Lexical Variation in Russian Sign Language: the case of SCHOOL

LING251 Language Variation in Time, Space and Society with BA Thesis

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Table of Contents

1. Introduction 2

2. Lexical variation in sign languages 4

3. Methodology 6

3.1 Distinguishing between variants 6

3.2 The sociolinguistic groups 8

4. Results 10

4.1 Age group and variants 10

4.2 City of birth and variants 11

4.3 Gender and variants 12

4.4 Deaf or hard-of-hearing relatives and variants 13

4.5 Age of RSL acquisition and variants 14

5. Discussion 15

6. Conclusion 18

List of references 19

Appendix 20

1. Introduction

All languages vary in time, space and society (Bybee, 2015), and this is crucially true for sign languages: natural languages of the deaf communities that exist in the visual modality. This means lexical signs in sign languages can vary just like lexemes in spoken languages can; lexically, phonologically, morphologically, and syntactically (Baker, Bogaerde, Pfau, & Schermer, 2016, p. 281). This topic, however, has only been explored for a small number of sign languages so much research is still needed. This paper will be focusing on data from Russian Sign Language and will explore sociolinguistic factors behind lexical and phonological variation in Russian Sign Language by looking at the Russian sign for *school*.

Comparably to spoken languages, variation in sign languages involves social differences between language users such as the region they are from, their age, gender, ethnic background, and social class (Baker, Bogaerde, Pfau, & Schermer, 2016, p. 282). For the purposes of this paper, a database of filmed participants was used to find the different variants for the sign SCHOOL. The variants were then coded to find how the influence of different sociolinguistic factors such as age, gender, city of birth, deaf relatives, hard of hearing relatives, and the age of Russian Sign Language acquisition affected the choice of variant for SCHOOL. This is an interesting topic because, as mentioned, variation in most sign languages is understudied, and this is especially true for Russian Sign Language. Furthermore, the deaf and hard-of-hearing have historically faced discrimination and prejudice, but the recognition of variation in RSL, and in sign languages in general, helps support their status as real languages and gives the languages of the deaf and hard-of-hearing the validity and recognition they deserve (Lucas, Bayley, & Valli, 2003, p. 63).

This paper starts with a literature review which formulates the most relevant and important findings of two sources on lexical variation in American Sign Language and British Sign Language, respectively. In addition, the distinction between phonological and lexical variation in sign languages is defined. Following this is the section on methodology which explains how the lexical and phonological variants were categorized, as well as a short description of the table of variants (see Appendix) before the results of the data analysis are formulated. After this comes a

discussion which explores what the findings reveal, followed by the conclusion which summarizes these findings.

2. Lexical variation in sign languages

The book *What's Your Sign for PIZZA?* by Ceil Lucas, Robert Bayley, and Clayton Valli, which is based on a large research project that lasted over the course of seven years, studied variation in American Sign Language (Lucas, Bayley, & Valli, 2003, p. 1). They discovered that the variation found in all human languages, whether spoken or signed, is mostly systematic. Furthermore, as is stated in *What's Your Sign for PIZZA?*, while many of the social factors that condition variation are identical for spoken and sign languages – such as, region, age, gender, ethnicity, socioeconomic class – there seem to be some factors, such as language use in the home, that are unique to sign language variation. They also found that age and region need to be understood specifically within the context of Deaf education. In addition, they discovered many similarities between the variable units and processes in spoken and sign languages, as well as fundamental differences between the respective structures of spoken and sign languages that are reflected in variation. They argue that this is visible in the strong role that grammatical constraints play in phonological variation in sign languages (Lucas, Bayley, & Valli, 2003, p. 177).

Researchers often distinguish between phonological and lexical variation in signs. The difference between phonological and lexical variation is that phonological variation occurs when the difference between the variants concerns one of the basic components of the sign such as the handshape, orientation, movement, or location, while lexical variation is when two signs differ in more than one of these components (Lucas, Bayley, & Valli, 2003, pp. 17-19). To give an example, one of the variants for the sign SCHOOL discussed in this paper is signed by the index finger and thumb in an L-shape while another variant is signed by the same fingers in a C-shape (see Figure 1 below). The only difference between these two signs is the handshape, while all the other parameters (orientation, location, and movement) are the same; these two variants are therefore phonologically distinct, but still the same lexeme. There is another sign for SCHOOL discussed in this text; it is signed by using the arms with the palms facing down as one arm moves down to clasp the other arm. This sign and the one discussed above differ in more than one of the basic components and are therefore different lexemes or lexical units.

There are several studies investigating the sociolinguistic factors that affect variation. For example, Stamp et al. (2014) investigate British Sign Language in their article, *Lexical Variation and Change in British Sign Language*, and find that age is an important factor in lexical variation and change across all groups in their study. The signs for countries were subject to several external influences such as political correctness, changing attitudes towards lexical borrowing, and greater international mobility and transnational contact. This change was age-graded with anecdotal evidence of some older signers also adopting new variants. However, changes in the use of traditional regional signs for colors and numbers did not appear to be subject to changes in attitudes to language, but rather appeared to reflect changes in the transmission of BSL in addition to increased mobility within the UK and exposure to lexical variation in BSL through the media (Stamp, et al., 2014, p. 12).

3. Methodology

The data which is the basis for the analysis part of this paper was collected by reviewing 172 different signers signing SCHOOL from the *Database of lexical variation in Russian Sign Language* from the Garage Museum of Contemporary Arts (https://rsl-research-explore.garagemca.org/?inputFilter=videoQuestion20).

3.1 Distinguishing between variants

All signs can be described by the four general parameters; handshape, location, orientation, and movement, which make up the internal structure of a sign (Baker, Bogaerde, Pfau, & Schermer, 2016, pp. 3-4). Therefore, the data used in this paper was coded by finding the different variants with respect to these general parameters as well as handedness and number of repetitions. The variants are categorized into five different lexical groups represented by the letters **A**, **B**, **C**, **D**, and **E** while the numbering **1**, **2**, **3**, **4**, etc. marks the phonological variants within the lexical variants.

The participants in our research group also produced variants which are complex signs (compounds) consisting of more than one lexical sign and have been listed as such in the table of variants (see Appendix). For the sign SCHOOL all compounds consisted of the sign LEARN followed by the variant it occurred with, i.e., LEARN + SCHOOL-B2. The different variants and their components were placed in a table (see Table 1 in the Appendix), which were then used when creating another table. This new table contained the signers and the variant(s) the signers used, along with the signers' sociolinguistic information which included age, city of birth, gender, deaf relatives, hard of hearing relatives, and the age of RSL acquisition. This table of data was then used for the data analysis to find the frequencies of the variants in the different sociolinguistic groups.

Evidence supporting the choice to make distinctions between certain signs, i.e., creating different phonological and lexical variants is provided by the observation that a single signer sometimes produced two or more different variants. For instance, it is clear there is a phonological distinction between no repetition of a sign vs. a repetition since some signers produced both the variant without a repetition and the variant with a repetition. Next, there is also an evident

distinction between the variant where the index finger and thumb are in an L-shape that turns into pinched fingers (see Figure 2) and the variants where the L-shape or C-shape stays the same and merely goes from the center and outwards (see Figure 1), because some signers sign both variants. Regarding compounds, a distinction is also observed between a simple variant such as SCHOOL-B2 and a complex variant derived from compounding by using LEARN followed by a variant, such as LEARN + SCHOOL-B2, also because some signers list both.

Consider the following four variants (Figures 1, 2 and 3). It was decided to group these variants into lexemes based on whether the sign contained handshape change or not, and not based on the specific handshape. This is motivated by two factors. First, the presence of handshape change also involves a movement (transitional movement between the handshapes), so the presence vs. absence of handshape change is enough to distinguish lexemes. Second, the two relevant handshapes in Figures 1, 2 and 3 exist on a continuum, such that sometimes it is unclear which handshape is used in the sign. Thus, it is reasonable that the variants only distinguished by the handshapes belong to the same lexeme.

Figure 1. SCHOOL-B1 (two frames) and SCHOOL-B2 (two frames)

Figure 2. SCHOOL-A3 (three frames)

Figure 3. SCHOOL-A6 (three frames)

As in spoken languages, sign languages have a considerable amount of phonetic variation. In spoken languages this means variation in the way words are articulated, while in sign languages it means variation in the way the signs are articulated. Such variation was also observed among the participants in our research group. There was variation among the signers such as minor differences in orientation, the number of repetitions beyond one (e.g., 2 or 3 repetitions), how bent the fingers were, and if the shapes were completely straight or slightly slanted. However, based on existing research on other sign languages, such minor variation is considered phonetic and thus does not lead to the creation of a variant (Baker, Bogaerde, Pfau, & Schermer, 2016, p. 238).

3.2 The sociolinguistic groups

This paper divides the participants into different groups based on their sociolinguistic information and looks at which variant(s) are the most common among the participants of a certain group. The first sociolinguistic category is "age" where there are four groups: ages 14-25, 26-40, 41-55, and 56 and older. These groups were created to represent young people, adults, middle age, and seniors. The next category is "city of birth" which includes sixty-one different cities, which is too many to look at individually in this paper due to word limitations. For this reason, only the observed variants used by the participants from the five most common cities of birth will be analyzed. The cities used in the analysis are therefore Moscow, Saint-Petersburg, Novosibirsk, Nizhniy Novgorod, and Kaluga.

Next, is the category "gender", where it will be studied if there is a difference between the variants used by women in contrast to those used by men. In addition, there is the category "deaf

relatives" where it will be explored if those who have deaf relatives use different variants than those who do not. It will be especially interesting to see if those with close deaf relatives such as parents, siblings, or a spouse use different variants than those who have more distant deaf relatives such as grandparents, cousins, aunts/uncles, etc. For this reason, the category "deaf relatives" has been divided into three groups: "close relatives", "other relatives", and "no relatives". The same will be done for the category "hard-of-hearing relatives". Lastly, there is the category "age of RSL acquisition" where the goal is to see if the age of RSL acquisition plays a part in the choice of variant. This category is divided into eight subgroups based on the age of acquisition: 0-3, 3-5, 6-8, 9-11, 12-14, 15-17, 18-20, and 21 or older. This division is based on the alternatives the participants were given so it was most efficient to keep the division as such when doing the data analysis.

4. Results

To start with, there were some participants who did not disclose information about themselves such as their age, gender, city of birth, etc. The observed variants used by those that did not state information for a given category will therefore not be used in the analysis as they do not contribute to the aim of this paper which is to study how sociolinguistic factors affect the choice of variant for SCHOOL.

When analyzing the data, it was decided to count each observation of a variant no matter if it was a single signer signing two or more different variants. This is because the goal is to see if a given sociolinguistic category influences the choice of variant. Due to this there may be more observations than total number of participants. In addition, a decision was made to only analyze the most frequent variants, SCHOOL-B2, SCHOOL-B6, SCHOOL-A3, and SCHOOL-A1, while the remaining variants were assigned to the category "other". This decision was made because there are many variants with a low frequency which makes the picture unclear, both graphically and analytically. Using R (R Core Team, 2021) and RStudio (RStudio Team, 2021) to analyze the data consisting of the participants, their sociolinguistic information, and their choice of variant(s), the following results were observed on the interaction between variant and sociolinguistic category.

4.1 Age group and variants

From the plot below (Figure 4) we see that the same variant occurs most frequently across all the age groups: SCHOOL-B2. SCHOOL-A3 is the second most common variant, followed by SCHOOL-B6, and lastly SCHOOL-A1 although this last variant is not observed among the participants ages 41 and older, and SCHOOL-B6 is not observed in the oldest age group. There does not seem to be any significant differences in which signs are used by the participants of the different age groups in our research group, except that SCHOOL-B2 appears to be more dominant in the age group 26-40 than in the other age groups.

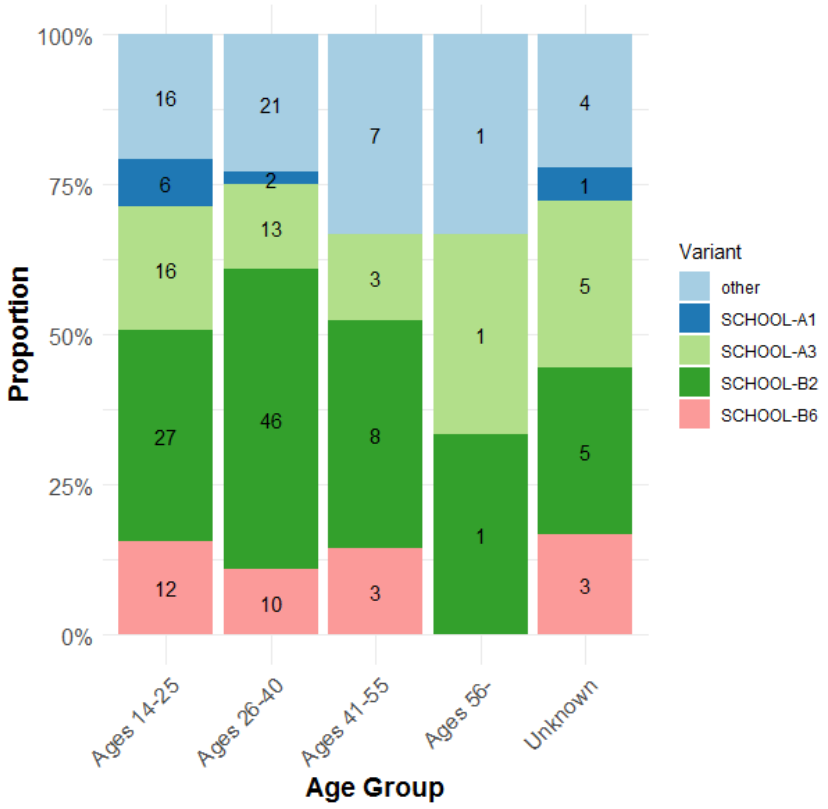

Figure 4. Distribution of major variants across age groups. The numbers in the bars represent the absolute counts of observations per category.

4.2 City of birth and variants

The results seem to indicate that region partially influences the choice of the variant. As displayed in Figure 5 below, out of the selected cities used in the analysis (Moscow, Saint-Petersburg, Novosibirsk, Nizhniy Novgorod, and Kaluga), the most common variant used by participants from Moscow and Novosibirsk is SCHOOL-B2 with SCHOOL-A3 being the second most common variant. Furthermore, the participants from Moscow were the only ones to produce the variant SCHOOL-A1. Participants from Saint-Petersburg preferred to use variants other than the main variants, while the participants from Kaluga preferred the variant SCHOOL-A3. Lastly, participants from Nizhniy Novgorod produced SCHOOL-B2, SCHOOL-B6, and "other" variants an equal number of times with SCHOOL-A3 being the least common variant.

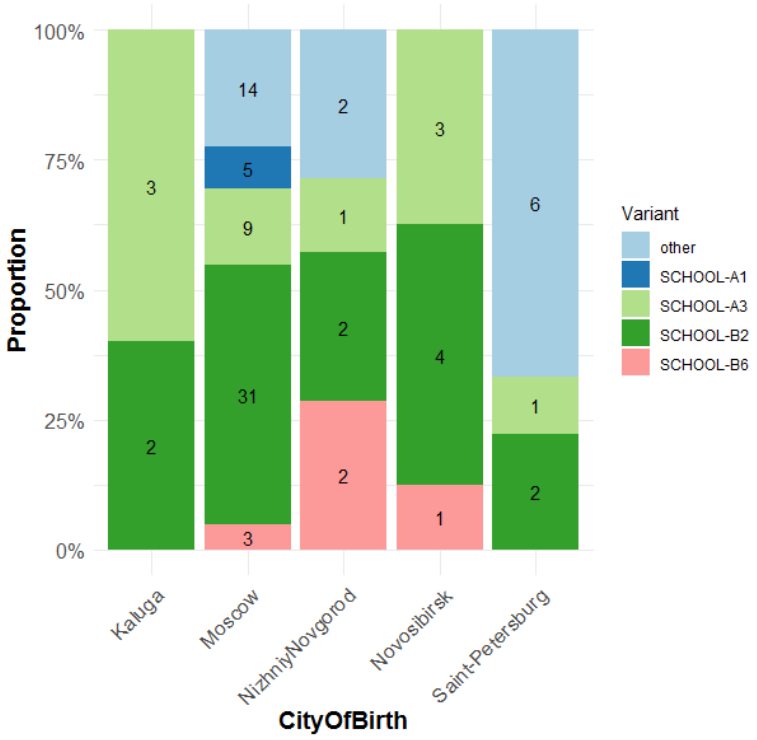

Figure 5. Distribution of major variants across cities of birth. The numbers in the bars represent the absolute counts of observations per category.

4.3 Gender and variants

The plot below (Figure 6) shows that the distribution of the variants across the two genders is very similar. There does not appear to be any significant differences, both genders produced the variant SCHOOL-B2 most frequently, and the remaining variants have similar percentages for both women and men; SCHOOL-A3 followed by SCHOOL-B6 and SCHOOL-A1.

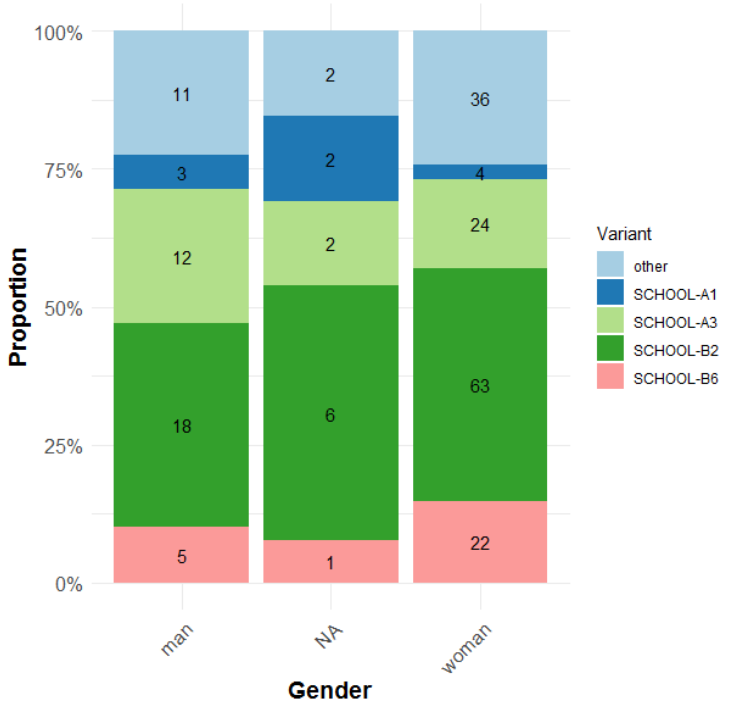

Figure 6. Distribution of major variants across genders. The numbers in the bars represent the absolute counts of observations per category.

4.4 Deaf or hard-of-hearing relatives and variants

The distribution of the most frequent variants appears to be quite similar across the deaf relative groups. The participants with close, no, or other deaf relatives all used SCHOOL-B2 most frequently. However, participants with close or other deaf relatives produced a variant other than one of the main variants second most often, while the participants with no deaf relatives preferred to use SCHOOL-A3. The remaining variants, SCHOOL-B6 and SCHOOL-A1 have similar proportions of use by the participants with close, no or other deaf relatives. Regarding hard-of-hearing relatives, the plot is not displayed here as the results were mostly identical to the ones for deaf relatives; SCHOOL-B2 was the most common variant with "other" variants

coming in second place for all groups of relatives, followed by SCHOOL-A3, SCHOOL-B6, and SCHOOL-A1.

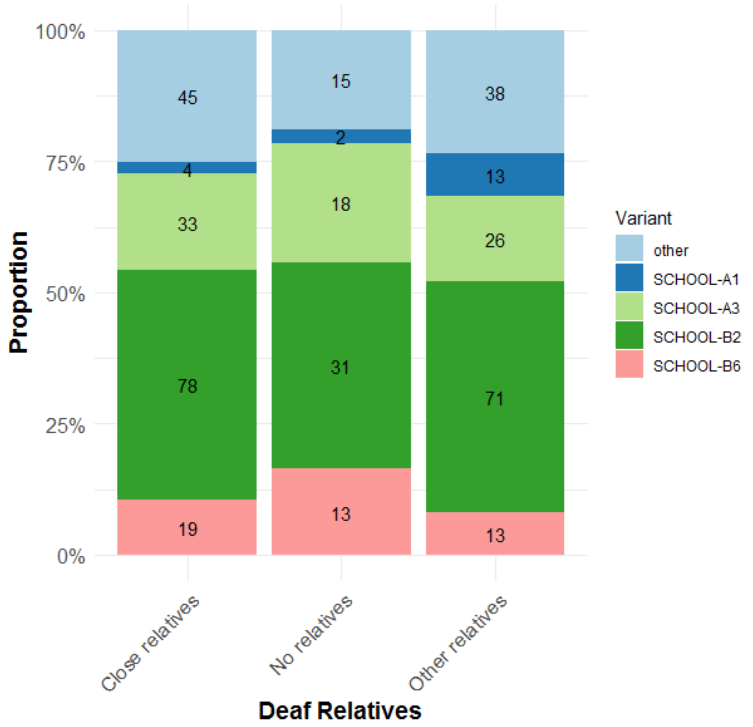

Figure 7. Distribution of major variants across types of relatives. The numbers in the bars represent the absolute counts of observations per category.

4.5 Age of RSL acquisition and variants

The groups who acquired RSL since birth, before age three, age 3-5, and age 6-8 produced SCHOOL-B2 most frequently, followed by SCHOOL-A3 and SCHOOL-B6, while the participants from the age group 9-11 most frequently produced SCHOOL-A3 followed by SCHOOL-B2 and SCHOOL-B6. For the remaining age groups (12-14, 15-17, 18-20, and 21 and older), there were far fewer participants, and therefore there are few observations. The participants belonging to these age groups were observed to produce a range of different variants, as seen in the plot below (Figure 8), but rarely the variant SCHOOL-B2.

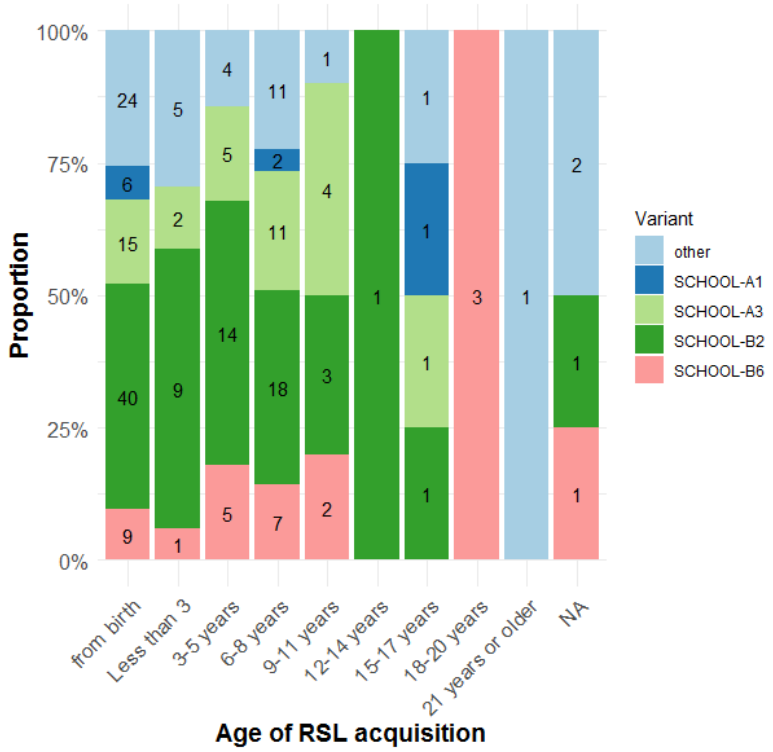

Figure 8. Distribution of major variants across ages of acquisition. The numbers in the bars represent the absolute counts of observations per category.

5. Discussion

When studying sociolinguistic variation, researchers also seek to collect examples of natural language use and want these examples to be representative of the community that uses it. However, recording is the only way to get good samples of language and since a recording of a signer is a filmed video, the participants are very much aware they are being observed which often causes them to become hyperaware of their own articulation and in turn causing it to become more formal and less natural (Lucas, Bayley, & Valli, 2003, p. 54). This needs to be kept in mind when considering the results from a research paper such as this one as the reality of the language use could be different than what the results indicate. Furthermore, for future studies, a research group consisting of a representative number of participants from each sociolinguistic category is necessary to get a proper assessment and accurate representation of the community of interest.

The results revealed that age does not have a significant effect on the choice of variant for SCHOOL: SCHOOL-B2 was the most frequently observed variant among all the age groups,

followed by SCHOOL-A3 although SCHOOL-B2 seemed most dominant among the participants aged 26-40. These findings contrast with the ones in the book by Lucas, Bayley, & Valli (2003), however, this could in part be explained by our participants consisting predominantly of the ages 14-40, while there were far fewer participants aged 41 and older. Despite these findings, it is possible that there is variation among the different age groups of the Russian Deaf community, but that this is simply not observed here because our research group contained few representatives of the older members of the community (older than 40). Therefore, for future studies it would be beneficial to have the number of participants from each age group be representative of the community to get a clear and representative picture of any differences between younger and older signers in the Russian Deaf community. Furthermore, we have only studied one sign, SCHOOL, so more differences and variation could be uncovered by looking at more signs.

The results for the influence of city of birth on the choice of variant for SCHOOL showed some variation among the participants. Participants from Moscow and Novosibirsk most frequently produced SCHOOL-B2, while participants from Saint-Petersburg preferred to use variants other than the main variants. Furthermore, participants from Kaluga preferred the variant SCHOOL-A3, while participants from Nizhniy Novgorod produced SCHOOL-B2, SCHOOL-B6, and "other" variants an equal number of times with SCHOOL-A3 being the least common variant. This indicates that there is some variation among the participants from these cities that could be due to regional dialects. These results are problematic, however, as most of the participants are from Moscow, while there are only five, seven, eight, and nine participants from Kaluga, Nizhniy Novgorod, Novosibirsk, and Saint-Petersburg, respectively. Therefore, one could claim that there is not substantial evidence to state that there is lexical variation between the different cities explained by regional dialects. Nevertheless, it is reasonable to acknowledge that SCHOOL-B2 is the dominant variant used by the participants from Moscow and Novosibirsk, as well as there being regional variation between the cities.

The results indicated that the distribution of the major variants among men and women were mostly similar with no significant differences; SCHOOL-B2 was the most dominant variant among both genders and the same tendencies were observed for the remaining main variants as

well. Note, however, that of the 172 participants, 124 were women, so a more representative sample is desirable for future research.

The data analysis yielded no significant findings with respect to having close or distant deaf or hard-of-hearing relatives, or not. The distribution of the major variants was mostly similar across the deaf relative groups with SCHOOL-B2 being the most common variant. Similar results were found for the category "hard-of-hearing relatives" as well. This contrasts with the findings by Lucas, Bayley, & Valli (2003), as well as Baker, Bogaerde, Pfau, & Schermer (2016) who stated that there can be considerable variation in the signing input from parents and from the people in the child's environment. Parents are the dominant source of language input so it would be expected that these signs would be different from the signs used by other relatives (Baker, Bogaerde, Pfau, & Schermer, 2016, p. 53). According to the results this is not the case, but this could be partially explained by the analysis being based on one sign where there are a couple dominant variants. For other signs, the results could be different.

A tendency was observed when studying the age of RSL acquisition and the choice of variant for SCHOOL: the participants who acquired RSL at a younger age (younger than age 9) most frequently produced the variant SCHOOL-B2 while the participants who acquired RSL at age 9 or older, rarely used this variant and rather favored other variants such as SCHOOL-A3, SCHOOL-B6, or others. Considering the number of observations of SCHOOL-B2 among the younger age groups gives reason to believe this is the dominant form and the form most often learned by signers from their parents or at school. The other forms are acquired by the older age groups possibly due to lack of exposure to RSL and proper immersion in the language. Parents are an important source of language input both for hearing and deaf children as children receive input from daily activities such as mealtime, playtime or bath time. Thereby a lack of such language input from a young age leads to a slower and less fluent language acquisition, which could explain the results of our analysis (Baker, Bogaerde, Pfau, & Schermer, 2016, pp. 52-53). Nevertheless, there were few representatives for the older age groups (age 9 and older), so it could be problematic to assert that those who learn RSL at an age younger than nine will use SCHOOL-B2 more often than those who learn the language at age nine or older.

Although these findings are based on a single sign from Russian Sign Language, this research paper can give an insight into the mechanisms behind RSL such as if and which social factors

affect variation in Russian Sign Language, as well as provide a good basis for future research on more signs in RSL. The results of our data analysis revealed a strong tendency to use SCHOOL-B2 across all sociolinguistic categories, which provides evidence that SCHOOL-B2 is the dominant variant across most regions and social groups.

6. Conclusion

This paper provided a first analysis of lexical variation in Russian Sign Language by looking at the sign SCHOOL and explored different sociolinguistic factors that could influence the choice of variant for it. Definitions and examples were given to explain the difference between phonological and lexical variation in sign languages which was an important theme in this paper. Although there were no huge revelations on variation in RSL, this paper was nonetheless able to make some connections between some of the sociolinguistic categories and their influence on the choice of variant, such as regional variation as well as deducing that the younger a signer is at the age of RSL acquisition, the more likely they are to acquire the variant SCHOOL-B2, which has been presumed to be the dominant form. Moreover, regardless of the sociolinguistic factor, there was a strong tendency among the participants to use the variant, SCHOOL-B2, which further strengthens our assumption that this variant is the dominant form. Lastly, studying Russian Sign Language, even if it is just one sign, helps the much-needed research on this sign language, as well as contributes to any discoveries on variation in RSL which in turn can support its status as a real language.

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Appendix

Table 1. Variants for SCHOOL (two pages).

Variant	Handshape	Location	Movement	Two-handed	Number of repetitions	Orientation	Comments
SCHOOL-A1	pinched fingers → L-shape	neutral space	from center and straight outwards	yes	1	palms facing forward	
SCHOOL-A2	pinched fingers → L-shape → pinched fingers	neutral space	from center and straight outwards	yes	1	palms facing forward	
SCHOOL-A3	L-shape → pinched fingers	neutral space	from center and straight outwards	yes	1	palms facing forward	
SCHOOL-A3	L-shape → pinched fingers	neutral space	from center and straight outwards	no	1	palm facing forward	
LEARN + SCHOOL-A3							
SCHOOL-A4	pinched fingers → L-shape → pinched fingers	neutral space	from center and straight outwards	yes	2	palms facing forward	
SCHOOL-A5	L-shape → pinched fingers	neutral space	from center and straight outwards	yes	3	palms facing forward	
SCHOOL-A5	L-shape → pinched fingers	neutral space	from center and straight outwards	yes	2	palms facing forward	
SCHOOL-A6	C-shape → pinched fingers	neutral space	from center and straight outwards	yes	1	palms facing forward	
SCHOOL-B1	L-shape	neutral space	from center and straight outwards	yes	1	palms facing forward	
LEARN + SCHOOL-B1							
SCHOOL-B2	C-shape	neutral space	from center and straight outwards	no	1	palm facing forward	
SCHOOL-B2	C-shape	neutral space	from center and straight outwards	yes	1	palms facing forward	
LEARN + SCHOOL-B2							
SCHOOL-B3	L-shape	neutral space	from center and straight outwards	yes	2	palms facing forward	
SCHOOL-B4	C-shape	neutral space	bounces from center and outwards and back again	yes	2	palms facing forward	
SCHOOL-B5	C-shape	neutral space	outwards and straight to center	yes	2	palms facing forward	

SCHOOL-B6	C-shape	neutral space	from center and straight outwards	yes	2	palms facing forward	
SCHOOL-B6	C-shape	neutral space	from center and straight outwards	yes	3	palms facing forward	
SCHOOL-C1	straight arms	neutral space	horizontal and upwards with one arm	yes	1	palms facing down	
SCHOOL-C2	straight arms	neutral space	horizontal and upwards with one arm	yes	2	palms facing down	
SCHOOL-C3	straight arms	neutral space	arm lowers down to other arm	yes	1	palms facing down	
SCHOOL-D1	Fingerspelling	neutral space		no	1	palm facing forward	
SCHOOL-E1	Curved thumb, index- and middle fingers	neutral space	from center twists towards signer's body	yes	1	palms facing each other → palms facing signer's body	
SCHOOL-E2	Curved thumb, index- and middle fingers	neutral space	from center twists forwards	yes	1	palms facing each other → palms facing forwards	
LEARN	thumb, index- and middle fingers pinched together	forehead	taps towards side	no	2	palm facing side	Only used as part of compound