

Article

Foreign Accent in Pre- and Primary School Heritage Bilinguals

Tanja Kupisch ^{1,2,*}, Nadine Kolb ², Yulia Rodina ² and Olga Urek ²¹ Department of Linguistics, University of Konstanz, 78464 Konstanz, Germany² Department of Language and Culture, UiT The Arctic University of Norway, 9019 Tromsø, Norway; nadine.kolb@uit.no (N.K.); yulia.rodina@uit.no (Y.R.); olga.urek@uit.no (O.U.)

* Correspondence: tanja.kupisch@uni-konstanz.de

Abstract: Previous research has shown that the two languages of early bilingual children can influence each other, depending on the linguistic property, while adult bilinguals predominantly show influence from the majority language to the minority (heritage) language. While this observed shift in influence patterns is probably related to a shift in dominance between early childhood and adulthood, there is little data documenting it. Our study investigates the perceived global accent in the two languages of German-Russian bilingual children in Germany, comparing 4–6-year-old (preschool) children and 7–9-year-old (primary school) children. The results indicate that in German the older children sound less accented than the younger children, while the opposite is true for Russian. This suggests that the primary school years are a critical period for heritage language maintenance.

Keywords: global foreign accent; accent rating; heritage language; majority language; preschool children; school children; Russian; German



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1. Introduction

Heritage speakers (HSs) are typically characterized as bilinguals growing up with a minority language, passed on by one or both parents, along with the dominant language of the society. Even though heritage speakers acquire two languages during early childhood, the societal (majority) language (ML) typically becomes their dominant language throughout the lifespan (herein, we will use the term “dominance” in terms of proficiency). The term heritage language has traditionally been used in the context of immigrant languages, indigenous languages and colonial languages. In this study, we focus on an immigrant minority language, specifically Russian in Germany, and on children in the second generation. Child (heritage) bilinguals are at the crossroads between first (L1) and second language (L2) learners. They are pre-critical period, L1 acquirers, who develop their phonological representations and their articulatory and acoustic-perceptual skills in tandem. At the same time, they bear resemblance with late L2 learners because they represent cases of language contact within an individual.

Pronunciation is one of the most puzzling phenomena in HSs. With regards to proficiency in their heritage language, HSs are generally said to possess native-like levels of pronunciation and fluency (e.g., Montrul 2008, p. 163; Polinsky and Scontras 2020, p. 8; Rothman 2009, p. 157). Indeed, research has shown that HSs have relatively “authentic” pronunciation, differing in this respect from late L2 learners (Au et al. 2008; Kupisch et al. 2014; Flores and Rato 2016; Kupisch et al. 2020; Chang et al. 2008; Saadah 2011). This is not surprising, since many phonetic and phonological properties are amongst the earliest acquired properties of language and should therefore be relatively resistant to attrition and resilient to cross-linguistic influence (CLI) (Montrul 2008, p. 71; Polinsky and Scontras 2020, p. 8).

In reality, however, HSs are often deemed foreign-sounding in their heritage language, and native speaker raters can easily detect accent features of the speakers’ dominant language (Kupisch et al. 2014; Lloyd-Smith et al. 2020; Kupisch et al. 2020). Benmamoun

et al. (2013, p. 137), while putting forward that HSs tend to retain their native phonological contrasts in the HL, also mention that the phonetic values of vowels and consonants may nevertheless be affected, thus contributing to a non-native accent. Similarly, while pointing out that “aspects of phonetics and phonological competence appear to be robust in heritage languages”, Polinsky and Scontras (2020, p. 10) also observe that HSs are distinguishable from monolingual native speakers because of their “heritage accent”. Thus, HSs benefit from their early exposure to the heritage language (HL), but are nevertheless vulnerable to dominant language influence. Therefore, HS data supports the idea that early exposure is the prerequisite for a speaker’s attainment of monolingual-like pronunciation (e.g., Flege et al. 1997; Abrahamsson and Hyltenstam 2009), but, at the same time, provides us with opportunities to investigate under which circumstances early exposure does not suffice.

While Benmamoun et al. (2013, p. 140) observed that research on HSs’ phonology has “barely scratched the surface”, numerous publications on adult bilingual HSs have since been published (on segmental properties, see, e.g., Amengual 2012, 2016; Nagy and Kochetov 2013; Mayr and Siddika 2018; Elias et al. 2017; Kissling 2018; Einfeldt et al. 2019; on supra-segmental properties, see, e.g., Chang et al. 2011; Colantoni et al. 2016; Henriksen 2016; Kim 2019, 2020). Studies on global¹ accent that have looked at both native languages of adult HSs have shown that HSs are most often perceived as foreign speakers when speaking their HL but as native when speaking their ML (Kupisch et al. 2014, 2020; Lloyd-Smith et al. 2020). In other words, influence in adult HSs is largely unidirectional, although there are some interesting exceptions, typically observed in populations where the HL predominates in the home, e.g., Sylheti-speakers in the UK, Turkish speakers in Germany (e.g., Mayr and Siddika 2018; Kupisch et al. 2020).

There is also a good coverage of studies on developing child bilinguals, i.e., speakers of a heritage language during early childhood (Kehoe 2015, 2018; Lleó 2016, 2018; Lleó and Cortés 2013). In contrast to the studies on adult speakers, these studies leave no doubt that influence—at this early age—is bidirectional, at least when children start acquiring their two languages simultaneously. For example, one and the same individual might show CLI from German (majority language) to Spanish (heritage language) in terms of syllable structure (Lleó et al. 2003), but from Spanish to German in terms of vowel length (Kehoe 2002). The fact that CLI tends to affect both languages in children, while the HL is relatively more affected during adulthood points to a shift in language balance sometime between early childhood and adulthood. Indeed, it has often been mentioned that one decisive period for the HL is when children enter school and are massively exposed to the societal language (Montrul 2008, 2018). However, there are no longitudinal studies linking early childhood and adulthood, and relatively few studies have investigated bilingual children during their early school years.

In the present study, we investigate the perceived foreign accents of German-Russian bilingual children (ages 4–9 years), who grow up as simultaneous or early sequential bilingual children in Germany, in both of their languages. Although German and Russian are typologically distinct, their phonological systems display some similarities: Both languages are stress-timed, where word level prominence is mainly associated with vowel duration in stressed syllables. Word stress and sentence intonation can affect the meaning and interpretation of words and sentences (Hall 2000; Bryzgunova 1963; Odé 1989; Svetozarova 1998). Both Russian and German have word-final devoicing of obstruents. Nevertheless, the languages sound very different, due to their dissimilar phonemic inventories. The phonological system of Russian contains 42 phonemes, with only five vowels (Avanesov 1956; Halle 1959; Panov 1967; Bondarko 1998), and is characterized by a large variety of positional vowel and consonant alternations. Vowel alternations are constrained by stress, which can fall on any syllable and can move. Russian further distinguishes between soft (palatalized) and hard consonants, and voiceless stops are pronounced without aspiration.

¹ When using the term “global” accent, we meant to imply that the accent does not result from one specific accent feature, but a combination of various segmental and suprasegmental features. These may stem from the influence of one or several contact languages or varieties.

German has only 24 consonants and, unlike in Russian, voiceless stops are aspirated, but a comparatively larger vowel inventory with 15 short and long monophthongs and four diphthongs (Hall 2000). German is also subject to substantial regional variation. The varieties relevant to our study are the Alemannic variety spoken in Konstanz and surroundings and the variety in Berlin, which, despite some idiosyncrasies, resembles Standard German more closely. For example, as a result of regional variation, speakers of the Alemannic variety might produce /z/ as voiceless [s] (Beckman et al. 2009) and palatalize /s/ (phonological process /s/ → [ʃ]/_[+stop]) (Auer 1990). The variety spoken in Berlin is characterizable as an urban dialect, which means that there are some dialect features (e.g., production of the front vowels [ɪ] and [ɛ] as rounded, i.e., as [ʏ] and [œ]; Wiese and Freywald 2017), but speakers tend to avoid them. Germans can typically identify speakers from other regions of Germany, even though they cannot always determine the exact region. The varieties of Russian are comparatively more homogeneous. There are a few prominent accent features (e.g., fricativization of /g/ in Southern Russian), but variation is much less pronounced than in German. The data in the present study are representative of the Central dialect group, which is characterized by a variety of vowel reduction patterns in contrast to the Northern dialect group where the reduction is weak or lacking (e.g., producing /ə/ vs. /o/ in unstressed positions) (Kasatkin 1989).

Our study compares the accents of Russian-German bilingual preschool and primary school children. We are particularly interested in potential differences between the languages as well as between different age groups (before and after starting primary school). Our results show that, when speaking German, the younger children are perceived as foreign-sounding more often than the older children, while when speaking Russian, it is the older children who tend to be perceived as more foreign-sounding. This suggests that the phonological systems of bilingual primary school children are still malleable and that it is during these years that a shift from sounding accented in the ML to sounding accented in the HL may take place, and could potentially be prevented. Our paper is structured as follows: In the next section, we provide some background on previous research on phonological development in bilingual children, and findings on the perceived accents of early bilingual adults. In Section 3, we formulate our research questions and hypotheses. Section 4 presents the results, which are discussed in Section 5. We conclude with some notes on the societal relevance of our findings.

2. Background

The acquisition of phonology is a gradual process, which starts very early but continues into the preschool years. For example, German-learning children produce the consonants [m b d t n] 90% correct between 1;6–1;11, while [j] and [ŋ] are only acquired between 3;0 and 3;5, and the sibilants [s] and [z] and the affricate [ts] are phonetically unstable up to the age of 5;11 (Fox 2007). Similarly, the acquisition of Russian phonology is characterized by early acquisition of the vowel [a] and on the late acquisition of the vowel [ɨ] (e.g., Shvachkin 1948; Gvozdev 1961). The speech of young Russian children is characterized by an overall softness of consonants. According to Zharkova (2005), palatalized consonants are the most frequent substitutes for other consonant phonemes at an early age. In contrast, stressed syllables are shown to be acquired very early, and Russian-speaking children make few mistakes in choosing which syllable to stress, but they can omit unstressed syllables before the age of 3. The fact that the acquisition of phonology, although it starts very early, continues throughout childhood compromises the idea that phonology is generally early acquired. It is likely that the late(r) acquired properties are particularly vulnerable to CLI in bilingual children, in particular in combination with (typically) massive exposure to the ML in the context of entering primary school, if not earlier, when some phonological properties are not yet stable.

2.1. Cross-Linguistic Influence in the Phonologies of HSs during Early Childhood

When it comes to the bilingual acquisition of phonology, most research during the past three decades has focused on whether the speech of bilingual children differs in qualitative and quantitative ways from that of monolingual children. Systematic differences would suggest that there is interaction between the two linguistic systems of the bilingual, i.e., CLI. Most of the relevant research in this area has focused on young bilinguals who are either simultaneous bilinguals (with exposure to both languages from birth) or early sequential bilinguals (with exposure to one language from birth and sequential exposure to the other before the age of three). Traditionally, there were two research trends. The first trend represents studies trying to show that bilingual children start out acquiring both of their languages with one unified speech system (Vogel 1975; Volterra and Taeschner 1978). Under the second approach, bilingual children are assumed to build up two systems from the beginning, although these two systems may interact (Paradis and Genesee 1996).

More recent studies within phonology-oriented research, based on in-depth analyses of production data, have tried to model cross-linguistic interaction (see, e.g., Lleó and Cortés 2013; Kehoe 2015; Lleó 2018). These detailed linguistic studies suggest that the acquisition of phonology may be accelerated or delayed depending on the specific structures under investigation. For example, findings on the same group of German-Spanish bilingual children revealed different patterns of interaction: acceleration of codas in Spanish, deceleration of the vowel length distinction in German, and transfer of long lag voicing into Spanish (Kehoe 2015). The use of the term “transfer” in this approach refers specifically to the presence of a non-native sound or structure in one of the bilingual’s languages, which comes from its presence in the other language, thus differing from its more traditional use, where it is synonymous with cross-linguistic interaction. It can be considered a qualitative difference to monolinguals. By contrast, acceleration and deceleration refer to quantitative differences between monolinguals and bilinguals, which implies that bilinguals undergo qualitatively similar processes as monolinguals but they do so earlier/faster or later/more slowly. In the following, the three types are illustrated on the basis of studies on German-Spanish children in Germany (see Kehoe 2015 for an excellent overview with more examples).

A clear example of acceleration has been provided by Lleó et al. (2003), who showed that German-Spanish bilinguals (HSs of Spanish) produced syllable-final codas in Spanish earlier than Spanish monolinguals, arguably due to experience with more complex codas in German. However, with regard to the same phenomenon in comparable language combinations other authors found deceleration or no influence (e.g., Gildersleeve-Neumann et al. 2008; Almeida et al. 2012; Ezeizabarrena and Alegria 2015), suggesting that language external factors also play a role. An example of deceleration comes from a study by Kehoe (2002) on the acquisition of vowel length in German-Spanish bilinguals. The German vowel system is more complex than the Spanish one and Kehoe (2002) findings suggest indeed that bilingual children experienced difficulty acquiring the more marked system of German vowels. Interestingly, German was the ML in this study, which means that at least at an early age, CLI can also affect the majority language. Moreover, the children did not differ from monolinguals in their acquisition of the five-vowel system of Spanish, their HL, which implies that in some cases, the HL is not affected by influence even if there are differences between the ML and the HL. An example of transfer was provided by Kehoe et al. (2004), who have shown that one of the four German-Spanish children they investigated transferred long lag VOT from German to Spanish. Both German and Spanish have the voiceless stops /p, t, k/, but the phonetic basis underlying the voicing distinction is different in the two languages, as they are realized with long lag in German and with short lag in Spanish. Since transfer of long lag was also found in a study on English-Japanese bilinguals with Japanese as their HL (Johnson and Wilson 2002), it is possible that transfer only affects the HL, while quantitative effects (acceleration and deceleration) can be bidirectional. Finally, note that evidence for language interaction can still be found at primary school ages. For example, Lleó (2018) investigated assimilation of

place in coda nasals in the Spanish productions of German-Spanish bilingual children in Germany. Comparisons to monolinguals and bilinguals growing up in Spain showed that in the productions of the bilinguals living in Germany the phenomenon was still unstable at the age of 7;0. In summary, research on young bilingual children has provided plenty of evidence for language interaction. The influence can be quantitative or qualitative, it can affect the HL and the ML, and it does not necessarily cease when children enter primary school.

There are very few accent rating studies with children, looking at accent globally. “Global” means that there is no focus on any particular phonetic or phonological feature, because an accent can result from a combination of different segmental or suprasegmental features. Accent rating studies with children are particularly challenging because, due to language development, children’s “accents” are different from those of adults for an extended period of time, yet without being foreign. To date, only three accent rating studies have been carried out with children (Asher and García 1969; Snow and Hoefnagel-Höhle 1977; Wrembel et al. 2019): The former two explored accentedness in bilingual children’s ML, and the latter in their HL Polish. Asher and García (1969) analyzed the accentedness of Spanish-English bilinguals aged 7–19 years compared to English monolinguals in their ML English in the US. Ratings were based on four English sentences rated by high school students. Findings show that all bilinguals were rated as accented; however, with an early age of onset upon arrival and with increasing length of exposure the amount of children rated as near-native increased. Snow and Hoefnagel-Höhle (1977) conducted two studies on accentedness to compare the abilities of children and adults (L1 English) to pronounce words in a new foreign language (Dutch): In study 1, three raters judged 136 English-speaking children and adults. In study 2, one rater judged 47 children and adults. The authors found that the pronunciation of the older participants was initially more target-like than that of the younger ones, and that after about a year of exposure this trend started to reverse. Wrembel et al. (2019) combined a detailed phonetic analysis with accent ratings investigating the speech of Polish-English bilinguals in their HL Polish. The rating study was based on data from a sentence repetition task and complemented by data from a narrative task. The bilinguals were preschool and primary school children (mean age 5.79) who were exposed to English (the ML) before the age of three and had at least one Polish-speaking parent. The raters for this study were teachers and teacher trainees, who assessed the degree of accentedness on a 7-point Likert scale. The Polish-English bilingual children were perceived to be significantly more accented than monolingual Polish children, and the amount and quality of the HL Polish input was found to be the main predictor. The relationship in global accentedness between the children’s two languages (HL and ML) during childhood has not been explored, so far. An open question concerns the adequacy of raters for accent rating studies with bilingual children. There has been some discussion in the context of late second language learners on whether it is crucial to work with experienced (i.e., phonetically trained) raters, but with no clear advantage pointing to either of the two types (see Jesney 2004). Therefore, in a study on early bilinguals, Kupisch et al. (2014) engaged 50% of each type, finding no difference between those groups. An additional challenge pertaining to child speech is the fact that children’s sound systems are still in the process of developing and that it may be difficult to distinguish “developmental” accents from “foreign” accents. This would justify prioritizing phonetically untrained raters, as long as they are familiar with child language, provided raters with the combined expertise (phonetics and child speech) are unavailable.

2.2. Global Accent in Adult Early Bilinguals

A foreign accent has been defined as any perceived divergence from a native speaker, resulting not from the presence of regional varieties but from the influence of another language (Derwing and Munro 2009). HSs are native speakers by definition, but they may nevertheless be perceived as foreign-sounding. Often, a foreign accent results from a number of features, including segmental and suprasegmental properties as well as

phonological rules, which is why relevant studies have often used the term “global” (“global foreign accent”). At the same time, a single sound that is pronounced in a divergent fashion may be sufficient to contribute to a perceived foreignness.

While many accent rating studies have focused on late L2 learners (see [Jesney 2004](#) for an excellent overview), only a few studies have assessed the perceived accents of early bilinguals and have included ratings for both languages. [Kupisch et al. \(2014\)](#) compared HSs when speaking their HL to (i) monolingual speakers of the same language, (ii) late L2 learners and (iii) bilinguals with the same language combination but an inverse dominance relation between ML and HL. For example, HSs of Italian in Germany were compared to (i) monolingual controls from Italy, (ii) L2 speakers of Italian and (iii) HSs of German in Italy speaking Italian as their ML. In addition, there was a (mirror) experiment for German, where the same two early bilingual groups were compared to monolinguals and L2ers. Crucially, all heritage bilinguals in this study had been exposed to both of their languages from birth so that potential effects of Age of Onset (AoO) could be excluded when comparing the ML and HL. The results showed monolingual-like ratings for HSs when speaking their ML and advantages over late L2ers when speaking their HL. Nevertheless, HSs were more often than not deemed foreign speakers of their native language. The study also included experiments with French HSs in Germany and German HSs from France with similar outcomes. Finally, individual speakers were compared in their two languages, and the comparison indicated that a native accent in the ML did not coincide with a foreign accent in the HL, or vice versa, as there were also speakers who were perceived to be native in their two languages.

In a follow-up study with HSs of Italian in Germany ([Lloyd-Smith et al. 2020](#)), HSs with sequential exposure to German were studied. The results confirmed those reported above, i.e., HSs performed on a par with monolingual speakers when speaking their ML, while in their HL they outperformed late L2ers but were nevertheless often perceived to have a foreign accent. It was also shown that a later AoO in German neither had a negative effect on the speakers’ accents when speaking German, nor a positive effect on their accent when speaking Italian. The latter might have been expected because an earlier AoO in German implies less time for the HL to develop independently. However, speakers who had reported using Italian more were perceived to sound more native-like when speaking Italian, which parallels [Wrembel et al. \(2019\)](#) study with Polish-speaking children. This suggests that language use is at least as important a factor for HL development and maintenance, as AoO is (said to be) an important factor for the development of the ML. Another interesting aspect comparing this study with [Kupisch et al. \(2014\)](#) was that the rate of perceived foreignness was lower: 49% in this study as compared to 70% in the Italian HSs of the previous study. This could be related to the different geographical settings, as [Lloyd-Smith et al. \(2020\)](#) study was situated in the South where density of the Italian populations is higher than in the region where [Kupisch et al. \(2014\)](#) had tested their Italian speakers. It could also be related to the higher number of sequential bilinguals in the latter study, i.e., speakers with a later AoO in German who spoke only Italian in the home. In another study with HSs of Turkish in Germany ([Kupisch et al. 2020](#)), these findings were confirmed once more, except that in this study the HSs were often perceived to be mildly accented when speaking their ML. The authors argued that what the raters have perceived might have been features of a variety of German, “Kiezdeutsch” (see [Wiiese 2012](#)), that is often spoken by young immigrants and native Germans in cities with larger linguistic minorities.

In summary, accent rating studies with HSs during adulthood show that these speakers are often, though not always, perceived to be foreign speakers of their HL but more rarely of their ML. Amount of language use seems to be a crucial factor for the development of a native-sounding accent in the HL, while it is somewhat controversial whether an early AoO in the ML is necessary for developing a native-sounding accent in the ML, as long as exposure happens during the preschool years. Other factors, such as the density of

the population, which comes with more opportunities to use the language, could play an additional role.

3. Research Questions and Predictions

Based on what we know from previous studies, we have formulated the following questions and predictions (P):

RQ1. How often are monolingual children perceived to have a foreign accent?

RQ2. Are bilingual children perceived to have a foreign accent more often than monolingual children when speaking the majority language?

RQ3. Are younger bilingual children perceived to have a foreign accent more often than older children when speaking the majority language?

RQ4. Are older bilingual children perceived to have a foreign accent more often than younger children when speaking the heritage language?

P1. Monolingual children will occasionally be rated as accented, but the incidence of perceived foreignness will fade in the older children. This hypothesis is motivated by the fact that monolingual children develop their phonological systems gradually and that some phonological phenomena are late acquired. Given individual variation, not all adult-listeners might be familiar with all accent features, even if they are used to hearing child speech and sensitized prior to the experiment.

P2. When speaking German, the bilingual children will be perceived as more accented than the monolingual children due to cross-linguistic influence from Russian. This hypothesis is motivated by the literature on young bilingual children having shown that the two languages of bilingual children can mutually influence each other. Of course, a later age of onset in German (in the case of children who speak only Russian at home) and schooling in German might play an additional role.

P3. Perceived accentedness in German, the majority language, will decrease over time. The motivation for this is twofold. First, children's speech becomes more adult-like with increasing age (see P1). Second, rating studies of early bilinguals during adulthood have shown that adult early bilinguals are rarely considered to be foreign-sounding.

P4. Perceived accent in Russian, the children's heritage language, will increase in the older bilingual children. The motivation for this prediction is again twofold. Research on child bilinguals has shown that the two languages of bilingual children show cross-linguistic influence. However, there is no indication that this influence is unidirectional from the majority language in the heritage language or vice versa. During adulthood, by contrast, heritage speakers tend to be accented in their heritage language and not in their majority language (Kupisch et al. 2014; Lloyd-Smith et al. 2020). Thus, a shift from bidirectional to (more) unidirectional influence must take place during their development in later childhood, catalyzed by a change in exposure patterns. We assume that this period coincides with entry to primary school where exposure and use of the majority language steadily increases.

4. Study

4.1. Child Participants and Preparation of Materials

We recorded German-Russian simultaneous and sequential bilingual children when narrating picture-based stories in German and in Russian, using the German and Russian versions of the Multilingual Assessment Instrument for Narratives (MAIN) task (Gagarina et al. 2012)². Narratives of 12 children aged 4–6 years (henceforth Group I, mean age 5;4), and of 12 children aged 7–9 years (henceforth Group II, mean age 8;4) were selected based on sound quality and availability of recordings of the same child in both languages. The reason for choosing these ages was as follows: In Germany, children start school at the age of 6 years. Thus, children aged 4–6 will have had exposure to German but presumably not

² The MAIN task was developed specifically to assess narrative abilities in the two languages of bilingual preschoolers and school-aged children up to the age of ten. In the production modus of the task, the children are asked to tell a story based on a sequence of six color pictures. The narrative data of the L1 Russian children is from Rodina (2017).

as much as with the beginning of school. At the age of 6, exposure to German is supposed to increase substantially in both quantity and quality, because alphabetization starts as well. Moreover, the educational setting might trigger changes in the children's identity (self-concept) and attitudes.

All children were born and raised in Germany (either in the Konstanz or the Berlin area³). Most of the children (19/24) were growing up in families in which both parents were Russian-speaking and in which only Russian was spoken. These children could be characterized as early sequential bilinguals, since their parents generally reported that their children had their first (intensive) experience with German around the age of three years when entering kindergarten. It needs to be acknowledged, however, that, since the children were growing up in Germany, they had most likely had some exposure to German before, so that the reported AoO of three years can only be approximate. The remaining children (5/24) grew up in families in which one parent was Russian and the other German, and in which both languages were spoken. These children could be characterized as early simultaneous bilinguals, as they had been exposed to both languages from birth with their parents generally following the one parent–one language strategy. Since the information on AoO is more problematic, as mentioned above, we prefer to refer to the groups in terms of family type (“Russian” vs. “mixed”) rather than AoO. Although we have not collected detailed information on input quantity and quality, it seems reasonable to say that the children from Russian families have been exposed to Russian more substantially.

Sound files of 30 s ($\pm 10\%$) per child in each language were extracted from the MAIN narratives (based on two of the MAIN stories). The length of the samples varied slightly in order to avoid interruptions within a sentence. In some cases, edits were required due to the lack of uninterrupted 30-s speech samples. The quality of the files was double-checked by native speakers of each language.

We further included control data from 12 monolingual Russian and 12 monolingual German age-matched children. Fewer control samples were included to avoid a bias towards more unaccented samples (we assumed that not all bilinguals would sound accented). The mean ages of Group I and II for the Russian controls were 4;8 and 8;6 respectively. The mean ages of Group I and II for the German controls were 5;1 and 8;1 respectively. The control data were included to ensure that the raters were able to identify a monolingual accent in German or Russian respectively (see Table 1 for an overview).

Table 1. Participating children.

	Group I (4–6-Year-Olds)		Group II (7–9-Year-Olds)	
	Bilinguals	Monolinguals	Bilinguals	Monolinguals
Russian	12	6	12	6
German		6		6

4.2. Rating Task and Raters

The sound files were judged by native speakers of Russian (Russian experiment) and German (German experiment) who lived in Russia and Germany, respectively. The main inclusion criterion for the raters was being familiar with child speech by spending time with 4–9-year-old children on a regular basis. Most of the participating raters ($n = 36$) had children, grandchildren⁴ or younger siblings in this age range. This choice of raters had the disadvantage that they were phonetically untrained (unlike in Wrembel et al. 2019), but it came with the advantage that they know what children at comparable ages sound like. We opted for this choice because there is mixed evidence concerning the need of phonetically

³ There was no intrinsic motivation for this choice.

⁴ In Russia, older siblings and grandparents often live together and if grandparents live separately they take care of their grandchildren several days a week.

trained raters, while it was crucial that the raters would be sensitive to developmental aspects of child speech.

The sound files were randomized and presented to the raters by means of a PowerPoint Presentation. The raters' task was to determine for each sample whether the child has "no accent", a "weak foreign accent" or a "strong foreign accent".⁵ The rating task consisted of two parts: preschoolers were rated in the first part, school children in the second part. Before the experiment, the raters were familiarized with the procedure and sensitized to the fact that they would listen to children. The raters were instructed to listen carefully to the children's short narratives, and to determine whether the specific child had a (weak/strong) foreign accent or not. The raters could listen to each recording twice. We explained that a foreign accent corresponds to a pronunciation in German or Russian respectively that is influenced by characteristics of another language. In addition, the raters were asked to ignore dialectal features and grammatical errors, and they were reminded of the fact that child speech differs from adult speech as young children often use shorter sentences and have a smaller vocabulary. The German raters participated in the experiment via internet in a Zoom meeting (due to the pandemic). The sound was checked carefully before starting the experiment.

Twenty-two Russian raters (16 females) with a mean age of 44 years (age range 18–69) participated in the Russian experiment. Most of them were mothers and grandmothers (age range 31–69) and one was an 18-year-old sister of a preschool boy. All raters were born and have lived most of their lives in Ivanovo, a city in Central Russia. They all spoke standard Russian without particular dialectal features. Our monolingual controls were from the same city. Twenty-one German raters (13 females) with a mean age of 44 years (age range 22–72) participated in the German experiment. The majority of the raters were parents of preschool and/or school children ($n = 14$), while others were primary school teachers ($n = 3$), grandparents ($n = 2$) and babysitters ($n = 2$) of 4–9-year-old children. At the time of testing, most of the raters ($n = 14$) were living in the Berlin area; the remainder came from other areas in Germany including Western and Southern Germany, often coinciding with the area in which they had grown up.

4.3. Results

In Figure 1, we plotted the distribution of foreign accent ratings ("weak accent", "strong accent" or "no accent") in Russian (left) and German (right) by the family type of the children: heritage mixed (family in which German and Russian are spoken), heritage Russian (family in which both parents speak Russian), monolingual Russian family in Russia or monolingual German family in Germany. In order to calculate the mean accent-ness of speakers (see Figures 2 and 3), accent ratings were converted into numeric scores, where "no foreign accent" corresponded to 0, "weak foreign accent" corresponded to 1, and "strong foreign accent" corresponded to 2. The measure of internal consistency reliability of the ratings in each language, Cronbach's alpha (Irm package, Rizopoulos 2006), was 0.899 for Russian and 0.703 for German data.

⁵ The choice of rating options might be criticized on the grounds that we primed the raters by asking them to judge *foreign* accentedness. However, we knew from previous research that early bilinguals are sometimes perceived as foreign-sounding (see literature reviewed above), and our goal was to find out how often this was the case in our data in relation to language, language use at home and age. It is possible that the degree of perceived foreignness would have been lower if we had not primed the raters towards foreignness.

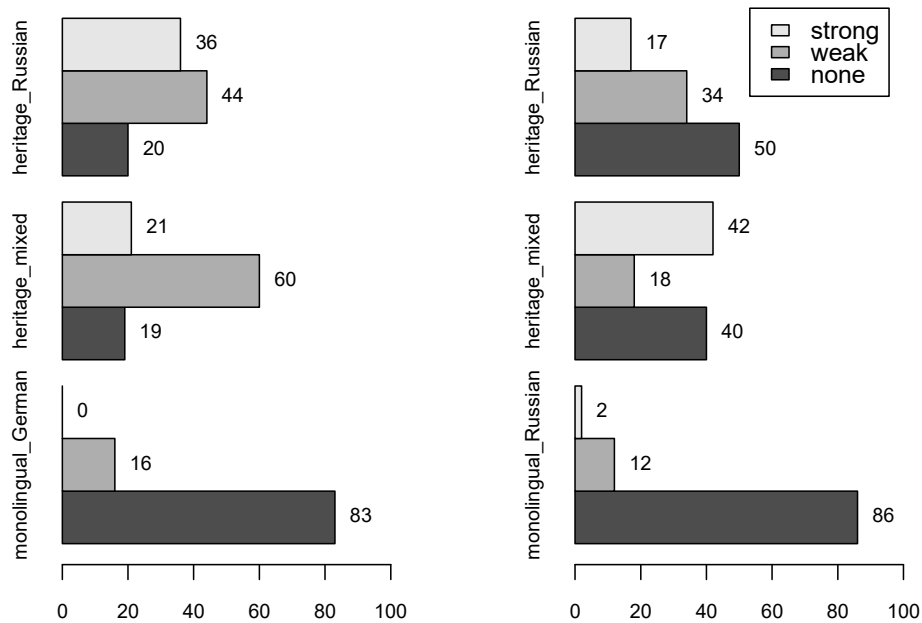


Figure 1. Distribution of accent ratings in German (left) and Russian (right) by language background.

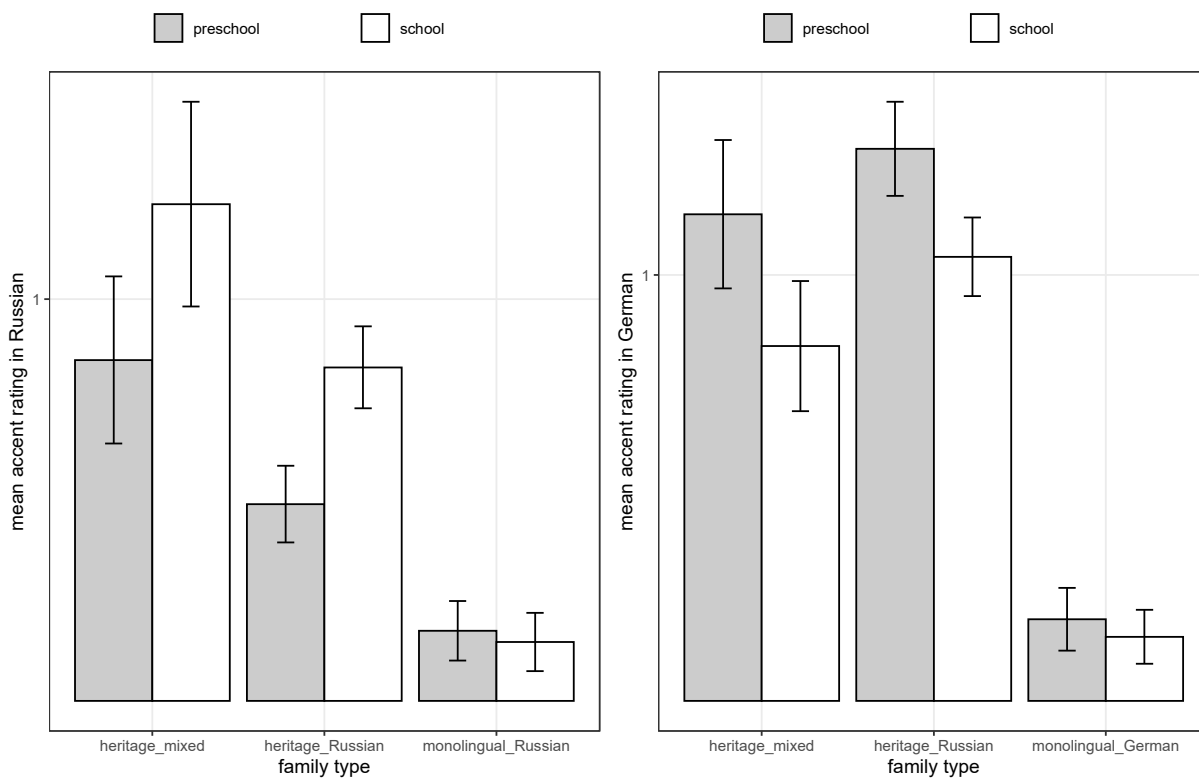


Figure 2. Mean accent ratings in Russian (left) and German (right) by age group and family type (error bars indicate a 95% confidence interval).

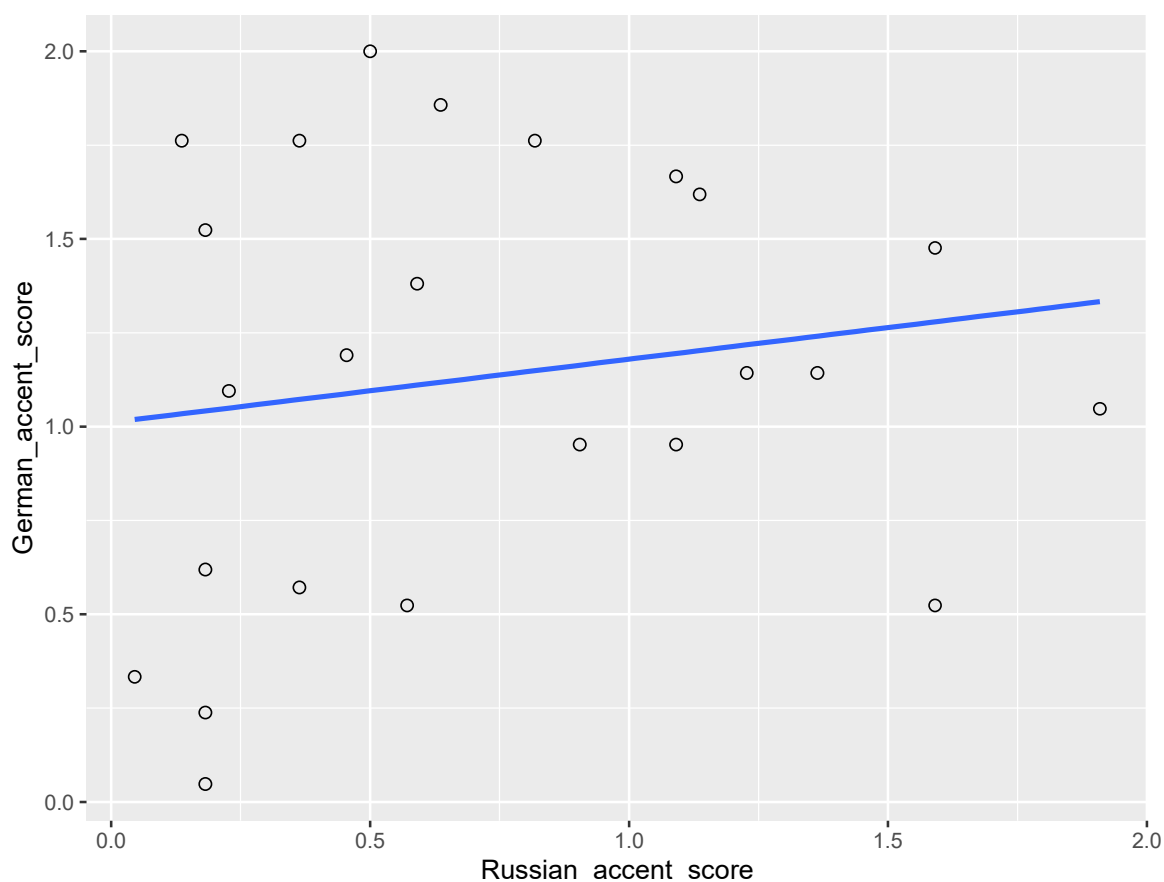


Figure 3. Mean accent score in German by mean accent score in Russian.

As expected, monolingual Russian and German children were most often rated as unaccented (86% and 83% respectively), although they were perceived as having a weak foreign accent, respectively, 12% and 16% of the time. Bilingual children from families with two Russian-speaking parents were rated as unaccented 50% of the time in Russian, but only 20% of the time in German. In this type of family, accent strength in Russian was mostly perceived to be “weak” (34% of the time) and less often as “strong” (17% of the time), while in German, the accent was perceived to be weak 44% of the time and strong 36% of the time. Bilingual children with one German-speaking parent were perceived as unaccented 40% of the time when speaking Russian, and only 19% of the time when speaking German. In this family type accents tended to be perceived as strong in Russian and as weak in German: 42% of the cases in Russian and 21% in German were rated as strongly accented; 18% of the cases in Russian and 60% of the cases in German were rated as weakly accented.

The effect of family type and age group on the perceived accentedness of the children was investigated with an ordinal mixed-effects logistic model in R (Ordinal package, Christensen and Christensen 2021), where accent score (ordinal variable taking values 0, 1 or 2) was predicted from family type, age group and their interaction, and “rater” was included as a random intercept term. For Russian, the model indicates a significant effect of family type, and a significant interaction between family type and age group, suggesting that the relation between perceived accentedness and age depends on the family type (Tables 2 and 3). For German, the interaction term was not included due to the incomplete information problem (Field et al. 2012, p. 322), resulting from the absence of “strong accent” ratings in German monolingual school children. The results are presented in Tables 4 and 5. For German, both the family type and age group are significantly associated with perceived accentedness.

Table 2. Mixed-effects model for perceived accentedness in Russian: random-effects factor.

Groups	Name	Variance	Standard Deviation
ID_rater	(Intercept)	0.4018	0.6338

Table 3. Mixed-effects model for perceived accentedness in Russian: fixed-effects factors (* significant, *** highly significant).

	Estimate	Std. Error	z-Value	Pr (> z)	
FamilyBilingual (Mixed)	2.34694	0.34335	6.835	8.17×10^{-12}	***
FamilyBilingual (Russian)	1.39138	0.28358	4.906	9.28×10^{-7}	***
AgeGroupschool	−0.09154	0.37177	−0.246	0.8055	
FamilyBilingual (Mixed)	1.14514	0.53114	2.156	0.0311	*
AgeGroupschool	1.03717	0.41993	2.470	0.0135	*

Table 4. Mixed-effects model for perceived accentedness in German: random-effects factor.

Groups	Name	Variance	Standard Deviation
ID_rater	(Intercept)	0.09011	0.3002

Table 5. Mixed-effects model for perceived accentedness in German: fixed-effects factors. (***) highly significant).

	Estimate	Std. Error	z-Value	Pr (> z)	
FamilyBilingual (Mixed)	2.8406	0.2566	11.07	$<2 \times 10^{-16}$	***
FamilyBilingual (Russian)	3.3350	0.2169	15.38	$<2 \times 10^{-16}$	***
AgeGroupschool	−0.6756	0.1557	−4.34	1.42×10^{-5}	***

We conducted post hoc pairwise comparisons (Lenth 2016) in order to compare mean accentedness scores between different participant groups (see Appendix A for detailed results). The data are illustrated in Figure 2, which plots mean accent ratings by age group in the different populations (error bars indicate a 95% confidence interval). The analysis shows that for Russian, both family type and age significantly affect the perceived accentedness of the children. Thus, monolingual Russian preschoolers were rated as significantly less accented than their peers from bilingual families with two Russian-speaking parents (z ratio = -4.907 , $p < 0.0001$), who, in turn, are rated as less accented than children coming from mixed heritage families (z ratio = -3.408 , $p = 0.0086$). The same step-wise distribution is also evident for school-age children, where monolingual Russian children are perceived to be less accented than bilingual children from families where both parents speak Russian (z ratio = -7.696 , $p < 0.0001$), who again are rated as less accented than children from families with one Russian- and one German-speaking parent (z ratio = -3.310 , $p = 0.012$).

For Russian, the effect of age is evident in that preschoolers are perceived as less accented than school children. The effect holds for the bilingual children from Russian bilingual families (z ratio = -4.844 , $p < 0.0001$), and for the children coming from mixed bilingual families, it is marginally significant (z ratio = -2.780 , $p = 0.06$). At the same time, no difference in accentedness scores is found between monolingual preschoolers and school-age children. For German, we find an overall effect of family type, such that monolingual German children are perceived as less accented than bilingual children with one Russian- and one German-speaking parent (z ratio = -11.068 , $p < 0.0001$), who, in turn, are rated as less accented than children with two Russian-speaking parents (z ratio = -2.414 , $p < 0.04$).

The effect of age is significant overall, such that school-age children are perceived as less accented than preschoolers (z ratio = -4.340 , $p < 0.0001$).

Figure 3 plots, for each bilingual child, the mean accent score in German against the mean accent score in Russian. A Pearson's test did not show a significant correlation between the two scores ($r = 0.16$, $p = 0.45$). The visual inspection of the scatter plot indicates that there are children who are perceived as not having an accent in any language and other children who are perceived as foreign-accented in one of their languages, while very few children are perceived as strongly accented in both of their languages.

5. Discussion

5.1. Perceived Accent in Monolingual Children

We predicted (P1) that monolingual children will occasionally be rated as accented but that the incidence of perceived foreignness will fade in the older children. This prediction was motivated by the fact that monolingual children develop their phonological systems gradually and, given individual variation, even listeners sensitized to hearing child speech may sometimes mistake a native accent for a foreign accent.

The monolingual children in our study were perceived to be (weakly) accented 12% (Russian) and 16% (German) of the time, respectively. Whether this small percentage of misclassifications is due to the raters' lack of familiarity with the dialectal features in the speech of individual children, or with difficulties distinguishing the idiosyncrasies of child speech from foreign accents, is hard to tell. The inter-rater reliability in our Russian study suggests that the ratings are reliable. However, they are somewhat less reliable for German, where dialectal variation is more typical, both in the language per se and also in our sample. Therefore, although we did not find that raters from specific areas (e.g., Berlin) systematically misclassified particular children (e.g., from Southern Germany), an overall effect of dialectal variation might be at play. Moreover, in previous studies with monolingual raters for various target languages, the highest rate of "misclassifications" (20%) was found in a study on German (Kupisch et al. 2014).⁶ Future studies might want to avoid such effects by including homogeneous speaker samples, and raters who are trained phonetically, familiar with the dialects of the target system and with developmental features of child speech. However, such studies would come at the cost of ecological validity, because in real life situations the two target systems of bilinguals typically do show regional variation, and those people who judge their speech, even if unconsciously, rarely ever happen to be linguists.

5.2. Perceived Accent in the Majority Language of Bilingual Children

Our second prediction (P2) was that, when speaking German, the bilingual children would be perceived as being more accented than monolingual children due to CLI from Russian. This prediction is motivated by the literature on young bilingual children showing cross-linguistic interaction, i.e., influence into both the minority and the majority languages. Moreover, although AoO effects are not always visible in HSs during adulthood (see Stangen et al. 2015), they may (still) be visible during childhood. Given that the youngest children in our study were only four years old and partially from monolingual Russian families, their exposure to German had, in the most extreme cases, only started 1–2 years before the data were collected. The results show that, when speaking German, the bilingual children tended to be perceived as accented (79%), compared to only 16% of the time in monolingual children, although in both groups the accents were mostly perceived to be mild. Strong accents were the exception and occurred more often in children from exclusively Russian speaking families with a later AoO in German. Thus, both monolingual and bilingual children are sometimes perceived as accented, but the incidence of perceived

⁶ In this specific case, some of the raters commented on one particular speaker, who was indeed the only Southern German speaker in the experiment, and whom they perceived to be foreign.

foreignness is higher in the latter population. This indicates that developmental features, “foreign” features and, potentially, dialectal features are not always easy to tease apart.

We further assumed (P3) that perceived accentedness in German would decrease over time, since rating studies of adult early bilinguals had shown that adult early bilinguals are rarely ever deemed foreign-accented. It was indeed the case that the older children were perceived to be less accented than the younger children, and this trend occurred in both family types. While we need to be cautious in not over-interpreting our data, these results could be taken to suggest that speaking (only) the HL in the family does not harm the development of the ML, at least not as far as accentedness is concerned. Of course, strictly speaking, our study does not allow us to conclude that a foreign accent in the ML decreases over time, because we have not looked at the same children longitudinally. While we can only speculate that by the time these children are adults, they will sound just like monolinguals, previous studies with adult bilinguals (e.g., [Kupisch et al. 2014](#); [Lloyd-Smith et al. 2020](#)) suggest that this is likely.

5.3. Perceived Accent in the Minority Language of Bilingual Children

We finally predicted (P4) that the incidence of perceived accents in Russian, the children’s HL, would increase in the older bilingual children. To begin with, we found that bilingual children from Russian families or families in which both German and Russian were spoken were perceived to be accented more often (50% and 60% of the time, respectively) than monolingual Russian children (12%). However, they were less likely to be perceived as accented when speaking Russian than when speaking German. Their foreign accents, if perceived, were more likely to be strong when they came from families with one German parent (42%) than when coming from Russian-speaking families (17%). Since the children were exposed to Russian from birth, their perceived accents must be due to the influence of German, which is arguably stronger if German is spoken in the family. These findings are unexpected under the assumption that early exposure is sufficient to attain a native-like accent, but they are expected given previous findings of CLI in early bilingual children. We further observed that the likelihood of a perceived foreign accent was higher for school children than for preschoolers. This was also expected given the high incidence of perceived foreignness in adult HSs in previous studies (e.g., [Kupisch et al. 2014, 2020](#); [Lloyd-Smith et al. 2020](#)), as well as [Wrembel et al. \(2019\)](#) finding that Polish-English bilinguals in the UK are perceived to be more accented than their monolingual peers from Poland. However, it is somewhat counterintuitive that older children, despite having had more language experience with the target language than younger children, do not move closer to the target but further away, at least in terms of pronunciation.

Finally, although one might have expected an inverse correlation in accentedness in the children’s two languages, such that children who sound native in German would sound foreign in Russian and vice versa, no such correlation was found. There are children who sound like monolinguals in both languages and children who are perceived as foreign-accented in one of their languages. The number of children being perceived as strongly accented in both languages is small. This is in line with previous studies on adult HSs in which both of the bilinguals’ languages were compared.

6. Conclusions and Relevance

In summary, German-Russian children were deemed foreign-sounding significantly more often than monolingual children. This was the case in both languages. There was a difference between the majority language and the heritage language, such that a perceived accent was more likely in German. When speaking Russian, children from German-Russian families were more likely to be perceived as foreign than bilingual children with two Russian-speaking parents, while the opposite was found for German. The incidence of a perceived foreign accent decreased from younger (preschool) to older (primary school) children in German, while increasing for Russian. The latter may be caused by a gradual change in the relative exposure to both languages, as the beginning of school comes

with more German input and qualitatively different input, including formal and written registers. This change in linguistic experience may be accompanied by changes in the HS's attitudes, caused by the prevalent ideologies in the educational settings of in countries with only one national language (e.g., [Hornberger and Wang 2008](#); [Valdéz et al. 2008](#)). Germany represents such a setting.

The observed increase in accent over time in Russian, and its decrease in German must be seen with caution. The first and foremost reason is that we did not investigate individual children longitudinally. Although unlikely, it is possible that we have included school children who happened to be generally more accented in Russian, and preschoolers who happened to be generally more accented in German. Second, our study leaves open which properties exactly are subject to CLI and the related question what exactly the raters perceived to be "different" from monolinguals. Anecdotally, the raters have commented on the pronunciation of /r/, vowel quality and rhythm in German, vowel quality, lack of palatalization and stress in Russian. However, we cannot exclude that the raters also based their judgment on morpho-syntactic properties, even if we explicitly told them not to do so. This might have been the case especially for the younger children when speaking German, as they sometimes omitted articles and produced gender and case errors. Such properties are developmental, i.e., also found in monolingual German children, but in monolingual acquisition they typically occur at an earlier age. Lastly, there was a lot of individual variation, suggesting that factors beyond family type and age were at play. From a methodological perspective, these might include the small sample size as well as a higher degree of misclassifications (compared to previous studies with adults) due to less familiarity with dialectal or developmental features.

Finally, one could question the relevance of such a study, asking why it is important that bilinguals sound "monolingual-like", given that being bilingual is part of their identity and having an accent is part of being bilingual, just as it is typical to speak a standard language with a regional dialect if one comes from a region in which a dialect is (still) spoken. In other words, do we, by studying bilingual children's accents, promote the idea of a "monolingual habitus" ([Gogolin 2008](#))? It is, of course, not our intention to promote a "monolingual habitus", nor do we subscribe to the idea that there is only one "correct" way of speaking a language. On the other hand, it is a fact that a foreign accent is a feature that can reveal a person's origin and identity. If there are positive associations with this origin, this is beneficial. However, an accent may also have negative associations. As shown in a large-scale study by [Gärtig et al. \(2010\)](#), Germans show positive attitudes towards French-, Italian-, English- or Spanish-sounding foreign accents, but not necessarily for certain other accents, and a third of the respondents mentioned comprehension difficulties in conversations with migrants. Such attitudes can affect people's well-being. One example is that young people with Turkish citizenship sometimes report that people in Turkey identify them as coming from Germany, while in Germany they count as "the Turkish", which could make them feel like strangers in both countries ([Kupisch et al. 2020](#)). As to the majority language, potential employers may unfairly discriminate against applicants with non-native sounding accents due to stereotyping or cultural biases ([Munro 2003](#); [Hosoda and Stone-Romero 2008](#)). From a linguistic perspective, it will be crucial to investigate in future studies whether differences in phonological production are mirrored in perception. Perception differences might have implications for the acquisition of morpho-syntactic properties, e.g., gender and number, which are typically marked by word-final sounds ([Colantoni et al. 2020](#)). If these are perceived differently, they may also be produced differently. Taking these points together, the choice about whether or not to consciously develop one's accents, e.g., by increasing use and/or exposure, should be made by the speakers themselves, and a first step towards this is to gain knowledge about when a foreign accent emerges.

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Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the Institutional Review Board (or Ethics Committee) of NSD Norwegian Centre for research data (protocol code: 51174, date of approval: 18 November 2016).

Informed Consent Statement: Informed consent was obtained from the parents of all children and all adults who have participated in the study.

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Appendix A

Table A1. Russian experiment: pairwise comparisons, age group by family type (subset).

Contrast	Estimate	SE	df	z. Ratio	p-Value
Monolingual (RU) preschool—Bil. (Mixed) preschool	−2.34694	0.343	Inf	−6.835	<0.0001
Monolingual (RU) preschool—Bil. (RU) preschool	−1.39138	0.284	Inf	−4.906	<0.0001
Monolingual (RU) preschool—Mon. (RU) school	0.09154	0.372	Inf	0.246	0.9999
Monolingual (RU) preschool—Bil. (Mixed) school	−3.40054	0.389	Inf	−8.738	<0.0001
Monolingual (RU) preschool—Bil. (RU) school	−2.33701	0.278	Inf	−8.404	<0.0001
Bilingual (Mixed) preschool—Bil. (RU) preschool	0.95556	0.280	Inf	3.408	0.0086
Bilingual (Mixed) preschool—Mon. (RU) school	2.43848	0.374	Inf	6.516	<0.0001
Bilingual (Mixed) preschool—Bil. (Mixed) school	−1.05360	0.379	Inf	−2.780	0.0607
Bilingual (Mixed) preschool—Bil. (RU) school	0.00993	0.269	Inf	0.037	1.0000
Bilingual (RU) preschool—Mon. (RU) school	1.48292	0.320	Inf	4.628	0.0001
Bilingual (RU) preschool—Bil. (Mixed) school	−2.00916	0.333	Inf	−6.034	<0.0001
Bilingual (RU) preschool—Bil. (RU) school	−0.94563	0.195	Inf	−4.844	<0.0001
Monolingual (RU) school—Bil. (Mixed) school	−3.49208	0.417	Inf	−8.375	<0.0001
Monolingual (RU) school—Bil. (RU) school	−2.42855	0.316	Inf	−7.695	<0.0001
Bilingual (Mixed) school—Bil. (RU) school	1.06353	0.321	Inf	3.310	0.0120

Table A2. German experiment: pairwise comparisons, age group.

Contrast	Estimate	SE	df	z. Ratio
preschool—school	0.676	0.156	Inf	4.340

Table A3. German experiment: pairwise comparisons, family type.

Contrast	Estimate	SE	df	z. Ratio
Monolingual (German)—Bilingual (Mixed)	−2.841	0.257	Inf	−11.068
Monolingual (German)—Bilingual (Russian)	−3.335	0.217	Inf	−15.379
Bilingual (Mixed)—Bilingual (Russian)	−0.494	0.205	Inf	−2.414

References

- Abrahamsson, Niclas, and Kenneth Hyltenstam. 2009. Age of onset and nativelikeness in L2: Listener perception versus linguistic scrutiny. *Language Learning* 59: 249–306. [CrossRef]
- Almeida, Letícia, Yvan Rose, and João Freitas. 2012. Prosodic influence in bilingual phonological development: Evidence from a Portuguese-French first language learner. In *Proceedings of the 36th Annual Boston University Conference on Language Development*. Edited by Alia Biller, Chung Esther and Kimball Amelia. Somerville: Cascadilla Press, pp. 42–52.

- Amengual, Mark. 2012. Interlingual influence in bilingual speech: Cognate status effect in a continuum of bilingualism. *Bilingualism: Language and Cognition* 15: 517–30. [CrossRef]
- Amengual, Mark. 2016. Acoustic correlates of the Spanish tap-trill contrast: Heritage and L2 Spanish speakers. *Heritage Language Journal* 13: 88–112. [CrossRef]
- Asher, James, and Ramiro García. 1969. The Optimal Age to Learn a Foreign Language. *The Modern Language Journal* 53: 334–41. [CrossRef]
- Au, Terry Kit-Fong, Janet S. Oh, Leah M. Knightly, Sun-Ah Jun, and Laura F. Romo. 2008. Salvaging a childhood language. *Journal of Memory and Language* 58: 998–1011. [CrossRef]
- Auer, Peter. 1990. *Phonologie der Alltagssprache: Eine Untersuchung zur Standard/Dialekt-Variation am Beispiel der Konstanzer Stadtsprache*. *Studia Linguistica Germanica* 28. Berlin and New York: Walter de Gruyter.
- Avanesov, Ruben Ivanovich. 1956. *Fonetika Sovremennogo Russkogo Literaturnogo Jazyka [Phonetics of Modern Russian Literary Language]*. Moscow: Moscow University Press.
- Beckman, Jill, Michael Jessen, and Catherine Ringen. 2009. German fricatives: Coda devoicing or positional faithfulness? *Phonology* 26: 231–68. [CrossRef]
- Benmamoun, Ellabas, Silvina Montrul, and Maria Polinsky. 2013. Heritage languages and their speakers: Opportunities and challenges for linguistics. *Theoretical Linguistics* 39: 29–181. [CrossRef]
- Bondarko, Liya V. 1998. *Fonetika Sovremennogo Russkogo Jazyka [Phonetics of Modern Russian Language]*. St. Petersburg: St. Petersburg University.
- Bryzgunova, Elena A. 1963. *Prakticheskaya Fonetika i Intonatsiya Russkogo Yazyka [Practical Phonetics and Intonation of the Russian Language]*. Moscow: Moskovskiy Gosudarstveniy Universitet.
- Chang, Charles B., Erin Haynes, Russel Rhodes, and Yao Yao. 2008. *A Tale of Two Fricatives: Consonant Contrast in Heritage Speakers of Mandarin*. University of Pennsylvania Working Papers in Linguistics. Philadelphia: University of Pennsylvania, vol. 15, pp. 37–43.
- Chang, Charles B., Yao Yao, Erin F. Haynes, and Russel Rhodes. 2011. Production of phonetic and phonological contrast by heritage speakers of Mandarin. *The Journal of the Acoustical Society of America* 129: 3964–80. [CrossRef]
- Christensen, Rune, and Bojesen Christensen. 2021. Analysis of Ordinal Data with Cumulative Link Models—Estimation with the R-Package Ordinal. Available online: https://cran.r-project.org/web/packages/ordinal/vignettes/clm_article.pdf (accessed on 19 May 2021).
- Colantoni, Laura, Alejandro Cuza, and Natalia Mazzaro. 2016. Task-related effects in the prosody of Spanish heritage speakers and long-term immigrants. In *Intonational Grammar in Ibero-Romance: Approaches across Linguistic Subfields*. Edited by E. Meghan, E. Armstrong and Nicholas Henriksen. Amsterdam: John Benjamins, pp. 4–23.
- Colantoni, Laura, Ruth Martínez, Natalia Mazzaro, Ana T. Pérez-Leroux, and Natalia Rinaldi. 2020. A phonetic account of Soanish-English bilinguals' divergence with agreement. *Languages* 5: 58. [CrossRef]
- Derwing, Tracey M., and Murray J. Munro. 2009. Putting accent in its place: Rethinking obstacles to communication. *Language Teaching* 42: 476–90. [CrossRef]
- Einfeldt, Marieke, Tanja Kupisch, and Joost van de Weijer. 2019. The production of geminates in Italian-dominant bilinguals and heritage speakers of Italian. *Language, Interaction, and Acquisition* 10: 177–203. [CrossRef]
- Elias, Vanessa, Sean McKinnon, and Ángel Milla-Muñoz. 2017. The Effects of Code-Switching and Lexical Stress on Vowel Quality and Duration of Heritage Speakers of Spanish. *Languages* 2: 29. [CrossRef]
- Ezeizabarrena, Maria-José, and Alaitz Alegria. 2015. Early coda production in bilingual Spanish and Basque. In *The Acquisition of Spanish in Understudied Language Pairings*. Edited by Tiffany Judy and Silvia Perpiñán. Amsterdam: John Benjamins, pp. 75–105.
- Field, Andy, Jeremy Miles, and Zoe Field. 2012. *Discovering Statistics Using R*. Thousand Oaks: SAGE Publications.
- Flege, James Emil, Elaina M. Frieda, and Takeshi Nozawa. 1997. Amount of native-language (L1) use affects the pronunciation of an L2. *Journal of Phonetics* 25: 169–86. [CrossRef]
- Flores, Cristina, and Anabela Rato. 2016. Global Accent in the Portuguese Speech of Heritage Returnees. *Journal of Heritage Language* 13: 161–83. [CrossRef]
- Fox, Anette V. 2007. *Kindliche Aussprachestörungen*. Idstein: Schulz-Kirchner.
- Gagarina, Natalia, Daleen Klop, Sari Kunnari, Koula Tantele, Taina Välimaa, Ingrida Balčiūnienė, Ute Bohnacker, and Joel Walters. 2012. *Multilingual Assessment Instrument for Narratives (MAIN)*. ZAS Papers in Linguistics 56. Berlin: ZAS, Available online: <http://www.zas.gwz-berlin.de/zaspil56.html> (accessed on 13 May 2020).
- Gärtig, Anne-Kathrin, Albrecht Plewnia, and Astrid Rothe. 2010. Wie Menschen in Deutschland über Sprache denken: Ergebnisse einer bundesweiten Repräsentativerhebung zu aktuellen Spracheinstellungen. In *Arbeitspapiere und Materialien zur Deutschen Sprache* 40. Mannheim: Institut für Deutsche Sprache.
- Gildersleeve-Neumann, Christina E., Ellen S. Kester, Barbara L. Davis, and Elizabeth D. Peña. 2008. English speech sound development in preschool-aged children from bilingual English-Spanish environments. *Language, Speech, and Hearing Services in Schools* 39: 314–28. [CrossRef]
- Gogolin, Ingrid. 2008. *Der monolinguale Habitus der Multilingualen Schule*. Münster: Waxmann.
- Gvozdev, Aleksandr Nikolaevich. 1961. *Formirovanie u Rebenka Grammatičeskogo Stroja Russkogo Jazyka*. Moscow: APN RSFSR.
- Hall, Tracy Alan. 2000. *Phonologie: Eine Einführung*. Berlin: DeGruyter.

- Halle, Morris. 1959. *The Sound Pattern of Russian: A Linguistic and Acoustical Investigation*. The Hague: Mouton & Co.
- Henriksen, Nicholas. 2016. Convergence effects in Spanish-English bilingual rhythm. *Speech Prosody*, 721–25.
- Hornberger, Nancy, and Shuhan C. Wang. 2008. Who are our heritage language learners? Identity and biliteracy in heritage language education in the United States. In *Heritage Language Education*. Edited by Donna M. Brinton, Olga Kagan and Susan Bauckhus. New York: Routledge, pp. 3–35.
- Hosoda, Megumi, and Eugene Stone-Romero. 2008. The effects of foreign accent on employment-related decisions. *Journal of Managerial Psychology* 25: 113–32. [CrossRef]
- Jesney, Karen. 2004. *The Use of Global Foreign Accent Rating in Studies of L2 Acquisition*. Annotated Bibliography. Calgary: Calgary, Language Research Centre, University of Calgary.
- Johnson, Carolyn E., and Ian L. Wilson. 2002. Phonetic evidence for early language differentiation: Research issues and some preliminary data. *The International Journal of Bilingualism* 6: 271–89. [CrossRef]
- Kasatkin, Leonid Leonidovich. 1989. *Russkaja Dialektologija [Russian Dialectology]*. Moscow: Prosveshcheniie.
- Kehoe, Margaret. 2002. Developing vowel systems as a window to bilingual phonology. *International Journal of Bilingualism* 6: 315–34. [CrossRef]
- Kehoe, Margaret. 2015. Cross-linguistic interaction: A retrospective and prospective view. In *Proceedings of the International Symposium on Monolingual and Bilingual Speech*. Edited by Elena Babatsouli and David Ingram. Chania: Institute of Monolingual and Bilingual Speech, pp. 141–67.
- Kehoe, Margaret. 2018. The development of rhotics: A comparison of monolingual and bilingual children. *Bilingualism: Language and Cognition* 21: 710–31. [CrossRef]
- Kehoe, Margaret, Conxita Lleó, and Martin Rakow. 2004. Voice onset time in bilingual German-Spanish children. *Bilingualism: Language and Cognition* 7: 71–88. [CrossRef]
- Kim, Ji-Young. 2019. Heritage speakers' use of prosodic strategies in focus marking in Spanish. *International Journal of Bilingualism* 23: 986–1004. [CrossRef]
- Kim, Ji Young. 2020. Discrepancy between heritage speakers' use of suprasegmental cues in the perception and production of Spanish lexical stress. *Bilingualism* 23: 233–50. [CrossRef]
- Kissling, Elizabeth M. 2018. An Exploratory Study of Heritage Spanish Rhotics: Addressing Methodological Challenges of Heritage Language Phonetics Research. *Heritage Language Journal* 15: 25–70. [CrossRef]
- Kupisch, Tanja, Dagmar Barton, Ewgenia Klaschik, Tatjana Lein, Ilse Stangen, and Joost van de Weijer. 2014. Foreign accent in adult simultaneous bilinguals. *The Heritage Language Journal* 11: 123–50. [CrossRef]
- Kupisch, Tanja, Anika Lloyd-Smith, and Ilse Stangen. 2020. Foreign accent in Turkish heritage speakers in Germany. In *Turkish as a Heritage Language in Europe*. Edited by Fatih Bayram. SiBil Series; Amsterdam: John Benjamins, pp. 207–28.
- Lenth, Russell V. 2016. Least-Squares Means: The R Package 'lsmeans'. *Journal of Statistical Software* 69. [CrossRef]
- Lleó, Conxita. 2016. *Bilingualism and Child Phonology*. New York: Oxford Handbooks Online.
- Lleó, Conxita. 2018. Aspects of the phonology of Spanish as a heritage language: From incomplete acquisition to transfer. *Bilingualism: Language and Cognition* 21: 732–47. [CrossRef]
- Lleó, Conxita, and Susana Cortés. 2013. Modeling the outcome of language contact in the speech of German-Spanish and Catalan-Spanish bilingual children. *International Journal of the Sociology of Language* 221: 101–25. [CrossRef]
- Lleó, Conxita, Imme Kuchenbrandt, Margaret Kehoe, and Cristina Trujillo. 2003. Syllable final consonants in Spanish and German monolingual and bilingual acquisition. In *(In)vulnerable Domains in Multilingualism*. Edited by Natascha Müller. Amsterdam: John Benjamins, pp. 191–220.
- Lloyd-Smith, Anika, Marieke Einfeldt, and Tanja Kupisch. 2020. Italian-German bilinguals: The effects of HL use on accent in the early-acquired languages. *International Journal of Multilingualism* 24: 289–304. [CrossRef]
- Mayr, Robert, and Aysha Siddika. 2018. Inter-generational transmission in a minority language setting: Stop consonant production by Bangladeshi heritage children and adults. *International Journal of Bilingualism* 22: 255–284. [CrossRef]
- Montrul, Silvina. A. 2008. *Incomplete Acquisition in Bilingualism: Re-Examining the Age Factor*. Amsterdam: John Benjamins.
- Montrul, Silvina A. 2018. Heritage language development: Connecting the dots. *International Journal of Bilingualism* 22: 530–46. [CrossRef]
- Munro, Murray J. 2003. A primer on accent discrimination in the Canadian context. *TESL Canada Journal* 20: 38–51. [CrossRef]
- Nagy, Naomi, and Alexei Kochetov. 2013. VOT across the generations: A cross-linguistic study of contact-induced change. In *Multilingualism and Language Contact in Urban Areas: Acquisition-Development-Teaching-Communication*. Edited by Peter Siemund, Ingrid Gogolin, Monika Schulz and Julia Davydova. Amsterdam: John Benjamins, pp. 19–38.
- Odé, Cecilia. 1989. *Russian Intonation: A Perceptual Description*. Amsterdam: Rodopi.
- Paradis, Johanne, and Fred Genesee. 1996. Syntactic acquisition in bilingual children: Autonomous or interdependent? *Studies in Second Language Acquisition* 18: 1–25. [CrossRef]
- Panov, Mikhail Viktorovich. 1967. *Russkaya Fonetika [Russian Phonetics]*. Moscow: Prosveshchenie.
- Polinsky, Maria, and Gregory Scontras. 2020. Understanding heritage languages. *Bilingualism: Language and Cognition* 23: 4–20. [CrossRef]
- Rizopoulos, Dimitris. 2006. ltm: An R package for latent variable modelling and item response theory analyses. *Journal of Statistical Software* 17: 1–25. Available online: <http://www.jstatsoft.org/v17/i05/> (accessed on 15 May 2021).

- Rodina, Yulia. 2017. Narrative abilities of preschool bilingual Norwegian-Russian children. *International Journal of Bilingualism* 21: 617–35. [CrossRef]
- Rothman, Jason. 2009. Understanding the nature of early bilingualism: Romance languages as heritage languages. *International Journal of Bilingualism* 13: 155–63. [CrossRef]
- Saadah, Eman. 2011. The Production of Arabic Vowels by English L2 Learners and Heritage Speakers of Arabic. Ph.D. dissertation, University of Illinois at Urbana-Champaign, Champaign, IL, USA.
- Shvachkin, Nikolai Hristoforovich. 1948. Razvitije fonematičeskogo vosprijatija reči v rannem vozraste. *Izvestija Akademii Pedagogičeskikh Nauk RSFSR* 13: 101–32.
- Snow, Catherine E., and Marian Hoefnagel-Höhle. 1977. Age differences in the pronunciation of foreign sounds. *Language and Speech* 20: 357–65. [CrossRef]
- Stangen, Ilse, Tanja Kupisch, Anna Lia Proietti Ergün, and Marina Zielke. 2015. Foreign accent in heritage speakers of Turkish in Germany. In *Transfer Effects in Multilingual Language Development*. Edited by Peukert Hagen. Amsterdam: John Benjamins, pp. 87–108.
- Svetozarova, Natalia. 1998. Intonation in Russian. In *Intonation Systems: A Survey of Twenty Languages*. Edited by Daniel Hirst and Albert di Cristo. Cambridge: Cambridge University Press, pp. 261–74.
- Valdéz, Guadalupe, Sonia V. González, Dania López García, and Patricio Márquez. 2008. Heritage language ideologies of language. In *Heritage Language Education*. Edited by Donna M. Brinton, Olga Kagan and Susan Bauckhus. New York: Routledge, pp. 107–30.
- Vogel, Irene. 1975. One system or two: An analysis of a two-year-old Romanian-English bilingual's phonology. *Papers and Reports on Child Language Development* 9: 43–62.
- Volterra, Virginia, and Traute Taeschner. 1978. The acquisition and development of language by bilingual children. *Journal of Child Language* 5: 311–26. [CrossRef]
- Wiese, Heike. 2012. *Kiezdeutsch: Ein Neuer Dialekt Entsteht*. München: C.H. Beck.
- Wiese, Heike, and Ulrike Freywald. 2017. "Könn'Se berlinern?"—Dialektgrammatik im Deutschunterricht. In *Sprache-Literatur-Region im Deutschunterricht: Fachliche Grundlagen und Unterrichts Anregungen*. Edited by Elisabeth Berner. Potsdam: Universitätsverlag Potsdam, pp. 127–47.
- Wrembel, Magdalena, Marta Marecka, Jakub Szewczyk, and Agnieszka Otwinowska. 2019. The predictors of foreign-accentedness in the home language of Polish–English bilingual children. *Bilingualism: Language and Cognition* 22: 383–400. [CrossRef]
- Zharkova, Natalia. 2005. Strategies in the acquisition of segments and syllables in Russian-speaking children. In *Developmental Paths in Phonological Acquisition. Special issue of Leiden Papers in Linguistics 2.1*. Edited by Marina Tzakosta, Claartje Levelt and Jeroen van de Weijer. Leiden: University of Leiden, pp. 189–213.