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Peer Effects in Language Training for Migrants

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Abstract

We investigate the relation between peer group composition and language improvement in language classes for adults. Using unique survey data of migrants participating in an intensive language course in Germany, we find that the age and skill composition of groups is related to differences in skill acquisition as assessed by the teacher. Moreover, groups that are more heterogenuous in terms of regions of origin on average obtain improvements in language skills with a higher probability.

Keywords: language skills, peer effects, migrants

JEL-Classification: I21, I28, J15

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1 Introduction

Acquiring the language of the country of destination has been shown to be of high relevance for the social integration of migrants (Bleakly and Chin, 2010), their earnings (Chiswick and Miller, 2014; Di Paolo and Raymond, 2012) and the probability of being employed (Prey, 2000; Dustmann and Fabbri, 2003).

Existing literature points out that, unsurprisingly, parental education and the migrant's own level of education are strong determinants of language skills among migrants (Dustmann, 1997; Beenstock et al., 2001; Van Tubergen, 2010). However, there is not much evidence on the most effective ways of improving migrants' language skills or on the effectiveness of existing language programs for migrants.

In this paper, we investigate whether the peer group composition of language courses for adult migrants matters for language improvement. In particular, we focus on gender, education, level of language skills at the beginning of the course and region of origin. To this purpose, we use unique survey data of migrants participating in an intensive language course in Germany.

There is a large amount of empirical evidence on peer effects in education. Nevertheless, most studies focus on peer effects in primary or secondary school. Epple and Romano (2011) provide an overview of the evidence on peer effects in education and conclude that peers play a significant role in determining pupil achievement.

One of the most researched peer variable influencing academic achievement is peer ability or achievement. Overall, existing empirical evidence points to a significant positive effect of higher peer performance on pupil achievement (Kang, 2007; Ding and Lehrer, 2007; Hanushek et al., 2003). Moreover, heterogenuous peer effects have been found for high and low-performing pupils (Sacerdote, 2011; Duflo et al., 2011; Burke and Sass, 2013). Ficano (2012) finds positive effects of peer achievement in US colleges for male, but not for female students.

A second branch of the peer effects literature focuses on the gender composition of classrooms, mostly for pupils in primary and secondary schools. A higher proportion of girls in class is often found to have a positive impact on achievement of both girls and boys (see e.g. Lavy and Schlosser (2011), Black et al. (2013) or Ciccone and Garcia-Fontes (2014)). Much less evidence is available on the effect of gender group composition on learning for adults. Oosterbeek and van Ewijk (2014) study gender peer effects in student learning groups in the Netherlands. They find no evidence of gender peer effects for this age group.

As to the ethnic or migration background composition of classrooms, the evidence on the effects of the share of pupils from ethnic minorities in class on test scores is not conclusive. Several papers find evidence that a higher share of pupils from ethnic minorities is mostly detrimental to the pupils from the minority itself. Hanushek et al. (2009) for instance find that black students' achievement is strongly decreasing in the share of black students in the school. In a meta-analysis,Van Ewijk and Sleegers (2010) find that at school, a high proportion of students from an ethnic minority has a stronger negative impact only on the academic achievement of students in this ethnic group but not on the achievement of students from the ethnic majority. However, Gould et al. (2009) conclude that a larger share of immigrant pupils significantly reduced the achievement of native pupils in Israel. Overall, peers' academic achievement and attitude towards school seem more important than their home language or origin (Friesen and Krauth, 2011).

In this paper, we assess wether the group composition in language training for adult migrants in Germany affects the development of language skills. Whereas the programme did not prove effective in increasing the employability of the participants (Walter et al., 2014), one of the goals of the programme, in this paper we would like to assess the relevance of peer group composition for the improvement of language skills. There were no clear criteria for grouping participants in class in the program. As a result, the groups are quite heteregenous with respect to the level of language skill, age, education or region of origin.

The organization of this paper is as follows. In section 2 , the language course and the data used in our analysis are introduced. Section 3 focuses on the empirical strategy, section 4 presents the results.

2 Language Course Programme and Data

The "Programme for the improvement of job-related language skills for persons with a migration background" provided of German language training to 132 000 migrants in Germany from 2009 to 2014 (see BAMF (2013) for more details on the programme). The programme was free of costs for the participants and is remarkable not only due to the high number of participants but also the high number of hours taught (up to 730 hours) and the duration of the language training provided (6 months in fulltime, 12 months in parttime). Moreover, all participants completed an internship, allowing them to gain some experience in potential occupations. Eligible for the programme were all persons with a migration background and a need of improving their German language skills

and who were recipients of unemployment or social benefits. A migration background exists if either the person themself or at least one of their parents or grandparents migrated to Germany from abroad. However, in our sample, all participants are first-generation migrants. Still, they are not newly arrived immigrants as the average time they spent in Germany before the survey is nine years .

Table 1: Descriptive statistics of the participants

	Mean	
	Study sample	**Full sample**
Language skill at start of course (assessed by teacher)		
A1	9%	
A2	33%	
B1	48%	
B2	9%	
C1	1%	
Region of origin		
Russia	36%	35%
Asia	21%	20%
Eastern Europe	10%	11%
Turkey	12%	14%
Age	39,4	38,7
Female	74%	72%
Tertiary Education	25%	24%
No educational degree	12%	12%
Years spent in Germany	9,2	9,1
Speaks German with friends	36%	37%
Speaks German at home	21%	25%
Number of observations	919	2562

In the context of an evaluation of the programme with respect to the employability of the participants, survey data on 2981 participants was collected by infas[1] in 2010 (Walter et al., 2014). We restrict the sample to classes where we observe these charactistics for at least 10 participants, independently of observing their language skills. For the estimation, we then restrict the sample to participants for which we observe the language skill at the start and at the end of the language course and classes where we observe for at least 5 such participants. We are then left with 60 classes and 919 individuals.

Information is available on the individual characteristics of participants, teachers, as well as on the internships and quality of teaching as perceived by the participants. Table 1 provides some descriptive statistics of the participants for

[1] infas Institut für angewandte Sozialwissenschaft GmbH, Bonn.

the sample excluding those attending classes with less than 10 surveyed participants (2562) and the sample that we use for our estimations. There are no significant differences between the restricted and the full sample. Most participants are female (74%), and the average age is 39 years. The starting level of language skill is generally A2 or B1 according to the Common European Framework. This corresponds to an intermediate level of language skill. This is not surprising since most participants have spent on average 9 years in Germany before participating in the programme. The most common regions of origin are Russia (36%), Asia (21%), Turkey (12%) and Eastern European countries (10%). About a quarter of the participants are graduates from tertiary education in their region of origin.

As a measure of the practice of the German language outside the classroom, participants were asked how often they spoke German with their friends and within their families. If the participants indicated that they used German or both German and another language, we attributed the value of one to the according dummy variable. According to this indicator, 36% of the participants speak German with friends whereas only 22% speak German at home.

Language skills were assessed both by the participants and the teachers near the start and near the end of the programme. However, the participants' subjective assessment proved inconsistent with the teachers' rating. We only use the teachers assessment as a measure for the language skill improvement for several reasons. First of all, teachers benefit from a more extensive assessment experience which makes their assessment more reliable. Moreover, teachers can take into account the relative performance of the participants in the same classroom. Participants were not reminded of their assessment at the start of the year so that they did not have a reference point. In addition, subjective assessments of the own performance are correlated with recent positive or negative feedback or experiences and can vary depending on the time asked.

As indicators for classroom composition, we compute the share of participants in each class that had the same level of language skill at the start of programme, the same gender, or a tertiary education. We use three measures for the homogeneity of classes with respect to regions of origin. First, we compute the highest share of pupils from the same region of origin in class. Moreover, we count the number of different regions of origin in each class. Finally, we compute the share of participants from a specific region of origin in each class.

Figures 1-4 show the group composition of the language classes. We observe that groups are quite heterogenous in their composition. However, very few classes have less than 50% female participants or more than 50% participants with a tertiary education. The largest variance of the share of participants

with the same level of language skills can be observed for the levels A2 and B1, that are the most common in our sample. As to class composition with respect to regions of origin, most variance in the share of participants with the same region of origin can be observed for Asia and Russia (Figure 2). The share of participants from Turkey or Eastern Europe in a class generally lies below forty percent.

Figure 1: Distribution of classroom characteristics

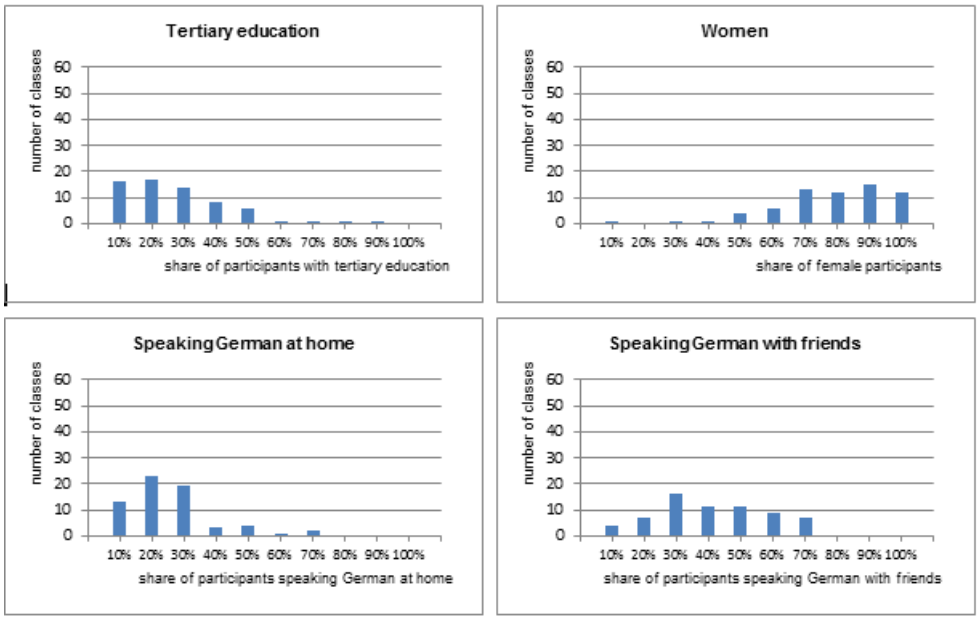


Figure 2: Distribution of the share of participants from the same region of origin

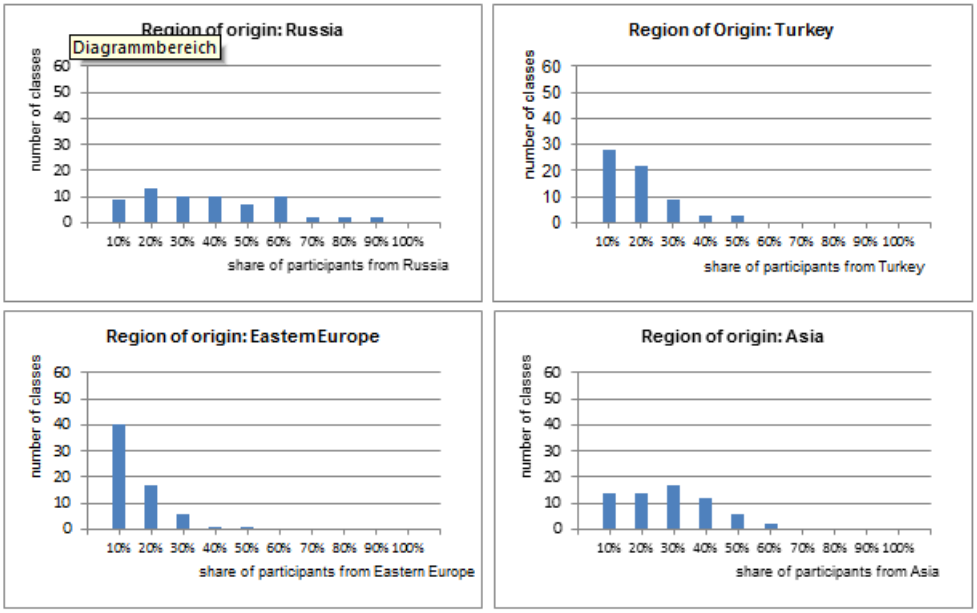
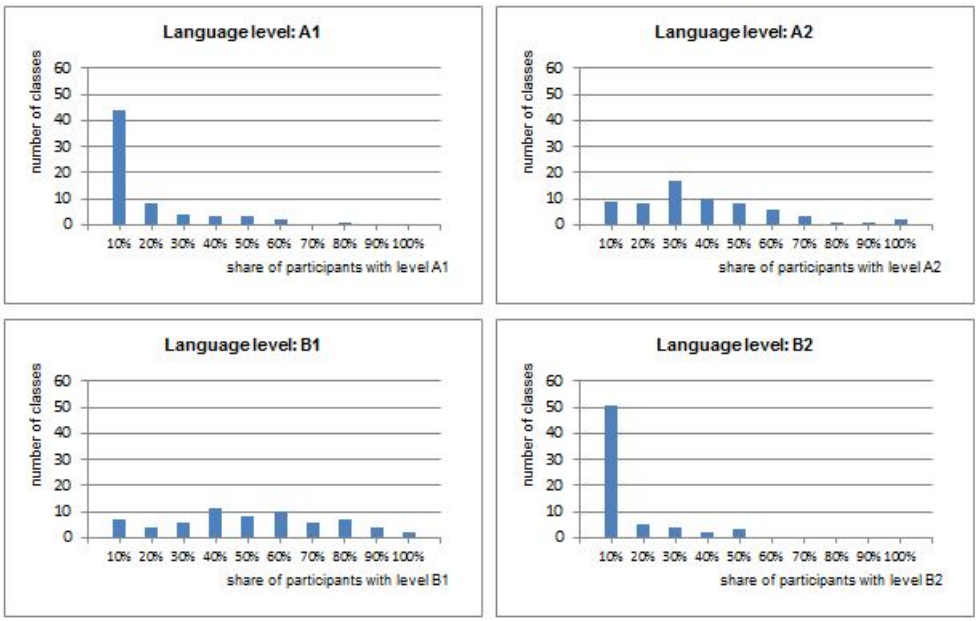


Figure 3: Distribution of the share of participants with same language level



3 Empirical strategy

We investigate how class composition is related to the probability of increasing one's language skill by one level. We estimate the effect of the share of female participants, the average age, the share of each region of origin, the share of tertiary education graduates and the share of participants with the same skill level on the probability that a participant increases his or her performance by one level in the European Common Framework. The outcome variable takes the value of zero if the participant stayed at the same level or fell to a lower level.

We thus estimate the following equation:

$$p(LevelHigher)_i = \alpha + \beta_1 InitialLevel_i + \beta_2 GroupComposition_{class} + \sum_{k=3}^{K} \beta_k X_{ki} + \varepsilon_i$$

where group composition refers to the average age of the group, the share of participants with the same initial level of language skill, the number of regions of origin in class and the share of participants from the same region of origin and the share of the class with a tertiary education degree. In addition, we control for a large set of control variables at the level of participants, teachers and organising institutions. Control variables are included for age, gender, speaking German with friends, the frequency of own oral interventions during each session, the overall satisfaction with the course, teacher quality, full-time attendance, and highest educational degree. Moreover we include the individual level of language skill at the start of the course (as assessed by the teacher) because the probability to increase one's language skills may depend on the inital level of skill. Standard errors are clustered at the class level.

In order to interpret the effect of class composition as causal, we have to assume that given these observable characteristics, allocation to groups of different composition was random.

The grouping of participants into classes was not based on fixed criteria. As can be seen in column 1 of Table 2, some of the organising institutions grouped pupils by language skills (32% of all classes), some based on their occupation (22%) and some tried to use both criteria (18%) or did not apply systematic rules (28%). Even when criteria existed, the organisers could in general not form homogenous classes in terms of language skill or profession, due to the heterogeneity of the participicants. Column two shows the percentage of classes with more than 50 percent participants with the same inital level of skill by grouping criterion. We observe that classes where the level of skill was the criterion for class composition, the share of classes where at least half the participants have the same level is higher than in classes where this criterion was not applied. However, more than half of the classes that claim not to have used this criterion for grouping have more than fifty percent participants with the same level of skill in class. Moreover, the region of origin, gender, education and age were not explicit criteria for group composition and we observe a large amount of variation in the share of similar participants in a class based on these criteria, even when taking the criteria for grouping into account.

Table 2: Criteria for Grouping Participants, percentage of all classrooms

	% of classes	Share of classes with at least 50 percent participants with same level of skill
Only language level at start of course	32%	79%
Only similarity of occupation	22%	54%
Both	18%	82%
No fixed criteria	28%	53%
Number of observations	60	60

4 Results

Table 3 presents an overview of the determinants of improving the participants language skill by one level. Among the most relevant variables are the level of language skill at the start of the course, age and education. The higher the inital level of language skill, the less likely is an improvement by one level. Men are significantly less likely to improve their language skills than women. Younger participants are significantly more likely to increase their level of language skill. As from the age of 35, the probability to improve one's language skill decreases. Participants with a tertiary education degree improve their skills with a higher probability. Moreover, the frequency of a participants' oral interventions in class and regularly reading german newspapers increase the probability to reach a higher level of language skill. Teachers with at least some experience obtain better results. Participants attending the course full-time rather than part-time have a lower probability of increasing their level of skill. This may seem counterintuitive however full-time courses also last half as long. The part-time participants are therefore exposed longer to the courses. Institutions that have several years of experience giving the language courses for migrants and the region of origin are not related to the improvement in language skills. Participants which understand the presented materials better also perform better.

Table 3: Determinants of the probability of improving the language skill by one level. Probit estimation (baseline), marginal effects

Variable	**Coeff. (Std.Dev.)**	Variable	**Coeff. (Std.Dev.)**
Male	-0,15***	Teacher 5-10 years of	0,30***
	(0,05)	experience	(0,09)
25-34 years old	-0,10	Teacher 10-20 years of	0,17**
	(0,10)	experience	(0,08)
35-44 years old	-0,15	Teacher more than 20 years of	0,08
	(0,10)	experience	(0,09)
45-54 years old	-0,27**	Participant speaks German	0,07
	(0,09)	with friends	(0,04)
55-64 years old	-0,26**	Full-time teacher	0,08***
	(0,09)		(0,02)
No school leaving certificate	-0,07	Experience with	0,01
	(0,05)	BAMF-courses	(0,03)
Tertiary education graduate	0,18***	Full-time course	-0,16**
	(0,05)		(0,06)
Level of effort necessary for	-0,03**	Often reads German	0,07*
the course	(0,01)	newspaper	(0,04)
From Russia	0,01	Speaks (German) in class at	0,08*
	(0,06)	least once per course	(0,04)
From Eastern Europe	0,07	Student understands the	0,04**
	(0,08)	contents of the courses	(0,02)
From Asia	-0,01	Satisfaction with the course	-0,01
	(0,06)		(0,02)
From Turkey	-0,04	Language level at start of	-0,25***
	(0,07)	course	(0,03)
R-squared	0,15	**Number of Obs.**	919

Note: *,**,*** stand for statistical significance at the 10, 5 and 1% level,

The following tables present the estimated coefficients of peer composition. Table 4 focuses on the average age of the participants in class. We observe that older groups on average present less progress in language skills than younger groups. This comes in addition to the negative effect of age at the individual level. Crossed effects of participants' age and average age are not significantly different from zero meaning that there is no difference in the older group penalty depending on the participants' own age. This implies that mixing participants of different ages in the same group in order to avoid "old" groups would yield better results.

Table 4: Age and the probability of improving the language skill by one level, Probit estimation results, marginal effects,

	Coeff. (Std.Dev.)	**Coeff. (Std.Dev.)**
Average age of participants in class	-0,02**	-0,02**
	(0,01)	(0,01)
Age 25-34	-0,09	-0,09
	(0,10)	(0,10)
Age 35-44	-0,10	-0,11
	(0,10)	(0,11)
Age 45-54	-0,21*	-0,21**
	(0,10)	(0,10)
Age 55-64	-0,18	0,32
	(0,11)	(0,65)
Older than 45 * average age class		-0,01
		(0,02)
Younger than 34 * average age class		0,00
		(0,01)
Control variables as in Table 3	yes	yes

Note: *,**,*** stand for statistical significance at the 10, 5 and 1% level.

As can be seen in Table 5, having a tertiary degree increases the probability to increase one's language skills but a higher share of tertiary education graduates in class is not related to a stronger increase in language skills. Nevertheless, participants without a school leaving certificate benefit from being in a group with more tertiary education graduates.

Table 5: Education and the probability of improving the language skill by one level. Probit estimation results, marginal effects.

	Coeff. (Std.Dev.)	**Coeff. (Std.Dev.)**	**Coeff. (Std.Dev.)**
Share of participants with a tertiary education in class	0,29	0,50**	0,21
	(0,18)	(0,21)	(0,18)
Having a tertiary education	0,15***	0,28***	0,15***
	(0,05)	(0,08)	(0,04)
Tertiary * share tertiary		-0,51*	
		(0,28)	
No school leaving certificate * share tertiary			0,94*
			(0,48)
Control variables as in Table 3	yes	yes	yes

Note: *,**,*** stand for statistical significance at the 10, 5 and 1% level.

Table 6 shows that classes that are more heterogenous in terms of regions of origin improve their language skills with a higher probability. Moreover, the higher

Table 6: Number of regions of origin in class and language improvement. Probit estimation results, marginal effects

	Coeff. (Std.Dev.)	**Coeff. (Std.Dev.)**
Number of different regions of origin in class	0,05*** (0,02)	
Share of largest region of origin in class		-0,35** (0,15)
Control variables as in Table 3	yes	yes

Note: *,**,*** stand for statistical significance at the 10, 5 and 1% level.

the share of the dominant region of origin in class, the lower the improvement in language skills. Mixing participants by region of origin thus seems beneficial for language improvement. But specific differences in peer effects by region of origin can be observed as well. The share of Russian participants in class is related to a lower probability of increasing one's language skills although being Russian in itself is not related to lower language skills.To the contrary, a higher share of participants in class from Turkey is related to a somewhat higher probability of language improvement.

There is no effect of the share participants from Asia or Eastern Europe in class on language improvement. However, these regions of origin are less homogenous than the Russian or Turkisch groups since they include several countries and mother tongues. Groups with a large share of Asian or Eastern European participants may therefore still have to rely on German as their common language and will not necessarily perceive themselves as coming from the same region. These results indicate that peer effects may depend on the specific country of origin as well as on the share of the majority group. Russia is the only country of origin where a considerale share of classes have more than 40% participants with this region of origin. Such a strong dominant group may lead to less opportunities to speak German in class in breaks because the most prevalent common language is Russian or lead the teacher to adapt his teaching to specific language difficulties for this mother tongue. The data unfortunately do not allow us to test these hypotheses.

We then investigate whether grouping participants by level of initial language skill matters for skill improvement. Results are shown in Table 7. As most participants start with the language level A2 or B1, we effectively cannot investigate the effect of grouping by level of language skill for the participants with a very high or very low initial language skill level. Groups where at least 40 percent of participants have the same inital level of language skill improve their language skills significantly more than participants in groups where fewer

Table 7: Share of participants from the same region of origin on the probability of improving the language skill by one level. Probit estimation results, marginal effects.

Region of origin	**Russia**		**Asia**		**Eastern Europe**		**Turkey**	
	Coeff.	**Coeff.**	**Coeff.**	**Coeff.**	**Coeff.**	**Coeff.**	**Coeff.**	**Coeff.**
	(Std.Dev.)	**(Std.Dev.)**	**(Std.Dev.)**	**(Std.Dev.)**	**(Std.Dev.)**	**(Std.Dev.)**	**(Std.Dev.)**	**(Std.Dev.)**
>30% class from region	-0,16***	-0,18***	0,05	0,01	-0,04	-0,10	0,16*	0,17*
	(0,05)	(0,06)	(0,06)	(0,07)	(0,15)	(0,19)	(0,09)	(0,09)
Participant from region	0,07	0,03	-0,03	-0,01	0,08	0,06	-0,08	-0,07
	(0,04)	(0,07)	(0,04)	(0,05)	(0,07)	(0,07)	(0,06)	(0,06)
Region* 30% from Region		0,06		-0,02		0,15		-0,04
		(0,03)		(0,09)		(0,21)		(0,11)
Control variables as in Table 3	yes	yes	yes	yes	yes	yes	yes	yes

Note: *,**,*** stand for statistical significance at the 10, 5 and 1% level.

participants have the same level. Based on these results, it appears more effective to group pupils by ability or initial skill level than to use other criteria for group composition.

Table 7 shows that when at least 50 percent of the class usually speaks German with their friends, this has a significantly positive impact on language skills of the whole group. The impact of a high share of participants speaking German at home does not strongly affect language improvement. However, only few participants speak German at home.

We do not find significant gender peer effects. Table 8 shows that influence of the proportion of women on skill improvement is very weak. At this point, we should however recall that only 5% of the classes have less than 40% woman, so that we are comparing the performance of groups with at least 40% women.

Table 9: Gender and the probability of improving the language skill by one level. Probit estimation results, marginal effects.

	Coeff. **(Std.Dev.)**	**Coeff.** **(Std.Dev.)**	**Coeff.** **(Std.Dev.)**	**Coeff.** **(Std.Dev.)**
Share of women in class	0,15 (0,16)			
40% women in class		-0,03 (0,14)		
50% women in class			0,05 (0,08)	
60% women in class				0,07 (0,07)
Control variables as in Table 3	yes	yes	yes	yes

Note: *,**,*** stand for statistical significance at the 10, 5 and 1% level.

Table 8: Language level of peers and the probability of improving the language skill by one level. Probit estimation results, marginal effects.

	Coeff. (Std.Dev.)	**Coeff. (Std.Dev.)**	**Coeff. (Std.Dev.)**	**Coeff. (Std.Dev.)**	**Coeff. (Std.Dev.)**	**Coeff. (Std.Dev.)**
Share of participants with the same language level in class						
50% with the same language level in class	0,11* (0,05)					
60% with the same language level in class		0,12** (0,05)				
Share of participants speaking German at home						
40% in class speak German at home			0,15* (0,08)			
50% in class speak German at home				0,14 (0,09)		
Share of participants speaking German with their friends						
50% in class speak German with their friends					0,13*** (0,05)	
60% in class speak German with their friends						0,11* (0,06)
Control variables as in Table 3	yes	yes	yes	yes	yes	yes

Note: *,**,*** stand for statistical significance at the 10, 5 and 1% level.

5 Conclusion

In this paper, the aim was to asses how the group composition of language learning classes for adult migrants is related to progress in German language skills. We find that the age and skill composition of the language classes as well as the share of participants from the same region of origin significantly change the probability that participants improve their level of language skills. In particular, older groups show on average lower progress, as well as groups with a majority of Russian participants. Classes where more participants have the same starting level of language skill achieved more progress in language skills. We thus conclude that according to our findings, better results could be reached if the participants would be grouped by level of skill. Moreover, participants would increase their language skills more if the participants were mixed in terms of age, education and region of origin.

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