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The Double Edge of Common Interest: Ethnic Segregation as an Unintended Byproduct of Opinion Homophily

Tobias H. Stark¹ and Andreas Flache¹

Abstract

How can we reduce ethnic friendship segregation in ethnically heterogeneous schools? The Common Ingroup Identity Model suggests that interethnic friendships are promoted by those intervention programs that focus on the interests students have in common. The authors argue that the outcome of these common interest interventions may crucially depend on sufficient consensus in participants' opinions regarding the shared interest. Such an intervention may backfire and increase ethnic segregation if participants from different ethnic groups have different opinions about the common interest. The authors test their argument analyzing the dynamics of friendship networks and opinions in 48 school classes with an actor-based stochastic model. Their findings suggest that salient common interests in ethnically mixed school classes can indeed reduce ethnic segregation. However, they also found that friendship selection on the basis of similar opinions can foster ethnic segregation. This occurred when ethnicity was correlated with the opinions that students held regarding the salient interest, even when these students did not prefer intra-ethnic friendship *per se*.

Keywords

friendships, homophily, networks, longitudinal, ethnic segregation, SIENA

Students' friendship networks tend to be ethnically segregated in ethnically diverse schools (Moody 2001; Quillian and Campbell 2003; Vermeij, Van Duijn, and Baerveldt 2009). This ethnic segregation in friendship networks has mainly been attributed to both propinquity—the tendency to form relationships with others who share the same social context (Blau and Schwartz 1984; Van Houtte and Stevens 2009)—and ethnic homophily, here conceived as a preference for friends with the same ethnic background (McPherson, Smith-Lovin, and Cook 2001; Wimmer and Lewis 2010). Ethnic friendship segregation is seen as a reason for concern because research has found that interethnic friendships are an important mechanism for the reduction of ethnic prejudices (Aboud, Mendelson, and Purdy 2003; Levin, van Laar, and Sidanius 2003). It has been shown, for

instance, that friendly contacts with ethnic minority members during childhood are a predictor of more interethnic relationships in adolescence (Patchen 1982) and less interethnic prejudice in adulthood (Ellison and Powers 1994).

Reduction of ethnic friendship segregation is on the agenda of many societal institutions, but how to accomplish this is often unclear. An example from a recent intervention in Arnhem, a mid-sized city in the Netherlands with highly ethnically heterogeneous city districts (some with

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over 50 percent inhabitants from minority groups), highlights the struggle institutions may experience. In the summer of 2007, youth workers in these heterogeneous districts tried to reduce ethnic segregation in the friendship groups of their teenage clients. The idea was to organize a hip-hop afternoon because this music style was popular at the time among teenagers from all ethnic groups. The youth workers prepared composing, beatboxing, and dancing workshops; hired a professional hip-hop artist; and invited participants through schools and youth centers. The youth workers expected that resentments between ethnic groups would diminish once the participants realized that they shared a common interest in hip-hop music. Making music together might even lead to new friendships that crossed ethnic boundaries. Unfortunately, the reality did not measure up to their expectations, and the afternoon ended in disaster. Instead of friendships, verbal arguments developed between the ethnic groups that eventually ended in fights.

What went wrong? The problem was not that the hip-hop intervention lacked a theoretical foundation. According to the Common Ingroup Identity Model (CIIM) (Gaertner and Dovidio 2000; Gaertner et al. 1989), highlighting a more inclusive group category (such as hip-hop fans) that encompasses members of different ethnic groups should have improved the group members' opinions of one another. Several intervention studies with schoolchildren supported this reasoning (Cameron, Rutland, and Brown 2007; Houlette et al. 2004; Levy et al. 2005). The theoretical foundation of the CIIM lies in self-categorization theory (Tajfel 1969; Turner 1985), which suggests that a salient common group identity will extend a pro-ingroup bias to the former outgroup members (Dovidio, Gaertner, and Saguy 2009). In other words, a common interest in hip-hop music may become a shared category on the basis of which participants can define their group identity so that former outgroup members can then be perceived as belonging to the newly formed ingroup. Thus, mixing students from different ethnic backgrounds in, for instance, music projects or sport teams should make similarities involving the common interest salient and hence help to form common ingroups such as hip-hop or soccer fans (Gaertner et al. 1989). In the remainder of this article, we will call interventions with these characteristics *common interest interventions*.

Although the CIIM is itself not concerned with friendship formation (but see Houlette et al. 2004; West et al. 2009), the homophily principle (McPherson et al. 2001) suggests that cross-group friendships will more likely eventually form, when—for example, due to a common ingroup intervention—students perceive former outgroup members as being similar to themselves in important characteristics (Aboud and Mendelson 1996). Just as Coleman (1961:174) pointed out, friendship groups “are not only a source of interest in popular music; they are in part created by such interests.” In this way, common interests should be able to promote integration in ethnically mixed schools. In line with this reasoning, Moody (2001) found more interracial friendships in schools that fostered racial mixing in extracurricular activities, where the students could discover similarities on dimensions other than ethnicity.

Why, then, can interventions that emphasize a common interest fail? We will argue in this article that the CIIM captures only one particular condition for intergroup interaction identified in Blau's (1977) much broader theory of “crosscutting social circles.” In the following section, we will employ the theory of crosscutting social circles to highlight conditions under which an intervention focusing on a common interest may succeed in establishing a common ingroup identity and others under which it may fail to do so. We will then test our argument empirically by studying how common interests affect the process of friendship formation in school classes. This indirect approach has been chosen instead of an experimental implementation of common interest interventions for ethical reasons. An intervention might increase ethnic segregation—if our arguments are correct—and thus considerably harm the social environment of students. Hence, we will investigate the development of students' friendship networks and their opinions about a range of salient interests in a three-wave longitudinal study of 48 school classes.

Integration through Common Interest Interventions

The idea of more inclusive common ingroups in the CIIM very closely resembles the classical sociological concept of concentric social circles that Simmel ([1922] 1955) suggested as being one condition for social integration. Groups form

concentric social circles if they overlap as a result of successively wider boundaries (e.g., different ethnic groups as parts of one school class). In concentric social circles, social relationships with former outgroup members may develop if the higher-order group membership becomes salient. However, it is not always possible to detect wider group categories that comprise several outgroups and that can be made salient in an intervention program. Hence, the suggestion of Gaertner and Dovidio (2000:7) to introduce “new factors (e.g., their common goals or fate) that are perceived to be shared by members [of different groups]” is followed in common interest interventions as an alternative approach for promoting integration through more inclusive group categories.

However, the application of the CIIM to interests resembles Simmel’s ([1922] 1955) concentric circles less than it does a special condition in Blau’s theory of “crosscutting social circles” (Blau 1977; Blau and Schwartz 1984). Blau emphasized that every individual belongs to several social categories, such as seventh-grade student, white-Caucasian, Hispanic, and hip-hop fan, which can be partially overlapping (i.e., crosscutting). A common ingroup that forms on the basis of a common interest does not by definition include all members of a social setting. Instead, only those students who share that interest can discover similarities with former outgroup members who also share the interest. The CIIM applied to common interests can be seen as focusing on the special case of perfectly crosscutting social circles. In this case, group categories are perfectly orthogonal to a larger category so that the same proportion of members of both ethnic groups belongs to the larger category. A common ingroup that comprises students from all ethnic groups could be formed, for example, on the basis of the category hip-hop fans if the overlap were perfect and hip-hop music were equally popular among all ethnic groups.

Segregation Instead of Integration

Despite the potential benefits of common interest interventions, we argue that Blau’s theory also implies that these interventions may backfire and reinforce friendship segregation under certain conditions. Adult youth workers often may not be aware of underlying distinctions between, for example, different music or clothing styles that are highly salient to adolescents. Designers of

the intervention may thus overlook the fact that the common interest itself represents only the most inclusive of a range of concentric social circles. The group of students who have an interest in common may fragment into narrower circles of students who differ in the actual opinions they have regarding particular areas of their common interest—a special case of the concept of concentric differentiation that Blau (1977) introduced, following in the footsteps of Simmel ([1922] 1955), to describe categories that comprise nested subcategories.

Blau (1977) expected that homophily—the tendency to select friends from the same category—might be stronger at the lower levels of differentiation. Accordingly, while it may appear that students prefer friends with similar interests, they may actually have a preference for friends belonging to the same subcategory of that interest. Following from Blau, Wimmer and Lewis (2010) focused on concentric differentiation of racial categories into more fine-grained ethnic subcategories. Consistent with Blau’s argument, they found that racial homophily in a sample of college students was a spurious result of students’ preference for friends from their ethnic group who happened to be of the same race.

Designers of a common interest intervention may overlook the fact that concentric differentiation can similarly contribute to segregation if the members of different ethnic groups have a common interest but are differentiated in subgroups that differ in their underlying opinions with regard to further subcategories of that interest. Even if all students indeed liked hip-hop music, this would not preclude their possible preference for different artists or hip-hop styles (such as West Coast or East Coast hip-hop). This is not a problem as long as those subcategories still sufficiently cut across the boundaries of different ethnic groups. Yet crosscutting social circles indicate only that groups overlap while they do not necessarily incorporate members of different groups to an equal extent (Blau 1977).

The extent to which different subcategories of a common interest cut across different social groups can be expressed in the correlation of the subcategories with the corresponding group categories (Blau and Schwartz 1984). As Blau (1977:86) argues, “the lower the correlations of parameters [i.e., social categories], the more extensive are the intergroup relations that strengthen macrosocial integration.” If, in the

previous example, most white-Caucasian as well as most Hispanic students were more interested in West Coast hip-hop than in East Coast hip-hop, either subcategory of hip-hop music would have a low correlation with the category of ethnic group membership.

Blau also emphasized, however, that the integration of two social groups may suffer if a cross-cutting social circle overlaps significantly more with one group than with the other (Blau 1977; Blau and Schwartz 1984). He warned that “coinciding [i.e., correlated] parameters have the opposite effect of making group barriers cumulative, which reinforces their inhibiting effects on intergroup relations” (Blau 1977:86). Making the interest in hip-hop salient might unintentionally increase students’ awareness of the dissimilarities between their ethnic groups rather than emphasize their similarity. In other words, the intervention actually makes salient the subcategories West Coast and East Coast hip-hop, which coincide with ethnic group membership, with the possible consequence being that ethnic group barriers will be reinforced.

This is what probably happened in our introductory case of the hip-hop afternoon in Arnhem. The youth workers organizing the afternoon assumed—rightly—that interest in hip-hop music would be a category that was not correlated with the ethnic group membership of the participants. However, as one of the youth workers suggested later on when reflecting on the event, they overlooked the fact that hip-hop has several facets and that different ethnic groups in their city liked different hip-hop styles. The broader category, hip-hop music, was indeed a common interest of different ethnic groups; however, it appeared that the youth workers were in fact dealing with two underlying interests that were correlated with ethnic group categories. Ironically, it seems that the intervention turned these hip-hop styles into the categories that were most salient for defining group boundaries at the hip-hop afternoon.

The failure of the hip-hop afternoon suggests a double edge of common interest. A common interest intervention may successfully improve intergroup relations when the common interest does not fall apart into more fine-grained subcategories that are related to ethnic group membership. However, the intervention can fail when such a correlation exists that has escaped the attention of the designers of the intervention. Accordingly, attempts to integrate a segregated

school with a common interest intervention may actually worsen the situation. We call this the *common interest trap*.

The mechanism through which common interest interventions affect intergroup relations in terms of both the CIIM and the common interest trap is opinion homophily, the preference for friends with similar opinions toward a certain interest. Opinion homophily is different from ethnic homophily, but in a context in which ethnicity and opinion are correlated, both forms of homophily may independently contribute to the ethnic segregation of friendship networks (Wimmer and Lewis 2010). In particular, ethnic friendship segregation may arise as an unintended by-product of opinion homophily even if students actually do not have a genuine preference for having friends from their own ethnic group. What appears to be ethnic homophily may not necessarily be caused by a preference for friends of the same ethnic group but rather by a preference for friends with similar opinions about a common salient area of interest.

The Present Study

Despite its theoretical plausibility, the argument that opinion homophily can contribute to ethnic segregation in schools has, to the best of our knowledge, not been tested empirically. There are two reasons for this lack of evidence. First, a methodologically appropriate study of the mechanisms underlying ethnic network segregation would need to disentangle the different mechanisms that shape social networks. Only in recent years have methods been developed that are able to distinguish between different possible causes of friendship network formation such as propinquity and homophily, while taking structural (or endogenous) network processes such as reciprocity and transitivity (a friend of a friend is more likely to become my friend) into account. Second, it would be ethically irresponsible to employ a common interest intervention in a context wherein opinions and ethnic backgrounds are correlated. If our arguments are correct, an intervention might increase ethnic segregation in such a context and thus considerably harm the social environment of the students.

The strategy we propose tests the potential for a double edge of common interest interventions without actually having to elicit common interests. The key idea here is that we investigate

whether the behavioral mechanisms (opinion homophily and ethnic homophily) that would give rise to a common interest trap also occur in school classes that are not actually exposed to a common interest intervention. A common interest intervention would make one interest dimension (or a subcategory of that interest) salient, which classmates would then use to select friends with similar opinions. But even without interventions, in many classes there are opinions that are sufficiently salient for students so as to affect their friendship selection. Our strategy is to identify such opinions and then to test whether they contribute to ethnic friendship segregation in the expected way. Why a particular opinion may be salient for friendship selection in a given class is, in this context, not important for our analyses. Nor is it important whether the opinion represents a common interest or a subcategory thereof. In our approach, the differentiation occurs between those who embrace the opinion (e.g., like a certain music style) and those who do not. What we are then interested in is the extent to which, in a given school class, the opinion that determines friendship selection is correlated with the ethnic background of the students and how this affects the ethnic segregation of friendships via ethnic homophily and opinion homophily.

Such correlations might exist for various reasons. For instance, there are several popular hip-hop musicians of Moroccan background in the Netherlands. Their music might be particularly popular with Moroccan teenagers and less so with Dutch hip-hop fans. As pointed out by Bourdieu ([1979] 1984), such differentiations in lifestyles (tastes) may even be actively used in network formation to preserve status differences and boundaries between different groups. People who perceive themselves as members of a high-status group use cultural preferences to distinguish themselves from other groups and identify members of their own group worthy to become friends with. If status differences are related to ethnic groups in a school class, students could use their interests to signal their group membership and find friends from their own group.

Our longitudinal data allow us to focus directly on the behavioral mechanisms that contribute to ethnic friendship segregation rather than inferring these mechanisms indirectly from an analysis of cross-sectional network data. More precisely, we investigate to what extent ethnic similarity affects students' friendship choices net of effects from the

		Correlation between opinion and ethnicity	
		YES	NO
Friendship selection based on opinion homophily	YES	Type 1: <i>gross ethnic homophily exceeds net ethnic homophily</i>	Type 2: <i>gross ethnic homophily smaller than net ethnic homophily</i>
	NO	Type 3: <i>gross ethnic homophily equals net ethnic homophily</i>	Type 4: <i>gross ethnic homophily equals net ethnic homophily</i>

Figure 1. Typology of school classes according to opinion homophily and correlation between opinions and ethnic background of the students

relative size of the ethnic groups (implicitly controlled for by the statistical model), from gender similarity, from network structural effects (reciprocity and transitivity), and most importantly, net of effects from similarity in opinions. The extent to which ethnic similarity affects friendship choices net of these controls¹ can be interpreted as a measurement of genuine ethnic homophily.

Since our interest focuses on the interplay of ethnic homophily and opinion homophily, we distinguish between gross ethnic homophily and net ethnic homophily, reflecting Moody's (2001) distinction of "gross segregation" and "net segregation" for cross-sectional network analysis. *Gross ethnic homophily* refers to the extent to which friendship choices are affected by ethnic similarity without controlling for the effects of opinion similarity (but net of the other controls). Net ethnic homophily is what remains of gross ethnic homophily after effects of opinion similarity have also been taken into account. Our theory of a double edge of common interest implies that the relationship between gross ethnic homophily and net ethnic homophily should depend on whether students in a particular class prefer friends with similar opinions and whether ethnicity and opinions are correlated. Figure 1 presents four types of school classes that can be distinguished based on this typology and the corresponding theoretical expectations.

Both in Type 1 and in Type 2 school classes in our typology, students prefer friends with similar opinions. But only in Type 1 school classes is

there, in addition, a correlation between ethnicity and opinions. It might appear here that students tended to select friends with similar ethnic backgrounds (ethnic homophily); however, we expect that this tendency can partially be attributed to their tendency to select friends with similar opinions (opinion homophily). In other words, we expect gross ethnic homophily in these school classes to be larger than net ethnic homophily (Hypothesis 1).

The effect of opinion homophily on friendship formation should be different in Type 2 school classes, where opinions and ethnicity are not correlated. Just as in Type 1 school classes, students tended to select friends with similar opinions. But given that opinion similarity is not related to ethnicity, this contributed to a reduction in ethnic friendship segregation or at least tempered its increase. Without controlling for students' preference for friends with similar opinions, one could thus underestimate their preference for friends with a similar ethnic background. Accordingly, if we analyze the dynamics of network formation in such a class, we should find that gross ethnic homophily falls below net ethnic homophily (Hypothesis 2).

Finally, in school classes without opinion homophily (Types 3 and 4), the correlation between interests and ethnicity should not be related to the extent to which opinion similarity contributes to friendship segregation. Here, friends were not selected based on similar opinions and, accordingly, we expect no difference between gross ethnic homophily and net ethnic homophily in Type 3 or Type 4 classes (Hypothesis 3).

DATA AND METHOD

Sample

Data were drawn from the secondary school module of The Arnhem School Study, a longitudinal study of social networks among 1,350 students who attended the first year of secondary education (age 12–13) in the city of Arnhem, a mid-sized city in the Netherlands. Class compositions changed completely for all students due to the transition from primary school so that many interpersonal relationships were newly formed. This start in a new school enabled us to follow the evolution of students' friendship relationships and the development of their opinions. School class data from the Netherlands lend themselves to our purpose because in the Dutch school system students

spend the entire school day with the same group of classmates so that the network composition remains stable and is well known to everybody in the classroom.

Data were collected at three points during the course of the school year. The first wave took place in the second and third week after the start of secondary education (September 2008). Wave 2 was conducted about three months later (December 2008), and Wave 3 took place about six months after that (June 2009). Such an unequal time lag between observations is recommended for the investigation of the friendship networks of initially mutual strangers because more change can be expected to happen in the first few months in a new school class (Veenstra and Steglich 2011).

Of all the first-year secondary school classes in the city of Arnhem, 61 (88.4 percent) took part in our study. Of the 1,350 students in these classes, 1,219 participated (response rate = 90.3 percent). Seven classes did not participate in all three waves and so were excluded from the sample. Moreover, we had to exclude 6 additional classes because there were either only students of one ethnic group or fewer than 3 students from ethnic minority groups, which led to serious estimation problems. There were 1,081 students in the remaining 48 classes, of which 999 (94.4 percent) participated in Wave 1, 997 (93.4 percent) in Wave 2, and 967 (89.3 percent) in Wave 3. These high response rates enabled us to use social network analysis, which requires near-complete data for accurate representation of school class networks (Neal 2008). There were on average 24.0 students in the classes. The final sample contained 561 boys and 495 girls. Twenty-five students who did not participate in any wave remained in the sample and were treated as uninformative missing values during the estimation process. Seven students transferred between school classes during the school year. They were represented in the networks of both classrooms so that complete networks could be analyzed.

Before data collection, parents received information letters that offered them the opportunity to not have their children participate. In addition, the students were informed that their answers would be treated confidentially and that they were free to end their participation. All students from a class who were present on the day of data collection simultaneously completed the questionnaire online on separate computers in a school computer lab. A teacher read instructions

to the students and supervised completion of the questionnaires, which took on average 30 minutes per wave.

Variables

Ethnicity. In our analyses, we did not just differentiate between ethnic majority and minority group students but used the country of origin of the parents to determine the ethnic background of the students. In this way, we overcame the limitations of earlier research that had to rely on rather crude measures of ethnicity (e.g., Van Houtte and Stevens 2009) and avoided misattributing any preference for a student's own ethnic group to an artificial aggregate category (Wimmer and Lewis 2010). Following the definition of *ethnicity* as determined by Statistics Netherlands, we classified a child as native Dutch when both parents had been born in the Netherlands (cf. Vermeij et al. 2009). If at least one of the parents was born outside the Netherlands, the child was assigned to the country of origin of that parent. If the parents were not born in the same country, the father's country of birth was used.² According to this definition, there were students from 64 ethnic groups in the sample, with 674 being native Dutch (64.4 percent). Students from the other large groups had parents from Turkey ($n = 103$), Morocco ($n = 36$), Suriname ($n = 32$), Afghanistan ($n = 24$), and Indonesia ($n = 22$). The ethnicity of 39 students was unknown. In our empirical analyses, we kept each ethnic group separate. This meant that if there was, for instance, only one Turkish child in a class, this student could not create ethnically homophilous friendship ties.

Friendship networks. To assess all friendship relationships within a school class, students were asked whom, of their classmates, they considered a "best friend." A list with the names of all classmates was displayed in the online questionnaire, and the students could check off the names of their best friends. Without limiting the number of friends, we obtained information on the entire friendship network. On average, students nominated 4.02 classmates (17.7 percent of all available classmates) as best friends in Wave 1, 4.89 (21.3 percent) in Wave 2, and 4.80 (20.8 percent) in Wave 3.

Opinions. Because we did not manipulate the salience of certain interests through an intervention, we collected students' opinions about various areas of interest that could be important for

friendship formation. The selection of interest areas was based on earlier research and on findings of several workshops and pilot studies we held with students of the same age group who did not belong to our sample. During the workshops, we asked the participants which important interests they discussed with their friends and which characteristics they preferred in their friends. The pilot studies were used to develop measurements of the salience of these interests. We selected one of these interests for each school class to test our expectations about opinion homophily. Details about the selection procedure will be explained in the Results section.

The first set of interests captured students' taste in music, which has been found to be important in early adolescence (Mulder et al. 2007; Ter Bogt et al. 2003) and to be related to adolescents' friendship groups (Coleman 1961). Based on earlier research in the Netherlands, we asked the students to rate various musical styles on 5-point scales ranging from *don't like at all* to *like very much* (Mulder et al. 2007; Ter Bogt et al. 2003). To clearly indicate what pop or hip-hop music style was meant and avoid students' thinking of different subcategories of a particular style, the names of two artists were added to each music style. Results of an explanatory factor analysis compared well with earlier findings (cf. Ter Bogt et al. 2003) for three general factors on which the opinions about these styles of music loaded (see Table O1 in the online supplementary material at soe.sagepub.com for the factor loadings in all three waves). To increase the reliability of our opinion measurements, we additively combined those opinions that loaded on the same factor in indexes ranging from 1 to 5. The first opinion measurement was called "Dutch music" and consisted of the opinions about Dutch pop and popular Dutch folk music. Two music styles, Dutch hip-hop and international hip-hop music, formed a separate index that we called "hip-hop music." Finally, the remaining items, rock and international pop music, constituted the last music opinion measurement. As can be seen in Table 1, Dutch music was on average the least popular in all waves, whereas the students preferred hip-hop music the most.

The second set of interests captured students' attitudes toward different social and antisocial behaviors. Several studies have shown that students tend to select their friends on the basis of similar deviant behavior such as fighting and vandalism

Table 1. Descriptive Statistics of Opinion Indices (N = 1,081)

	Wave 1			Wave 2			Wave 3		
	Mean	Standard deviation	Missing	Mean	Standard deviation	Missing	Mean	Standard deviation	Missing
Dutch music	2.54	1.13	107	2.66	1.11	117	2.47	1.10	120
Hip-hop music	3.68	1.09	105	3.74	1.03	112	3.65	1.02	121
Rock/pop music	3.26	1.21	119	3.38	1.19	127	3.38	1.14	134
Deviant behavior	1.75	0.72	94	1.81	0.74	103	1.98	0.82	133
Teen behavior	3.83	0.79	94	3.87	0.76	101	3.90	0.72	123
School attitude	2.30	0.99	94	2.28	0.95	102	2.16	0.92	124

(Baerveldt, Voelker, and Van Rossem 2008; Knecht et al. 2010) as well as smoking (Mercken et al. 2010; Steglich et al. forthcoming). We therefore included a list of these issues in the questionnaire and asked the students, “How much do you like to do this yourself?” Answers could be given on a 5-point scale ranging from *I don’t like to do this at all* to *I like to do this very much*. Two other behavior-related areas of interest were brought up in the workshops we conducted. First, students repeatedly suggested issues that might be best described by the term *teenager behavior*. Items that belong to this category were “listening to the latest music,” “kissing someone,” “going out at night,” “hanging out on the street,” and “chatting on the Internet.” Second, school-related issues were suggested. Of those, we picked the items “doing homework” and “reading schoolbooks at home.” The same question that was asked for deviant behavior was also asked for these items, and answers could be given on the same scale. We entered all items of the second set of interests into explanatory factor analyses for each wave. As can be seen in Table O2 in the online supplementary material at soe.sagepub.com, the items clearly loaded on three factors: capturing the items for deviant behavior, teenager behavior, and students’ school attitudes. Additive indices ranging from 1 to 5 were also computed for these opinions, and their means and standard deviations can be found in Table 1.

Analytic Strategy

A student’s choice of friends is affected not only by his or her friends’ opinions but also by the network of current friendship relationships of the student (Quillian and Campbell 2003; Snijders, Van de Bunt, and Steglich 2010). For example, friendships tend to be reciprocated, and they tend to be

transitive (Wimmer and Lewis 2010). Moreover, friends tend to adjust their opinions to one another (social influence; see Friedkin 1998). Ignoring the structural effects of networks on friendship selection, such as reciprocity or transitivity, can lead to overestimation of individual preferences in the analysis of friendship data such as the preferences for friends with the same ethnic background (Goodreau, Kitts, and Morris 2009; Mouw and Entwisle 2006). Likewise, this preference can be correctly estimated only if the opportunity structure for interethnic and intra-ethnic friendships is controlled for (McPherson et al. 2001; Wimmer and Lewis 2010). This means that the more ethnic minority students there are, the higher is the likelihood for an interethnic tie for a majority group student. Also, opinion similarity among friends might be caused not by a preference for friends with similar opinions but by social influence.

To disentangle these dependencies in the analysis of the dynamics of social networks and actor attributes, Snijders and his collaborators (Snijders 2001; Snijders et al. 2010; Steglich, Snijders, and Pearson 2010) developed the stochastic actor-based model of interrelated network and opinion dynamics. For the analysis of friendship formation in our classes, this model allows for the structural effects of the network itself to be controlled for while disentangling opinion homophily from ethnic homophily. Moreover, the stochastic actor-based model allows for the mutual feedback processes between friendship formation and opinion change—potential social influence—to be taken into account. The model has been applied to the relationship between friendships and delinquency (Baerveldt et al. 2008; Knecht et al. 2010), weapon carrying (Dijkstra et al. 2010), and smoking (Mercken et al. 2010).

In general, the model can comprise two parts. The selection part models changes in the

friendship networks, and it can be used to investigate opinion homophily and ethnic homophily, net of each other and net of structural effects. An influence part can be added that tests for social influence of friends on opinions. This allows estimating the opinion homophily effect in the selection part, controlling for influence processes. The stochastic actor-based model requires data on complete networks. For our application this meant that all students in the school classes were included in the analyses even if they entered the class in a later wave or left the class before the end of the school year. Missing values for individual attributes and network ties were treated as noninformative in the estimation process (Huisman and Steglich 2008). Mathematical specifications of the model can be found in Steglich et al. (2010). A more intuitive introduction is given in Snijders et al. (2010). We will sketch this model in the next sections.

Friendship selection. The model allows us to estimate which combination of preferences best explains the observed evolution of dichotomous network relationships (i.e., friendships). For this, a simulation method is applied that derives the expected distribution of changes in the network structure from theoretically specified assumptions about the underlying preferences of the actors and the initial condition. In other words, the simulation algorithm estimates the likelihood of changes in network ties as responses to the current state of the network and the opinions of others, given assumptions about the actors' preferences for obtaining networks with specific characteristics (e.g., with reciprocated friendships or same-ethnicity friendships). In every iteration of the simulation, a randomly chosen actor can choose between establishing a new friendship tie, terminating an existing tie, or doing nothing at all. This decision is based on the actor's characteristics and the characteristics of (potential) friends, and the actors' current position in the network and the current state of the rest of the network. The underlying idea is that changes in the network follow from attempts by each actor to optimize his or her position in the network according to short-term preferences and constraints (Snijders et al. 2010). It is assumed that the actors are fully informed about the state of the network and about the individual characteristics of all the other actors. After the decision is made and the network has either changed or not changed, the process is repeated with a randomly chosen other actor. Through this continuous-time Markov

process, likely change trajectories are imputed between waves, where the previous observations of the network and opinions form the starting points. In statistical analyses, this algorithm is used to assess how well the simulated dynamics of network and opinions fit the observed dynamics. This, in turn, allows for the estimation of the parameters for the actors' preferences, for which the model yields the best fit to the observed longitudinal data on both network and opinions.

Both structural network effects and actor characteristics can be included in the model to simultaneously estimate their effects on the dynamics of the network. We controlled for network structural effects by (1) an outdegree effect that reflects the preferred average number of friends chosen, net of other characteristics of the friends and the network. This effect captures the density of the networks. Furthermore, we included a (2) reciprocity effect that indicates to what degree actors prefer to reciprocate friendship choices and (3) a transitive triplets effect that controls for the tendency of students to become friends with the friends of their friends (transitivity). Controlling for these structural effects is recommended to avoid a bias in the estimation of homophily (Snijders 2001). If, for example, two students with similar opinions about hip-hop music form a friendship because they have a common third friend, ignoring their tendency for transitivity would incorrectly lead to an overestimation of the effect of taste in music on friendship.

Effects for actor characteristics account for the fact that certain actors are more likely to be selected as friends, are more likely to select more friends than others, or are more likely to choose each other. The degree of ethnic homophily was measured by a so-called same-ethnicity effect in the model. This tests whether dyads of students with the same ethnic background have a stronger tendency to form a friendship than students from different ethnicities. Including an opinion homophily parameter in the same models tests whether students with similar opinions are more likely to form a friendship than those with less similar opinions—under control of their ethnic homophily preference and vice versa. Additionally, we included sociality effects for the opinion covariate, which controlled for the possibility that students with certain opinions may be more social than others in the sense that they tend to select more friends than others or are more popular in the sense that they are more often chosen as

friends. Inclusion of these effects precludes a potential overestimation of opinion homophily that has been shown for cross-sectional network analysis (Goodreau et al. 2009).³ An opinion popularity effect indicates whether students with a high value on the opinion scale are more likely to be chosen as friends than those with low values. In the same vein, an opinion activity effect tests whether students with higher values on the opinion scale tend to form more friendship ties. Finally, a same-gender effect was included to control for a preference for same-gender friends that has consistently been found in research on school friendship networks (Aboud et al. 2003; Knecht et al. 2010; Mercken et al. 2010).

Social influence. When an influence part is added to the model, the potential mutual feedback process between friendships and a behavioral covariate (i.e., opinions in our cases) is taken into account.⁴ This adds two additional options for an actor to choose from in every step of the simulation. Besides changing network ties, it is also possible to change one's opinion by one step up or down on the opinion scale. This decision is made in response to the network structure and the opinions of the other actors in the network. While opinions are allowed to take on real numbers when only the selection part of the model is estimated, opinions have to be represented by discrete numbers when social influence is added to the model (Snijders and Ripley 2010). As a result, the opinions were rounded to integer values between 1 and 5 for the influence analyses.

Several effects can be included in the influence part to model the changes in students' opinions and to determine on which effects these changes may depend. First, two tendency effects control for the distributional shape of the opinion variables. A linear tendency effect expresses the general tendency to have high values on the opinion scale. The same effect squared controls for underdispersion (regression to the mean) or overdispersion (polarization) of the opinion. Both forms of dispersion might bias the estimation of influence effects (Snijders et al. 2010). Second, the average opinion similarity effect represents the preference of actors for adopting similar opinions as those of their friends. Having both an opinion homophily and this effect in the model allows us to differentiate whether students with similar opinions become friends at later measurement points or whether friends develop more similar opinions over time.

Analyses. For each school class separately, we estimated three friendship-selection models using

the program SIENA 4.0 in R (Snijders and Ripley 2010). The first model was used to identify classes in which opinion homophily played a role in the formation of the friendship networks. This enabled us to allocate the school classes on the y-axis of the typology in Figure 1 (friendship selection based on homophily or not). To this end, an analysis was carried out that excluded the same-ethnicity effect for each class. Score tests (Snijders et al. 2010) were applied to the resulting homophily effects of all opinion measurements in the study. These tests compare the goodness of fit of different model specifications and indicate whether inclusion of the homophily effect of any opinion dimension would improve the model fit significantly.

We tested the central hypotheses of our study in the next two models. In the first analysis, the ethnic homophily effect was included alongside a range of controls, but all opinion-related friendship selection effects were excluded. In the second analysis, these latter effects were also included in the model. This allowed us to compare gross ethnic homophily to net ethnic homophily. In other words, we used the change in the ethnic homophily parameter to test our hypotheses. The significance of all effects in the model was assessed using *t* ratios defined as estimate divided by its standard error, which follows an approximate standard normal distribution (Snijders 2001). Subsequently, for the four types of school classes, estimates and *t* ratios were combined in a meta-analysis following the approach suggested by Snijders and Baerveldt (2003). This also allowed us to test for significant variation between the school classes. Finally, for each school class, we estimated a model in which selection and influence effects were combined to make sure that any significant opinion selection effect that we found was not actually attributable to social influence.

RESULTS

Typology

In a first step, we had to determine which type each class belonged to in the typology of Figure 1. As explained above, we first determined from the data which opinion was relevant for friendship selection in a particular class, using the method of score tests. It was unimportant which opinion dimension was related to friendship choices in

a particular class since the process behind the CIIM and the common interest trap is independent of the content of a particular interest. That the interests and their corresponding opinions varied between classes did not influence the results, because every class was analyzed separately.

Next, it was necessary to separate classes with and without a correlation between opinions and ethnic group membership. We applied ANOVAs in each class and wave since we were interested in the relationship between the metric opinion variables and the categorical measurement of ethnicity. The p value of these ANOVAs indicated whether the ethnic groups in each school class held significantly different opinions. Given the small sample sizes in the classes, we considered any p value less than .2 as an indication of different opinions. Only the correlations in the first and second waves were relevant for our analysis because the stochastic actor-based approach models only change between two consecutive waves. Opinion homophily would have been indicated if, for example, students who were not friends but had similar opinions in Wave 1 selected each other as friends in Wave 2. In this case, their opinions in Wave 2 would not be relevant for the homophily parameter. However, in our three-wave study, the opinions in Wave 2 were relevant for the change between Waves 2 and 3. The opinions in Wave 3 were relevant only for social influence models. Accordingly, we considered ethnic group membership to be correlated with opinions if there was at least one p value of the ANOVAs less than .2 in Waves 1 or 2.

If there was any indication for opinion homophily on more than one dimension according to the score tests, the one with the highest correlation (lowest p value) was selected. If there was no indication of opinion homophily, we also selected the opinion dimension with the highest correlation. In this way, all classes were allocated to one of the four types of Figure 1. In Table 2, we present the class composition, the selected opinion, and the p values of the ANOVAs for the first two waves for the 8 classes of Type 1 and the 11 classes of Type 2. The same is done in Table 3 for 17 Type 3 classes and 12 Type 4 classes.

Ethnic versus Opinion Homophily

Two friendship selection models were estimated for each class: the first model without and the second model with the opinion-related effects included. Results for the most important

parameters of these models for each class can be found in Table O3 and Table O4 in the online supplementary material at soe.sagepub.com. The summary results for meta-analyses of these results are shown in Table 4 for classes of Types 1 and 2. Model 1 in Table 4 presents the meta-analysis of the models without opinion-related effects in the eight classes where we found indication for opinion homophily and a correlation between ethnicity and opinions (Type 1). Here, we expected that gross ethnic homophily would exceed net ethnic homophily. The three network structural effects were all highly significant. The negative outdegree effect ($b = -1.75, p < .001$) reflects the fact that the overall network of friendship nominations was rather sparse. According to the meta-analytical method of Snijders and Baerveldt (2003), there was significant variation between the classes in the outdegree effect, which was not captured by the other effects included in the network formation model. The results indicate, furthermore, that students generally tended to reciprocate friendship nominations ($b = .55, p < .001$) and strove for transitivity ($b = .17, p < .001$) in their friendship networks.

The last two effects indicate friendship selection based on individual attributes. First, the significant same-gender effect ($b = .64, p < .001$) confirmed the preference for friends of the same gender established by previous research. Second, the positive and significant same-ethnicity effect ($b = .22, p = .01$) indicated significant gross ethnic homophily. In other words, students in Type 1 classes were more likely to select friends from their own ethnic group than friends from other ethnic groups, net of the other effects in Model 1. The random components for these coefficients were likewise significant. This means that the degree to which selection processes played a role in these dimensions varied between school classes. Still, on the basis of the overall significant effects, one could conclude that there was ethnic homophily in these classes.

According to Hypothesis 1, the observed gross ethnic homophily should at least in part be attributable to a preference for friends with similar opinions. As Model 2 of Table 4 shows, net ethnic homophily fell considerably below gross ethnic homophily. After the opinion-related selection effects were included in the analysis, the same-ethnicity effect was no longer significant ($b = .12, p = .12$) whereas the structural effects and the same-gender effect remained largely

Table 2. Descriptive Statistics for School Classes of Type 1 (Opinion Homophily and Correlation between Ethnicity and Opinions) and Type 2 (Opinion Homophily but No Correlation)

Class identification	Class composition					Opinion	p values of ANOVAs between ethnic groups and opinions	
	n	Missing			Ethnic groups		Wave I	Wave 2
		Wave 1	Wave 2	Wave 3				
Type 1								
3	25	3	6	7	11	school attitude	.010*	.955
18	21	0	0	2	5	school attitude	.031***	.120*
19	23	0	0	1	6	rock/pop music	.019***	.125*
22	24	2	2	1	7	teen behavior	.005****	.086**
35	29	1	1	2	5	deviant behavior	.017***	.061**
39	20	3	3	7	6	school attitude	.027***	.022***
47	16	0	0	1	7	hip-hop music	.800	.115*
49	23	1	1	3	8	deviant behavior	.032***	.325
Type 2								
5	20	0	0	1	8	deviant behavior	.720	.587
6	22	2	2	2	7	Dutch music	.341	.637
14	26	0	1	0	4	deviant behavior	.267	.310
20	24	2	4	2	6	deviant behavior	.896	.619
24	23	1	1	3	7	deviant behavior	.585	.905
31	25	6	3	5	8	Dutch music	.456	.352
33	29	0	2	4	5	deviant behavior	.504	.266
38	28	1	2	0	7	rock/pop music	.817	.830
43	12	2	1	0	5	deviant behavior	.621	.840
59	28	4	4	3	10	deviant behavior	.782	.776
63	27	2	1	1	5	deviant behavior	.790	.822

Note: Missing cases consist of respondents who did not participate but also students who were not yet or no longer in the class. These cases are not missing in the traditional sense as they do not belong to the network in the particular wave.

* $p < .2$. ** $p < .1$. *** $p < .05$. **** $p < .01$.

unchanged. Also, there was no more significant variation for this variable between the classes. Instead, the opinion homophily parameter was positive and highly significant ($b = .84$, $p < .001$), indicating a preference by the students for selecting friends who shared their opinions.

Unfortunately, there was hitherto no available method to determine whether the reduction of the same-ethnicity parameter was significant. A very conservative test based on confidence intervals has been suggested, but this test does not make efficient use of the available information (Steglich et al. forthcoming). According to this test, a reduction of a coefficient is considered significant if the confidence intervals of the two estimates are nonoverlapping. According to this method, the reduction was not significant ($p = .54$). Nevertheless, the

most important message of Models 1 and 2 is that excluding the opinion homophily effect would lead to the incorrect conclusion that students in these classes preferred friends of their own ethnicity. However, what appeared to be ethnic homophily in friendship formation in these classes was actually caused by a preference for friends with similar opinions.

Results of similar analyses for classes of Type 2 are reported in Models 3 and 4 of Table 4. According to Hypothesis 2, we expected the opposite to happen here: Opinion homophily should counteract ethnic homophily, and thus should net ethnic homophily exceed gross ethnic homophily. The results of the analyses without opinion-related effects in Model 3 resemble those of Model 1 very well. In one class, the model encountered

Table 3. Descriptive Statistics for School Classes of Type 3 (No Opinion Homophily but Correlation between Ethnicity and Opinions) and Type 4 (No Opinion Homophily and No Correlation)

Class identification	Class composition					Opinion	p values of ANOVAs between ethnic groups and opinions	
	n	Missing			Ethnic groups		Wave 1	Wave 2
		Wave 1	Wave 2	Wave 3				
Type 3								
7	29	1	1	1	8	rock/pop music	.105*	.591
8	29	2	2	11	6	rock/pop music	.001****	.000****
9	27	5	1	7	8	rock/pop music	.041***	.094**
13	27	0	0	1	6	teen behavior	.021***	.268
15	26	2	2	1	4	deviant behavior	.004****	.005****
25	23	1	1	2	9	deviant behavior	.119*	.582
32	21	3	1	0	6	teen behavior	.414	.026***
34	30	0	1	2	4	school attitude	.881	.093**
36	28	2	3	4	3	teen behavior	.057**	.626
37	28	3	0	2	4	school attitude	.095**	.010***
40	19	2	2	5	7	Dutch music	.309	.069**
41	13	4	1	1	5	hip-hop music	.430	.042***
42	13	2	0	1	5	hip-hop music	.172*	.019***
54	24	8	11	5	5	Dutch music	.014****	.422
57	14	0	1	0	6	deviant behavior	.930	.003****
58	12	2	2	2	5	rock/pop music	.676	.106*
64	20	1	5	5	8	hip-hop music	.240	.004****
Type 4								
2	26	1	1	2	5	deviant behavior	.605	.485
4	24	0	1	3	6	teen behavior	.953	.460
10	27	0	0	1	7	hip-hop music	.249	.210
21	21	0	0	1	8	teen behavior	.614	.788
23	24	1	4	0	7	hip-hop music	.726	.655
28	25	2	2	7	4	school attitude	.680	.758
44	12	2	2	0	4	deviant behavior	.570	.533
48	15	2	3	3	4	teen behavior	.742	.604
50	25	3	3	3	9	school attitude	.693	.894
55	23	3	1	0	5	teen behavior	.500	.807
56	9	0	0	0	4	school attitude	.765	.502
61	29	4	5	3	8	deviant behavior	.210	.935

Note: Missing cases consist of respondents who did not participate but also students who were not yet or no longer in the class. These cases are not missing in the traditional sense as they do not belong to the network in the particular wave.

* $p < .2$. ** $p < .1$. *** $p < .05$. **** $p < .01$.

convergence problems because much more change was happening between Waves 2 and 3 than between the first two waves. A dummy effect of time controlled for this difference but had no substantial meaning (Snijders and Ripley 2010). Just as in Type 1 classes, we found indication for a preference for friends of the same ethnic group ($b = .15$, $p = .045$). But this same-ethnicity effect became

stronger ($b = .22$, $p = .003$) once we controlled for the students' strong preference for friends with similar opinions ($b = 1.24$, $p < .001$). Again, this increase was not significant according to the conservative confidence interval method ($p = .63$). Still, the results show that ethnic homophily became an even clearer pattern once it was separated from friendship selection due to opinion similarity. Or

Table 4. Meta-analyses of Network Dynamics (Friend Selection) in Type 1 and Type 2 Classes

	Type 1 classes				Type 2 classes			
	Model 1		Model 2		Model 3		Model 4	
	<i>b</i> ^a	SE	<i>b</i> ^a	SE	<i>b</i> ^a	SE	<i>b</i> ^a	SE
Outdegree	−1.75**** ^b	0.10	−1.81**** ^b	0.11	−2.13**** ^b	0.11	−2.29**** ^b	0.14
Reciprocity	0.55****	0.10	0.53****	0.10	0.84**** ^b	0.13	0.83**** ^b	0.14
Transitive triplets	0.17****	0.01	0.18****	0.02	0.22****	0.02	0.23****	0.02
Effect of time ^c					0.39	0.15	0.30	0.16
Same gender	0.64**** ^b	0.09	0.66**** ^b	0.08	0.73**** ^b	0.12	0.78**** ^b	0.14
Same ethnicity	0.22**** ^b	0.08	0.12	0.08	0.15***	0.07	0.22****	0.08
Opinion popularity			0.09***	0.04			0.05 ^b	0.08
Opinion activity			0.04	0.03			0.07	0.04
Opinion homophily			0.84****	0.08			1.24****	0.14
Number of classes	8		8		11		11	
Number of students	181		181		264		264	

a. Unstandardized estimated mean parameter according to the Snijders-Baerveldt (Snijders and Baerveldt 2003) method.

b. Significant differences ($p < .01$) found between school classes according to the Snijders-Baerveldt (Snijders and Baerveldt 2003) method.

c. Effect of time was included in only one analysis to reach convergence of the model.

*** $p < .05$. **** $p < .01$.

to put it positively, there was less of a tendency toward ethnic segregation in Type 2 classes because students selected friends not only because of their ethnic backgrounds but also based on opinion similarity, where in these classes opinions happened to be uncorrelated with ethnicity.

Finally, it was tested whether gross ethnic homophily and net ethnic homophily differed in Type 3 and Type 4 classes (Hypothesis 3). In Type 3 classes, in which the opinions were correlated with ethnic group membership, the students had no preferences for choosing friends of their own ethnic groups ($b = .04$, $p = .56$; Model 5 of Table 5). In accordance with Hypothesis 3, this conclusion did not alter once opinion homophily was controlled for as shown in Model 6 of Table 5. The same was true for Type 4 classes, as can be seen in the last two models of Table 5. As expected, gross ethnic homophily was no different from net ethnic homophily in these classes.

Social Influence

Our results could be misleading if similar opinions among friends were not actually caused by students' selecting friends on the basis of their

opinions but instead by friends' adjusting their opinions to each other. To rule out the possibility that only social influence led to similar opinions among friends, we analyzed models including both a selection part and an influence part. Here, opinion homophily was estimated controlling for potential social influence on the opinion dimension. Unfortunately, insufficient variation over time in the dependent behavioral variable (here, the opinions) is known to cause estimation problems (Knecht et al. 2010). Because of that, we had to exclude the tendency squared control effect in classes, where students' opinions hardly changed between the observations from the analyses. To avoid additional estimation problems given the large number of effects in our models and the small sizes of the networks, we removed the opinion sociality effects from the models because these effects were mainly unimportant in the preceding analyses.

The results of the meta-analyses of the selection and influence analyses for all four types of school classes are reported in Table 6. The top part of this table shows the same effects as in the selection models except for the sociality effects. The opinion homophily effect is, however,

Table 5. Meta-analyses of Network Dynamics (Friend Selection) in Type 3 and Type 4 Classes

	Type 3 classes				Type 4 classes			
	Model 5		Model 6		Model 7		Model 8	
	<i>b</i> ^a	SE	<i>b</i> ^a	SE	<i>b</i> ^a	SE	<i>b</i> ^a	SE
Outdegree	-2.02**** ^b	0.13	-2.11**** ^b	0.13	-1.71**** ^b	0.14	-1.75**** ^b	0.14
Reciprocity	0.81**** ^b	0.14	0.85**** ^b	0.14	0.70**** ^b	0.16	0.72**** ^b	0.16
Transitive triplets	0.19****	0.01	0.19****	0.01	0.18****	0.01	0.18****	0.01
Effect of time ^c	-0.43	0.35						
Same gender	0.77****	0.08	0.81****	0.08	0.50****	0.07	0.52****	0.08
Same ethnicity	0.04	0.06	0.04	0.06	0.07 ^b	0.08	0.07 ^b	0.09
Opinion popularity			-0.02 ^b	0.05			-0.05	0.04
Opinion activity			-0.01 ^b	0.05				0.03
Opinion homophily			0.12	0.10			0.14	0.11
Number of classes	17		17		12		12	
Number of students	383		383		260		260	

a. Unstandardized estimated mean parameter according to the Snijders-Baerveldt (Snijders and Baerveldt 2003) method.

b. Significant differences ($p < .01$) found between school classes according to the Snijders-Baerveldt (Snijders and Baerveldt 2003) method.

c. Effect of time was included in only one analysis to reach convergence of the model.

**** $p < .01$.

not directly comparable to the models of Tables 4 and 5 because the opinion variables were rounded to integer values.⁵ Nevertheless, the qualitative results of the selection analyses remained unchanged. In the analyses of both Type 1 and Type 2 classes, the results still indicated a preference by students for selecting friends with similar opinions (see Models 9 and 10 in Table 6). This means that opinion homophily was in fact responsible for the differences between gross ethnic homophily and net ethnic homophily that were reported above, independent of whether social influence also took place. In line with our argument, the opinion homophily parameter also remained insignificant in Types 3 and 4 school classes.

In the lower part of Table 6, the results of the social influence analyses can be found. Here the preferred direction of change in the students' opinions was modeled. For some classes we also had to include an effect of time on opinion change because significantly more or less change occurred between the first two observations than between the last two observations. This effect had no substantial meaning, just like the effect of time on the selection part of the model (Snijders and Ripley 2010). Both tendency effects

were mostly insignificant, indicating that opinions fluctuated over time around the mid-point of the scale. Only in Type 2 classes did the significant tendency squared effect indicate a self-reinforcing process. Students with lower values tended to adopt even lower values, while those with higher values became more positive.

Substantively speaking, the most interesting are those effects reported in the last row of Table 6. The insignificant average opinion similarity parameter in Model 9 ($b = 1.55$, $p = .09$) indicates that there was no social influence on the opinions in Type 1 classes. The reduction in ethnic homophily is thus clearly attributable to the selection of friends with similar opinions. The significant parameters for average opinion similarity in all other types of classes indicate that, here, students adopted the opinions of their current friends in a later wave. This indication of social influence should be interpreted, however, with some caution. The relatively large estimate in Type 2 classes ($b = 2.60$) may suggest that the influence process was stronger than the selection process ($b = 1.37$). However, the coefficients are not directly comparable, since the opinion homophily parameter is based on another scale and dependent variable than the average opinion similarity

Table 6. Meta-analyses of Network (Friend Selection) and Opinion Dynamics (Social Influence) in All Types of School Classes

	Model 9 Type 1		Model 10 Type 2		Model 11 Type 3		Model 12 Type 4	
	<i>b</i> ^a	SE	<i>b</i> ^a	SE	<i>b</i> ^a	SE	<i>b</i> ^a	SE
Selection								
Outdegree	-1.83****	0.10	-2.23**** ^b	0.15	-2.03**** ^b	0.14	-1.72**** ^b	0.15
Reciprocity	0.52****	0.08	0.79**** ^b	0.13	0.83**** ^b	0.13	0.69**** ^b	0.15
Transitive triplets	0.17****	0.01	0.22****	0.02	0.18****	0.01	0.16****	0.01
Effect of time ^c					0.76	0.24		
Same gender	0.74****	0.06	0.76**** ^b	0.13	0.81****	0.07	0.56****	0.08
Same ethnicity	0.16	0.09	0.20****	0.08	0.04	0.06	0.08 ^b	0.08
Opinion homophily	1.47****	0.20	1.37****	0.21	0.17	0.21	0.32	0.22
Influence								
Tendency	0.05	0.08	-0.06	0.09	0.01	0.06	0.05	0.04
Tendency squared ^d	0.01	0.08	0.15****	0.05	0.03	0.05	0.01	0.07
Effect of time ^c					1.17	2.27		
Average opinion similarity	1.55	0.90	2.60****	0.63	2.83**** ^e	0.89	2.60****	0.65
Number of classes	8		11		17		12	
Number of students	181		264		383		260	

a. Unstandardized estimated mean parameter according to the Snijders-Baerveldt (Snijders and Baerveldt 2003) method.

b. Significant differences ($p < .01$) found between school classes according to the Snijders-Baerveldt (Snijders and Baerveldt 2003) method.

c. Effect of time was included in only one analysis to reach convergence of the model.

d. The tendency squared effect had to be excluded in several analyses because there was too little variation over time in the opinions. This happened in three classes of Model 9, two classes of Model 10, five classes of Model 11, and five classes of Model 12.

e. The estimates and standard errors of the average opinion similarity parameter were larger than 10 in four classes of Model 11 and were therefore not trustworthy. This is known as the Donner-Hauck phenomenon in logistic regression, and those estimates were excluded from the meta-analysis (Snijders and Ripley 2010).

*** $p < .05$. **** $p < .01$.

parameter (Snijders and Ripley 2010). Opinion homophily refers to the log-odds ratio of creating a friendship tie with a classmate with similar opinions, whereas the influence effect refers to the log-odds ratio of adjusting the opinion to that of one's friends.

DISCUSSION AND CONCLUSION

The CIIM (Gaertner and Dovidio 2000) suggests that students from different ethnicities are more likely to develop positive interpersonal attitudes and eventually even intergroup friendships if an intervention directs their attention to a shared interest. However, based on Blau's (1977; Blau and Schwartz 1984) analysis of crosscutting social circles, we have argued that such intervention programs may backfire if one violates the assumption

of the CIIM that students' opinions with regard to the common interest (or subcategories thereof) are not correlated with their ethnicity. We have called this the common interest trap.

The empirical analysis of the dynamics of students' friendship networks supported the presence of the behavioral mechanisms that can drive both successful common interest interventions and the common interest trap. In school classes where ethnicity was correlated with opinions toward certain interests, the initial statistical model indicated that the students had a preference for friends of the same ethnic group (ethnic homophily). However, after we controlled for friendship selection based on opinion similarity, it turned out that what appeared to be ethnic homophily was largely caused by opinion homophily. In other words, the observed gross ethnic homophily in these classes

was the consequence not of a preference for friends of the same ethnicity but of a preference for friends with similar opinions. A correlation of opinions with ethnic group membership translated this opinion homophily into ethnic homophily. In line with Blau's (1977) argument, this suggests that ethnic segregation may be unintentionally fostered by interventions that promote friendship selection on the basis of a common interest if—on a more fine-grained level—that interest turns out to be not so common after all.

We also found evidence indicating that common interest interventions might successfully promote ethnic friendship integration in those classes in which opinions were not correlated with ethnicity, consistent with the assumptions of the CIIM. Here, gross ethnic homophily was weaker than net ethnic homophily. Opinion homophily counteracted ethnic homophily because friends with similar opinions often belonged to different ethnic groups. Common interest interventions could thus indeed help reduce ethnic segregation if they are applied in settings where the shared interest is truly more inclusive. Moreover, our analyses revealed that selection of friends with similar opinions and not social influence among friends lay at the heart of the effect of opinion similarity on ethnic segregation.

Our results are in line with the expectations of Wimmer and Lewis (2010), who also tested whether racial segregation in a network of college freshmen could be attributed to homophily in interests and characteristics that were correlated with racial categories. That these authors found only weak evidence for such an effect was perhaps because there was homophily on only a few of the categories that were investigated. Moreover, Wimmer and Lewis studied "picture friends" on Facebook, which probably represent weaker ties than the best friend nominations used in the current study. For the selection of acquaintances (on Facebook), visible but more superficial dimensions such as ethnicity may be more important than shared interests that are much harder to observe. These kinds of characteristics might much more strongly determine the selection of best friends and, accordingly, are less likely to affect the level of ethnic segregation in a network of acquaintances.

The mechanisms that we have analyzed may also affect forms of segregation besides ethnic segregation. Bourdieu ([1979] 1984) has shown that opinions toward cultural dimensions (tastes) can

correlate with social status positions. We have seen that an intervention program may successfully reduce ethnic segregation if ethnicity and opinions are not correlated. But according to Bourdieu, the intervention may at the same time increase network segregation along social status lines if opinions correlate with the status background of the participants. This might happen in particular when an intervention highlights dimensions of highbrow culture that are used by higher-social-status groups to distinguish themselves from others.

Furthermore, the principles we have uncovered can also be used to prevent the failure of an intervention program if the correlation between interests and ethnicity cannot be determined up front. Coleman (1961) suggested interschool competition to divert attention from within school performance differences that otherwise could bear conflict potential between low and high achievers. In the same sense, competition with a group outside the intervention program might divert attention from different opinions by making a higher-order and truly inclusive group category salient. In our introductory example, the youth workers could have organized the hip-hop afternoon around a hip-hop competition with groups from other city districts. Then, participants from different ethnic groups could have identified with their more inclusive city district group. If the goal of winning the competition were more important than the goal of making music of the "right" hip-hop style, youths in these new groups would have probably worked together instead of fought each other. Hence, even if opinions and ethnicity are correlated, making a higher-order goal sufficiently salient should promote integration. This principle has already been acknowledged by Allport (1954:276) in his appraisal of multiethnic athletic teams: "Here the goal is all-important; the composition of the team is irrelevant. It is the cooperative striving for the goal that engenders solidarity."

We believe that an important strength of our study is its use of a statistically appropriate method and research design for the difficult task of disentangling opinion homophily, ethnic homophily, social influence, and several other mechanisms in the simultaneous formation of friendship networks and opinions. The three-wave longitudinal design enabled us to study the evolution of friendship networks in a relatively large number of newly formed school classes. Furthermore, the stochastic actor-based model (Snijders 2001; Snijders et al. 2010) applied to

these data separated students' preference for friends of their own ethnic group from their preference for friends with similar opinions, while taking social influence processes and structural effects such as transitivity into account. If researchers are not only interested in the ethnic composition of friendship networks (e.g., Stearns, Buchmann, and Bonneau 2009) but want to draw inferences about ethnic homophily preferences, it is necessary to statistically address the interdependency of different network processes (Wimmer and Lewis 2010). Yet even some recent contributions neglect this problem (e.g., Jugert, Noack, and Rutland 2011).

Moreover, the analytical approach of analyzing each class separately and combining the results only in the very last step was more appropriate in the current study than analyzing all classes at once under the assumption that the same processes took place in each class, as has been done elsewhere (e.g., Dijkstra et al. 2010; Schaefer et al. 2010), for two reasons. First, we found significant variation for most effects between the school classes. This invalidates the assumption that the same processes form networks in all school classes. Second, the central conclusion of our study was that fundamentally different mechanisms can lead to a similar pattern of network formation: In both Type 1 and Type 2 classes we found gross ethnic homophily, although only in Type 2 school classes did this seem to be caused by students' preference for same-ethnicity friends. Such differences might slip a researcher's attention if the classes were not kept separate.

This stated, there are several limitations to our study. The applied statistical methods offer no measurement of effect size (Knecht et al. 2010). Moreover, we experienced some estimation problems, especially in the analyses of social influence models. Unfortunately, the model is sensitive to the size of the network at hand and to the amount of variation in a behavioral dependent variable (the opinions, in our case). Furthermore, unlike multilevel modeling, the meta-analysis used in this study does not allow for individual-level effects and differences between the school classes to be simultaneously modeled to better explain the between-class variation. Unfortunately, such an extension is currently unavailable. Finally, we cannot be sure that the opinions included in our study were the only opinions important for friendship formation, since we ourselves did not manipulate their salience by an intervention.

This study has important methodological and practical implications. On the methodological side, we believe, our research has demonstrated that the stochastic actor-based model might be of interest for other domains of educational sociology. It offers a better way than do conventional methods to address research questions that combine network dynamics with behavioral change. Such questions confront researchers with the need to differentiate between selection and influence in the analysis of longitudinal data. For instance, one could investigate whether similar academic performance levels among friends (Riegle-Crumb, Farkas, and Muller 2006) are caused by students' selecting friends who perform similarly or by friends' influencing each other's performance. Another methodological implication is that scholars of ethnic segregation should take other characteristics into account that motivate friendship selection and may be correlated with ethnic backgrounds. Our results have shown that opinion homophily that is unaccounted for in a statistical model can lead to both an overestimation and an underestimation of students' preference for friends from the same ethnic group.

On the practical side, practitioners who want to promote the integration of students in ethnically diverse schools through interventions based on the CIIM should select the common interest targeted by the intervention program carefully. Our findings suggest that only if there is sufficient consensus on the opinions with regard to that interest across the ethnic groups can such an intervention program be expected to foster integration. If there is not enough agreement, the intervention can backfire and unintentionally increase what it aimed to reduce, that is, the segregation of friendship networks along ethnical lines.

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NOTES

1. Changes in ethnic segregation of networks can also be caused by propinquity mechanisms that take place outside the classroom (Wimmer and Lewis 2010). Students who live close to each other or play on the same sports team are more likely to form friendships than are other students (Mouw and Entwisle 2006). Unfortunately, we do not have any data to control for such additional propinquity effects.
2. In the Netherlands, parental birthplace serves as the main predictor of ethnicity and ethnic minority group students' self-identification (Verkuyten 2005). Moreover, we believe that the classification of students according to parents' birthplace allows a conservative estimation of ethnic homophily because a friendship between students with parents from different countries who perceive themselves as members of the same ethnic group will be categorized as an interethnic friendship. It should be noted that our approach classifies all students of the third generation of immigrants as being Dutch. The potential bias induced by this however, should, be small because there are currently very few immigrants of the third generation. Numbers for the entire Netherlands are available only for immigrants from non-Western countries, and from this group, 6,270 children between 12 and 17 years of age were of the third generation in 2008, compared to 144,390 of the second generation and 40,240 of the first generation (Goedhuys, König, and Geertjes 2010).
3. For the same reason, it would have been preferable to include sociality effects for ethnicity. However, inclusion of these effects led to serious estimation problems because of the small size of our networks (i.e., school classes) and the large number of ethnic groups. It would have been necessary to estimate an activity and a popularity effect for every ethnic group in the class. Inclusion of these effects in the few networks in which estimation succeeded was not found to alter our results.
4. Note that the term *behavior* is commonly used in the literature on the influence process of actor-based models as shorthand for all endogenously changing actor covariates, even if these are opinions, attitudes, or perceptions.
5. As mentioned earlier, the stochastic actor-based model requires actor covariates to be integers when they are used as dependent variables in influence models.

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