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Religiosity as a Bridge or Barrier to Immigrant Children's Educational Achievement?

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Abstract

Immigrant children in Europe remain in a position of educational disadvantage. Most studies underscore the role of the parents' education level and their socio-economic status in the educational achievement of their children. This paper adds to the literature by exploring other factors that reduce or contribute to educational inequality among immigrant children. Using research from the United States as a reference point, we specifically examine religiosity as a device for social mobility. Religiosity may be conducive to educational attainment in two ways: (1) religious organizations may provide guidance, support and beneficial social norms that foster the formation of social capital and sanction deviant behaviour; (2) religious participation may induce an internal locus of control that encourages students to focus on learning and resist counterproductive peer influence. Other scholars argue that ethno-religious in-group ties can be a mobility trap when human capital and socio-economic status in an immigrant community is low. Using the German National Educational Panel Study (NEPS), we take a cross-sectional perspective to test these arguments for Christian and Muslim students of immigrant origin living in Germany. Our analyses reveal that religiosity is primarily relevant for Muslims' mathematical test performance. We find that students and parents' religiosity are not necessarily a barrier to good mathematical test performance. Yet our multidimensional measure of religiosity consisting of religious engagement, praying and subjective religiosity allows us to uncover distinct relationships depending on the form of religiosity. Christians and Muslims' frequency of praying is positively linked to academic performance. Self-rated religiosity, however, is correlated with worse performance. Finally, we find that religious community engagement is related to better academic performance only when the share of co-ethnics in a residential area is low.

Keywords: Muslims; religion; educational achievement; segmented assimilation theory; social capital

1. Introdution

In the United States, many researchers have moved beyond powerful but orthodox explanations for educational disadvantage – mainly, parental socio-economic status – and have begun to examine religiosity as another device for social mobility, especially for the educational achievement of immigrant students (e.g., Bankston & Zhou, 2002; Brown & Taylor, 2007). Despite the presence of large Muslim minorities in many European countries, the role of religiosity in educational achievement in Europe has been studied primarily in relation to the majority group (i.e., without immigrant background), and to a much lesser extent in relation to immigrants (e.g., Helbig & Schneider, 2014). When studies do focus on minorities, they usually examine the reverse relationship, wherein religiosity is the dependent variable and educational achievement the independent variable (e.g., Fleischmann, 2011; Güveli & Platt, 2011).

Recent figures show that the descendants of guest workers (i.e., the second generation, if born in the country of residence), particularly those with parents from Muslim-majority countries (e.g., Turkey), lag behind the native majority group in educational achievement (Alba, Sloan, & Sperling, 2011). In Germany, Turkish minorities belong to one of the largest ethnic groups. In the highly stratified German education system, these children are generally found in lower-track schools, which obstructs their chances of upward mobility. Slightly less than 20 per cent of the Turkish second generation has obtained the *Abitur* (maturity certificate), compared to approximately 40 per cent of native children (Kristen & Granato, 2007). Moreover, children of Turkish origin in Germany are more likely to be discriminated against during the decisive transition from primary to secondary school (Sprietsma, 2013). As most Turkish, North African and some Yugoslav minorities have Islamic roots, they frequently face social exclusion and are perceived as having distinctly different values (e.g., Carol, 2016).

With the disadvantaged situation of Muslim students in mind, we seek to answer the following question: Is ethno-religious attachment a bridge or barrier to the educational achievement of Muslim and Christian students with an immigrant background living in Germany?

Much of the research on the integration of minorities in Europe has deemed attachment to an ethnic group or a religious denomination as counter-productive to social equality and underlined the importance of intergroup ties for social mobility. But North American migration studies have shed a different light on the matter. Scholarly work in

the US has been engaged in a lively debate about these contrasting perspectives and the advantages and disadvantages of ethnic attachment when it comes to integration. Indeed, this topic has been at the forefront of North American migration studies since the emergence of early assimilation theories and continues to be important in segmented assimilation theory (SAT), which was more recently introduced by Portes and Rumbaut (2001; see also Bankston & Zhou, 2002). SAT casts the role of ethnic and religious communities in a different, rather optimistic light by emphasizing that they do not necessarily hinder the achievement of immigrants and their descendants. For example, according to SAT (Portes & Rumbaut, 2001; see also Bankston & Zhou, 2002), it is precisely the ethnic and religious embeddedness of Asian Americans that is central to their success, as these communities offer strong social support, beneficial institutions, norms and forms of social control that reinforce students' devotion to education. Ethnic embeddedness helps students stay motivated in the face of discrimination or exclusion (Portes & Zhou, 1993).

But other studies, including some by SAT proponents, argue that ethnic embeddedness is generally not beneficial for educational achievement. This position is, for instance, adopted by Portes and Hao (2004), and it is also present in more recent contributions. Such studies adopt a conditional view, wherein effects depend on the resources and opportunities as well as the norms and values provided by a particular group (Kroneberg, 2008; Schulz, 2013). This argument is particularly relevant in the European context, given that Western Europe's largest and most disadvantaged religious minority – Muslims (mainly of Turkish and North African origin) – are in less favourable starting positions than Asian immigrants in the US (Alba et al., 2011) and Muslims in the US (Sander, 2010). In stark contrast to the US, religious minorities in Europe encounter a relatively secularized majority group (Foner & Alba, 2008), which might lead to discrimination that strengthens religious boundaries in education. As a result, immigrant religiosity has been identified as a barrier to integration in secularized Western Europe (Foner & Alba, 2008) but also as an anchor of stability in the aftermath of immigration (Diehl & Koenig, 2013). Yet, religiosity does not become less important in subsequent generations (Jacob & Kalter, 2013), which suggests that it will continue to affect different dimensions of integration, including educational integration.

Given that existing studies often neglect the role of immigrant religious denominations in educational achievement (cf. Schulz, 2013 for a review), we see a

promising opportunity to analyse the link between educational achievement and religiosity for Muslim and Christian immigrant children in Europe, and to test whether the mechanisms discussed in the American literature hold for other denominations and countries. This paper seeks to unravel the potential of using religiosity to explain immigrant children's educational achievement, which is key to other domains of integration. We expect religiosity to influence educational achievements by means of social capital, norms and beliefs (Bankston & Zhou, 2002).

Our contribution is fourfold. First, we bring together theoretical arguments from different debates in the sociology of religion, migration studies and social stratification research. Second, in contrast to existing research, which focuses mostly on the US, we provide novel findings on the link between educational achievement and religiosity in Germany (used as a European example) from a cross-sectional perspective. Third, we draw on cross-sections in two cohorts of students in the German National Educational Panel Study (NEPS), which include refined measurements of test performance and three different forms of religiosity. The refined measurements help us to show that religiosity is not necessarily a barrier or bridge to achievement, and that the relationship is more complex. Fourth, we include data on parental religiosity and show that this is also not a barrier to educational achievement. Our findings are relevant for countries that are home to both very religious and upwardly mobile minorities.

2. Theoretical framework: The role of religiosity in educational achievement

Consistent with previous research, we differentiate between intrinsic (e.g., identification and beliefs) and extrinsic religiosity (e.g., bonding through praying and visiting places of worship) (Saroglou, 2011) to explicate the distinct effects of religiosity on educational achievement.

In the US, there is a long tradition of research on religiosity and its effects on educational achievement. Most of these studies find a positive relationship: church attendees (Brown & Taylor, 2007; Regnerus, 2000) and students who are actively involved in religious communities (Stokes, 2008; Bankston & Zhou, 2002) outperform less religious students (Jeynes, 1999).

In Europe, the role of religiosity in educational achievement has been rarely studied. Instead, valuable research has been conducted on the reverse relationship, i.e., the effect of educational achievement on religiosity. Such research indicates ambiguous

results, depending on the national context and the minority groups in question (e.g., Fleischmann, 2011; Güveli & Platt, 2011).

In the following sections, we specify the mechanisms that may explain the relationship between educational achievement and religiosity.

2.1 The role of religious communities in educational achievement

A review of the literature reveals that social capital contributes to educational achievement in two main ways. First, religious social capital in the forms of norms and social control may bolster educational achievement. Coleman (1988) is one of the pioneers in exploring the importance of social capital when it comes to children's educational achievement. He argues that religious embeddedness can counteract educational disadvantages and thus reduce the risk of school-dropout by transmitting achievement norms, fostering social control in neighbourhoods and establishing mutual obligations (see also Muller & Ellison, 2001). Social control ensures adherence to moral codes and prevents behaviour that would undermine these rules (Bankston & Zhou, 2002). In qualitative interviews, Muslim students said they perceive religious activities as generating social capital, enforcing norms and values related to educational achievement, and reducing the risk of deviant behaviour and of wasting spare time, thereby rendering Islam a driver of educational achievement (Van Praag, Agirdag, Stevens, & Van Houtte, 2016; Shah, Dwyer, & Modood, 2010).

Segmented assimilation theory often takes a similar perspective (e.g., Bankston & Zhou, 2002; Portes & Rumbaut, 2001). If an individual is obstructed from assimilating into the American white middle class, greater involvement in an ethno-religious community may be viewed as a more promising path than downward assimilation into the lower classes. As a result, participation in American society is accompanied by 'selective acculturation', which involves retaining one's ethnic – and possibly also religious – identity and ties (Portes & Rumbaut, 2001). Previous studies support segmented assimilation theory by showing that parents' community engagement (Werum, Davis & Cheng, 2011), social control and ethnic community resources can promote educational achievement among descendants of immigrants (Portes, Fernández-Kelly, & Haller, 2009; Portes & Rumbaut, 2001; see also Fleischmann, Deboosere, Neels, & Phalet, 2013; Levels, Dronkers, & Kraaykamp, 2008).

Second, religious community centres might directly mitigate lags in educational achievement by providing language classes or offering counselling and additional skills training (Bankston & Zhou, 2002), which in turn might reduce the primary effects of ethnic origin (Kristen et al., 2011; Boudon, 1974). Religious organizations such as churches and mosques might also act as a buffer against inequality by providing practical advice, such as expertise on the education system, which immigrants sometimes lack (Bankston & Zhou, 2002). Knowledge about the school system counteracts the so-called secondary ethnic effects that cement social inequality (Kristen et al., 2011; Boudon, 1974). Children who are involved in a religious denomination might also gain access to mentors and role models (Erickson & Phillips, 2012). Religious organizations can serve as foci for establishing contacts with upwardly mobile individuals. According to Wuthnow (2002), churches (and perhaps mosques) are able to bring together people of different social statuses, which contributes to the flow of resources between social classes. This suggests that achievement increases with students' and their parents' engagement in religious communities.

But not all effects of ethno-religious attachment are positive. Portes and Rumbaut (2001) acknowledge that this path offers opportunities that are contingent on the community's economic strength, social status and its accumulated experience in intergenerational upward mobility (see also Kalter & Kogan, 2014; Kroneberg, 2008). If these conditions do not exist for a particular minority group, then bridging ties to the majority population are more likely to provide the group access to social capital.

Similarly, Coleman (1988; see also Sikkink & Hernández, 2003) states that only the inter-linkage of foci such as residential area, school and religious community ensures the level of control necessary for the effective facilitation of educational achievement. Coleman's theory, however, does not account for the specificity of one's status as a religious or an ethnic minority. Smith (2003) helps us to refine Coleman's argument. He claims that interactions in residential areas might override the positive effects of religious involvement by promoting competing moral orders that can be prevalent among minority youth (Baier & Pfeiffer, 2011).

Accordingly, we hypothesize that religious embeddedness combined with ethnic embeddedness (i.e., residential segregation) does not result in better educational achievement.

2.2 The role of religious devotion in educational achievement

Many scholars have connected the effects of religiosity on education to personality traits that are conducive to learning and competence development. According to these studies, religious individuals are more likely to have an internal locus of control (attribution of success and failure to personal effort) than an external locus of control (attribution of life outcomes to luck and to forces outside one's influence) (Coursey, Kenworthy & Jones, 2013). An internal locus of control tends to be accompanied by a strong work ethic, which in turn improves performance in school (Jeynes, 1999, see 2002 for a review). An internal locus of control might be even more important in adolescence, when students struggle with their identities and are exposed to peer influence.

The idea that religious denomination can affect both individual life chances and societal stratification is a classical but contentious argument in sociology. Weber (2012 [1920]) has argued that religious leaders can put forward norms of self-responsibility by promoting rules for life (e.g., educational aspirations, career orientations) and certain personality traits (e.g., internal locus of control, volition, self-discipline) that also strengthen educational success. With this in mind, religious devotion is (independent of other forms of religiosity) not automatically the mobility trap that it is often viewed as (e.g. Garcia-Munoz & Neuman, 2013).

Accordingly, we hypothesize that religiously devoted (i.e., praying) students are more likely to demonstrate better educational achievement.

2.3 The role of subjective beliefs in educational achievement

Nevertheless, there is reason to believe that studying religious scriptures may distract students from academic work and confront them with values, e.g., obedience, that conflict with critical thinking and scientific rationalism (Beyerlein, 2004; Lehrer, 1999; Sherkat & Darnell, 1999). Conversely, attending school might expose students to secular individuals and ideas (see also Güveli & Platt, 2011), such as humanism, cultural tolerance and Darwin's theory of evolution. According to Sherkat and Darnell (1999), fundamentalist parents have an interest in downplaying education that is antagonistic to their beliefs, thereby limiting their financial and social investment in children's education or even

punishing their children for secular educational attainment that puts God's word or their parents' will into question.

> *First, this leads us to expect a withdrawal of (intrinsically religious) believers from secular education, resulting in worse educational achievement. Second, parents' strong religious beliefs have a negative impact on children's educational achievement.*

Leaving the US aside, a recent study (Koopmans, 2015) has shown that fundamentalist beliefs are more widespread among Muslim minorities compared to the Christian majority groups, which suggests that the negative relationship between subjective religiosity and achievement is more plausible for Muslim minorities. There is one study, by Mukhopadhyay (2010), that does find lower educational attainment along with higher levels of religiosity among Muslim immigrants. But it suffers from shortcomings. Instead of employing different measures of religiosity, it measures religiosity only by attendance of religious services, which is of limited use when studying newly arrived immigrants who may have difficulty finding a place of worship. Moreover, the dependent variable primarily measures minorities' education that was obtained outside the US.

The negative relationship between educational achievement and subjective religiosity is also particularly plausible for Muslim minorities because Islamic religiosity is a strong symbolic marker in a society that is predominantly Christian or secular, and it thus contributes to the cementation of a brighter boundary (see Alba, 2005). The once meaningful divide between Protestants and Catholics may have shifted to a divide between Christians and Muslims, as Catholics made up the leeway (e.g., Coleman, 1988). Finally, Muslims' on average more disadvantaged socio-economic situation might result in a negative effect of being embedded in the Muslim community as it offers little access to beneficial resources. But here the primary explanation should be the socio-economic resources of the community, not the religion per se (see Figure A1 in the appendix). In conclusion, differences in educational achievement might be more persistent among Muslim as compared to Christian students, and religiosity – particularly subjective religiosity (less so religious devotion) – might be less effective at, or even obstructive to, reducing these differences.

2.4 Concluding remarks on the role of religiosity in educational achievement

In sum, the research is inconclusive with regard to the effects of religiosity on educational achievement. While some studies find higher educational achievement among religious students, others find less educational achievement among religious students. Not all individuals who practise their faith share religious beliefs that contradict scientific rationalism; it is certainly possible to believe without belonging (identification with a denomination), and vice versa (Storm, 2009). While extrinsic religiosity in the form of prayer or attendance of religious services might not be in significant conflict with education, strong religious beliefs and identification with a denomination can collide with the goals of secular education. Hence, a differentiated measurement of religious and ethnic embeddedness is crucial for revealing the actual ways in which religiosity impacts educational achievement. Corresponding effects might differ across forms and measures of religiosity and for religious and ethnic embeddedness as well as denominations (e.g., McFarland, Wright, & Weakliem, 2011). Figure A1 (in the appendix) summarizes these arguments.

The effects of religiosity might also differ across measurements of educational achievement and work independently of each other. The few European studies on the link between educational achievement and religiosity (wherein educational achievement is the dependent variable) have focused on attendance of higher-track secondary schools (*Gymnasien*) and grades (Ohlendorf, Koenig, & Diehl, 2017; Schneider & Dohrmann, 2015; Werum et al., 2011). However, the selection process for such schools, which occurs as children switch from primary to secondary school, as well as grading, sometimes involves discrimination against Turkish students (Sprietsma, 2013). Because of such discrimination as well as self-selection, *Gymnasium* attendance and grades are not clear-cut indicators of achievement in the way that test performance is. Moreover, other studies have not scrutinized religiosity's effects on test performance by denomination (e.g., Helbig & Schneider, 2014).

As mentioned earlier, most of the studies discussed in this paper focus on Christians in the US or have shortcomings in how they measure achievement and religiosity. With this in mind, the present study makes four distinct contributions. First, we bring together theoretical arguments from different debates. Second, we apply these debates to Europe by studying minority children of different origins in Germany. Third,

we differentiate between dimensions of religiosity and educational achievement. Fourth, we investigate the influence of parental religiosity.

3. Immigrant children in Germany

The gap between majority and minority children in Germany remains larger than in other OECD countries (Bertrand, Ischinger & Martin, 2012). Social origin has been the primary cause of the gap. On average, minority children grow up in families with less human capital, weaker integration into the labour market and less conducive home environments for learning. Attendance of a lower-track school (*Hauptschule*), where immigrant children are often found in concentration, increases the cumulative educational disadvantage over the course of life and leads to poorer career opportunities. The highly stratified German education system makes it difficult to switch to the intermediate-track school (*Realschule*) or the highest-track school (*Gymnasium*).

Germany's immigrant population is mainly composed of ethnic Germans (people with German ancestry from Eastern Europe, called *Aussiedler*) and former guest workers from Italy, Spain, Greece, Turkey, Morocco, Portugal, Tunisia and Yugoslavia,[1] plus their reunified families and their descendants. Across immigrant generations, the two largest groups are ethnic Germans from Eastern Europe and the Turkish minority. Approximately 3,219,000 ethnic Germans from Eastern Europe and 2,998,000 Turkish immigrants and their descendants live in Germany (Statistisches Bundesamt, 2013, pp. 55, 59).

Although the second generation is trying to catch up with native students, children from the Turkish minority still have one of the least promising starting positions (Alba et al., 2011; Kristen & Granato, 2007). Particularly individuals of Muslim origin are more likely to be discriminated against on the labour market (e.g., Wright, Wallace, Bailey, & Hyde, 2013). The activation of community resources (e.g., social norms and control, provision of information on the school system, tutoring and role models) may provide them a way to escape from the lowest rungs of the social ladder. As many scholars emphasize, however, the lack of resources within these communities may in fact worsen educational achievement.

4. Data

[1] http://www.bpb.de/gesellschaft/migration/dossier-migration/56377/migrationspolitik-in-der-brd).

For our analyses, we used data from the National Educational Panel Study in Germany (NEPS), for which stratified random samples of regular schools were drawn and cluster sampling was applied[2] (Blossfeld, von Maurice & Schneider, 2011). We analysed a sample of students, which was interviewed in the fifth school year for the first time and is called the third starting cohort (SC3) and a sample of students, which was interviewed in the ninth school year for the first time and is called the fourth starting cohort (SC4). SC3 began in school year five in 2010 when students were about 10 years old and represents young adolescents, and SC4 began in school year nine in 2010 when they were about 15 years old and represents older adolescents. Since then, they have been interviewed repeatedly (at multiple time points = waves). As we will explain below and in Table A1 in the appendix, our variables have been gathered in different waves. We will refer to the term age groups instead of starting cohorts and distinguish between students who are primarily 10-13-year-olds (SC3) and 14-17-year-olds (SC4) during the investigated time period. Despite the general panel design of NEPS, our analyses are cross-sectional because our main explanatory variables on religiosity have only been asked once so far. Therefore, longitudinal data are not yet available.

We focused exclusively on minorities to avoid conflating immigrant background with religious denomination (most Muslim minorities have an immigrant background, while most Christians are natives). This strategy allowed us to include more immigrant-specific variables that were not gathered for native students (e.g., immigrant generation, share of co-ethnic neighbours). Inter-group differences are primarily linked to denomination, not immigrant status, as the results are similar for Christian natives and Christian immigrant children (both performing better than Muslims). We also bundled Protestants and other Christians together, as the multivariate analyses do not show significant differences in performance between these groups (results not shown), which lends credence to the claim that the boundary between Christians and Muslims is stronger than that between Protestants and other Christians, mainly Catholics.

We studied a sample of 657 students of immigrant origin in school year five (SC3) who were asked about their religiosity when they were interviewed for the second time (wave 2). 383 children were Christian, 195 were Muslim, and 79 reported no religious

[2] For further information, please visit: https://www.neps-data.de/en-us/datacenter/studydocumentation/startingcohortgrade5/studydescription.aspx, accessed 11.01.2015.

affiliation. Jewish students, students of other faiths and students who did not provide information about their denomination were excluded from the analyses. Among students without religious affiliation, students from the former Soviet Union were overrepresented. But because they answered questions about religiosity, we were able to include them in our analyses. The majority of those reporting no affiliation could be called atheist, as they classified themselves as not (particularly) religious (about 81 per cent).

Our analyses of age group 14-17 (SC4) are based on 2,324 students of immigrant origin who described themselves as Christian (1,291) or Muslim (682), or did not indicate a religious affiliation (351). Overall, about 85 per cent of the students in the fourth cohort who did not indicate a religious affiliation described themselves as not (particularly) religious, which means that this category can be classified as atheist. As compulsory schooling ends after the ninth school year in some federal states, our sample splits into those who stay in school (stayers) and those who leave school (mostly without or the lowest degree). We call this group 'leavers'. Stayers were interviewed in personal paper-and-pencil interviews (PAPI) every school year and school leavers were interviewed in computer-assisted telephone interviews (CATI). Pooling these different samples and age groups provides us with a unique data source consisting of 2,981 students of immigrant origin.

We also looked into the role of parents by using the parental data for the age group 10-13 (parental data for students in age group 14-17 include no information on religiosity). The parental analyses were based on 467 cases, among those 260 complete cases of Christian parents and 97 of Muslim parents who provided information on their religious denomination, religiosity and whose children participated in performance tests.

5. Operationalization

As we use variables from different waves, Table A1 (in the appendix) provides a detailed overview. We operationalized our dependent variable, achievement, through *mathematical test performance.* For age group 10-13 the test performance was gathered in wave 3 and for age group 14-17 (SC4) it was gathered in wave 1 (see Table A1 in the appendix). The scores are based on the NEPS cognitive tests and corrected for test positioning, using weighted maximum likelihood estimates (WLE). We chose test performance in maths rather than German or other subjects, as it depends to a lesser extent on language skills, which eases inter-group comparisons (e.g., Levels et al., 2008).

The values in our sample range from -4.06 (worst performance) to 4.80 (best performance).

Our second dependent variable is *school leaving* after compulsory education. The value of the variable is 1 if individuals have left school after year nine (many of them without having even the lowest school certificate), and 0 if they are still enrolled in school (and aiming for a higher secondary school certificate).

The central explanatory variables are children's and parents' religiosity, measured by the means of subjective religiosity (as a proxy for intrinsic religiosity and beliefs), praying frequency and engagement in a religious community (SC3/age group 10-13, wave 2; SC4/age group 14-17, wave 3). Moreover, we distinguished between Christians and Muslims. Subjective religiosity was assessed by asking the question 'How religious would you say you are?', on a scale from 0 (not at all religious) to 3 (very religious). Respondents could also rate their praying frequency on the following scale: 0 (never), 1 (once a year or less), 2 (several times a year), 3 (several times a month), 4 (once a week), 5 (more than once a week) and 6 (every day). We made sure that higher scores indicate higher levels of religiosity. The other behavioural measure of religiosity was captured in the question 'Are you an active member of a religious community? Do you, for instance, regularly go to meetings or events?' Respondents could answer 0 (no) or 1 (yes). This measure approximates the organizational form of religiosity as a potential source of social capital.[3]

We included variables for gender (1=female; 0=male), immigrant generation (first, second and third), cohort/age group at the time of the measurement of variables (1=SC3/ age group 10-13; 0=SC4/age group 14-17), number of books at home excluding magazines, newspapers and textbooks (0=a few; 1=some; 2=many),[4] whether students attend a higher-track secondary school/*Gymnasium*[5] and parents' ethnicity (Turkish, Former Soviet Union, Former Yugoslavia, Eastern European, Southern European, Middle Eastern, Western Europe, Asian, other). We replaced missing information for these

[3] We checked for multicollinearity of these measures in a regression model with list-wise deletion, but all VIF scores were around 2.

[4] We decided to use this measure instead of parental education for two reasons. First, the parental education variable had too many empty cells at the higher educational levels for immigrants, especially for Muslims. Second, this item is particularly difficult to answer for children and thus contains much larger fractions of missing values. It is more difficult for children to provide information on their parents' educational degrees if the education systems between the home country (of their parents) and the receiving country (Germany) greatly differ. As this difference is generally larger for Muslim students than for Christian students, measurement bias and missing data are more likely among the former than the latter.

[5] We simply distinguished between those who attend *Gymnasien* and those who attend *Realschulen*, *Gesamtschulen* or *Hauptschulen*, as the direction of effects of the latter three do not differ.

variables with information from the previous or subsequent waves whenever available. Moreover, ethnic embeddedness was captured by the question 'How many people from your group of friends come from an immigrant background, i.e., were born abroad or have at least one parent who was born abroad?', ranging from 0 (none) to 6 (all). Ethnic embeddedness in a residential area was measured by the question 'How many people from your residential area emigrated from the same country of origin as your family?'. Unfortunately, the answers were assessed on different scales for age group 10-13 (1 "no co-ethnics" – 6 "all"), their parents (1 "no co-ethnics" – 6 ">40%) and age group 14-17 (1 "<10% - 6 ">50%"). To replace missing values for parents and students in age group 10-13, we had to harmonize the scale for age group 10-13, which led to a scale with three categories ranging between 0 (almost no co-ethnics), 1 (some co-ethnics) and 2 (many co-ethnics).[6] For students, we measured both questions simultaneously with religiosity (see Table A1 in the appendix for a detailed overview). Parents' ethnic embeddedness in a residential area was measured after the other variables were observed (SC3/age group 10-13: wave 4/6). However, we could assume that the ethnic composition of parents' neighbourhoods has not changed substantially over time because residential mobility among minorities is lower than among the majority group (Şaka, 2012). In addition, we controlled for language skills based on 'vocabulary listening comprehension at word level' in German, ranging between 7 and 85 in our sample (sum score).

We also estimated interactions between number of books (frequently used as a proxy for socio-economic status) and religious denomination (Christian, Muslim) because education has different meanings for different minority groups depending on the education system in their countries of origin. If the education system in the country of residence differs from the system in the minority group member's country of origin, the individual will lack knowledge about the former. This means that minorities are equipped with different resources, and it implies that we should not estimate a general effect of socio-economic background, but rather estimate one that can vary across groups. Luthra and Soehl (2015) have made this argument in relation to the native–immigrant divide,

[6] The questions regarding the number of books and the share of co-ethnics in residential areas were originally measured with more fine-grained measures, but on different scales for parents and students in age group 10-13 (SC3) and age group 14-17 (SC4). Thus, we had to harmonize the scale for pooled analyses. But results were similar if we use the more finely graduated measures in separate models for age groups 10-13 and 14-17.

and we transferred it to the different denominations. As denominations might differ in their resources, they should be affected to different degrees by socio-economic origin.

To test our hypothesis about the different relationships between ethnic and religious embeddedness with test performance, we also included an interaction between co-ethnics in the residential area and religious community engagement.

6. Method

We estimated ordinary least-squares regressions. Whenever possible, missing information was replaced with information collected in other waves. We use list-wise deletion in our models[7] and reported the estimates with clustered standard errors at the schools level. We did not weight the analyses because the full sample was not used in the analysis, and the constructed weight is not independent of some of the variables used in the analyses (see Steinhauer, Aßmann, Zinn, Goßmann & Rässler, 2015).

Overall, we first estimated combined models for Christians, Muslims and atheists (Table 2), followed by separate models for Christians (Table 3) and Muslims (Table 4). Table 3 and 4 begin with a common model for the two age groups (Model 1). In additional models, we conducted robustness checks to see whether the coefficients of our explanatory variables vary for the younger cohort (Model 2). We estimated the role of parental religiosity separately from children's religiosity because they are connected to each other (Model 3). Lastly, among age group 14-17 we distinguish between those who remain in school (Model 4) versus those who have left school (Model 5). In the last step, we analysed to what extent school leaving correlates with religiosity for leavers versus stayers (Table 5).

7. Results

[7] Alternatively, we used multiple imputation by chained equations and full-information maximum likelihood (FIML). Both approaches led to similar findings. The share of missing values of the imputed variables are as follows: 0.1% for German vocabulary, 0.5% for subjective religiosity, 0.6% for gender, 3% for praying frequency, 3.3% for the number of books and engagement in a religious community, 6.7% for share of friends with migration background, 22.7% for share of co-ethnics in residential area, 34.4% for parents' share of co-ethnics in the residential area, 43.4% for parents' subjective religiosity, 46.8% for parents' engagement in religious community and 47.1% for parents' praying frequency (if parental non-response in the survey is included in the calculation of missings). For the latter, one should keep in mind that this does not only reflect item non-response, but also two further waves of panel attrition. We dropped all cases, which have missing values for the religious group variable (6.9% of those who specified an immigrant origin) and our dependent variable of maths test performance (9.3% in the religious groups we investigate).

7.1 Denominational differences in mathematical test performance

On average, Christian students amount to 0.05 (Table 1) on a standardized scale of maths test performance (corrected weighted likelihood estimate, ranging from -4.06 ['worst performance'] to 4.80 ['best performance'] in our sample). With an average score of -0.63, Muslims have a significantly lower average performance than Christians and atheists (see also Table 2, Model 1). Atheists/non-affiliated show a mean test score of -0.05 (Table 1). The following analyses attempt to explain students' performance by investigating the role of religiosity and holding immigrant background constant.

-- Table 1 about here --

Source: Compiled by the authors, using NEPS data.

-- Table 2 about here --

Source: Compiled by the authors, using NEPS data.

Note: Clustered standard errors (school level) in parentheses, + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

7.2 Mathematical test performance and religiosity

We then move onto the central question of this study: What role does religiosity play in maths performance? To answer this complex question, we pay attention to different dimensions of religiosity.

-- Table 3-4 about here --

Source: Compiled by the authors, using NEPS data.

Note: Clustered standard errors (school level) in parentheses, + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, †n<40.

Beginning with the role of *parents' religiosity*, we conclude in the common model for Christians and Muslims that parental religiosity is neither a detriment to students' test performance nor a boost to their children's test performance (Table 2, Model 4). However, we find that the religious community engagement of Christian parents affects children's achievement positively if parents report living in areas with a low share of co-ethnics (Table 3, Model 3; Figure 1).

When we more closely examine the differences between students' religiosity measures, we see that the relationships between subjective religiosity, praying frequency or community engagement on the one hand, and maths performance on the other hand,

differ in their significance and direction across groups. *Subjective religiosity* is negatively associated with Muslims' test performance, which affirms our hypothesis (Table 4). This applies primarily to Muslim students in age group 14-17 (Table 4, Model 4), but not to their Christian counterparts (except for those who have left school) (Table 3, Model 5). The finding partly resonates with our hypothesis that intrinsic forms of religiosity (religious beliefs) are associated with poorer performance because students might be distracted by or confronted with competing moral orders and put greater emphasis on religiosity than school performance.

When we turn to religious practice by examining *praying frequency*, the picture looks quite different, but again partly affirms our hypothesis. Praying frequency is related to a better maths performance of both Christian leavers (Table 3, Model 5) and Muslim students (Table 4).

In addition, we expected to find that students who are engaged in *religious communities* are able to access social capital and are subject to social control, which should result in better school performance net of the ethnic composition in the residential area. Put differently, we wanted to understand if attachment to the religious community adds something on top of ethnic embeddedness, something we are not yet aware of. The answer is yes: such attachment does add something extra for Muslim students in the highest year approaching the end of compulsory education, i.e., older cohort (Table 4, Model 4). But this is not the case for Christian students (Table 3). For Muslim students and Christian parents alike, the role of engagement in the religious community depends on the ethnic composition of residential areas, as our interaction effects visualized in Figure 1 illustrate.

-- Figure 1 about here --

Source: Compiled by the authors, using NEPS data.

Note: Clustered standard errors (school level) in parentheses; controlled for other variables included in the model for Christian parents (Table 3, Model 3) and Muslim students (Table 4, Model 4).

Muslims' community engagement relates to better test performance when the share of co-ethnics is low (Table 4, Model 4).[8] By contrast, among Muslim students who

[8] However, the difference is significant only if the share of co-ethnics is low. Differences between religiously engaged and unengaged students are not significant if the share of co-ethnics is high. This means that religiously engaged students have an advantage in less segregated residential areas, but not in highly

report living in areas with higher shares of co-ethnics, test performance grows worse (Figure 1), as we would expect based on previous literature about the downsides of ethnic embeddedness (e.g., Kalter & Kogan, 2014). Among Muslim school leavers, community engagement is associated with poorer performance, but the sample size is too low for us to draw any robust conclusions (Table 4, Model 5). Therefore, community engagement plays a different role for early school leavers and for students who continued their education after year nine. Muslim students are more likely to leave school early if they indicate a higher level of subjective religiosity that is not mirrored in religious practices (Table 5, Model 1). This means they are not necessarily a group of very pious students, but rather a group of low-achievers or even students who have failed in school.

--Table 5 about here ---

Source: Compiled by the authors, using data from NEPS.

Note: Clustered standard errors (school level) in parentheses, + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

In sum, the findings for Muslim students in age group 14-17 and for Christian parents lend partial support to segmented assimilation theory, given that community engagement is associated with better performance. At the same time, however, our findings clearly contradict the idea that ethnic embeddedness has advantages as such. In fact, an increasing share of co-ethnics undermines the advantages of religious community engagement, and the overlap between these foci might actually worsen performance (the slopes for co-ethnics decline more steeply for religiously engaged Muslim students just as it does for religiously engaged Christian parents; see Figure 1). These findings support the (conditional) view that the effect of religious communities on educational achievement depends on the resources and orientations of the community members. In line with our alternative hypothesis, we can show the opposite effects of religious and ethnic embeddedness and separate out religious effects from ethnic effects. Our paper thus demonstrates the complexity of residential and religious processes, and it calls into

segregated residential areas. In the latter, the sample size is also lower (n=102) due to lower segregation levels in Germany. For age group 10-13, the positive coefficient for religious community engagement becomes insignificant once the conservative control of vocabulary comprehension is included (result not shown).

question the assumption that ethnic or religious communities are generally beneficial or generally detrimental, at least for students in Germany.

7.3 Ethnic differences in mathematical test performance

As most research has focused on ethnic origin, we estimated additional models that include dummies for ethnic origin. Since ethnic origin substantially overlaps with denomination (though there is variation), we only use ethnicity in the group-specific models for Christians and Muslims. These models (Table 3 and 4, Model 1) show that there is limited variation across the larger ethnic groups, which supports our focus on religious denomination as a relevant category. But there are two notable findings. In line with research from the US (e.g., Portes & Rumbaut, 2001), we observe a marginally significant Asian lead over Christian students whose parents originate in the former Soviet Union while Turkish Christians perform worse (Table 3, Model 1). Apart from these two findings, coefficients do not vary significantly across ethnic groups.

7.4 Socio-demographic determinants of mathematical test performance

The most important socio-demographic variable – our measure for socio-economic status – cannot fully explain denominational differences. Table 2 (Model 1) reveals that a significant gap persists between Muslims and non-Muslims regardless of the operationalization of socio-economic status (measured by the number of books or HISEI, please see Table A2 in the appendix), which has also been observed for employment (König, Maliepaard, & Güveli, 2016). Comparing the standardized coefficients (results not shown) reveals that the standardized coefficients for socio-economic status and religiosity are similar in size and sometimes even higher, as is the case for Muslims in age group 14-17. This shows that religiosity can complement socio-economic explanations of educational achievement.

8. Discussion

These findings have strong implications for our knowledge of educational achievement among adolescents of immigrant origin. As social scientists, we are inherently interested in social inequality between groups. While many studies have examined ethnic inequality in society, few European studies have acknowledged the role that immigrants' religious denominations play in social stratification. In most cases, ethnicity has been discarded as

a barrier to good educational achievement. But this does not necessarily hold true if we shift the focus to the religious denominations of ethnic minorities. Our study fills this research gap by drawing on various subjective and manifest measures of religiosity and by using a comprehensive measurement of mathematical skills. The latter is based on test results, which are superior to the less objective measure of grades; test scores are independent of, among other things, grading of teachers.

We take three lessons from our analyses of the relationship between religiosity and mathematical test performance. First, s*tudents' religiosity per se is not necessarily a barrier to educational success*, although Muslims' subjective religiosity seems to be linked to worse test performance in age group 14-17. Islam, then, might be an important marker only when a student reaches late adolescence. With regard to external forms of religiosity, religious devotion, approximated by praying frequency, is linked to better test performance among Muslims and Christian leavers. Overall, this confirms our hypothesis.

The relationship between engagement in religious communities and test performance is more complicated. It is interlinked with residential segregation for Muslim students in age group 14-17: religious community engagement is positively correlated with maths test performance if students live in residential areas with a low share of co-ethnics. These residential areas (especially religious communities based there) offer more opportunities for inter-ethnic contact, which might offer resources and orientations that strengthen educational achievement. Students who are not involved in the religious community but are embedded in an ethnic residential area might be worse off than both their peers who participate in the life of the mosque and live in less segregated residential areas. We interpret this as tentative support for segmented assimilation theory; religious ties might offer access to social capital that has the potential to buffer the educational disadvantage. By contrast, co-ethnics in the place of residence are associated with worse test performance among Christians and religiously engaged Muslim adolescents, but not among Muslims who are not religiously engaged (in age group 14-17).

The reverse was true for Muslims in the sub-sample of school leavers (primarily *Hauptschule* graduates with the lowest certificate and dropouts). Additional analyses revealed that students are more likely to leave school if they describe themselves as religious, but do not adhere very strongly to external forms of religiosity. From these findings, we learned a second important lesson: Muslim religiosity could be an important part of students' social identity when experiencing school failure or difficulties in the

transition from school to work, which hints that it may not only distract students by presenting competing moral orders, but also be reactive in nature (see Portes & Rumbaut, 2006, on reactive ethnicity). Therefore, *religiosity can come in two forms: as a buttress of conformity, and as a compensator or an anchor.*

These findings point to an important caveat: strictly speaking, we cannot treat the associations as causal due to our cross-sectional design. Of course, the results might depict a scenario where students do not perform better because of their access to social capital, but it could also be selection effects: religious students who aspire to structural and social integration move into less segregated residential areas to fulfil their aspirations. But we controlled for socio-economic background and inter-ethnic friends; the latter can be considered a good indicator of integration. In this way, we captured potential selection effects arising from a stronger wish to integrate. At the very least, we can conclude that religiosity is not necessarily a barrier – an important fact to know. The inclusion of future waves of NEPS data will allow us to study these mechanisms from a longitudinal perspective. Even in longitudinal data, however, it is often the case that not enough change can be observed, especially if students were surveyed at short intervals. We have tried to address this as well as possible by including students from two different school years and by comparing early school leavers to students who continued schooling after age group 14-17.

As this discussion clearly shows, future research should more closely investigate how religiosity affects children's upbringing and socialization, and how it produces high achievers. Better measurements of religiosity would also allow us to detect the mechanisms that explain the relationship educational achievement and religious commitment, i.e., whether religious ties lead to help with homework, boost motivation, exert social control or improve knowledge of the education system.

Third, we learned that *parental religiosity* is mostly unrelated to students' maths achievement – with one notable exception. Christian parents are often more engaged in religious communities than their children are, and this seems to pay off in better educational achievement if families live in residential areas with low shares of co-ethnics. In such areas, immigrants may get access to social capital such as helpful ties and information about schooling, which is all the more likely in middle class Christian parishes. But we must keep two things in mind when we study the role of parental religiosity. First, the sample of parents is somewhat selective and small, with Muslims

underrepresented, as in other school surveys. Second, Christians are an ethnically relatively heterogeneous sample, which does not allow us to test to what extent the effect of ethnic embeddedness might differ across the various immigrant groups. Some groups are certainly more clustered than others. Yet, the existing data sources on immigrant youth lack the necessary oversamples of these groups to undertake such an endeavour.

Although the measurements are subject to improvement, we would like to emphasize the novelty of this study and the contribution it makes to the literature on social stratification. Future research should not neglect immigrant religiosity. No other study of this size has investigated the role of religiosity for performance tests in Europe. Importantly, we can conclude that it is primarily Islamic religiosity that relates significantly to educational achievement, whereas it plays only a minor role among Christians. This finding appears plausible in the context of previous research, which has revealed higher levels of religiosity among Muslims (e.g., Jacob & Kalter, 2013) (possibly due to exclusion, see Diehl & Koenig, 2013) and the perception of Islamic religiosity as a strong symbolic marker in Western European societies with a Christian heritage (Van Praag et al., 2016). Given the large number of Muslim minorities in Western Europe and the heated debate about religiosity as a barrier to integration (Foner & Alba, 2008), this study has important implications for other European countries. In contrast to previous studies from the US, we show that subjective religiosity can indeed constitute a barrier, but that, overall, the religious practices of Muslims are not necessarily a barrier to achievement.

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Tables and figures

Table 1: Descriptive statistics of the variables

			Atheist		Christian		Muslim	
	MIN	MAX	Mean/ %	SD	Mean/ %	SD	Mean/ %	SD
Math Competency (WLE corrected)	-4	5	-0.05	1.25	0.05	1.22	-0.63	0.99
Subjective religiosity	0	3	0.63	0.80	1.54	0.85	2.24	0.72
Praying frequency	0	6	1.11	1.75	2.52	2.04	3.10	2.13
Engagement in religious community	0	1	5%		24%		46%	
Parents' subjective religiosity	0	3	1.93	0.92	2.68	0.80	3.03	0.68
Parents' praying frequency parent	0	6	2.15	2.33	3.13	2.22	3.85	2.36
Parents' engagement in religious community	0	1	20%		29%		36%	
Female	0	1	50%		52%		50%	
Number of books at home	0	1	1.22	0.84	1.30	0.82	0.80	0.80
1st generation	0	1	22%		19%		16%	
2nd generation	0	1	24%		29%		59%	
3rd generation	0	1	54%		51%		24%	
School type: *Gymnasium*	0	1	37%		39%		21%	
Share of friends with migration background	0	6	2.50	1.56	2.50	1.61	3.38	1.65
Share of co-ethnics residential area	0	2	0.59	0.73	0.66	0.78	1.07	0.79
Parents' share of co-ethnics residential area	0	2	0.53	0.71	0.59	0.76	0.99	0.81
Vocabulary German (Sum)	8	85	54.26	11.25	54.38	10.61	43.04	11.05
Age group 10-13	0	1	18%		22%		25%	
Turkish	0	1	12%		2%		62%	
Former Soviet Union	0	1	18%		24%		1%	
Former Yugoslavia	0	1	6%		6%		11%	
Eastern Europe	0	1	12%		23%		0%	
Southern Europe	0	1	7%		12%		1%	
Middle East and Maghreb	0	1	5%		1%		13%	
Western countries	0	1	9%		10%		0%	
Asian	0	1	9%		2%		4%	
Other	0	1	21%		20%		8%	

Table 2: Mathematical test performance among atheists, Christians and Muslims

	(1) Age group 10-13 and 14-17	(2) Age group 10-13 and 14-17	(3) Age group 10-13	(4) Parents of age group 10-13	(5) Age group 14-17
Christian (ref. atheist)	0.034			-0.020	
	(0.056)			(0.140)	
Muslim (ref. atheist)	-0.151*			-0.614***	
	(0.064)			(0.175)	
Subjective religiosity	-0.053*	-0.057*	-0.036		-0.075*
	(0.027)	(0.026)	(0.046)		(0.032)
Praying frequency	0.025**	0.026**	0.006		0.032**
	(0.009)	(0.009)	(0.018)		(0.011)
Engagement in religious community	-0.027	-0.032	-0.110		0.004
	(0.043)	(0.042)	(0.091)		(0.050)
Parents' subjective religiosity				-0.086	
				(0.071)	
Parents' praying frequency				-0.018	
				(0.026)	
Parents' engagement in rel. community				0.026	
				(0.122)	
Female (ref. male)	-0.357***	-0.359***	-0.309***	-0.364***	-0.364***
	(0.036)	(0.036)	(0.078)	(0.089)	(0.040)
2nd generation (ref. 1st gen.)	0.087+	0.086+	0.079	-0.067	0.099*
	(0.045)	(0.045)	(0.120)	(0.160)	(0.047)
3rd generation (ref. 1st gen.)	-0.007	-0.012	0.030	0.053	-0.018
	(0.047)	(0.047)	(0.123)	(0.150)	(0.050)
School type: Gymnasium (ref. others)	0.957***	0.955***	0.958***	1.148***	0.938***
	(0.059)	(0.058)	(0.086)	(0.099)	(0.071)
Age group 10-13 (ref. 14-17)	0.688***	0.690***			
	(0.052)	(0.053)			
Vocabulary German (Sum)	0.027***	0.027***	0.036***		0.025***
	(0.002)	(0.002)	(0.004)		(0.002)
Share of friends with migration background	-0.011	-0.009	0.027		-0.023+
	(0.011)	(0.011)	(0.024)		(0.013)
Share of co-ethnics residential area	-0.083***	-0.081***	-0.042		-0.095***
	(0.020)	(0.020)	(0.045)		(0.023)
Few books	Ref.			Ref.	
Some books	0.175***			0.302*	
	(0.040)			(0.126)	
Many books	0.175***			0.499***	
	(0.043)			(0.121)	
Atheist # Few books		Ref.	Ref.		Ref.
Atheist # Some books		0.006	0.108		-0.015
		(0.115)	(0.328)		(0.126)
Atheist # Many books		0.110	0.190		0.090
		(0.107)	(0.299)		(0.121)
Christian # Few books		-0.081	-0.301		-0.031
		(0.098)	(0.298)		(0.103)
Christian # Some books		0.198	0.293		0.185
		(0.131)	(0.371)		(0.144)
Christian # Many books		0.136	0.462		0.049
		(0.113)	(0.328)		(0.126)
Muslim # Few books		-0.203*	-0.307		-0.174+
		(0.098)	(0.292)		(0.105)
Muslim # Some books		0.204	0.266		0.189

		(0.126)	(0.348)		(0.138)
Muslim # Many books		-0.061	0.100		-0.107
		(0.122)	(0.334)		(0.138)
Observations	2981	2981	657	467	2324
AIC	7710.631	7710.188	1756.732	1317.305	5946.113
N_clust	496.000	496.000	159.000	150.000	463.000

Table 3: Mathematical test performance among Christian students

	(1) Age group 10-13 and 14-17	(2) Age group 10-13	(3) Parents of age group 10-13	(4) Age group 14-17 Stayers	(5) Age group 14-17 Leavers
Subjective religiosity	-0.009	-0.064		-0.033	-0.141*
	(0.037)	(0.063)		(0.056)	(0.066)
Praying frequency	0.006	-0.031		0.016	0.090*
	(0.014)	(0.025)		(0.020)	(0.036)
Engagement in religious community	0.013	-0.075		0.036	0.073
	(0.091)	(0.157)		(0.108)	(0.276)
Parents' subjective religiosity			-0.073		
			(0.107)		
Parents' praying frequency			-0.028		
			(0.044)		
Parents' engagement in rel. community			0.312+		
			(0.178)		
Female (ref. male)	-0.443***	-0.410***	-0.462***	-0.502***	-0.270**
	(0.050)	(0.111)	(0.127)	(0.065)	(0.094)
Some books (ref. few)	0.202**	0.438**	0.613**	0.166*	0.100
	(0.064)	(0.155)	(0.183)	(0.075)	(0.109)
Many books (ref. few)	0.233***	0.650***	0.652***	0.090	0.056
	(0.064)	(0.152)	(0.176)	(0.073)	(0.133)
2nd generation (ref. 1st gen.)	0.094	0.074	0.146	0.122	-0.075
	(0.063)	(0.165)	(0.248)	(0.076)	(0.124)
3rd generation (ref. 1st gen.)	0.081	0.028	0.195	0.075	0.041
	(0.069)	(0.165)	(0.233)	(0.077)	(0.126)
School type: Gymnasium (ref. others)	0.950***	0.930***	1.262***	0.920***	0.191
	(0.066)	(0.111)	(0.130)	(0.082)	(0.291)
Age group 10-13 (ref. 14-17)	0.719***				
	(0.063)				
Vocabulary German (Sum)	0.027***	0.033***		0.025***	0.023***
	(0.003)	(0.006)		(0.004)	(0.006)
Share of friends with migration background	-0.012	0.032		-0.035+	0.007
	(0.015)	(0.029)		(0.019)	(0.030)
Share of Co-Ethnics Place of Residence	-0.132***	-0.153*	0.064	-0.037+	-0.015
	(0.031)	(0.074)	(0.109)	(0.019)	(0.024)
Interaction share of co-ethnics in place of residence	0.030	0.014	-0.371*	-0.015	0.027
	(0.080)	(0.139)	(0.145)	(0.035)	(0.082)
Former Soviet Union (ref.)					
Former Yugoslavia	0.106				
	(0.107)				
Eastern Europe	0.043				
	(0.060)				
Southern Europe	-0.115				
	(0.078)				
Middle East and Maghreb†	-0.197				
	(0.189)				
Western countries	-0.040				
	(0.119)				
Asian	0.263+				
	(0.154)				
Turkish†	-0.309+				
	(0.185)				
Other	-0.203**				
	(0.068)				
Observations	1581	383	260	1080	211
AIC	4209.267	1050.789	742.571	2910.038	477.669
N_clust	428.000	135.000	112.000	347.000	107.000

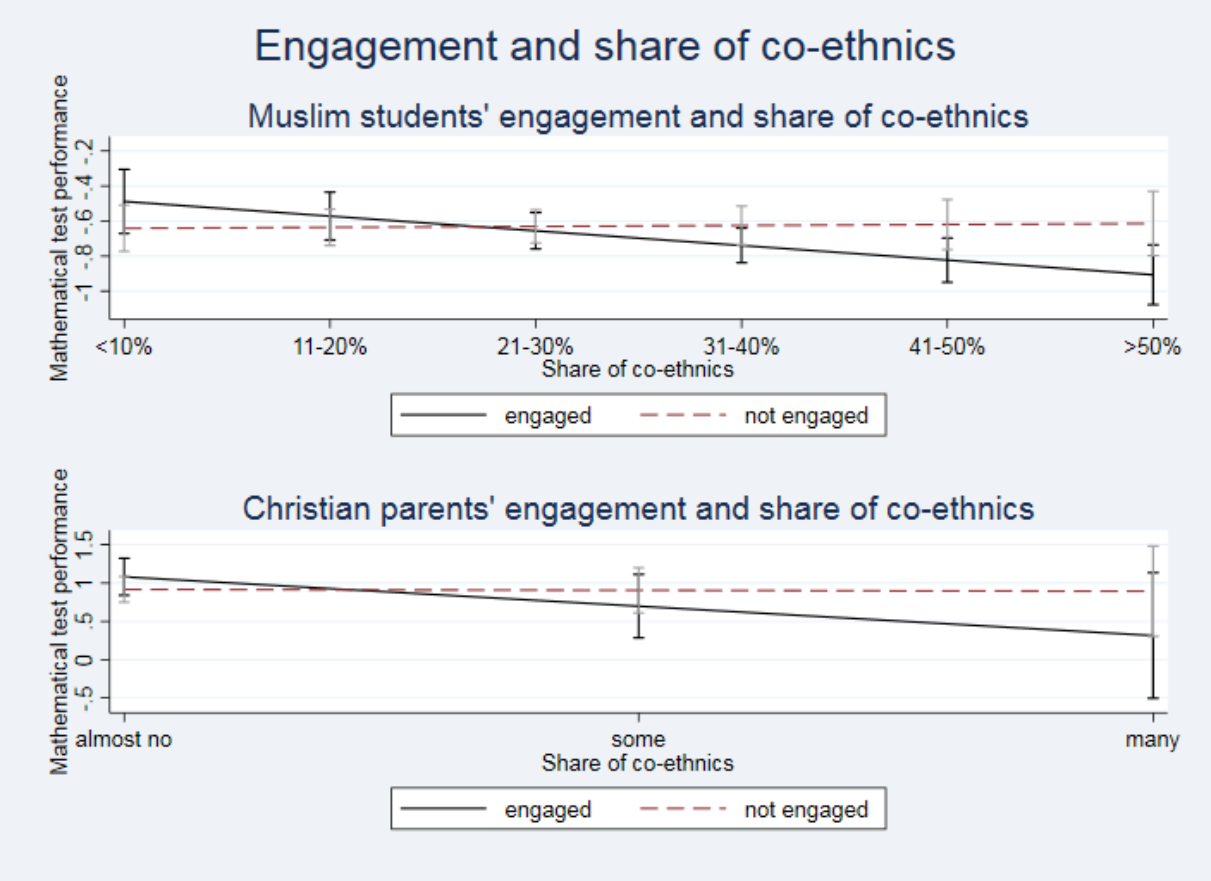
Table 4: Mathematical test performance among Muslim students

	(1) Age group 10-13 and 14-17	(2) Age group 10-13	(3) Parents of age group 10-13	(4) Age group 14-17 Stayers	(5) Age group 14-17 Leavers
Subjective religiosity	-0.113*	-0.001		-0.150**	-0.148
	(0.047)	(0.108)		(0.055)	(0.108)
Praying frequency	0.040**	0.069+		0.034*	0.049
	(0.014)	(0.036)		(0.015)	(0.036)
Engagement in religious community	-0.010	0.014		0.228*	-0.627**
	(0.106)	(0.298)		(0.111)	(0.213)
Parents' subjective religiosity			0.058		
			(0.120)		
Parents' praying frequency			0.015		
			(0.053)		
Parents' engagement in rel. community			-0.045		
			(0.399)		
Female (ref. male)	-0.236***	-0.216	-0.047	-0.247***	-0.122
	(0.056)	(0.131)	(0.164)	(0.068)	(0.135)
Some books (ref. few)	0.235***	0.342*	0.015	0.275***	0.027
	(0.059)	(0.150)	(0.226)	(0.066)	(0.180)
Many books (ref. few)	0.075	0.269	0.233	0.078	-0.106
	(0.061)	(0.174)	(0.277)	(0.069)	(0.138)
2nd generation (ref. 1st gen.)	0.092	0.235	-0.052	0.148+	0.036
	(0.074)	(0.155)	(0.329)	(0.080)	(0.190)
3rd generation (ref. 1st gen.)	-0.019	0.283	0.145	-0.118	0.187
	(0.089)	(0.187)	(0.308)	(0.101)	(0.221)
School type: Gymnasium (ref. others)	0.844***	1.112***	1.095***	0.650***	
	(0.110)	(0.144)	(0.225)	(0.119)	
Age group 10-13 (ref. 14-17)	0.654***				
	(0.085)				
Vocabulary German (Sum)	0.027***	0.035***		0.026***	0.004
	(0.003)	(0.006)		(0.004)	(0.009)
Share of friends with migration background	0.013	0.039		-0.012	0.035
	(0.019)	(0.046)		(0.021)	(0.037)
Share of Co-Ethnics Place of Residence	0.002	0.146	0.059	0.005	-0.077+
	(0.048)	(0.136)	(0.198)	(0.025)	(0.044)
Interaction share of co-ethnics in place of residence	-0.059	-0.098	-0.141	-0.092**	0.195**
	(0.072)	(0.200)	(0.273)	(0.034)	(0.062)
Turkish (ref.)					
Former Soviet Union	-0.112				
	(0.377)				
Former Yugoslavia†	-0.091				
	(0.093)				
Southern Europe†	-0.123				
	(0.246)				
Middle East and Maghreb	-0.138				
	(0.088)				
Western countries†	-0.451				
	(0.397)				
Asian†	-0.034				
	(0.133)				
Other	-0.166				
	(0.114)				
Observations	877	195	97	565	117
AIC	2086.269	520.954	287.288	1272.340	256.602
N_clust	283.000	88.000	53.000	204.000	55.000

Table 5: Mathematical test performance among stayers and leavers

	Muslims leavers (no/yes) (1)	Muslim leavers (no/yes) (2)	Christian leavers (no/yes) (1)	Christian leavers (no/yes) (2)
Subjective religiosity	0.061*	0.061*	-0.003	-0.003
	(0.024)	(0.024)	(0.017)	(0.017)
Praying frequency	-0.027***	-0.026**	-0.009	-0.008
	(0.008)	(0.008)	(0.007)	(0.007)
Engagement in religious community	-0.025	-0.050	-0.030	-0.007
	(0.030)	(0.047)	(0.025)	(0.026)
Female (ref. male)	-0.016	-0.016	-0.120***	-0.119***
	(0.038)	(0.038)	(0.022)	(0.022)
Some books (ref. few)	0.011	0.010	-0.015	-0.014
	(0.034)	(0.034)	(0.033)	(0.033)
Many books (ref. few)	-0.010	-0.012	-0.026	-0.025
	(0.028)	(0.028)	(0.029)	(0.029)
2nd generation (ref. 1st gen.)	-0.058	-0.058	-0.042	-0.042
	(0.038)	(0.038)	(0.026)	(0.026)
3rd generation (ref. 1st gen.)	-0.081	-0.079	0.014	0.014
	(0.049)	(0.049)	(0.031)	(0.031)
Vocabulary German (Sum)	-0.003	-0.003	-0.005***	-0.005***
	(0.002)	(0.002)	(0.001)	(0.001)
Share of friends with migration background	0.003	0.003	0.001	0.000
	(0.011)	(0.011)	(0.007)	(0.007)
Share of Co-Ethnics Place of Residence	0.008	0.004	0.014+	0.018*
	(0.008)	(0.010)	(0.007)	(0.008)
Interaction share of co-ethnics in place of residence				
Math Competency (WLE, corrected)	-0.062**	-0.061**	-0.069***	-0.069***
	(0.020)	(0.021)	(0.010)	(0.010)
Share of Co-Ethnics place of residence		0.011		-0.018
		(0.016)		(0.014)
Observations	682	682	1291	1291
AIC	576.400	577.915	930.748	930.890
N_clust	235.000	235.000	405.000	405.000

Figure 1


Engagement and share of co-ethnics
Muslim students' engagement and share of co-ethnics
Mathematical test performance
-1 -.8 -.6 -.4 -.2
<10%
11-20%
21-30%
31-40%
41-50%
>50%
Share of co-ethnics
engaged
not engaged
Christian parents' engagement and share of co-ethnics
Mathematical test performance
-.5 0 .5 1 1.5
almost no
some
many
Share of co-ethnics
engaged
not engaged

Appendix

Figure A1: Hypotheses

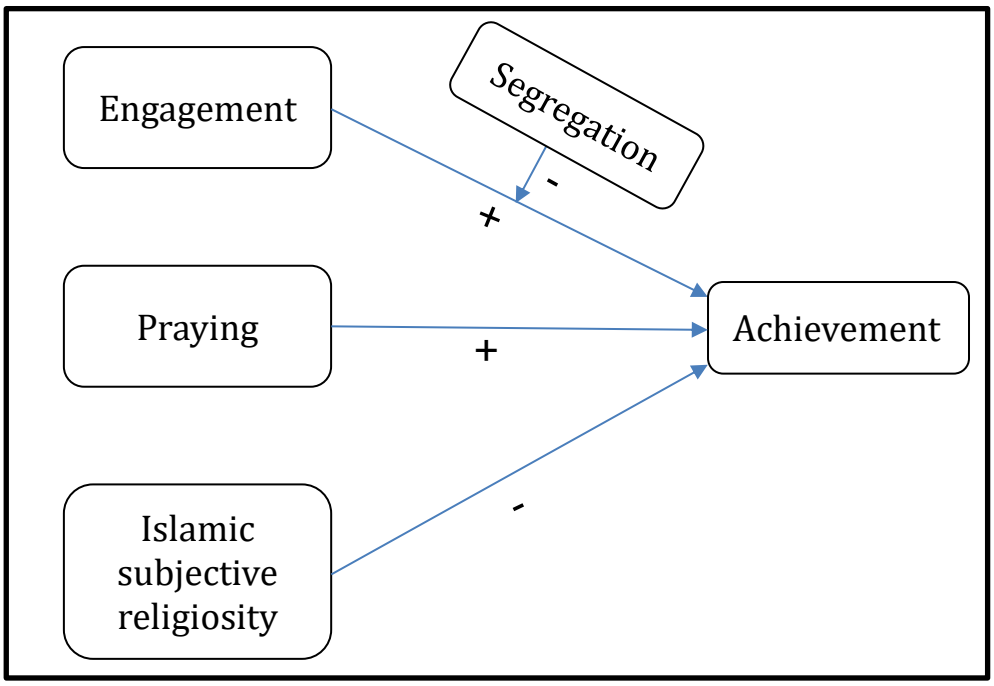


Table A1. Measurement of key variables across sub-samples

Starting cohort	Wave 1	Wave 2	Wave 3	Wave 4	Wave 6
5-7th grader (Age group 10-13)	Grade 5 (Autumn 2010) *Students (PAPI)* Demographic variables German Vocabulary *Parents (CATI)* Demographic variables	Grade 6 (Autumn 2011) *Students (PAPI)* Religiosity Ethnic Embeddedness *Parents (CATI)* Religiosity	Grade 7 (Autumn 2012) *Students (PAPI)* Math test	Grade 8 (Winter 2014) *Parents (CATI)* Ethnic Embeddedness	Grade 9 (Spring 2015) *Parents (CATI)* Ethnic Embeddedness
9-10th grader (Age group 14-17)	Grade 9 (Autumn 2010) *Students (PAPI)* Math test Demographic variables *Parents (CATI)* Ethnic Embeddedness	Grade 9 (Spring 2011) *Students (PAPI)* Ethnic embeddedness German Vocabulary	Grade 10 (Autumn 2011) *Stayers (PAPI)* Religiosity *School leavers (CATI)* Religiosity		

Table A2: Achievement and parents' highest ISEI

	(1) Parents of age group 10-13	(2) Age group 14-17
Christian (ref. atheist)	-0.008	0.083
	(0.135)	(0.071)
Muslim (ref. atheist)	-0.639***	-0.293***
	(0.162)	(0.083)
Subjective religiosity		-0.135***
		(0.035)
Praying frequency		0.032*
		(0.013)
Engagement in religious community		0.035
		(0.055)
Parents' subjective religiosity	-0.055	
	(0.070)	
Parents' praying frequency	-0.023	
	(0.027)	
Parents' engagement in rel. community	0.070	
	(0.111)	
Female (ref. male)	-0.305***	-0.477***
	(0.089)	(0.044)
Highest parental ISEI	0.006+	0.003**
	(0.003)	(0.001)
2nd generation (ref. 1st gen.)	0.000	0.003**
	(0.154)	(0.001)
3rd generation (ref. 1st gen.)	0.127	0.003**
	(0.150)	(0.001)
School type: Gymnasium (ref. others)	1.207***	1.220***
	(0.109)	(0.071)
Observations	482	1993
AIC	1363.291	5282.413
N_clust	153.000	453.000

Clustered standard errors (school level) in parentheses
$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$