and the survival of national associations as well as local deaf clubs. This lends further credence to the argument that sign languages have a kind of resilience that other minority languages lack, wherein signers acquire these skills despite not having full access to the ambient spoken language, and also in spite of the overt influence of and constant pressure to use this ambient language (Barberà et al., 2019). Such resilience is perhaps evidence of sign languages being "the most natural and effortless means of communication for deaf individuals" (Barberà et al., 2019:81). It may be worthwhile to examine this resilience by adding a diachronic component to the interactive Atlas. This could perhaps be done by asking participants periodically for updates on their previous answers and displaying charts that indicate any changes, which would inform best practices for promoting vitality (Webster & Safar, 2019).

6. Conclusion

This paper has discussed a sign language survey intended to populate an innovative interactive atlas. By considering the survey responses provided by 10 out of the 29 participants who have so far submitted socio-historical data for the Atlas, it has been possible to investigate implications for sign language vitality. Administered by the Sign Hub project, this survey is intended to enable researchers to populate an online Atlas displaying socio-historical and grammatical details about each language. The analysis presented here of the answers in the three sections most relevant to vitality, i.e. history, community, and status, indicates that nearly all of the sign languages and deaf communities represented have experienced oppression, and the recorded knowledge and research on them has quite limited time depth (less than 70 years). Indeed, few of the respondents were able to draw on documented analysis for their answers, and most had to rely on personal estimation for the majority of the questions.

The responses also suggest that, for the majority of the ten investigated sign languages, there is a reasonable level of awareness among the hearing community as well as use within educational institutions, national deaf associations, and local deaf clubs. These factors all support sign language vitality. However, the availability of interpreter training and access to media in sign languages appears to be generally poor, which hinders vitality. The existence of multiple dialects for most sign languages paints a picture of complexity that makes the lack of training for interpreters even more problematic, and raises further questions about the tendency among governments and researchers to treat sign languages as singular, clearly-bounded entities. Efforts to collect and disseminate data about the status of sign languages, such as this detailed survey by the Sign Hub team, are supporting sign language vitality by bolstering engagement and knowledge transfer with and among signing communities, equipping them with the evidence that they need to advocate for their linguistic rights (see Webster & Safar, 2020). This survey in particular, being aimed at placing sign languages in a user-friendly Atlas with the facility of searching for specific socio-historical, phonological, lexical, and grammatical phenomena, constitutes a ground-breaking endeavor, and will provide exciting scholarly and advocacy opportunities for deaf communities and researchers in the fields of sign language linguistics and deaf studies.

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Competing interests. The authors declare none.

Notes

1 The project's full title is "The Sign Hub: Preserving, researching and fostering the linguistic, historical and cultural heritage of European Deaf signing communities with an integral resource." Further details are available at https://cordis.europa.eu/project/id/693349.

2 In the whole Atlas (all sections), at the time of writing there are 56 different sign languages represented. However, since different people answered different questionnaires, the number of languages per section (i.e. per questionnaire) varies. For instance, the phonology and lexicon section has 41 languages, morphology has 28, and history has 29.

3 This is the last of four separate questionnaires that were distributed by the Sign Hub team. The first was on phonology and lexicon, the second on morphology, and the third on syntax. Putting the questions into four separate files enabled the team to target experts in each sub-discipline and avoid having all 200 questions in one document.

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