

Chapter 10

Social Discrimination in Classrooms: The Contribution of a Social Networks Approach to Theory and Methods, and Empirical Evidence

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10.1 Introduction

Ethnic mixing as an instrument for desegregation has a long history in the education policies of western countries. In 1954, a debate started in the US when the Supreme Court ruled that black people had the right not only to 'equal' schooling facilities, but also to desegregated schools (e.g. Brown 1954). Since then, many policy makers, not only in the USA (Moody 2001), but also in many western countries such as Belgium and the Netherlands, have promoted ethnically mixed school populations (Laquière 1997; Vermeij 2006). Often, practices of desegregation such as 'bussing' students to specific schools were motivated by the guiding principles of equality and integration. This is surely one of the most prominent examples of how educational institutions are expected to perform tasks that go far beyond the educational goal of skill formation. The results of the experiments were not overwhelmingly positive. Schools often tended to stay either 'black' or 'white', even when policy makers supported ethnic mixing (e.g. Coleman 1975; Karsten 2006). However, schools with actually ethnically mixed populations also did not always reach better integration results (Stark 2011).

In this paper we first sketch some of the theoretical reasons of why ethnic mixing succeeds or fails. We argue that these reasons may explain why the empirical research is still inconclusive, but also that methodological problems contributed significantly to the unclear outcome. The social networks tradition entered the field in the 1980s and initially focused on solving some methodological issues. This focus was maintained in the empirical investigation of social discrimination within classroom networks, which is presented in this paper. In several

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papers we examined the effect of discrimination on segregation and the effect of the opportunity structure on social discrimination. However, as our overview of empirical results will show, the consequences of a network approach went far beyond solving methodological issues. In particular, central constructs were adapted and operational network definitions were developed for ethnic mix, segregation, opportunity and social discrimination.

10.2 Opportunity and Social Discrimination

Politicians and policy-makers who advocate ethnic mixing generally implicitly or explicitly refer to Allport's contact hypothesis (Allport 1954; Pettigrew 1998). Contact with members of other groups is argued to lead to a rectification of prejudices, a more positive attitude towards these groups and an enhanced willingness to choose a member of this group as a friend. Also, when true cultural differences exist, contact may lead to understanding or adaptation, paving the way for satisfactory interaction with members of the other group. Out-group contact is thus assumed to reduce *social discrimination*, which we define as negative attitudes and behavior towards individuals or groups on arbitrary grounds. Note that the contact hypothesis does not imply that interethnic contact always reduces prejudices. According to Allport (1954), such contacts have to be personal. Casual and superficial contact could even reinforce hostility (p. 281). Furthermore, Allport states that contact reduces prejudice and supports social integration only if the participants have the same status level, and have at least some common goals, which can only be reached by cooperation. Moreover, relevant authorities, law and custom should support integration.

While school settings often more or less meet Allport's criteria, neighbourhood settings seldom do. Contacts at school are personal, particularly in classrooms. Also, no formal status differences exist within school classes in western countries. Furthermore, it has long been known that pupils generally prefer a friendly climate, for which they need classmates (Coleman 1961). Moreover, the school organisation and teachers usually support integration. In contrast, contacts in neighbourhoods are usually superficial. While it can be safely assumed that most residents prefer a friendly and safe environment with a certain level of social services, they are not often inclined to bring about these goals by collective action with the whole neighbourhood. Also, while local and national governments usually officially support integration, substantial measures are often lacking or are not recognised by the residents. All in all, when following Allport's reasoning, we may expect effects of mixing in many schools, but usually not in neighbourhoods.¹

¹ Exceptions are possible, if only because school and neighbourhood settings can be intertwined. Ethnic segregation in neighbourhoods may be reproduced within school populations, and schools may facilitate the mixing or segregation of parents.

There are more reasons why results may differ between contexts. The contact hypothesis is not undisputed by theorists and researchers. According to competition theory the relations between ethnic groups can be competitive (Blalock 1957; Bobo and Hutchings 1996; Quillian 1995). Inter-group boundaries are assumed to be actively and purposefully constructed and maintained, whether it is for material purposes or more symbolically for the construction and maintenance of social identity (Tajfel and Turner 1979). Therefore, interethnic contact does not automatically counteract the preference for intra-group relationships. People may discriminate even more strongly against a more or less similar group than against a group that is clearly distinguishable from their own group (Jetten et al. 2001). According to competition theory, experienced threat is an important predictor of discrimination: when members of an ethnic group feel more threatened by other groups, they will stress their own identity more. All in all, according to competition theory, mixing projects will, under certain conditions such as large enough minority groups, increase discrimination. Until now, the results of empirical research have not been conclusive. According to Pettigrew and Tropp (2006), who performed an extensive meta-analysis, the hypothesis that contact reduces prejudice is sustained by empirical evidence. However, their study is not the final answer they seem to suggest it to be. Somewhat surprisingly, the authors conclude that Allport's list of conditions is too strict because projects that did not meet (some) of the criteria were also effective. However, it is not clear what this should mean for the theory. Moreover, the mean effects of mixing projects on prejudices are rather weak, which suggests that much of the effect can be better explained by other variables. In particular, while Pettigrew and Tropp admit that contexts, such as the organisational embeddedness of the project, can have important effects, they did not elaborate on the nature of such effects and accordingly did not present results. Finally, the meta-analysis was on prejudices only, leaving the effects on actual discriminating behaviour and the quality of relationships uninvestigated.

Note that meta-analyses of ethnic discrimination presuppose that there is some way to compare ethnic groups in different contexts. However, comparison is often hazardous. According to de Federico de la Rúa (2007), ethnicity does not refer as much to identity as to identification. Ethnic identifications are not fixed, but are shaped by people depending on configurations. Thus, ethnic definitions are partly subjective and partly societal constructs, and accordingly differ between contexts. Consequently, definition and measurement problems arise when researchers compare different contexts (Musterd 2005). To illustrate from our own experience (Baerveldt et al. 2007), it was not possible to define comparable ethnic categories for Dutch and Flemish high school students, even though these EU regions share the same language, have similar school systems and a similar immigration history. The main problem was that the data for the Netherlands was older (1995) than that for Flanders (2004): the first study counted many second generation immigrant children from Morocco to Turkey, whereas most immigrant children in the latter study were third generation immigrants. This not only led to practical problems of measurement and comparison, but also brought up the question of what an ethnic

category really is. To solve this quandary, many authors only distinguish between an ethnic majority and an ethnic minority, following the local definitions of who is considered a stranger and who is not.²

10.3 From Prejudice to Social Discrimination and Social Networks

The Pettigrew and Tropp study illustrates the dominance of studies on prejudice in social discrimination studies in the 1980s. However, it is questionable whether such dominance is reasonable from a theoretical perspective. The gap between preferences and actual relationships is ignored: people may or may not have prejudices towards another ethnic group and may or may not maintain positive relationships with some members of these groups. The relation between prejudices and relationships can be rather complex, and there is no empirical evidence that they are always positively associated (Stark 2011). Moreover, when the focus is on negative outcomes of discrimination for the discriminated minority members, research and theory should include the experiences of the victim. The victim cannot perceive prejudices directly: the heads of others are closed. Instead, (s)he experiences the actual behaviour of people from other ethnic origins, especially negative behaviour like aggression or avoidance, or the withholding of positive behaviour, like job offers and friendly contacts. Social discrimination is at work when such behaviour is systematic and stronger between people of different ethnic origins than between people of similar origins. Therefore, the study of ethnic discrimination should include the investigation of actual relationships.

Researchers who studied actual relationships, such as friendship or collaboration, encountered some serious methodological problems. Many studies on actual relationships in the 1980s offered numbers regarding intra- and interethnic relationships. These numbers, however, could not be interpreted in terms of segregation or discrimination because they were affected by contact opportunity (the number of possible intra- and interethnic relationships) as well as by ethnicity-based selection (social discrimination). Therefore, controlling for the opportunity of those relationships became vital in the analysis of their actual occurrence. The question arose which possible relationships could be assumed to be opportune. For instance, are only relationships with neighbours opportune or relationships with all people living within a distance of 250 m or even with all citizens? The literature did not offer a clear theoretical solution to this problem, which probably reduced the popularity of relationship studies and enhanced that of prejudice studies.

The recent social network tradition entered the field in the 1980s, especially because it offered a solution to the problem of controlling for opportunity. Hallinan

² This is in line with the generally adopted idea that ethnic identities are socially constructed (see e.g. de Federico de la Rúa 2007; Wimmer 2008).

was one of the first to recognize the potential of quantitative network research in classrooms for the study of discrimination (Hallinan 1982, 1987; Hallinan and Kubitschek 1999). The social network approach typically combines actors—like people, organisations or countries—with relationships (ties)—like friendships, trade or cooperation—between those actors. The boundaries of many types of networks are not clear by definition and in practice are often vague. However, so-called complete networks have clearly defined boundaries. A complete network includes a 'natural' set of people with all the (possible) friendships among them. Examples of complete networks include the members of and relationships within organisations, travel groups, parliaments, small island populations and UN nations. The opportunity structure of such networks can be assessed for all network members. In small complete networks, such as classroom networks, all relationships within the network can be considered as (equally) opportune. Initial attempts to control for opportunity were often problematic in a statistical sense, usually because the statistical models did not cope well with the interdependence of personal data in networks (Hallinan and Smith 1985; Hallinan and Teixeira 1987; Hallinan and Williams 1989; Kubitschek and Hallinan 1998). However, appropriate statistical models were developed (Robins et al. 2007; Van Duijn et al. 2004; Wasserman and Pattison 1996; Zijlstra et al. 2006), and successfully used since the 2000s (Baerveldt et al. 2004; Moody 2001; Quillian and Campbell 2003).

What started as a solution to the technical research problem of controlling for opportunity had consequences beyond methodological ones. The social network solutions above point to a problem at aggregation levels. Allport defined discrimination as an act of communities or groups, as a macro-outcome of micro-processes in which the prejudices of individual people are at the forefront. This combination of a macro-level phenomenon with a micro-level 'mechanism' is not unusual; it is, for instance, in line with Coleman's (1990) prominent vision on sociological theory. Accordingly, it seemed only logical to test social discrimination in a neighbourhood by aggregating the behaviour (usually having prejudices) of the individuals living in that neighbourhood. However, the social network tradition changed this scheme. The central unit of social network research is usually not the actor, but the dyad, i.e. a pair of actors and the (possible) tie(s) between them (Wasserman and Faust 1994). Most prominent network variables, like density, transitivity and structural equivalence, are built up by aggregating from dyads rather than from individuals. Consequently, the focus of the research shifted from the individual to the dyad, from the prejudices of individuals to the existence and quality of relationships between individuals. Accordingly, the question arose of whether the probability that two individuals have a positive relationship is higher if they have a similar ethnic background. This question fits well into social network tradition, where similarity is abundantly studied, not only regarding ethnicity but also regarding many other personal attributes. The first famous similarity studies stem from the 1950s (Homans 1950; Lazarsfeld and Merton 1954; Morton 1959). Since the 1980s a large number of studies showed similarity effects regarding a wide variety of attributes such as gender, socio-economic background, physical attractiveness, anti- and pro-social behaviour and

intellect. These similarity effects are explained from a wide variety of perspectives, most of which do not include 'negative' psychological processes such as the development of prejudices an overview of similarity effects and possible causes is given by McPherson et al. (2001). Thus, the social network approach did not only solve some methodological problems, but also introduced dyadic thinking and positioned 'social discrimination' as only one cause of one kind of similarity.

In the present paper, we continue to illustrate the consequences of a social network approach by discussing a series of three classroom network studies (Baerveldt et al. 2004, 2007; Vermeij et al. 2009). The studies were inspired by the working theory of mixing projects. First, we investigated whether segregation (ethnic boundaries) existed within classrooms, and whether this segregation was caused by social discrimination (Baerveldt et al. 2004, 2007). Second, we studied the effect of the opportunity structure in classroom networks and neighbourhoods on social discrimination (Vermeij et al. 2009). From the beginning it was clear that the network approach would have consequences beyond the methodological level. Thus, our enterprise was also meant to solve two connected problems. The first was how to define social discrimination and related concepts within a network context in clear, operational terms. The second was how to analyse effects on discrimination.

10.4 A Social Network Approach to the Study of Social Discrimination

A social network approach includes not only a certain branch of data and data gathering and a certain brand of statistical methods, but also network-based operational definitions.

When considering positive interethnic relationships (e.g. friendship, support, doing things together) in complete networks, it is possible to provide a rather straightforward definition of the opportunity structure. When the ethnic distribution across the network is known, i.e. the ethnicity of each network member, the number of possible intra-ethnic relationships is also known, as well as the number of possible interethnic relationships. All possible relationships can be viewed as relationship opportunities when it is easy for network members to meet each other. This is usually the case in classroom networks, but also in many other types of complete networks. In practice, those networks should not be too large and there should be no hindrances like geographic distances or formal rules. The opportunity for each network member is then given by the proportion of possible (positive) intra-ethnic relationships compared to the total number of possible relationships. In operational terms: when a complete network includes N members, of which N_{maj} are majority members and N_{min} are minority members, then the opportunity of intra-ethnic relationships for each majority member is $N_{\text{min}}/(N - 1)$, and for each minority member the opportunity equals $N_{\text{maj}}/(N - 1)$. Aggregating these

proportions across all members of specific ethnic categories creates opportunity indexes for each ethnic category at the network level.

While opportunity refers to what is possible at all, the ethnic mix refers to what is reality. In complete networks, where all possible and actual relationships are known, the connections are known, which offers the opportunity to count and compare and thus to assess the ethnic mix for each member of the network. The ethnic mix can then be defined as the proportion of actual intra-ethnic relationships compared to the total number of actual relationships. In operational terms: when a network member has X friendships, of which X_{intra} are within the same ethnic category, the ethnic mix index is X_{intra}/X . Aggregating these proportions across ethnic categories creates ethnic mix indexes for each ethnic category at the network level.

A low mean of the ethnic mix indicator(s) does not automatically imply segregation. When there is only one Chinese person in town, the ethnic mix indicator for the other inhabitants with respect to Chinese people is low, but this situation does not cover the idea of segregation at all. What is essential here is the actual number of relationships with a member of a certain category, compared to the number of possible relationships. The crucial question is whether people have a tendency to engage in positive intra-ethnic relationships more than can be expected from their opportunity. First, consider the total density d , i.e. the proportion of actual relationships within the whole network compared to the total number of possible relationships within the network. Then, consider the density $d_{\text{intra}}(X)$ of intra-ethnic relationship within an ethnic category X , i.e. the proportion of actual relationships with people of the same category compared to the number of possible relationships within that category. A clear segregation index is then given by $d_{\text{intra}}(X)/d$. Note that the segregation index is directly related to the existence of ethnic boundaries. Ethnic boundaries exist when the segregation index is significantly larger than 1, i.e. members of category X have a tendency to have more relationships within their own category than can be expected from the total number of actual and possible relationships in the whole network.³ Moreover, the strength of boundaries is given directly by the value of the segregation index. Note that not just one index exists for the whole network, but that one index exists for each ethnic category. Consequently, segregation is considered here as a multi-dimensional construct, where each ethnic category adds a perspective to segregation.

Social discrimination is not automatically implied when networks are segregated (i.e. when one or more segregation indexes is larger than 1), because ethnic segregation can be caused by factors other than discrimination. For instance, if minority members live in cheaper buildings than majority members in the same neighbourhood, this can cause segregation even without social discrimination. In classrooms, gender is usually the strongest divider (most friendships are intra-gender friendships), which can indirectly cause ethnic segregation. This initially led us to define social discrimination as a propensity of network members to engage more in

³ We focus on the strength or permeability of the boundaries, and do not take into account how society defines the relevant 'ethnic' categories (Alba 2005; Esser 2004, 2008; Wimmer 2008).

intra-ethnic than in interethnic relationships (Baerveldt et al. 2004). Note that while social discrimination is usually defined at aggregation levels above the individual, the propensity should refer to networks or categories. The word 'propensity' refers to people and accordingly suggests that the construct is aggregated from an individual variable. However, in social network research, the unit of analysis is usually the dyad and not the individual. What is important here is what happens to dyads, in particular the status regarding the existence of positive relationships within the dyad. What is essential is whether the propensity to engage in intra-ethnic relationships has an effect on this status. Consequently, we defined social discrimination as a (positive) effect of ethnic similarity on the probability that a possible relationship is an actual relationship. This definition enabled us to include social discrimination as an effect in appropriate statistical models. But it also affected the view on discrimination. Note that by this definition, social discrimination is observed as an activity that is only directly visible in its effect on the formation of dyadic relationships. The intention and prejudices of the 'sender' (i.e. the discriminator) and any of the sender's psychological mechanisms are not taken into account. Social discrimination is not defined as the outcome of preferences; other mechanisms, such as peer pressure, can as easily play a role. The process within the 'receiver' (i.e. the discriminated) is also not taken into account.

10.5 The Three Classroom Studies: Design, Analyses and Results

10.5.1 Data and Design

Three different databases were used to investigate networks of high school pupils in the Netherlands and Flanders. First, segregation (ethnic boundaries) and social discrimination were studied in 20 Dutch pupils' networks (Baerveldt et al. 2004). Second, 34 high school pupil networks in Flanders were investigated and compared with the Dutch networks (Baerveldt et al. 2007). Third, a dataset comprising 86 pupils' networks in the Netherlands were used to study the effects of ethnic composition on social discrimination (Vermeij et al. 2009). Each network from the first two databases consisted of a school cohort at an intermediate level of education (track). These networks usually included more than one classroom. The third database included separate classroom networks. Friendship relations within the networks and ethnicity were measured by questionnaires; pupils were asked to indicate with whom in their class they had (specific) positive relationships, like friendship, emotional and practical support. These items were used across all three studies, but there was some variation in the way they were used in the analysis. While precise information about ethnicity existed and was used in descriptive analyses, only the distinction between majority and minority members was used in the final analyses. See the cited publications for more information about design and measurements.

10.5.2 Statistical Methods

Our first concern was to define the concepts above in such way that, on the one hand, they were as true as possible to the theoretical framework behind the mixing discussion and, on the other hand, in line with the social networks approach. The statistical models were developed in the last decades, and two of our co-authors contributed significantly to the models we needed (Van Duijn et al. 2004; Zijlstra et al. 2006). Consequently, the definitions given above were partly inspired by the development of new statistical models, as the development of the models was partly inspired by our search for clear definitions and results. It is only by defining social discrimination as an effect on dyads that we were able to use the new models.

Classical methods, such as log linear or logit analysis, presuppose that data at the individual level is independent. However, such variables are usually interdependent in social networks. For instance, the number of friendships a pupil has within a classroom network depends partially on the number of friendships of his/her classmates. However, methods that deal correctly with the problems of interdependency in social networks have become available recently, not least the $p2$ and p^* models which are examples of Exponential Random Graph models (ERGMs, see e.g. Robins et al. 2007). In our analyses, we used the $p2$ model (Van Duijn et al. 2004; Zijlstra et al. 2006). The $p2$ model is a random effects multinomial logistic regression model with a complex variance structure to account for the dependence between dyads. The dependent variable is the relationship status of a dyad (i,j), indicating whether an actual relationship exists between pupils i and j. The model incorporates and controls for sender and receiver characteristics, such as ethnic group membership, and for dyadic characteristics, such as ethnic similarity between the pupils of a dyad. This makes it possible to assess social discrimination as an ethnic similarity coefficient in the $p2$ model. Recently, a multi-level version of the $p2$ model has been developed (Zijlstra et al. 2006) that includes the effects of network-level variables, such as ethnic network composition, in the equation. The interaction effect of network composition variables and the social discrimination coefficient on the status of dyads can now be interpreted as the effect of ethnic composition on social discrimination.

10.6 Results

In all three studies, we first investigated the ethnic mix. We found that majority members predominantly had positive relationships with majority members. In our first study (Baerveldt et al. 2004, p. 64) we found that 79 % of (received) support relationships of the native Dutch pupils in the first study were with other native Dutch pupils and only 2 % with pupils of Moroccan origin. However, only 24 % of the support relationships of the pupils of Moroccan origin were with other Moroccans and 27 % with native Dutch pupils. The results in the other two studies

were similar: while minority members had mixed networks, majority members mostly remained in their native network.

The ethnic mix seems to imply that majority members were discriminating, but our investigation of segregation suggested a completely different interpretation. While the percentage of intra-ethnic relationships in the personal networks of majority members was more or less equal to the possible percentage of these relationships in these networks, minority members had (many) more intra-ethnic relationships than could be expected, taking the ethnic distribution into account. Thus, majority members were not segregated, but minority members were. Our analysis of social discrimination supported the hypothesis that the segregation was caused by social discrimination. Again, we found striking differences between majority and minority members. Minority members discriminated, whereas majority members did not discriminate or discriminated less.

Finally, we investigated the effect of the opportunity structure on social discrimination (Vermeij et al. 2009). Our data permitted us not only to take the ethnic mix in the classroom into account, but also the ethnic mix in the neighbourhood (postal codes) where the pupils lived. Table 10.1 shows that the results run counter to expectation, whether on the basis of contact hypothesis or competition theory.

We found (1) no effects of a larger number (proportion) of minority members in classroom networks on social discrimination by majority members. This seems contrary both to contact theory, which predicts less discrimination, and to the competition perspective, which instead predicts stronger discrimination. In contrast, we found (2) that a larger number of minority members in the neighbourhood reduced social discrimination by majority members in the classroom. As we have argued, however, neighbourhoods do not meet Allport's criteria for such an effect. Also, our finding is not in line with the competition perspective, which predicts a rise of social discrimination. Table 10.1 also shows that (3) there were no effects of ethnic classroom composition on social discrimination by minority members. This does not contradict the contact hypothesis. The main reason is that minority members usually have abundant contacts with majority members and that a larger number

Table 10.1 The influence of a larger number of minority members in the classroom and in the neighbourhood on social discrimination among classmates. Predictions from a contact and from a competition perspective, and empirical results

	Larger number of minority members in:	Predictions from		Empirical results
		Contact theory	Competition perspective	
Majority members				
(1)	Classroom	-/-	+	0
(2)	Neighbourhood	0	+	-/-
Minority members				
(3)	Classroom	0	+	0
(4)	Neighbourhood	0	+	+

would not substantially reduce the number of such contacts. Our finding is, however, contrary to the competition perspective because, when minority members find themselves in larger numbers, they would, according to that perspective, more easily build identities around their own ethnicity. Finally, we found (4) that an increase in the number of minority members in the neighbourhood reinforced minority members' social discrimination of majority members. This is not in line with the contact hypothesis, which never predicts stronger social discrimination under these circumstances. However, it exactly matches the predictions of competition theory.

10.7 Conclusion and Discussion

In this paper we presented a series of three studies of social discrimination in a social networks frame. First, to overcome some problems of earlier discrimination studies on positive relationships and networks, operational network definitions and measurements were developed for ethnic mix, segregation, opportunity structure and social discrimination. Second, making use of the fact that the opportunity structure for relationships is known in complete networks, we analysed three datasets of classroom networks. Third, using p^2 models, we tested the effects of discrimination on segregation and of ethnic mix on discrimination. This approach led to some remarkable results. While most majority members had only few positive relationships with minority members in the class, more than half of the relationships of minority members were with majority members. This is entirely due to the opportunity structure because, strikingly, minority members discriminated more than majority members. The ethnic classroom composition had no effect on social discrimination, whereas the effects of neighbourhood composition were clear: minority members discriminated more strongly in neighbourhoods with more minority members, and majority members did discriminate less. None of these findings seems to be in line with either Allport's contact hypothesis or social identity/competition theory.

Before going on with the interpretation of the results and the evaluation of the chosen research strategy, we want to discuss some possible limitations of our study. First, we ignored institutional discrimination, like discrimination by organisations, in the economy or by laws and policy. We acknowledge that institutional discrimination can have a huge impact on everyday life and cannot be studied sufficiently from our dyadic approach. However, our inspiration came from ethnic mixing projects, which aimed to boost integration and equality in educational institutions, because such projects still take on a major role in integration policy in some western countries. The driving force for mixing projects is not structural, but social discrimination. Therefore, we limited ourselves to a social network perspective and dyad-based constructs.

Second, we acknowledge that our empirical results cannot be generalised automatically to apply to school populations of other configurations. The Dutch schools in the first and third study were not randomly selected, and probably

counted fewer minority members than average in the Netherlands. The problems regarding the assessment of the membership in a minority group suggest that measurement problems will probably arise when studying other countries or historical periods. Moreover, in some configurations, integration will be supported by authorities and in others it will not, which according to theory (Allport) would lead to different expectations (regarding the outcome). However, there is one reason not to be too pessimistic about generalisation. The Flemish schools in the second study were selected randomly, and while the percentages of minorities in the class and the political context were different, some striking outcomes were still the same. While the minorities were the social discriminators in the class, they still had mixed personal friendship networks, whereas the majority members did not discriminate but had a less diverse ethnic mix. Therefore, we expect that our findings are no coincidence and that studies in western countries will probably often replicate our findings.

Third, while the use of complete networks makes it possible to measure the opportunity structure and social discrimination, the friendship networks of the pupils in our study are still cut off by classroom walls, and the pupil's networks outside school remain invisible. The question is: how important are the pupils' friends outside of the classroom network? We asked the pupils how important they were and they indicated that the most important friends were usually those in the classroom. We also controlled all our analyses for this variable, which did not change the major outcomes. Also, for theoretical reasons, it could be argued that social discrimination is generalised across all settings (like a personal trait), and that pupils would socially discriminate as much in school as outside of school. However, there still is a slight chance that behaviour inside and outside of school differs, and it would be wise to include out-of-school friendships in future research.

Fourth, in Vermeij et al. (2009, p. 238) we interpreted our findings regarding the effect of the ethnic composition of neighbourhoods on social discrimination: majority members discriminated less and minority members more as the number of minority members in the neighbourhood increased. We suggested that this might be explained by the neighbourhood choice of ethnocentric parents: parents with ethnic majority background would leave neighbourhoods with many minority members, and ethnocentric parents of a minority background would readily enter them. However, it is not probable that such a mechanism would offer a full explanation of the findings. Other neighbourhood features, such as house/rent prices, distance from work, safety and facilities probably affect the choice of neighbourhood more. Moreover, while there is usually a mean effect of parents' morals on their children, the effect should be very strong to explain the large differences we found. While keeping in mind that the influence of parents on their children rapidly decreases as the children enter adolescence (Meeus et al. 1999), we conclude that the neighbourhood choice of ethnocentric parents cannot explain away our findings.

Our findings illustrate that mixing projects may 'work', even though they do not support the theoretical basis of Allport's contact hypothesis. The data shows that social discrimination exists, but that minority members still have plenty of

interethnic contacts. Thus, the effects of ethnic composition on the ethnic mix in personal networks can easily outweigh the effects of social discrimination. Therefore, the negative consequences of social discrimination experienced by minority members are probably more than compensated for by positive experiences in positive relationships. Consequently, when mixing projects indeed succeed in creating ethnically mixed school populations, they have positive externalities for minority members, such as social and cultural capital, even if they do not reduce social discrimination between pupils. This suggests that mixing projects should focus on these externalities rather than on the prevention of social discrimination.

We found that classroom composition did not affect social discrimination by majority and minority members. This seems contrary to Allport's contact hypothesis, which predicts that a larger contact opportunity should reduce discrimination. However, we already indicated that it is possible that the classroom contexts did not always meet Allport's additional criteria. A strong initial segmentation of classroom networks or negative signals from authorities regarding integration would, according to Allport, impede the reduction of discrimination. Nevertheless, we also found that a larger number of minority members in the neighbourhood reduced social discrimination, while the probability that neighbourhood contexts meet Allport's criteria, is even less. We conclude that the contact hypothesis may only be valid when Allport's additional criteria are considered. We would like to suggest the abandonment of Allport's idea that only personal contacts matter and acknowledge that superficial contacts can have more important effects on selection. This latter idea has become rather popular in the social network tradition, since Granovetter (1973) advocated the 'strength of weak ties', and should be given serious consideration.

Our findings are only partially in line with the competition perspective. First, because classroom composition did not affect social discrimination, the competition perspective should depart from the idea that personal contacts are the most important ones for competition. Competition seems to be enhanced by a more abstract feeling to be part of a larger group than by actual experiences in intimate social networks. Second, while minority members, as predicted, discriminated more when their numbers were larger in their neighbourhood, majority members discriminated less. The latter outcome deviates further from a competition perspective than can logically be expected. It might be possible for neighbourhood composition to have no effect on discrimination by majority members, if those members do not experience a larger number of minority members as a threat. However, a negative effect is not in line with the perspective.

We propose that the amount of social discrimination is best explained as a balance between the positive and negative effects of superficial contact opportunities. Stronger social discrimination is due to the potential and possibilities of a strengthening of the actors' own ethnic identity, roughly in line with the competition perspective; however, conflicts between actual persons usually do not play a major role here. Contexts at higher aggregation levels, such as political climate, economy and housing policy, will probably have a strong effect on this process. A decrease in social discrimination may still be brought about by (social) psychological processes,

including the reduction of prejudices, associated with repeated superficial contact. These processes are more general and less context-dependent.

Apart from the empirical results, the use of a social network approach alone has had some important consequences for the study of social discrimination. First, the focus shifted from the individual to the dyad. While we first followed tradition and defined social discrimination as a seemingly individual attribute, we later redefined and analysed it as an attribute of dyads. This enabled us to distinguish between certain kinds of dyads. For instance, the strength of ethnic discrimination could be compared easily between same-sex and opposite-sex dyads. In general, dyadic analysis enables researchers to control for selection mechanisms that compete with ethnic discrimination. Second, a certain kind of 'symmetry' is a natural feature of the social network approach. It is hazardous to compare social discrimination as measured by the prejudices of majority and minority members. The main reason is that the relevant prejudices of majority members are usually different from those of minority members. In contrast, we have defined social discrimination as friendship selection, independent of the (ethnic) position of the potential discriminator, and majority and minority discrimination are easily compared. Third, social discrimination is more explicitly defined as a cause instead of a consequence. When analysing social discrimination, it is assessed as the effect of an independent variable (ethnic similarity) on friendship choice. Fourth, defining ethnic discrimination as a similarity effect stresses that social discrimination is only an example of a selection pattern. This suggests that the theoretical approaches of other fields can be used to understand discrimination. For instance, there is no compelling reason to interpret social discrimination as the outcome of preferences; peer pressure, scarcity of attractive candidates for friendships and erroneous information can as easily lead to social discrimination (Baerveldt et al. 2010). Also, the occasionally moralistic values embedded in the study of 'prejudices' can be avoided. There is no overarching theoretical reason why it would be negative to select same-ethnicity friends and positive to select same-gender friends. The only reason to avoid social discrimination would be in the negative externalities, not because discrimination itself is 'bad'. Fifth, the relations between the important concepts, ethnic mix, segregation, social discrimination and opportunity structure are intuitive and clear in a social network approach and can easily be translated into analyses.

Finally, the object of our study shifted from 'prejudices' to 'friendship choice'. This is, again, partly an effect of the network approach: network studies usually do not focus on intra-personal development factors, such as maintaining or dropping prejudices, but on actual relationships between people. We would like to emphasize the merits of this shift. The rather complex (and not always positive) association between prejudices and discrimination in friendship choice makes it unfeasible to regard prejudices and social discrimination as equivalent. As we already stated, the usually negative moral value associated with ethnic discrimination is not embedded in the fact that people have prejudices, but rather in negative externalities, such as aggression or avoidance, poorer education and less job opportunities. According to the literature (e.g. Wimmer 2008), ethnic boundaries can have strong direct effects

on these externalities, and therefore the study of those boundaries seems to be more salient than the study of prejudices. Our contribution is that, with our segregation index, we developed a method to measure the strength of the ethnic boundaries (given the societal definitions of the relevant ethnic categories). Moreover, we developed a segregation index for each ethnic category, implying that the strength (or permeability) of the ethnic boundary can differ between those categories. This is in line with the understanding that members of one ethnic category can more easily cross the 'same' ethnic boundary than members of another category.

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