

## *Language Screening Studies Point at Insufficient Medical and Language Therapeutic Care of Immigrant Children*

Eugen Zaretsky, University Hospital of Frankfurt/Main and Benjamin P. Lange, Julius Maximilian University of Wuerzburg, Germany

---

### ABSTRACT

Immigrants in Germany might suffer from disadvantages with respect to the medical treatment of language-related problems. We hypothesised that parents of immigrant children reported language-related abnormalities less often than parents of monolingual Germans because such abnormalities more often remain undetected. **Methods.** Three data sets with a total of 5,726 monolingual German children (= MO) and 3,240 bi-/multilingual children (= BM) of preschool age were analysed retrospectively. Questionnaires for parents and daycare centre teachers as well as language test results were examined by cross-tables, Mann-Whitney *U*-tests, correlations, and binary logistic regressions. University language experts classified all children as needing (CLIN) or not needing (NCLIN) medical help and as needing (ED) or not needing (NED) educational help in acquiring German. **Results.** BM was significantly more often classified as CLIN than MO. However, their parents reported significantly less often children's pathologies or impairments affecting language as well as language disorders of their relatives. BM was also significantly less often in speech therapy and numerically less often in language courses than MO. Regression coefficients showed that MO—independently from their language competence and medical issues—were more likely to undergo a language therapy. **Conclusion.** Immigrant parents believed less often than Germans that their children suffered from language-related diseases/illnesses/impairments, although the opposite seems evident. Immigrant children had limited access to the services of the German healthcare and educational systems compared to native German children despite higher needs (ED/CLIN).

### INTRODUCTION

A considerable percentage of preschoolers in Germany have an immigration background and are raised at least bilingually. According to the Federal Statistical Office, 30% of all German children under the age of six had an immigration background in the year 2009 (Statistisches Bundesamt 2015a). Immigrant children face a variety of challenges related to their medical and educational needs. That is because some of their parents have limited German skills. The lack of validated language-free tests for medical issues such as auditory processing disorders contributes to the problem, as do subjective judgments of parents and daycare centre teachers on children's German skills. There is an inability to differentiate between limited language skills (due to recent exposure to German) and those related to health concerns (cf. Triarchi-Herrmann 2009, 34). Furthermore, most validated and widely used language tests such as "Screening des Entwicklungsstandes bei Einschulungsuntersuchungen" (S-ENS; Döpfner et al. 2005) still ignore the high percentage of bi-/multilingual children, usually with an immigration background, in the preschool population (cf. Triarchi-Herrmann 2009, 37). Only very few language tests

apply separate norms for children with an immigration background and/or describe how to identify language-related disorders under the condition of limited German skills (e.g., a validated short version of the “Marburger Sprachscreening,” MSSb; Euler et al. 2010, Neumann et al. 2011). Obligatory language screening programs for preschoolers are available only regionally, and there is still no compelling evidence that they contribute to the early identification of children with special educational and medical needs (Institut für Qualität und Wirtschaftlichkeit im Gesundheitswesen 2009).

Also, the assignment mechanisms of language courses offered by many daycare centres often seemed not transparent during the study and could be rather motivated by the children’s social status than their educational needs. Comparatively, wealthy daycare centres, for instance, owned by banks, tended to offer such courses even to children who spoke German age-appropriately, whereas state-owned or confessional daycare centres could not afford to provide such services even to all children with high educational needs. Also, a certain inertia in the provision of educational support could sometimes be observed; that is, children who needed language courses at the beginning of the daycare centre attendance, at the age of two or three, still attended these courses at the age of four. The motivation behind an assignment of language courses will be looked at in more detail in the current study.

All three samples described in the Methods section were extensively examined both in the studies on the development of new language tests and in sociolinguistic studies dedicated to various aspects of the language acquisition by German children of the preschool age. Some of the findings of these sociolinguistic studies turned out to be contra-intuitive and were left aside as, at first sight, inexplicable to be analysed in more detail in the study presented here.

One of such contra-intuitive findings was published in an article on geolinguistics of vocabulary skills of German preschoolers (Zaretsky and Lange 2016a). The sample described as S2 in Table 1 was utilised in this case. The article focused on the distribution of the total scores of correct answers in the language test MSSb in 45 districts of the German city of Frankfurt am Main. Five districts with the highest vocabulary scores were identified. In these districts, the sociolinguistic conditions of language acquisition were exceptionally favorable. Most children acquired/learned German comparatively. They played more often with other children and spoke more often when playing, they attended associations and study groups more often and were more often monolingual Germans in comparison with children from other districts. Preschoolers from five “best” Frankfurt districts were classified by university language experts significantly less often as needing additional educational or medical help in acquiring German. However, these

very children participated in language courses significantly more often than children from other districts, although the opposite was expected.

Also, in one of the recent studies with the same sample (S2, see Table 1), dedicated to the sociolinguistic portraits of the largest groups of immigrant children in Germany, two linguistically weakest groups of German learners, Turks and Arabs, turned out to be underrepresented in language courses (Zaretsky and Lange 2016b). Turkish children acquired German under very unfavourable conditions: a comparatively seldom attendance of nursery schools, more opportunities to speak the mother tongue (Turkish) in the daycare centres, almost no German spoken at home. However, although Turkish children were classified significantly more often than English speaking children—linguistically the strongest group of immigrants acquiring German—as needing additional educational help in the acquisition of/learning German (72% vs. 37%), the difference between percentages of children from both groups participating in language courses was statistically negligible, with a numerically lower value in case of Turks (36% vs. 38%). The same tendencies were found for immigrants speaking the Arabic language. Among other things, despite more prominent educational needs, only 9% of children speaking Arabic and 37% of other immigrants participated in language courses.

In yet another study on the sociolinguistic and demographic characteristics of immigrants acquiring German (Зарецкий 2015), the same sample of predominantly four-year-old German preschoolers, described in Table 1 as S2, was analysed. Some contra-intuitive tendencies in the answers of immigrant parents were found. Immigrant children underwent significantly less often language(-related) therapies than monolingual Germans, probably because their parents believed significantly more often than German parents that their children did not suffer from otitis media or, more generally, hearing disorders or, even more broadly, any language-related disorders/illnesses/impairments. These findings contradicted the judgments of the university language experts who classified immigrant children significantly more often than Germans as needing additional medical help in acquiring/learning German. Also, immigrant parents believed more often than Germans that their relatives did not suffer from “problems with reading and writing” and language disorders, although one can hardly assume that Germans are more liable to language disorders than representatives of other nationalities.

These, at first sight, contra-intuitive findings were examined in more detail in the present study by three samples of predominantly four- to six-year-old children. Based on the results of S2 (see above), immigrant children were expected to participate as often as Germans or even significantly less often in both language courses and therapies in spite of much higher needs

(according to the university language experts) because of (a) the inability of both parents and daycare centre teachers to judge the German language competence of children with an immigration background adequately and to differentiate between the lag in the linguistic development caused by a limited contact to German and by medical issues, (b) unfavorable sociolinguistic and demographic conditions of language acquisition in case of immigrant children, for instance, attendance of comparatively poor daycare centres offering very few or qualitatively inadequate language courses (Becker 2010).

The study aimed at a comparison of the educational and medical needs of immigrants and monolingual Germans of preschool age, as well as a comparison of their opportunities to participate in language courses and therapies. Also, the motivation behind the assignment of such courses and therapies was analysed cross-sectionally and, for one sample, in a follow-up design.

## **METHODS**

The study presents a retrospective analysis of data collected in several projects on the development and validation of two language tests for German preschoolers. All three available samples were utilised to check the replicability of the results. The samples were not qualitatively different, but children from Sample 3 (S3) were mostly one or two years older than children from Samples 1 and 2 (S1, S2) and were tested not in their daycare centres but public health departments during the school enrolment examination. Also, because only age-appropriate language tests were used, tests for S3 differed from those for S1 and S2. For details, see Table 1.

*Table 1 Characteristics of study samples*

	Sample 1 (S1)	Sample 2 (S2)	Sample 3 (S3)
<b>N</b>	6,144	2,050	772
<b>N Germans</b>	4,280 (70%)	1,142 (56%)	304 (39%)
<b>N immigrants</b>	1,864 (30%)	908 (44%)	468 (61%)
<b>Age range</b>	4;0-4;5	3;0-7;8	4;0-8;3
<b>Age median</b>	—	4;3	5;11
<b>Boys</b>	3,116 (51%)	1,126 (55%)	402 (52%)
<b>Girls</b>	3,028 (49%)	919 (45%)*	370 (48%)
<b>Time span</b>	2007-2010	2007-2012	2009-2010
<b>Test location</b>	daycare centres	daycare centres	public health departments
<b>Language tests</b>	MSSb	MSSb	S-ENS, AWST-R, ETS

<b>Linguistic domains assessed</b>	Speech comprehension, vocabulary, grammar, articulation	Speech comprehension, vocabulary, grammar, articulation, phonological short-term memory	Speech comprehension, vocabulary, grammar, articulation, phonological short-term memory
<b>Questionnaires</b>	for parents and daycare centre teachers	for parents and daycare centre teachers	for parents

Note. MSSb = “Marburger Sprachscreening – revised version“ (Euler et al. 2010), S-ENS = “Screening des Entwicklungsstandes bei Einschulungsuntersuchungen“ (Döpfner et al. 2005), AWST-R = “Aktiver Wortschatztest für 3- bis 5-jährige Kinder – Revision“ (Kiese-Himmel 2005), ETS = “Entwicklungstest Sprache für Kinder von 4 bis 8 Jahren“ (Angermaier 2007).

\* No information on five children.

Although the same language screening was used in S1 and S2, the subtests on the phonological short-term memory (repetition of sentences and nonce words) did not yet exist in S1.

Only S1 can be considered unselected. Children were obliged to participate in a state-wide language screening program without written permission from their parents. In S2 and S3, such permissions were required. Consequently, certain subgroups tended to participate in the study or to avoid participation. This can be seen regarding a higher percentage of immigrants in S2 and especially in S3 compared to S1. The difference in the percentage of immigrants might have also been caused to a certain extent by geographical variation, since S1 was tested only in the state of Hesse, whereas S2 and S3 were also tested in the state of North-Rhine Westphalia, where the proportion of immigrants was higher (Statistisches Bundesamt 2015d).

In the case of S1 and S2, the study results can be considered generalisable to daycare centre attendees only. However, according to 2012 data, these make out 93% of the total population of three- to five-year-old children in the states of Hesse and North-Rhine Westphalia (Statistisches Bundesamt 2012). In S3, all children were tested irrespective of whether they attended daycare centres or not.

Most children were classified by a group of university language experts (professors, clinical linguists, speech and language pathologists) as (a) needing (ED) or not needing (NED) additional educational help and (b) as needing (CLIN) or not needing (NCLIN) additional medical help in acquiring/learning German. The former (ED) means that the child needed a language course because he/she scored below the 17<sup>th</sup> percentile in comparison with a reference sample of the same age and under consideration of the immigration background (with lower norms for immigrants in S1 and S2). The latter (CLIN) means that the child would not have benefited from language courses alone because he/she had some medical issue such as Down syndrome or a hearing disorder and thus, first and foremost, he/she needed a medical therapy. Such children usually scored below the 6<sup>th</sup> percentile in comparison with the reference group in

at least one linguistic domain of the validated, age-appropriate language tests used in this study (see Table 1 for an overview of linguistic domains).

Questionnaires for parents, as the primary source of sociolinguistic and demographic information on children and their families, were a part of test batteries in all three samples but differed in the number of items. The sample sizes varied in the calculations below, depending on whether questionnaire items already existed and whether parents or daycare centre teachers were willing to reveal certain information, which was quite problematic, for instance, concerning the educational level. Also, attempts to conceal the immigration background were not uncommon.

All calculations were carried out in SPSS 20 (IBM, Armonk, New York, USA) and are reported as two-tailed, if not stated otherwise, with a significance level of  $\alpha = 5\%$ .

In the Results section, the educational and medical needs of Germans and immigrants were compared. Depending on the scale of the data, questionnaire items were cross-tabled with the classification of children as immigrants or Germans either using Chi-Square or linear-by-linear associations (*lbt*). For metric data such as the age of children in months, Mann-Whitney *U*-test was utilised. Based on findings in S2 (see Introduction), immigrant children were expected to be described as suffering from various medical problems and as receiving medical help as often as Germans or less often.

Also, sociolinguistic and demographic factors associated with participation in language therapies and courses were examined. All available questionnaire items (e.g., parents' educational level) were cross-tabled with the dichotomous variables related to participation or non-participation in language therapies or courses. Because 148 children from S3 had already been tested in S2 one or two years earlier, when they were four years old, associations between participation or non-participation in therapies at the age of five or six were analysed in regard to sociolinguistic and demographic characteristics of these children at the age of four, thus trying to find the motivation for undergoing a language therapy in the past. Children re-tested in this follow-up design had not been chosen deliberately for S3 and just happened to be invited to the public health departments for the school enrolment examination during the months when the study on S3 was conducted there. Analysis in the follow-up design of the motivation for the participation in language courses was not feasible because the corresponding questionnaire item (participation vs. non-participation) was used only for S2.

The importance of the immigration background for the assignment of a language therapy was assessed by three binary logistic regressions, one for each sample, with "participation vs.

non-participation” as the dependent variable. The percentage of the explained variance was quantified by Nagelkerke  $R^2$ . Ideally, participation in language therapies should be closely associated with the judgments of university language experts on children’s need for additional medical help (CLIN/NCLIN) and, less closely, with the language test scores because CLIN children tend to score significantly lower than children who speak German age-appropriately. Immigration background was not supposed to function as an independent predictor of undergoing a language therapy. However, due to the findings in the S2 questionnaires (see Introduction), it was hypothesised that being monolingually German alone could have sometimes sufficed as motivation to let children undergo a language therapy, irrespective of their total scores of correct answers in language tests as well as of the CLIN/NCLIN classification.

The reliability of the subjective judgments of parents and daycare centre teachers on children’s German skills was analysed for S2, the only sample where both judgments were available. Dichotomous pass/fail results (that is, whether the child speaks German age-appropriately or not) were cross-tabled with the classification of children by university language experts. Also, phi-correlations between these variables were calculated. For reasons of simplification, a new dichotomous variable was created for these calculations based on the classifications by language experts: the child speaks German age-appropriately vs. the child needs either educational (ED) or medical help (CLIN) in acquiring/learning German. It was hypothesised that both daycare centre teachers and parents tended to overestimate immigrant children’s German skills, which might be one of the reasons for the underestimation of their educational and medical needs.

Differences in the standards applied by both parents and daycare centre teachers to certain subgroups of immigrant children were visualised in boxplots with total scores of correct answers in MSSb on the one hand and the dichotomous classification of children as speaking German age-appropriately or not age-appropriately on the other hand. As children speaking Italian demonstrated much better German skills than children speaking Turkish and Arabic in previous studies (Zaretsky and Lange 2015, 2016b), subjective standards applied by parents and daycare centre teachers to the former were expected to be higher than those applied to the latter.

### RESULTS

In S1, very few sociolinguistic and demographic variables were documented. However, the tendencies described in the Introduction for S2 were found in S1 as well. First, immigrant parents believed significantly more often than German parents that their children did not suffer from hearing disorders ( $\chi^2_{(1)} = 9.85$ ,  $p = .002$ ,  $N = 6,144$ ), although university language experts

classified immigrants more often as CLIN ( $\chi^2_{(1)} = 72.48, p < .001, N = 6,144$ ), which means some hearing disorder in most cases. Second, immigrant parents believed significantly more often than Germans that there were no cases of language disorders in their families:  $\chi^2_{(1)} = 44.77, p < .001, N = 6,144$ .

Immigrant children underwent language therapies less often in comparison with monolingual Germans (5% of all immigrants vs. 6% of all Germans), most of children in therapy being monolingual Germans (26% immigrants vs. 74% Germans). The difference yields a statistically significant result if calculated one-tailed ( $\chi^2_{(1)} = 2.89, p = .049, N = 6,144$ ), but would be only marginally significant if calculated two-tailed ( $p = .089$ ). Most children who were or had been in therapy were classified as NED (67%;  $\chi^2_{(1)} = 40.13, p < .001, N = 6,144$ ) and NCLIN (54%;  $\chi^2_{(1)} = 217.71, p < .001, N = 6,144$ ). However, the frequency of language-related issues among therapy participants was higher than that among non-participants in case of hearing ( $\chi^2_{(1)} = 25.01, p < .001, N = 6,144$ ) and mental ( $\chi^2_{(1)} = 55.63, p < .001, N = 6,144$ ) disorders (such as attention deficit hyperactivity). The frequency of language disorders among relatives was also higher among participants than non-participants:  $\chi^2_{(1)} = 114.57, p < .001, N = 6,144$ . No further variables were available.

The results for S2 have already been described in the Introduction. However, some not statistically significant findings were left unmentioned in the previous study (Зарецкий 2015) and are listed here. This is done because they seem to demonstrate the same tendency to neglect or to overlook medical issues of immigrant children and, consequently, to grant any medical help and to diagnose any deviation from the norm predominantly or only in monolingual Germans. Thus, according to questionnaires for parents and daycare centre teachers;

- 10 children with diagnosed auditory processing disorders,
- 12 children who took medicine regularly,
- 27 (71%) out of 38 children with some diagnosed severe illnesses/diseases/impairments (not related to language),
- 36 (68%) out of 53 children receiving some therapy (not related to language),
- 8 (68%) out of 12 children with a diagnosed permanent hearing disorder,
- 5 out of 6 children (83%) with a diagnosed motor disorder,
- 7 out of 11 children (64%) with an early or risk birth,
- and 36 out of 38 children (95%) with head injuries and/or operations were monolingual Germans.

No counterevidence was found. Taking into account that immigrants made out almost one-half of this sample, one could have expected that medical issues would have been identified in the groups of immigrants and native Germans almost in a one-to-one ratio.

Although in S2 immigrant children were classified by university language experts as



CLIN significantly more often than Germans (21% vs. 16%;  $\chi^2_{(1)} = 9.68, p = .002, N = 1,950$ ), they underwent language therapies significantly less often (8% of all immigrants vs. 13% of all Germans), with 68% of children in therapy being monolingual Germans ( $\chi^2_{(1)} = 15.04, p < .001, N = 1,998$ ). Therefore, the next question to be studied regarded the motivation for undergoing such therapies. According to the university language experts, 37% of children who were/had been in therapy were NED ( $\chi^2_{(1)} = 63.07, p < .001, N = 1,592$ ), 47% were NCLIN ( $\chi^2_{(1)} = 169.42, p < .001, N = 1,594$ ). Although the participation in therapy was significantly associated with both ordinal judgments of daycare centre teachers ( $lbl = 36.17, p < .001, N = 1,302$ ) and dichotomous judgments of parents ( $\chi^2_{(1)} = 30.14, p < .001, N = 600$ ) on children's German skills, between 42% and 63% of children who underwent language therapies did not need them according to these judgments. However, again, the proportions of medical issues in the subgroup of children who underwent language therapies were higher than those in all other children, as was found for stuttering ( $lbl = 11.28, p = .001, N = 990$ ), language-related illnesses/diseases/impairments ( $\chi^2_{(1)} = 90.08, p < .001, N = 720$ ), and hearing disorders ( $lbl = 60.67, p < .001, N = 1,539$ ). Also, children in language therapy received worse school marks from daycare centre teachers for their German skills both at the beginning of the daycare centre attendance ( $lbl = 4.99, p = .026, N = 199$ ) and at the time point of the language test ( $lbl = 4.70, p = .030, N = 203$ ) compared to children who did not undergo therapy.

A large number of variables from questionnaires for parents and daycare centre teachers did not yield statistically significant results regarding:

- age and gender of children,
- length of daycare centre attendance in months or hours per day,
- regularity of daycare centre attendance,
- attendance of a nursery school, sociability (“the child likes to play with other children,” “...plays with German speaking children after daycare centre hours,” “...speaks out when playing”),
- rates of sight disorders or other disorders/illnesses which might influence the language development (frequent otitis media, intellectual disability),
- whether there is at least one more child in the daycare centre group who speaks the same language, if not German, as the study participant, and how often the study participant plays with this/these child/children,
- language(s) preferred at home (by the mother, father, child),
- length of the child's contact with the German language,
- attendance of associations or study groups,
- early or difficult birth,
- age when parents began to learn/acquire German,

- parents' educational level and first language(s), "problems with reading and writing" in the family.

Also, several variables that assessed specific German skills of preschoolers according to the subjective judgments of daycare centre teachers yielded no statistically significant results: "The child understands sophisticated handling instructions," "vocabulary is age-appropriate," "speech can be understood by everyone," "... articulation is age-appropriate", the child can speak in full sentences, "and "the child can use articles correctly."

In S3, immigrant parents demonstrated the same tendencies as in S1 and S2. According to their questionnaires, immigrant children suffered significantly or marginally significantly less often than monolingual Germans from stuttering ( $lbl = 9.97, p = .002, N = 748$ ), hearing disorders ( $lbl = 8.61, p = .003, N = 757$ ), and, more generally, illnesses or impairments or diseases which influence language acquisition negatively ( $\chi^2_{(1)} = 3.67, p = .056, N = 760$ ). Immigrant children underwent language therapies less often than Germans, significantly by trend (15% of all immigrants, 20% of all Germans;  $\chi^2_{(1)} = 3.00, p = .083, N = 763$ ), although they were more often classified by university language experts as ED ( $\chi^2_{(1)} = 95.52, p < .001, N = 700$ ) and CLIN ( $\chi^2_{(1)} = 3.99, p = .046, N = 700$ ). In this sample, 54% of children in therapy were immigrants, but a much larger proportion of immigrants than Germans in S3 compared to S1 and S2 should be taken into account. Also, immigrant parents believed more often than German parents that none of their relatives had "problems with reading and writing" ( $\chi^2_{(1)} = 6.13, p = .013, N = 736$ ).

Again, the question regarding the motivation for language therapies revealed a large proportion of children in therapy who spoke German age-appropriately: 54% of children in therapy were classified by university language experts as NED ( $\chi^2_{(1)} = 17.34, p < .001, N = 612$ ), 73% as NCLIN ( $\chi^2_{(1)} = 44.27, p < .001, N = 612$ ). Children whose mothers ( $lbl = 3.94, p = .047, N = 715$ ) and fathers ( $lbl = 4.41, p = .036, N = 690$ ) had a high educational level (university or comparable) as well as children of fathers (but not mothers) who could read and write German "well" or "very well" ( $lbl = 4.73, p = .030, N = 382$ ) underwent language therapies comparatively seldom. Children in therapy tended to stutter more often than other children ( $lbl = 25.91, p < .001, N = 740$ ), to have a hearing disorder ( $lbl = 10.79, p = .001, N = 750$ ), or, more generally, some language-related illness or disease or impairment ( $\chi^2_{(1)} = 175.25, p < .001, N = 757$ ). In their families, "problems with reading and writing" ( $\chi^2_{(1)} = 8.83, p = .003, N = 731$ ) and language disorders ( $\chi^2_{(1)} = 38.80, p < .001, N = 749$ ) occurred more often than in the families of children who did not undergo language therapies. Contrary to S2, no statistically significant association between participation in a language therapy and the subjective judgments of parents and daycare centre teachers on children's German skills were found. Also, no significant results were

identified for other variables documented in the questionnaire for parents: voice disorders, how often the child plays with peers, length of daycare centre attendance in months and hours per day, whether the child attended a nursery school, how often German is spoken at home, immigration background, parents' first language(s), and age when parents began to acquire/learn German.

Because 148 children from S3 had already been tested one or two years earlier as part of S2, when they were four years old, associations between the participation in a language therapy at the age of five or six and sociolinguistic/demographic characteristics of the same children at the age of four were analysed. It was hypothesised that in the case of children in therapy who spoke German age-appropriately at the older age, there might have been some medical issues one or two years earlier, which motivated the assignment of therapy. Although a list of more than 40 variables was available in the questionnaires for parents and daycare centre teachers in S2, only three of them yielded statistically significant results. Children who underwent a therapy at the age of five or six had the following characteristics at the age of four: Their speech ( $lbi = 10.50, p = .001, N = 126$ ) and, more specifically, articulation ( $lbi = 5.47, p = .019, N = 125$ ) were more often hardly comprehensible to peers and adults, and, also, they underwent more often a language therapy at the age of four ( $\chi^2_{(1)} = 28.62, p < .001, N = 148$ ). However, already at the age of four, 66% of children in therapy did not need it according to the university language experts (NCLIN;  $\chi^2_{(1)} = 13.46, p < .001, N = 148$ ), which is only 7% less than at the age of five or six. Thus, no motivation was found for the therapy participation of most children at both time points of the follow-up study (S2, S3).

Next, the association of immigration background with children's participation or non-participation in a language therapy was assessed by three binary logistic regressions (enter method). Results for all three samples are presented in Table 2.

Table 2. Binary logistic regressions (Wald statistics) with participation in the language therapy as the dependent variable and language test scores, classification of children as needing (CLIN) or not needing (NCLIN) additional medical help in acquiring/learning German as well as immigration background (yes/no) as independent variables.

	Sample 1	Sample 2	Sample
Nagelkerke $R^2$	.135	.248	.202
% correctly predicted	95%	89%	85%
Speech comprehension	.022	0.23	0.57
Articulation	19.25***	30.76***	19.23***
Vocabulary	8.74**	21.59***	2.15
Grammar	85.00***	22.46***	0.29
Classification: need/no need of medical help	18.15***	18.56***	9.77**
Immigration background	10.70**	10.64**	4.46*
<i>N</i>	6,144	1,438	479

Note. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

According to all three regressions, the absence of immigration background was

significantly associated with the participation in a language therapy. In all three samples, less than 25% of the variance could be explained by the chosen factors although the CLIN/NCLIN classification alone must have accounted for almost 100% of the dependent variable.

The motivation for the participation in language courses could be analysed only for S2, where this variable was included in the questionnaire for daycare centre teachers. Despite a large number of available sociolinguistic and demographic variables, very few of them yielded statistically significant results. Children in language courses began later to acquire German ( $lbl = 15.75, p < .001, N = 167$ ), they suffered more often from diagnosed illnesses/diseases/impairments ( $\chi^2_{(1)} = 8.83, p = .003, N = 323$ ), and their German skills received higher (= worse) school marks by day-care centre teachers at the beginning of the day-care centre attendance ( $lbl = 17.08, p < .001, N = 187$ ). There was no significant association between the participation in language courses and the judgments on children's German skills (at the time point of the study) by university language experts, parents, and daycare centre teachers. Out of 102 children in language courses, 70% were classified as NED and 84% as NCLIN. The difference between Germans and immigrants regarding the participation in language courses (29% of all immigrants vs. 33% of all Germans; 56% of children in language courses were Germans, 44% immigrants), were not statistically significant, although notably more immigrants were classified as ED than Germans (54% vs. 22%;  $\chi^2_{(1)} = 214.34, p < .001, N = 1,946$ ).

S2 was also the only sample in which the reliability of subjective judgments of both parents and daycare centre teachers could be compared with the classifications of children by university language experts. Out of 444 children who were classified by university language experts as ED and/or CLIN, 173 (24%) spoke German age-appropriately according to daycare centre teachers. A phi-correlation between day-care centre teachers' judgments and those by university language experts was found to be moderate ( $\phi = .460, p < .001, N = 1,119$ ). In case of the questionnaire for parents, the percentage of children who were classified as ED and/or CLIN by university language experts and, simultaneously, as speaking German age-appropriately by parents was somewhat higher, 30% (162 out of 223), with a lower phi-value ( $\phi = .365, p < .001, N = 606$ ). However, a smaller sample size must be taken into account in the latter phi-calculation. In the case of immigrants, these tendencies were even more prominent. Daycare centre teachers overestimated German skills of bi/multilingual children in 35% of cases (101 out of 311), and parents in 48% of cases (99 out of 153), compared to the ED/NED/CLIN/NCLIN classification. Phi-values remained approximately on the same level in case of both day-care centre teachers ( $\phi$

= .455,  $p < .001$ ,  $N = 551$ ) and parents ( $\phi = .368$ ,  $p < .001$ ,  $N = 267$ ).

Both parents and daycare centre teachers applied lower standards to particular subgroups of immigrant children, as can be seen in Figure 1. Although daycare centre teachers expected somewhat better German skills than parents to classify a child as having good German skills, native speakers of Arabic were classified as speaking German age-appropriately even if they scored approximately at the same level as monolingual Germans who were classified as speaking German not age-appropriately. For Italian speaking children, much higher standards were applied.

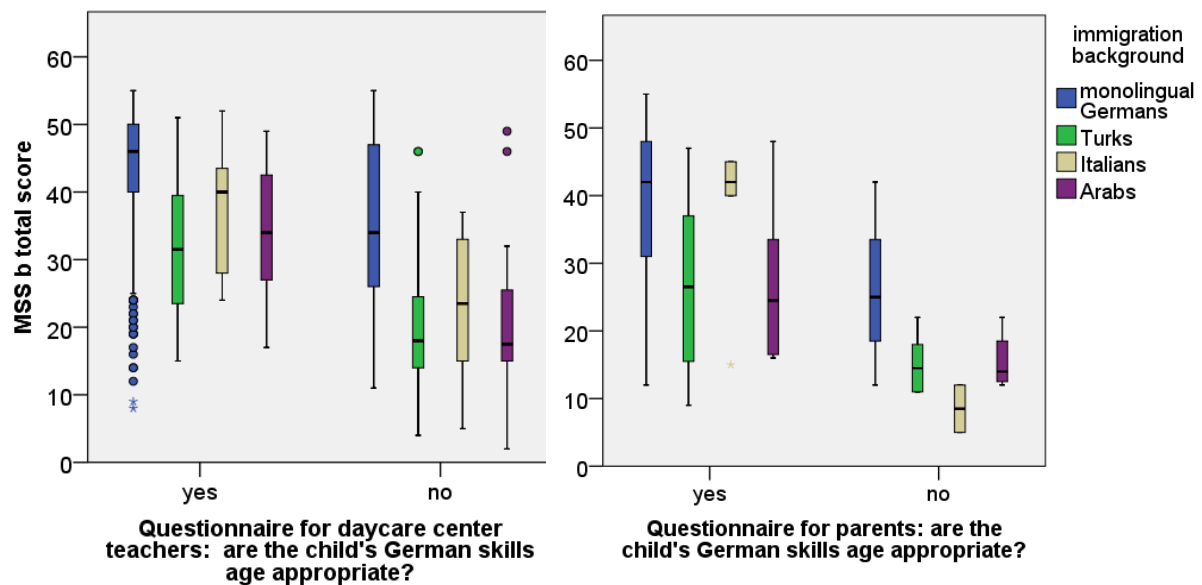


Figure 1. Sample 2: Standards applied by daycare centre teachers and parents to classify children as speaking German age-appropriately or not age-appropriately

Note. MSSb = *Marburger Sprachscreening – revised version*

In Figure 1, boxes of the box plots show the median (line in the middle of the box), the first and third quartiles. Fifty percent of all cases (here: tested children) are represented within the box. About 95% of all cases are located within the error bars.

## DISCUSSION

To sum up, in all three samples, immigrant parents believed significantly more often than Germans that both their children and other relatives suffered comparatively seldom from various language-related disorders. No objective information on adult immigrants was available, but more immigrant than German children were classified by university language experts as needing additional medical help in acquiring/learning German. Presumably, due to the wrong estimation of children's medical needs by parents and daycare centre teachers, immigrants underwent language therapies significantly or marginally significantly less often than monolingual Germans. The absence of an immigration background even turned out to be an independent

predictor of participation in the language therapy, which means that native Germans' language skills and their medical needs were not always considered crucial when assigning such therapies. This is also indirectly supported by some findings in S2 that did not reach the level of statistical significance rather due to low sample sizes than due to their irrelevance because all of them demonstrated the same tendency and no counterevidence was found. According to these findings, any medical issues (e.g., head operations) and medical help (e.g., regular medication) were documented more often or exclusively in the subsample of monolingual Germans despite comparable proportions of Germans and immigrants in S2.

Several reasons for the disproportionately frequent participation of Germans in the language therapies are conceivable. First, a higher income of Germans in comparison with immigrants as well as their higher educational level (cf. Kristen and Granato 2007, Statistisches Bundesamt 2015b-d) guarantee them better access to and a higher quality of language(-related) therapies offered to privately insured customers by some clinics. Immigrants are more often insured under a statutory insurance plan than privately insured in comparison with Germans (De Groot and Sager 2010).

Second, immigrants with a limited command of German face a considerable challenge trying to understand concerns regarding children's medical and educational issues uttered by others as well as trying to convey their concerns both to the daycare centre teachers and the medical staff. In several recent studies on the use of German medical services by immigrants, a limited command of German was described both by the medical staff and immigrants as the most obvious obstacle (for an overview, see Die Beauftragte der Bundesregierung für Migration, Flüchtlinge und Integration 2014, 154).

Third, some German medical tests and screenings employ language-based tasks, which excludes the participation of immigrants with limited German skills. Medical issues of such drop-outs might remain undetected because of the limited diagnostic options.

Fourth, a comparatively low income of immigrants is closely linked to some other factors, including attendance of daycare centers with comparatively unskilled (and underpaid) staff so that children's medical issues might be overlooked both by parents and daycare centre teachers. Each German state defines the educational program for the daycare centre teachers independently. In some of them, hardly any training on the identification of language(-related) medical issues and language development is provided (Die Beauftragte der Bundesregierung für Migration, Flüchtlinge und Integration 2014, Lisker 2011). Whereas authorities of some cities and states consider the participation in further education programs on these topics obligatory,

others leave it up to daycare centre teachers to decide whether to participate and how to finance such involvement.

Fifth, cultural peculiarities, traditions, and beliefs, such as belief in “God-given” illnesses, in some subgroups of immigrants, prevent them from contacting the medical staff (Kitz 2013). For instance, Italians and Spaniards living in Germany prefer to search for medical help in the circle of their relatives and acquaintances (Bermejo et al. 2012).

Sixth, more language therapies are assigned than can be conducted, which means that some speech and language therapists can afford to be choosy regarding their patients. Because language therapies of immigrant children usually last longer and have a lower chance of success (Triarchi-Herrmann 2009), some speech and language therapists might filter out children with a minimal command of German as potentially difficult cases. The preference of speech and language pathologists for “convenient” patients was demonstrated in Zaretsky and Lange (2016c), where a subgroup of children was identified who remained in the language therapy for years despite above-average German skills.

Seventh, as was shown in the Results, both German and immigrant parents tended to overestimate their children’s German skills. However, in the case of immigrants, the correct judgments (if we consider the classifications by university language experts as the reference standard) were made more seldom than in the case of all children taken together. Almost one-half of immigrant parents whose children were classified as ED and/or CLIN believed that the children’s German skills were age-appropriate. Also, norms applied by both daycare centre teachers and parents varied depending on the subgroup of immigrants and were higher, for instance, for children speaking Italian than for those speaking Turkish and Arabic (see Figure 1), probably because the advanced German skills of the former (Zaretsky and Lange 2015) and limited German skills of the latter (Zaretsky et al. 2013) are well-known in Germany.

Hence, although the number of diagnosed language disorders in the state of Hesse is growing (Hessisches Sozialministerium 2006), the accessibility of the health care services for immigrant children (or, maybe, the accessibility of immigrant children for the health care services) remains limited. Taking into account that the majority of daycare centre attendees in Germany—60% in the years 2008-2013 (Die Beauftragte der Bundesregierung für Migration, Flüchtlinge und Integration 2014)—are at least bilingual and, hence, have at least one parent with an immigration background, undetected language-related medical issues in this subgroup of preschoolers might have far-reaching consequences for the school performance and, later, job

market.

Interestingly, subjective opinions of parents regarding the health status of immigrant children contradict not only the judgments of the university language experts but also to the results of a large-scale ( $N = 17,641$ ) study on the subjective judgments of children regarding their health (Ellert and Ziese 2013). In the subsample of children under the age of ten, 96% of respondents without immigration background and only 89% of respondents with immigration background described their health as good or very good. Immigrants with the lowest results were those from Turkey and the Islamic states, that is, those speaking Turkish and Arabic, which corresponds to the results on S2 presented in the Introduction.

Inequality in the distribution of the resources of the German healthcare system and a higher liability of immigrants to suffer from various more or less language-related medical issues were also demonstrated in the analysis of the results of school enrollment examinations in the study “Child and youth survey 2003-2006” (Kitz 2013). Immigrant children, among other things, consult a doctor less often than Germans despite identical symptoms, take medication less often, tend to miss obligatory screening programs such as hearing screenings, have more often behavioural, mental, attention-deficit/hyperactivity disorders and even get more often into traffic accidents than native Germans.

Despite the underrepresentation of immigrants in language therapies, these therapies cannot be called totally unmotivated. In all three study samples, children in therapy suffered from various language-related diseases and impairments significantly more often than other children. Also, there were more cases of language disorders in the families of therapy participants. And although unexpectedly, most children in therapies turned out to be neither ED nor CLIN during the current study, it does not presuppose that these children never had language-related medical issues. In (S1 and S2, the questionnaire item on undergoing language therapies included a reference to the past: “Does/did your child undergo...”). No objective data on these issues were available for the age of two in the current study, but some language therapies before the study participation must have been successful, and a certain percentage of two-year-olds with obvious language deficits must have caught up with normally developed children within one or two years irrespective of medical assistance (so-called “late bloomers,” cf. Zorowka 2005). However, because in the follow-up study arm most children in therapy who were tested twice, in S2 and S3, were classified as NCLIN in both cases, a conclusion should be drawn that—at best—the German healthcare system can be characterised by a certain inertia, reflected in undergoing therapies that might have been necessary at the age of two or three, but not at the



age of four, five or six.

It cannot be left unmentioned in this respect that, according to the comments of some daycare centre teachers during the study, some parents mixed up participation in language courses and therapies because (a) there was no item on participation in language courses in their questionnaire, (b) sometimes both language courses and therapies were offered in the same daycare centres. Nevertheless, very high percentages of NCLIN/NED children in a language therapy need to be examined in more detail in prospective studies.

Immigrant children are underrepresented not only in language therapies but also in language courses. Immigrants participated in such courses numerically, although not statistically significantly, less often than Germans in S2, despite much higher educational needs. The replication of these results on the basis of S1 and S3 was not possible due to a lack of data. The analysis of questionnaires in S2 revealed very few statistically significant tendencies regarding the assignment of language courses. Children's German skills at the beginning of daycare centre attendance, that is, the first impression of daycare centre teachers, as well as the presence of language-related medical issues played a major role in this respect. None of the variables on the children's language competence at the time point of the current study was associated with participation in the language courses, which means that the level of participants' German skills must have improved in most cases but children still received additional educational help in acquiring/learning German due to a certain inertia of the educational system. In general, taking into account a large number of available sociolinguistic and demographic variables in S2 that yielded no significant results, the assignment of language courses should be considered even less transparent than the assignment of language therapies, probably because the former is done by daycare centre teachers on the basis of their subjective opinion and, often, with a very limited expertise in language development, whereas the latter is done by medical staff on the basis of standardised, validated tests and a certified expertise.

The question whether immigrants were offered and/or accepted fewer opportunities to let their children participate in language courses and therapies could not be directly answered because relevant questionnaire items were not available in this retrospective study. However, the fact that immigrant parents showed greater concern about the language competence of their children, which can be concluded based on the high percentage of immigrant study participants in S2 and S3 (study arms with a voluntary participation) compared to S1, as well as the fact that both daycare centre teachers and especially parents tended to overestimate the immigrant children's language competence seem to indicate that the immigrant parents had enough

motivation but saw no reason to address the medical staff and, hence, received fewer opportunities for course and therapy participation.

The underrepresentation of immigrants in language courses and therapies can hardly be explained in terms of discrimination given that even in the most nationalistic German state, Bavaria, native Germans are underrepresented in prestigious German schools, grammar schools (“Gymnasium”), compared to that of citizens of German-speaking Austria, and citizens of “disliked” countries such as Poland, Ukraine, and the Russian Federation (Körber-Stiftung 2014, Kucharczyk et al. 2013) due to the comparatively weak school performance of native German pupils (Halbhuber 2007).

## CONCLUSIONS

Because the available data were collected for an entirely different purpose, namely the development of language tests, the comparability of samples regarding questionnaire items and characteristics of test subjects was limited. However, immigrants from all three samples demonstrated the same tendencies: They believed more often than native Germans that both their children and adult relatives did not suffer from language(-related) disorders. Also, their children underwent less often language therapies in all three samples despite higher percentages of CLIN cases, and there was no statistically significant difference in the participation in language courses despite a higher percentage of ED cases among immigrant children. The study revealed a high subjectivity of judgments of both daycare centre teachers and parents regarding the language competence of immigrant children, with a clear tendency to overestimate it, which might explain why immigrants received both educational and medical help in acquiring/learning German disproportionately seldom. Most children in language courses and therapies did not need them according to the judgments of the university language experts, probably, among other things, as a sign of inertia in the provision of educational and medical services in Germany, inability of parents to differentiate between language courses and therapies (the former being less motivated than the latter) as well as a consequence of a wide-spread use of not validated language tests (or unauthorised short forms of validated tests), and uncertainty in the differentiation between immigrants’ educational and medical needs by speech and language pathologists, parents as well as educational staff.

\*\*\*\*\*

## REFERENCES

Angermaier, Michael J. W. 2007. *ETS 4-8. Entwicklungstest Sprache für Kinder von 4 bis 8 Jahren*. Frankfurt am Main: Harcourt Test Services GmbH.

- Becker, Birgit. 2010. "Wer profitiert mehr vom Kindergarten? Die Wirkung der Kindergartenbesuchsdauer und Ausstattungsqualität auf die Entwicklung des deutschen Wortschatzes bei deutschen und türkischen Kindern." *Kölner Zeitschrift für Soziologie und Sozialpsychologie* 62:139–63.
- Bermejo, Isaac, Lars P. Hölzel, Levente Kriston, and Martin Härter. 2012. "Subjektiv erlebte Barrieren von Personen mit Migrationshintergrund bei der Inanspruchnahme von Gesundheitsmaßnahmen." *Bundesgesundheitsblatt* 55:944–53.
- Die Beauftragte der Bundesregierung für Migration, Flüchtlinge und Integration. 2014. *10. Bericht der Beauftragten der Bundesregierung für Migration, Flüchtlinge und Integration über die Lage der Ausländerinnen und Ausländer in Deutschland (Oktober 2014)*. Berlin: Die Beauftragte der Bundesregierung für Migration, Flüchtlinge und Integration.
- De Groot, von Olaf, and Lutz Sager. 2010. "Migranten in Deutschland: Soziale Unterschiede hemmen Integration." *Wochenbericht des Deutschen Instituts für Wirtschaftsforschung* 49:2–10.
- Döpfner, Manfred, Iris Dietmair, Heiner Mersmann, Klaus Simon, and Gabriele Trost-Brinkhues. 2005. *S-ENS. Screening des Entwicklungsstandes bei Einschulungsuntersuchungen*. Göttingen: Hogrefe.
- Ellert, Ute, and Thomas Ziese. 2013. "Wie geht es Kindern und Jugendlichen mit Migrationshintergrund in Deutschland? Ausgewählte Ergebnisse der KiGGS-Studie." In *Schwerpunktthema 2013: Migrantinnen und Migranten in der Pädiatrie*, edited by Nikolaus Weissenrieder, 9–14. Köln: Berufsverband der Kinder- und Jugendärzte e. V.
- Euler, Harald A., Inge Holler-Zittlau, Susanne van Minnen, Ulrike Sick, Winfred Dux, Yevgen Zaretsky, and Katrin Neumann. 2010. "Psychometrische Gütekriterien eines Kurztests zur Erfassung des Sprachstandes vierjähriger Kinder." *HNO* 58:1116–23.
- Halbhuber, Werner. 2007. "Die Schulstatistik der Kultusministerkonferenz." In *Migrationshintergrund von Kindern und Jugendlichen: Wege zur Weiterentwicklung der amtlichen Statistik*, edited by Bundesministerium für Bildung und Forschung, 67–75. Bonn, Berlin: BMBF.
- Hessisches Sozialministerium. 2006. *Hessischer Kinder- und Jugendgesundheitsbericht 2006*. Wiesbaden: Hessisches Sozialministerium.
- Institut für Qualität und Wirtschaftlichkeit im Gesundheitswesen. 2009. *Früherkennungsuntersuchung auf umschriebene Entwicklungsstörungen des Sprechens und der Sprache. Abschlussbericht*. Köln: IQWiG.
- Kiese-Himmel, Christiane. 2005. *AWST-R. Aktiver Wortschatztest für 3- bis 5-jährige Kinder – Revision*. Göttingen: Hogrefe.
- Kitz, Christina. 2013. "Transkulturelle Pädiatrie – Gesund aufwachsen für alle?" In *Schwerpunktthema 2013: Migrantinnen und Migranten in der Pädiatrie*, edited by Nikolaus Weissenrieder, 52–8. Köln: Berufsverband der Kinder- und Jugendärzte e. V.
- Körper-Stiftung. 2014. „Zuwanderung in die EU soll gerechter werden – aber nicht in Deutschland.“ Accessed 05. January 2016. <http://www.koerberstiftung.de/bildung/presse/presse-meldungen/presse-details-bildung/artikel/zuwanderung-in-die-eu-soll-gerechter-werden-aber-nicht-in-deutschland.html>.

- Kristen, Cornelia, and Nadia Granato. 2007. "Bildungsinvestitionen in Migrantenfamilien." In *Migrationshintergrund von Kindern und Jugendlichen: Wege zur Weiterentwicklung der amtlichen Statistik*, edited by Bundesministerium für Bildung und Forschung, 25–43. Bonn, Berlin: BMBF.
- Kucharczyk, Jacek, Agnieszka Łada, Cornelius Ochmann, and Łukasz Weners. 2013. *Im Osten was Neues? Das Bild Polens und Russlands in Deutschland 2013*. Gütersloh: Bertelsmann Stiftung.
- Lisker, Andrea. 2011. *Additive Maßnahmen zur vorschulischen Sprachförderung in den Bundesländern*. München: Deutsches Jugendinstitut e.V.
- Neumann, Katrin, Inge Holler-Zittlau, Susanne van Minnen, Ulrike Sick, Yevgen Zaretsky, and Harald A. Euler. 2011. "Katzengoldstandards in der Sprachstandserfassung. Sensitivität und Spezifität des Kindersprachscreenings (KiSS)." *HNO* 59:97–109.
- Statistisches Bundesamt. 2012. *Kindertagesbetreuung in Deutschland 2012*. Wiesbaden: Statistisches Bundesamt.
- Statistisches Bundesamt. 2015a. "Kinder mit Migrationshintergrund im Alter von unter sechs Jahren (Stand: 01. März 2009)." Accessed 05. January 2016. <http://de.statista.com/statistik/daten/studie/151625/umfrage/kinder-mit-migrationshintergrund/>.
- Statistisches Bundesamt. 2015b. "Monatliches persönliches Nettoeinkommen im Jahr 2006 nach jeweiligem Migrationshintergrund." Accessed 05. January 2016. <http://de.statista.com/statistik/daten/studie/150623/umfrage/monatliches-persoenliches-einkommen-nach-jeweiligem-migrationshintergrund/>.
- Statistisches Bundesamt. 2015c. "Bildungsstand: Verteilung der Bevölkerung mit und ohne Migrationshintergrund in Deutschland nach beruflichem Bildungsabschluss (Stand 2014)." Accessed 05. January 2016. <http://de.statista.com/statistik/daten/studie/245781/umfrage/bildungsstand--verteilung-der-bevoelkerung-nach-migrationshintergrund-und-beruflichem-bildungsabschluss/>.
- Statistisches Bundesamt. 2015d. *Bevölkerung und Erwerbstätigkeit. Bevölkerung mit Migrationshintergrund – Ergebnisse des Mikrozensus 2012*. Wiesbaden: Statistisches Bundesamt.
- Triarchi-Herrmann, Vassilia. 2009. "Zur Förderung und Therapie der Sprache bei Mehrsprachigkeit." *Spektrum Patholinguistik* 2:31–50.
- Zaretsky, Eugen, Katrin Neumann, Harald A. Euler, and Benjamin P. Lange. 2013. "Pluralerwerb im Deutschen bei russisch- und türkischsprachigen Kindern im Vergleich mit anderen Migranten und monolingualen Muttersprachlern." *Zeitschrift für Slawistik* 58:43–71.
- Zaretsky, Eugen, and Benjamin P. Lange. 2015. "Ob Italienisch Deutsch fördert. Warum Italienisch sprechende Kinder schneller Deutsch erwerben als einige andere Migrantengruppen in Deutschland." *Dutch Journal of Applied Linguistics* 4:121–39.
- Zaretsky, Eugen, and Benjamin P. Lange. 2016a, in print. "Geographie der Wortschatzkenntnisse bei Vorschulkindern in Frankfurt am Main: Migrationshintergrund, Einkommen und andere demographische Einflussgrößen." *Beiträge zur interkulturellen Germanistik*. Tübingen: Narr-Verlag.

- Zaretsky, Eugen, and Benjamin P. Lange. 2016b, in print. "Soziolinguistische Porträts der größten Gruppen der Vorschulkinder mit Migrationshintergrund in Deutschland." In 23. *Linguistik- und Literaturtage in Sankt-Petersburg/Russland: Die Sprachen Mitteleuropas und darüber hinaus. Tagungsband*. Hamburg: Dr. Kovač-Verlag.
- Zaretsky, Eugen, and Benjamin P. Lange. 2016c, in print. "Sociolinguistic factors associated with the subjectively and objectively measured language development in German preschoolers in three follow-up studies." *Linguistics*.
- Zorowka, Patrick G. 2005. "Disorders of speech development: diagnostic and treatment aspects." *Journal of Neural Transmission-Supplement* 69:37–49.
- Зарецкий, Евгений. 2015. "Социолингвистический портрет детей-иммигрантов в Германии: корреляты стагнации в приобретении немецкого языка." In *Социокультурные проблемы языка и коммуникации: сб. науч. тр. Вып. 10*, edited by В. Л. Чепляев, 140–7; Саратов: Поволж. ин-т упр. им. П. А. Столыпина.