Working Paper

Friendship and Identity in School

Field report on Wave 1, Wave 2, and Wave 3 (Technical Report)

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Abstract

The research project *Friendship and Identity in School*, which is funded by the German ResearchFoundation (DFG), investigates the formation and change of adolescents' social networks and ethnic identifications. For this purpose, network panel data were collected in nine schools in the federal state of North Rhine-Westphalia, Germany. This field report documents the preparation and collection of the three waves of data, which were completed in May 2013, February 2014, and November 2014, respectively. Portrayed are the design of the study, the development of the questionnaire, sampling procedures and response rates, the field work, and data preparation. In total, 2,100 students of 26 grades (85 classes) were interviewed. A total of 1,668 students took part in the first wave, 1,862 in the second, and 1,889 in the third. 1,249 students took part in all three waves. In a follow-up project, three additional waves will be collected within the same schools.

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Preface

In 2013 and 2014, as part of the research project *Friendship and Identity in School,* funded by the German Research Foundation (DFG), more than 2,100 students in nine schools in North Rhine-Westphalia were questioned in surveys. Of these participants, almost 1,250 took part in all three surveys. Such extensive data collection is only possible with a number of supporter and helpers. We would therefore like to express our gratitude here to all those who helped to make this study possible.

Firstly, we thank the school students who took part and their parents for their trust. We are also very grateful to the school directors, the contacts in the schools, and the teachers for allowing the surveys and supporting the organisation and implementation.

For their tireless support and patience in organisational and all other matters we thank Beate Rossi, Marianne Schneider, and Antje Wechsler from the Mannheim Centre for European Social Research (MZES).

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1 Introduction

This field report documents the planning and implementation of three waves of the research project *Friendship and Identity in School*.[1] The project is based at the Mannheim Centre for European Social Research (MZES) of the University of Mannheim and is funded by the German Research Foundation (DFG). Over a period of three years, the project collected network panel data from some 2,100 school students in 26 fifth, sixth and seventh grades (a total of 85 classes) at nine schools in the federal state North Rhine-Westphalia, Germany. In a follow-up project, three additional waves of data will be collected.

The main aim of the project is to investigate the co-evolution of *social networks* and *ethnic identifications* of children and adolescents. A point of special attention was the empirical investigation of possible causal interactions between networks and identifications. This places considerable demands on the data used, which existing data sources have been unable to meet for three reasons. Firstly, at the start of the project there was no precise and fully tested German-language *measuring instrument for ethnic identifications* (cf. Leszczensky & Gräbs Santiago 2014a, 2015; Riedel 2014). Secondly, most investigations of social networks and ethnic identifications have been based on cross-sectional data, although *longitudinal data* is required for the investigation of possible interactions (cf. Leszczensky 2013). Thirdly, surveys of social networks have in the past mostly been carried out egocentrically. In comparison to *total networks*, in which the relationships between all relevant actors are taken into account and the individual characteristics are measured for all relevant actors, egocentric networks provide an inadequate data basis (cf. Bicer & Windzio 2014).

In summary, at the start of the project, no data was available with which to achieve the main project goal of investigating the interactions between social networks and ethnic identifications. The collection of suitable data was therefore a priority of the project. In a first step it was necessary to develop a German-language *measuring instrument to register ethnic identifications* of children and adolescents, and subject this to cognitive pre-tests and a quantitative instrument test. The final instrument and extensive tests of measurement invariance and validity are documented by Leszczensky & Gräbs Santiago (2014a, 2015). The measuring instrument is available in the “Collected sociological items and scales for the social sciences” (ZIS) of GESIS (Leszczensky & Gräbs Santiago 2014b). The second step, which involved the collection of *network panel data*, is the topic of this field report. In the following, we first present the study design (Section 2) and the survey instrument (Section 3). We then describe how the schools were selected and the participation (Section 4), the field work in the three waves (Section 5) and the data processing (Section 6). This is followed by conclusions (Section 7) and a bibliography (Section 8).

2 Study design

The study *Friendship and Identity in School* was designed as a network panel study in which the same school students were surveyed on a number of occasions. In the initial project period funded by the DFG (02/2012-01/2015), three waves were collected at intervals of some nine months. The granted continuation of the project will survey the panel in a further three waves in order to cover the period through to completion of lower secondary education (*Sekundarstufe I)*. This field report documents the planning and implementation of the first three waves, which took place in April/May 2013, January/February 2014, and October/November 2014. The fourth wave, which is part of the follow-up project, is scheduled for September 2015.

1 Leszczensky et al. (2014) provide a German version of this report, which, however, only covers the first two waves of data.

2.1 Network panel

When collecting network data it is first necessary to specify the boundaries of the social network in the form of a clearly defined group of actors (cf. Laumann et al. 1992). As in much of the literature, we specify social networks in terms of *schools* (cf. Beier et al. 2014; Bicer & Windzio 2014; Friemel & Knecht 2009; Leszczensky & Pink 2015). Children and adolescents spend an important part of their life in school, and the social relationships formed there are regarded as having considerable influence on the development of social networks and patterns of behaviour (cf. Baerveldt et al. 2004).

In order to be able to draw causal conclusions about how and why social networks develop and change, it is necessary to conduct surveys on a number of occasions. The intervals have to be small enough to register any changes to ethnic identifications and social networks as precisely as possible. On the other hand the intervals have to be large enough to allow for a significant amount of change (cf. Snijders et al. 2010: 49f.). In studies with children and adolescents, intervals ranging from six months to a year are commonly chosen. This is felt to be a period within which both social networks and ethnic identifications can change to a sufficient extent (cf. Berndt et al. 1986; Burk et al. 2007; Chan & Poulin 2007; Kiang et al. 2010; Meeus 2011). In the initial project, we chose to conduct the survey in *three waves* at intervals of some nine months. The continuation of the project, which already has been granted by the German Research Foundation, will collect three more waves at the same intervals.

2.2 Project-specific requirements for network panel data

The investigation of the mechanisms for the formation and change of social networks and ethnic identity does not require a representative sample of schools. On the contrary, for our project it is necessary to select schools which satisfy two key criteria on the basis of which the mechanisms can be investigated.

1: Size of yearly grade

In contrast to most other studies, we did not register social networks solely for a single class (cf. Bicer et al. 2014; Kalter et al. 2014; Stark & Flache 2012), but for all the classes in the same year (Leszczensky & Pink 2015). This offers the advantage that we registered a larger proportion of the networks of the students and thus are able to gain a more comprehensive view of their social relationships. Since combining all the classes of one year includes a larger number of actors (and thus also more links), it offers the methodological advantage that more information is available for each network and, in particular, complex multivariate models can be applied (Valente et al. 2013). Where appropriate, a larger number of networks with fewer students in any single class can be depicted. Combining all the classes in a year therefore offers the greatest flexibility for the analysis.

It is important that the number of students in the year should be neither too large nor too small (Snijders et al. 2010). It should be plausible that all students in the year have at least a fleeting acquaintance with each other so that they could potentially become friends. There are also more changes in larger networks so that there is sufficient variation to model and explain the changes in a network over time. The refusal of an individual student to participate or an absence due to illness has less effect in larger networks. For the main survey, we decided on a minimum size for the year of 45 students, and a maximum of 120 students.

2: High proportion of school students with a migration background

Because we are interested here in ethnic identities and therefore in particular in children and adolescents with a non-German background, the participating schools must had a sufficient number of *school students with a migration background*. The focus here was in particular on Turkish students, who not only constitute

by far the largest migrant group in Germany, but are also the worst integrated along most dimensions – in particular the emotional and social dimension (cf. Diehl & Schnell 2006; Haug 2003; Kalter 2006; Kalter & Granato 2007; Kalter et al. 2007).[2] In order to be able to investigate the influences of structural opportunities in the form of differing ethnic compositions, we included years with differing proportions of Turkish students. In order to take into account students with other ethnic origins and ethnically diverse years, we also included years with a large proportion of foreign students but comparatively few Turkish students.

We formed three strata: 1) Schools with more than 15% Turkish students.[3] 2) Schools with *10-15% Turkish students*. 3) Schools with at least *15% foreign students, but fewer than 5% Turkish students,* i.e. with a high level of ethnic diversity.

2.3 Sample characteristics

In a *multi-cohort design*, we included all classes from the fifth, sixth, and seventh years of lower-level secondary schools, intermediate secondary schools and comprehensive schools in *North Rhine-Westphalia*. In the following, we explain our choices.

Multi-cohort design

We presented questions to students in the fifth, sixth and seventh year classes. There are two reasons for choosing this *multi-cohort design*. Firstly, this makes it possible to survey the students over a longer period of their life. At the time of the first wave, the students in the fifth year were approx. 11-12 years old and by the time of the third wave will be 13-14 years old. Seventh year students were approx. 13-14 years old at the time of the first wave and will be 15-16 years old by the time of the third wave. This means that our data will cover various stages of development of children and adolescents which are relevant for the formation of identity (Huang & Stormshak 2011; Quintana 1999, 2007). Secondly, students from these three years remain together throughout this period in all the types of school involved. This is important because our chosen network limits remain stable over the observation period of the project as well as for possible follow-up questioning if the project is extended. For practical reasons, we questioned three year cohorts within the same school in each case.

Federal state of North Rhine-Westphalia

We restricted the survey to *North Rhine-Westphalia* because this federal state has a high proportion of school students with a migration background. In addition, school surveys in North Rhine-Westphalia (in contrast to all other federal states) can be arranged directly with each school.[4] It would not have been feasible to have completed the development and testing of the measurement instrument for ethnic identities months in advance in order to present the questionnaire for official approval by the ministry of education, as required in other federal states.

2 We use the terms “migrant” and “with migration background” to refer to members of ethnic minorities even if they were actually born in Germany. Terms such as “Turkish” are used similarly, irrespective of the actual citizenship of the individual.

3 The figures for the proportion of Turkish and foreign students relate to the citizenship, since this was the only information available before the surveys (see below). On the basis of other studies, we estimated that the proportion of individuals with migration background would be two- to three-times greater than the proportion of foreign students. We calculated aggregates for all three years. This means that in the event of an uneven distribution our criteria would not be met for all three years in a school. However, as a rule the proportions are very similar.

4 Cf. School Act of North Rhine-Westphalia dated 15 February 2005, http://www.schulministerium.nrw.de/BP/Schulrecht/Gesetze/Schulgesetz.pdf.

Secondary school types

We questioned students from various types of secondary school in order to be able to investigate the influence of structural opportunities in the form of different social origins of the students. We chose to survey lower-level secondary schools, intermediate secondary schools and comprehensive schools (*Hauptschulen, Realschulen* and *Gesamtschulen)*. We excluded grammar schools (*Gymnasien*) because migrants (and Turkish migrants in particular) are still underrepresented at this type of school (Kalter & Granato 2007; Kristen & Dollmann 2010). We also excluded the new so-called *Sekundarschulen* introduced only a few months before the start of the project, which would not have been sufficiently established over the course of the project.

Overview of the schools

Table 1 gives an overview of the participating schools. At the time of the first wave we questioned the fifth, sixth and seventh classes at each school.

Table 1: Types of school and proportion of Turkish and foreign students

Strata	Lower-Level Secondary School	Intermediate Secondary School	Comprehensive School	Total
10-15% Turkish	1	1	1	3
>15% Turkish	1	1	1	3
>15% Foreign; <5% Turkish	1	1	1	3
Total	3	3	3	9

In short, the students we questioned attended lower-level secondary schools, intermediate secondary schools and comprehensive schools in North Rhine-Westphalia with a high proportion of students with a migration background, and with between 45 and 120 students in the fifth, sixth, and seventh years.

3 Survey instrument

3.1 Questionnaire

We developed the questionnaire with reference primarily to Schnell (2012) and Porst (2009). In addition to discussions within the project team and other colleagues, we also received feedback from Michael Braun and Rolf Porst in the course of consultancy provided by GESIS - Leibniz-Institute for Social Sciences.

Questionnaire for the first wave

The questionnaire used in the first wave contained the measuring instrument we developed for *ethnic and national identities* (cf. Leszczensky & Gräbs Santiago 2014a, 2014b, 2015). In comparison with other German-language instruments, this offers three advantages. Firstly, we take into account that identity is a multi-dimensional construct and therefore measure *various dimensions of ethnic and national identity* (cf. Ashmore et al. 2004; Phinney & Ong 2007). Secondly, we measure national identity not only for children and adolescents with a migration background, but also for a *non-migrant reference group*, which other studies have not done (cf. Riedel 2014). Thirdly, previous measurements have not taken into account that

in particular the children and grandchildren of migrants increasingly adopt *dual identities* such as German-Turkish (Verkuyten & Martinovic 2012). This form of identification is frequently not perceived as just a combination of two individual identities (Simon & Ruhs 2008), so that we measure it separately.

In line with the project objective, the questionnaire also covered various *dimensions* of *social networks*. This includes friendship dimensions, e.g. who the students spent time with outside school, who they talked about problems with, or who they frequently send messages to (cf. Davies et al. 2011). It also includes negative aspects and conflicts, with dimensions such as annoyance or dislike, which can also be important for the development of networks and identity (Stark et al. 2013). In order to register network relationships, each student was given a numbered list of all students in their year arranged alphabetically in terms of first names for each class (see Annex A1). Depending on the question, a student could nominate up to ten other students from the list.

The questionnaire also included questions which were related to other aspects of identity or friendships, or which measured corresponding determinants of identity and friendships. Examples of the latter are perceived discrimination, the identity of the parents, religious identity, linguistic competence, interethnic attitudes and alternative opportunity structures such as the primary school that was attended or the neighbourhood.[5]

Questionnaire for the second wave

In accordance with the panel design, the questionnaire used in the second wave only differed slightly from that of the first wave. Identical questions were used with regard to time-variant characteristics. In addition, questions regarding some time-constant factors were included once again in the second wave, such as ethnic origin or sex, in order to fill in any gaps and to check the consistency of the students' responses.

The second wave questionnaire also included some new questions. These were intended to improve the precision of information collected in the first wave, e.g. regarding the country of birth of grandparents. We also added aspects not covered in the first wave. e.g. relationships between students and their parents, general trust, or personality traits of the students.

Questionnaire for the third wave

The questionnaire used in the third wave again only slightly differed from that of the previous waves. As in the second wave, time-constant characteristics like ethnic background were surveyed to minimize missing values and to increase credibility. Only few new questions were asked. Most importantly, this included information on course attendance, as the majority of the surveyed students had to choose elective subjects. Students also were increasingly taught outside of their classroom, for example according to their academic performance in subjects like Math, German, or English. To gain a more comprehensive picture of how students were distributed, we also asked them to nominate school mates they liked in their respective courses and tracks.

3.2 Cognitive pretests, instrument test, and final pretest

We carried out two c*ognitive pretests* in order to check the measuring instrument we had developed for ethnic identification. The first cognitive pretest was conducted in May 2012 with two dozen children and

5 For an overview of determinants of national and ethnic identity see Phinney et al. (2006) and Verkuyten & Martinovic (2012). For determinants of interethnic friendships see Martinovic et al. (2009) and Wimmer & Lewis (2010). A series of common determinants of national Identity friendships are discussed in Leszczensky (2013).

adolescents in youth centres in Mannheim/Ludwigshafen. We first obtained written permission of the parents. We used a series of cognitive techniques in the interviews to identify problems with the questions (cf. Presser et al. 2004; Prüfer & Rexroth 2005; Willis 1999). In particular we tested whether children and adolescents understand identity-related concepts, how they respond to relevant questions and whether there are differences between various age groups or between respondents with or without a migration background. We used the results to amend the questions and then carried out a second cognitive pretest in July 2012, once again with two dozen children and adolescents in youth centres in Mannheim/Ludwigshafen. At the end of the second cognitive pretest we had a series of successfully tested questions that the test persons with and without migration background aged from 11 to 16 years could understand and answer.

In October 2012 we carried out an *instrument test* with 175 students in eight school classes at two lower-level secondary schools and two comprehensives in North Rhine-Westphalia. This involved two fifth and sixth classes and four seventh classes. We were able to subject our measuring instrument for ethnic identifications to a first quantitative test, but we also tested the entire project questionnaire, including how various network dimensions were covered at the class level and also the computerised data entry, which involved the completed questionnaires being scanned and the results digitised. The instrument test confirmed the basic approach and gave important results that led to improvements of some details. The use of lists of students to register network relationships was shown to be unproblematic.

On the basis of the results of the instrument test we optimised the questionnaire for the first wave survey. We carried out a final pretest of the questionnaire in January 2013 with more than 70 students in two sixth and two seventh classes at a lower-level secondary school in North Rhine-Westphalia. Here we extended the network coverage to include all the classes in the same year. The final pretest showed that the test persons coped with the extended list without problems. About a fifth of friendships were between students in other classes, which encouraged us to proceed with this approach. An overwhelming majority of the students were able to complete the questionnaire within a double lesson (about 90 minutes).

4 Selection of schools and participation

4.1 Selection of schools and participation at the school level

Choice of schools

Using the criteria described in Section 2, we selected suitable schools on the basis of the official school statistics of North Rhine-Westphalia for the school year 2011. However, the statistics only included details of nationality, but not the ethnicity of the students. In a first step, we selected appropriate secondary schools (*Hauptschulen, Realschulen* and *Gesamtschulen*) in North Rhine-Westphalia with between 45 and 120 school students in an academic year. We then sub-divided these schools in terms of the three strata relating to the proportion of Turkish or foreign students, as explained earlier. From the nine cells produced by this approach we drew groups of five schools using a random algorithm. The schools in the first group were contacted, while the schools in the following groups were reserves in case none of the schools in the previous group could be recruited.[6]

6 This is similar to the approach adopted in other school surveys, e.g. CILS4EU (Kalter et al. 2014) or Add Health (see http://cpc.unc.edu/projects/addhealth/design/wave1).

Contacting the schools

Early in December 2012 we sent a two page letter by post to the first five selected schools in each stratum. The letter provided information about the project and gave notice that the director would be receiving a telephone call from us within one or two weeks. In most cases, the telephone contact showed that the director had at least already read the letter and the study. If the school was interested in participating, we arranged an appointment for a further discussion, to allow for consultations within the school administration and with the class teachers. On average, 2.5 phone calls were necessary before a school reached a decision on whether to participate or not, and a period of two weeks lay between sending out the letter and the final decision on participation. Further correspondence was conducted by e-mail.

Participation and reasons why schools declined to take part

In total we contacted 84 schools. At first sight the participation at the school level appears low – only a little more than one in ten of the schools contacted finally took part in the study.

Various factors are responsible for the low level of school participation. Firstly, it should be noted that we were contacting schools in parallel in groups of five, and in each group we only recruited the first school that agreed to participate. There are also signs of 'over-researching' in North Rhine-Westphalia. The most common reason given by school directors for not participating was that their school had already taken part in other studies, or was involved in an ongoing study. Reference was frequently made to existing cooperation agreements with universities in the area. Furthermore, we sent out the contact letter in the run-up period to Christmas, when many schools were very busy or difficult to contact. In January, after the Christmas break, we received replies much more quickly. Also it is possible that some schools were rather intimidated by the prospect of the multiple survey involving three complete academic years. However, none of the schools that declined to take part explicitly cited the contents or design of the study as a reason.

Characteristics of the participating schools

Three each of the nine participating schools were in towns or cities with more than 100,000 inhabitants, with 50,000 to 100,000 inhabitants, or with fewer than 50,000 inhabitants, respectively. The three types of school were all represented in each of the three sizes of urban centres. Most, but not all of the schools were located in the conurbations of North Rhine-Westphalia.

The fifth, sixth, and seventh classes of the participating schools at the time of the first wave had a total of 2,182 students. The average year size was 95.3 students, with only slight differences between the three year levels. However, there were considerable differences between the numbers of students for the nine participating schools. The smallest school had some 50 students or less in one year, whereas the largest schools had four school classes in one year with 110 or more students. In one of the three lower-level secondary schools there is no longer a fifth year, because the school is to be closed at the end of the school year 2014/15. In general, the lower-level secondary schools (*Hauptschulen*), with an average of 53.7 students in one year at the time of the first wave, are much smaller than the intermediate schools (*Realschulen*), which have on average 85.3 students in a year. The comprehensive schools, with an average of 117.8 students, are by far the largest. Class sizes also reflect this pattern. The overall mean class size in the first wave was 26.9 students (21.0 for lower-level secondary schools, compared with 27.3 for intermediate schools and 28.8 for comprehensive schools).

4.2 Participation by school students

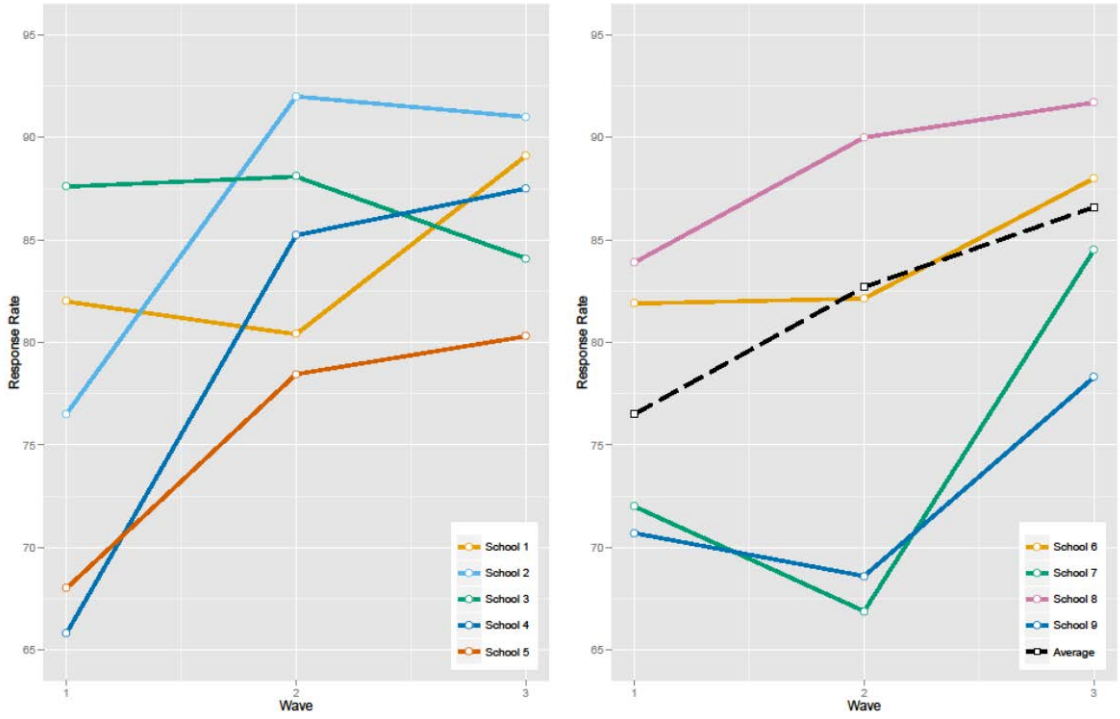
Figure 1 shows the participation rate in all three waves for all nine schools. Next, we first discuss participation in the first wave. Subsequently we discuss participation in the second and third wave.

Participation in the first wave

Students had to present signed parental approval before they could participate. Of a total of 2,182 students in the relevant years, we questioned 1,668. This represents a participation rate of 76.5%, which satisfies the requirements for the analysis of network data (cf. Huisman & Steglich 2008; Windzio 2012).

The participation rate is comparable with our experience in the instrument test and the final pretest, and also with similar studies such as "Children of immigrants longitudinal survey in four European countries" (Kalter et al. 2014), "*Integration durch Freundschaft*" (Bicer & Windzio 2014: 91ff.), "*Freundschaft und Gewalt im Jugendalter*" (Beier et al. 2014) or "*National Educational Panel Study*" (Blossfeld et al. 2011). It should also be taken into consideration that our target population is drawn from schools with particularly high proportions of students with a migration background, in which as a rule students from socio-economically disadvantaged families are over-represented (Kristen 2002; Segeritz et al. 2010). In total, 65% of the participating students have a migration background, which is considerably higher than the average for other studies. At the level of schools, the proportion of students with non-German origins varied between 49% and 86%. At the level of single years, the range was slightly greater, between a minimum of 41% and a maximum of 94%.

Figure 1: Student participation rates at schools in the three waves



As Figure 1 shows, the student participation rate varied between schools. In two schools we were able to question about two thirds of students, but in some of the other schools the proportion was in part well above 80%. The participation rates for single years ranged from 55.3% to 91.7% of the students questioned. It is not surprising that the greatest differences in the participation rates were found at the level of

individual classes. The values here ranged from 36.0% up to 100%.[7] The participation rate was highest in the intermediate secondary schools (*Realschulen*) and lowest in the comprehensive schools (*Gesamtschulen;* see Leszczensky et al. 2014: 7f.). There were only slight differences between the three strata. Here the participation rate was 78.8% in schools with comparatively few Turkish students, but a large proportion of foreign students, compared with 74.8% in schools with a high proportion of Turkish students.

Participation in the second wave

The nine schools taking part in the survey had a total of 2,251 students in the three grades at the beginning of the second wave. Of these, we were able to question 1,862, which represents a participation rate of 82.7%. This value is higher than for the first wave. This is due above all to the fact that the necessary parental approval had already been obtained for the students participating in the first wave and the students who had forgotten the first time had a second opportunity to bring the approval and take part.

The panel drop-out rates are extremely low. Of the students who participated in the first wave, 91.1% also took part in the second wave survey. In all, 1,449 students took part in both waves.

Participation in the third wave

Students' participation further increased in wave 3. Of 2,181 students in the three grades at the time of the third wave, 1,889 took part in the survey. This amounts to an participation rate of 86,6%. We mainly ascribe this development to the fact that almost no new parental permissions had to be obtained. In addition, students' may have become accustomed to the survey as well as to the cash incentive, which may have encouraged students who did not participate in earlier waves.

In total, 1,249 students took part in all three waves.

Reasons why students did not take part

The reasons why students did not take part were not registered in a standardised fashion, but can in part be deduced from the interviewer notes. 12.7% of non-participating students handed in the parental approval but were not at school on the day in question because of sickness or for some other reason. The remaining 87.3% of non-participating students did not hand in the parental approval, although in most cases the reason for this is not known to us. While we were told in a few cases that the student had refused to participate or that the parents had not approved, the class teachers frequently pointed out that many students had simply forgotten all about the note for their parents. We therefore assume that forgetfulness of the students was a main reason for not submitting parental approval, but we cannot discount unspoken reluctance as a reason for this.

The participation rates not only differed between schools but also between years and classes in the same school. We see these differences as an indication that the low levels of participation in some classes was due to factors that lie mainly outside our control. Firstly, there were considerable differences between classes regarding the *level of information*, although all class teachers had received the same information from us in advance. For example, students in many classes asked repeatedly about the promised cash incentive of five euros (cf. Section 5.2), but students in other classes were obviously unaware of the payment. It was also observed that some teachers reminded their students about the purpose of the survey at the start of the lesson and/or had already gone through this in an earlier lesson, while in other classes little or nothing had been said about the survey.

7 One class refused *en bloc* to take part. The project team only found this out when they arrived at the school. The contact person did not know the reasons for the refusal to take part.

Social dynamics within individual school classes or cliques are another example of factors which are difficult to influence externally, but which probably affected the willingness to participate. For example, in a few classes, interviewers observed that individual students loudly expressed their dissatisfaction about the survey and demonstrably refused to take part. It is possible that other students could have been influenced by such behaviour before the survey started.

5 Field work

The planning and implementation of the three survey waves was the responsibility of Lars Leszczensky and Sebastian Pink. The first wave took place in April and May 2013, the second wave in January and February 2014, and the third wave in October and November 2014. The field organisation of the second and third wave was broadly identical with that of the first wave; special aspects are discussed in the relevant sub-sections.

5.1 Timetable and organisation for the surveys

Timetable

The choice of the period for the first wave survey was restricted by two factors. Firstly, the survey could not take place during school holidays, and secondly our own time plan was restricted by the fact that the project started in February 2012 and methodological preparations were required in advance. The timetable also had to allow a second survey to be carried out some nine months after the first wave and a third wave to be carried out some nine months after the second wave.

These considerations led to the decision to arrange the first wave survey for the period April/May 2013. Dates were arranged with the schools by telephone. As a rule we were able to coordinate the visits so that we could present the questionnaires on successive days in schools that were close to one another.

In the first wave, arrangements had to be revised in two cases. In one school, a teacher had moved a class excursion to the week in which the survey was to take place, so that the survey for the entire school had to be rescheduled. In another case, one class in a school had to be questioned a day later than the other classes because the class teacher had arranged a test that clashed with the arranged date.

The second wave survey took place over a period of three weeks in late January and early February 2014. This had already been arranged with the schools at the end of the first wave survey, so that is was much simpler to agree on dates and make contacts. However, one class teacher informed us some days before the survey was due to take place that some of the students would be away on a work experience project. We questioned these students separately some two weeks later.

The third wave survey took place at the end of October and, mainly, in November 2014. As in the second wave, because the dates had already been agreed up by the schools, coordination and organization went smoothly, with one exception. This exception was a school which did not want to further participate in the study because the survey necessarily leads to cancellation of lessons. Fortunately, however, the principal of the school and the teachers could be persuaded to continue their participation.

Information packets and letters

Three or four weeks before the survey date, we sent an information packet to the participating schools. Our intention was to allow the schools and in particular the class teachers and students enough time to obtain parental approval. The school packet included envelopes addressed to the school director, any contact persons, and the class teacher.

We sent the school director a letter in which we described in detail the procedure on the day of the survey. The school director was also given guidance and templates for the student lists needed for registering the networks (see Annex). We announced that we would ring up shortly before our visit to finalise details. We also included copies of the documents contained in the envelope for the class teacher: a short account of the study, the letter to the class teacher, a flyer for the students, and a parental approval form. If we also had another contact person in the school, they received the same documents as the school director.

We wrote personally to each class teacher, since they had a crucial role to play in collecting the parental approval. Here too we explained the procedure of the survey and requested that the teacher remind the students to return the parental approval form in time. As well as approval for participation in the first wave, we also obtained consent for subsequent waves in order to reduce the demands on the teachers and parents and not least on the students. We included an appropriate number of parental approval forms printed on yellow paper. Some forms were also included with the German text on one side and a Turkish or Russian translation on the reverse.[8] We asked the teachers to distribute the forms to the students appropriately and to explain their importance. The teachers were provided with a short account of the study describing the most important points, in order to help them to present the study to the class.

The students were given the parental approval forms by the class teacher and a flyer printed on green paper which briefly introduced the study, highlighted the importance of all students taking part in the survey, and explained that all the students taking part would receive a compensation payment of five euros.

For the second and third wave we once again sent out an information packet to the participating schools two to three weeks before the survey visit. We enclosed fewer parental approval forms this time, because for the students who had participated in the first, or second, wave we had already obtained approval for subsequent waves. We asked the class teachers to hand these forms out to the students who had not returned a form for the earlier waves or who were new in the class. The majority of teachers complied with this request so that some students could be questioned in the second and third wave for the first time.

In the first wave, one class had collectively refused to participate for reasons unknown to us. We wrote to the two class teachers of this class once more and asked them to reconsider this decision for the second wave. Some of the students then did take part in the following waves.

As another special case, after the first wave three new classes had been set up in the year groups covered by the survey. This involved lower-level secondary schools to which students had been transferred from higher-level schools. These new classes were sent a packet similar to the one used in the first wave, with a larger number of parental approval forms.

8 We included Turkish and Russian translations because these are the two most common migrant groups in North Rhine-Westphalia. In view of the ethnic diversity in the classrooms it was not practicable to provide versions in all the languages spoken by the parents and grandparents.

Telephone contacts

About a week before the agreed date, we contacted the schools once more by phone. This served to ensure the preparation of the lists of students in each year and other details of the survey. These calls were very useful, because they made it possible to identify some problems in advance and come up with solutions. One school told us by phone about a week before our planned visit that a class would be away on an excursion, so that we were able to arrange a new date. The contact person at another school told us that the packet had not yet been opened but that they would now take care of it. These examples show that telephone contacts shortly before the visit are helpful to ensure that the survey proceeds as smoothly as possible.

5.2 Incentives and panel care

An incentive for participation

We offered students a compensation payment as an incentive to take part in the survey. We proposed to the participating schools that each participating students would receive five euros. Some schools wanted the equivalent total sum to be paid into the class kitty and we accepted this form of collective incentive in such cases. For participation in the second and third wave we again paid the sum of five euros to participants.

In the first wave only one of the nine schools taking part decided in advance that they wanted collective incentivisation. However, two of the eight schools with which we had previously agreed on individual incentives changed their minds on the morning of our visit. The explanation given was that students should not get used to participating only when money was offered. Since the wish was expressed by the school directors, we respected this in both cases. In the second and third wave, students received the sum themselves in six of the nine schools. In the other three schools, as in the first wave, the money was paid into the class kitties at the request of the school directors.

In the opinion of the project team, the provision of incentives considerably increased the willingness to participate. The financial aspect of the survey was obviously important to many of the students. This was demonstrated for example by the way students asked explicitly about the five euros in the schoolyard before the lesson, when the study was being introduced, and again after the lesson. Teachers frequently reported that the parental approval forms for our study were returned much more quickly than any school forms that required parental signatures.

Panel care

In order to thank the schools for their cooperation and to maintain the interest in the survey we sent the school directors and contact persons a letter of thanks two weeks before the summer holidays. We used this opportunity to inform the schools about the progress of the project, the overall participation, the participation of their school, together with a reminder of the targeted dates for the second wave.

In addition, we used data from the first wave to prepare an information brochure that we presented personally to the school directors, class teachers and contact persons in the course of the second wave. The brochure presented selected descriptive findings from the first wave survey. In some schools, interested students or other teachers also received a brochure on request. Some class teachers also received an additional brochure that they could show to parents as appropriate. After the third wave, schools will receive a short results report, as requested by some principals and teachers.

5.3 The questioning procedure and the visit situation

The school visits

All survey sessions were carried out by Lars Leszczensky and/or Sebastian Pink personally with the help of eight student helpers.[9] A school was visited by one project researcher and usually with four student helpers. A class was usually presented with the questionnaire by a researcher or a student helper, so that up to five classes could be supervised in parallel. If fewer than five classes took part at the same time then two people presented the questionnaire jointly in a class. This was the case in about a fifth of the classes. The general procedure for the survey sessions corresponded mostly to the approach that had proved effective in the instrument tests and pretests.

A double lesson was made available for the survey. In most schools this meant that all classes had at least 95 minutes to complete the questionnaire (in one school 120 minutes).[10] In the classes, the interviewers introduced themselves and briefly explained about the study. After the interviewer had handed out the questionnaire together with the teacher, the students were instructed by means of a standardised interviewer introduction to the questionnaire and in particular about the use of the year name lists for the network questions. In the first wave, this took up to 20 minutes depending on class, the type of school, and the number of questions the students asked – on average nearly 13 minutes. In the second and third wave, a somewhat shorter introduction was given, for most students already took part in the first. After this collective introduction, the students began to complete the questionnaire individually. The interviewer was available throughout the session to answer any further questions. The questionnaires were handed in on completion. The interviewer instructed the students to detach the name list from the questionnaire, and the lists were also collected and destroyed immediately after the completion of the survey session.

The survey sessions

Interviewers recorded their impression of the key aspects of the survey sessions using a standardised question sheet. All interviewers made entries during or immediately after the survey session. No appreciable differences were determined between the three waves. The following figures relate to the first wave.

All in all, the interviewers assessed that nearly two-thirds of the first wave survey sessions in classes were very good, and a further 29% were good. Only in 6% of the classes was the session rated as poor. There was no difference in the overall ratings between years or types of school.

For various reasons, the survey sessions differed between schools and classes. The number of participants differed considerably depending on class size and participation rate. In some cases there were more than 30 students present, but in other cases fewer than ten. Non-participating students either left the room before the session started or occupied themselves quietly at their desk. Other things being equal, the more students there were in the room then the more difficult the questioning sessions were. The atmosphere in the classes and schools varied considerably. In some schools, teachers would use the term “problem class” when talking to us in advance. Most students were quieter and completed the questionnaire in a more concentrated manner if one or more teachers were present. This was the case in more than three-quarters of the classes.

9 Interviewers were instructed about the survey in advance. The researchers explained the questionnaire to them and the procedure in the survey sessions. Nearly half of the student helpers had already been involved in the instrument test and the final pretest.

10 There was one exception. In the third wave, students in one school had only one lesson to complete the questionnaire, for the respective school requested to minimize cancellation of lessons. Fortunately, the reduced amount of time turned out not to be problematic; all students in the school finished the questionnaire.

Overall, the interviewers reported that students worked very calmly in more than half of the classes. Only 8% of the classes were more unsettled, and two classes were reported to be unruly. Nearly two-thirds of the intermediate secondary school students worked very calmly, but only just over half the comprehensive school students and a good third of the lower-level secondary school students. The tendency was for most classes to noticeably begin to lose concentration after some 20 to 30 minutes and to become increasingly unsettled.

In the second and third wave, many of the students remembered the first, or second, survey session. In most classes the interviewer was well received, and the introduction took less time than in the first wave, because the students were a little older than at the time of the first wave, and at least some could still remember the procedure. Overall, the interviewers noted that the students completed the second and third wave questionnaires more quickly and had fewer problems than the first time. We attribute this to their more mature understanding and also the experience gained in the first wave sessions.

In one school in the second wave, a class which was due to participate had already left the school building. Since the interviewing team had an appointment at another school the following day, the researcher instructed the class teacher at the school about the procedures involved and the questionnaire was completed on the following day under the class teacher's supervision. The class teacher had experienced the first wave survey session and gave the researchers the impression of being dedicated and reliable. The completed questionnaires were returned to us promptly and showed no obvious discrepancies.

6 Data registration and processing

Data registration

The responses on the completed questionnaires were registered using *quexf* open source software.[11] Helpers scanned in the questionnaires and imported them into *quexf*; they then checked the automated response recognition and made any necessary corrections. In order to test the reliability of this procedure we tested a random sample of 50 first-wave questionnaires for deviations. On a case-by-case basis, we identified a deviation of variable values of only 0.2%. This is well below the conservative tolerance limit of 0.5% we had set in advance. This result shows that the combination of computerised and human data registration leads to an enormous reduction in the error rate and thus increases the quality of the data registration. The process also is quicker. Some 1,700 questionnaires of the first wave were registered in less than three months – a period which began while the field phase was still ongoing and ended at a time when the student helpers were preoccupied with examinations. On average, a complete set of questionnaires for a school took about two weeks, with the helpers able to process several schools simultaneously.

Data processing

The syntax-based data processing using *Stata* began directly after the field phase, at which time sufficient data was already available to write the syntax. In a first step, the registered data (csv-files at class level) was integrated in a dataset. In a second step, the data was then edited. The data editing involved consistency and logic checks to ensure the data quality, the addition of variables and value labels, coding of all open responses, and linking to the interviewer comments, information about the classes, and regional characteristics. In addition, we created some central variables such as the ethnic origin or the migration generation, in line with the proposal of Dollmann et al. (2014). Any changes we made to raw data were always marked with special missing codes.

11 http://quexf.sourceforge.net.

In order to simplify the processing and exploration of the network data, two Stata ados were programmed, which are available via Statistical Software Components (SSC).[12] *Npinfo* simplifies the processing of network data in Stata (Pink 2014); *d3network* allows the visual exploration of networks using the browser (Pink & Vogel 2014).

For the second and third wave, we were able to draw on the procedures developed for the first survey wave, which made the data processing much simpler and quicker. It also made it possible to repeatedly access time-constant characteristics such as the ethnicity, to reduce the number of missing values, and to clarify queries. In addition to separate datasets for the three waves, a longitudinal dataset was also produced containing all waves.

The collected data are assessed by the researchers in terms of the projects objectives. At the end of the project, the processed data will be passed on to the GESIS data archive, so that they can be made available to other researchers. For ease of access to the data, it is also intended to provide an analysis syntax and a data manual.

7 Summary

In the course of the DFG-funded project *Friendship and Identity at School*, a panel of nine secondary schools in North Rhine-Westphalia was established. At each school, all the classes in the fifth, sixth and seventh years were questioned in three survey waves. This involved a total of more than 2,100 school students. All waves were completed in the planned survey period. In a follow-up project, which already has been granted by the German Research Foundation, starting in September 2015, three additional survey waves will be collected.

On the basis of the network panel data it is possible for the first time in Germany to empirically investigate the development and change of social networks and ethnic identities and in particular their interactions. The strength of the data result firstly from the measuring instrument for ethnic and national identities that was developed and thoroughly tested in the course of the project. The measure precisely registers various dimensions of ethnic and national identities of children and adolescents of different ethnic origins. The network panel data also offer a series of other advantages, in particular regarding the repeated measurement of social networks and ethnic identities and other important individual characteristics for all relevant actors. This makes it possible to analyse not only the formation and the transformation of friendship networks and ethnic identities, but also their interactions. In combination with a questionnaire that is sufficiently broad and is designed to address identity and networks questionnaire this makes the project data interesting not only for network and identity researchers, but also for migration researchers in general. After the conclusion of the follow-up project, the data will be made available to them in the GESIS data archive.

12 To install ados, e.g. `ssc install d3network` can be entered in the Stata command line.

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8.1 Project-related publications

German version of field report for wave 1 and wave 2

Leszczensky, L., Pink, S. & Kalter, F. (2014), *Freundschaft und Identität in der Schule. Feldbericht zu Welle 1 und Welle 2*, MZES Working Paper No. 157, Mannheim Centre for European Social Research (MZES).

Measurement instrument for ethnic identifications

Leszczensky, L. & Gräbs Santiago, A. (2014a), *Die Messung ethnischer und nationaler Identität von Kindern und Jugendlichen*, MZES Working Paper No. 155, Mannheim Centre for European Social Research (MZES).

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Scientific research articles

Leszczensky, L. & Pink, S. (2015), "Ethnic segregation of friendship networks in school: Testing a rational-choice argument of differences in ethnic homophily between classroom- and grade-level networks", *Social Networks*, 42, 18-26.

Software

Pink, S., 2014: *npinfo. Stata Befehl zur Erstellung von Netzwerkstrukturen*, available via Statistical Software Components under http://fmwww.bc.edu/RePEc/bocode/n/.

Pink, S. & Vogel, S. (2014): *d3network. Stata Befehl zur Visualisierung von Netzwerken im Browser unter Verwendung von Javascript und JSON*, available via Statistical Software Components under http://fmwww.bc.edu/RePEc/bocode/d/.

Annex

A1 Template for the student lists

List of all students in Class		
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Number	First name	Surname
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List of all students in Class		
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Number	First name	Surname
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List of all students in Class		
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Number	First name	Surname
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List of all students in Class		
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