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Intergroup Relations in Integrated Schools: A Glimpse Inside Interdistrict Magnet Schools

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Abstract: The frequency and quality of intergroup contact within racially and ethnically diverse schools has potentially important implications for the achievement of desegregation goals. The analyses presented here use survey data to assess intergroup contact within a sample of ten interdistrict magnet schools in Connecticut. Findings indicate frequent intergroup interactions within interdistrict magnet schools, but also that the perceived quality of intergroup relations differs across racial groups and both the frequency and quality of intergroup contact varies considerably across schools. Students who report higher quality intergroup relations in their school also tend to report more positive academic environments and more positive attitudes towards other groups.

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Together these findings indicate that attention must be paid to intergroup relations within diverse schools if the goals of integrated schooling are to be realized.
Keywords: Desegregation; Peer Interaction/Friendship; Urban Education; Race

Relaciones intergrupales en las escuelas integradas: un vistazo rápido a las *escuelas magnet* interdistritales*

Resumen: La frecuencia y la calidad del contacto entre grupos en las escuelas con diversidad racial y étnica tienen implicaciones potencialmente importantes para lograr los objetivos de la integración. Los análisis presentados aquí utilizan datos de encuestas para evaluar el contacto intergrupal con un grupo de diez *escuelas magnet* interdistritales en Connecticut. Los resultados indican que las interacciones entre grupos son comunes dentro de las *escuelas magnet* entre distritos, y también que la calidad de las relaciones intergrupales entre los grupos raciales difiere y que tanto la frecuencia y la calidad de contacto intergrupal, varían considerablemente entre las escuelas. Los estudiantes que señalan una mayor calidad de las relaciones intergrupales en las escuelas también suelen señalar ambientes académicos más positivos y mejores actitudes positivas hacia otros grupos. En conjunto, estos resultados indican que se debe prestar atención a las relaciones intergrupales en las escuelas con diversidad racial y étnica si se tiene la intención de llevar a cabo los objetivos del sistema educativo integrado.
Palabras clave: integración; interacción pares; amistad, escuelas urbanas; raza.
*Las escuelas Magnet son escuelas públicas que reciben fondos adicionales para alcanzar la meta de reducción de la segregación voluntaria. Estas son escuelas que ofrecen un programa de estudios o un enfoque diferenciado de instrucción, que atraen a los estudiantes que viven fuera de la escuela local y tener la diversidad como un objetivo explícito. Fuente: http://www.publicschoolreview.com/articles/2

Relações Intergrupais em Escolas Integradas: Um breve olhar sobre as escolas *Magnet Interdistritais**

Resumo: A frequência e a qualidade do contato intergrupal em escolas com diversidade racial e étnica têm implicações potencialmente importantes na concretização dos objetivos de integração. As análises aqui apresentadas usam dados de pesquisa para avaliar o contato intergrupal numa amostra de dez escolas *Magnet* Interdistritais em Connecticut. Os resultados indicam que as interações intergrupais são frequentes dentro das escolas *Magnet* Interdistritais, mas também que a qualidade das relações intergrupais difere entre os grupos raciais e que ambas, a frequência e a qualidade do contacto intergrupal, variam consideravelmente entre escolas. Os estudantes que enunciam uma qualidade mais elevada das relações intergrupais nas suas escolas também tendem a enunciar mais ambientes académicos positivos e mais atitudes positivas em relação a outros grupos. Em conjunto, estes resultados indicam que se deve prestar atenção às relações intergrupais nas escolas com diversidade racial e étnica caso se pretendam realizar os objetivos da escolarização integrada.
Palavras-chave: Integração; Interação entre pares/Amizade; Educação Urbana; Raça.
* Magnet Schools são escolas públicas que recebem um financiamento adicional para cumprir o objetivo de reduzir voluntariamente a segregação racial. São escolas que oferecem um currículo ou uma abordagem instrutiva diferenciada, que atraem estudantes que moram fora da zona local da escola e que têm a diversidade como uma finalidade explícita. Fonte: http://www.publicschoolreview.com/articles/2

Introduction

Efforts to desegregate schools have been motivated by the tenet that separate schooling is inherently unequal and the belief that integrated schools improve access to resources, positive educational environments, and social opportunities for historically disadvantaged racial and ethnic groups. Many also believe that increased contact between races in schools reduce prejudice and improve intergroup relations (Pettigrew & Tropp, 1996).[1] Although the extent of desegregation has varied across regions and there is evidence of resegregation in some places (Fry, 2009; Clotfelter, Ladd, & Vigdor, 2008), there are unquestionably many more racially diverse schools today than before school desegregation efforts began (Clotfelter, 2004). Yet questions remain about whether school integration has delivered the anticipated benefits.[2]

One question is whether reducing segregation across schools is sufficient to achieve the amounts and types of interracial contact needed to promote positive intergroup attitudes and positive learning environments. Several studies suggest that intergroup contact within racially diverse schools is reduced by segregation across classrooms, friendship groups, and extracurricular activities (Clotfelter, 2002; Joyner & Kao, 2000; Mickelson, 2001; Moody, 2001). There is also reason to suspect that racially diverse schools with high levels of within-school segregation and negative intergroup relations might undermine the quality of school learning environments (Fryer & Torelli, 2005).

In this paper we focus on interdistrict magnet high schools in Connecticut. These are public schools designed to reduce racial, ethnic and economic isolation by providing students from different districts an opportunity to attend the same school. Established in response to a landmark civil rights decision, interdistrict magnet schools in Connecticut provide an important model for current school integration efforts, and recent evaluations show that interdistrict magnet schools are substantially more diverse than schools from which their students are drawn (Bifulco, Cobb & Bell, 2009; Cobb, Bifulco & Bell, 2011). Here we use data from student surveys to examine the frequency and quality of intergroup contact within a sample of ten interdistrict magnet high schools. We also examine whether the frequency and quality of an individual student's contact with other racial groups is associated with perceptions of the school learning environment and attitudes toward other groups. The goal is to explore how intergroup contact within these diverse schools might be influencing the achievement of desegregation goals.

The results of our analyses suggest that the frequency of intergroup contact is generally high in these ten magnet schools, but that there are some differences across racial groups and considerable variation across schools in the frequency and quality of intergroup contact. Those magnet schools that are majority black or majority white appear to have less frequent and lower quality intergroup contact than the other schools that have more equal proportions of white, black & Hispanic students. We also find that students who report higher quality intergroup relations in their school also tend to perceive more positive peer influences and to have more positive attitudes towards other groups, particularly among black and Hispanic students. Also, more frequent contact with other groups is associated with more positive intergroup attitudes and greater interest in future multicultural contexts. Together these findings suggest that frequent, positive intergroup contact does not arise automatically in diverse schools achieved through desegregation efforts and that the extent to which these conditions are achieved matter for the promotion of desegregation goals.

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[1] For further discussion of the link between intergroup contact and the formation of intergroup attitudes see Allport, 1954; Dovidio, Kawakami, and Gaertner, 2000; Johnson and Johnson, 2000; Pettigrew, 1998; Stephan and Stephan, 2001.

[2] For opposing views, see Armor, Thernstrom, and Thernstrom (2006) and Linn and Welner (2007).

Even though results based on a small sample of integrated schools are difficult to generalize, the analyses presented here are important for at least two reasons. First, as discussed further below, interdistrict magnet schools in Connecticut provide an important model for contemporary desegregation efforts, and information on intergroup relations within these schools is important for understanding the benefits created by these schools. Second, the measures of intergroup relations and individual attitudes used here provide a set of tools that can be used to examine the understudied topic of within-school, group relations in other evaluation settings.

The next section of the paper briefly reviews the literature on intergroup relations within diverse schools and discusses the importance of the issue for evaluating school desegregation efforts. Section III provides background on Connecticut's interdistrict magnet schools high-lighting why they are an important model to study and briefly summarizing the results of recent evaluations. Section IV describes the study sample, the student survey and the measures used in the analyses. Section V discusses analytic issues, and Section VI presents our results. A final section discusses implications for policy and future research.

Relevance of Intergroup Relations within Diverse Schools

The remarkable reduction in racial segregation across schools beginning in the 1960s is well documented. Between 1968 and 1988 the percentage of black students in the U.S. attending a school with enrollments more than 90 percent black decreased from 64 to 32 percent (Clotfelter, 2004). Progress toward reducing segregation has not been as marked in the Northeast and Midwest as in the South (Clotfelter, 1999, 2004), and some districts in the South have seen increases in segregation in recent years (Clotfelter, Ladd, &Vigdor, 2008). Nonetheless there is substantially more integration across schools in the U.S. today than there was 50 years ago.

There is some reason to believe, however, that there is substantial racial and ethnic segregation of students within the diverse schools created by school desegregation efforts. An early study by Morgan and McPartland (1981) found that students from different racial and ethnic groups are not evenly distributed across classes within schools, and that segregation across classes was most marked in high schools and in schools with approximately equal numbers of black and white students. Other early studies found substantial segregation in the school cafeterias of desegregated schools (Schofield, 1982, Wells & Crain, 1997). More recently, Mickelson (2001) finds that academic tracking creates substantial segregation across classes and Clotfelter (2002), using a collection of high school yearbooks, finds that sports teams and clubs are racially unbalanced within schools.

Several studies also show segregation across friendship groups within schools. Halinan and Williams (1989) and Joyner and Kao (2000) have found that same race friendships are much more common than cross-race friendship even in integrated schools. For instance, Joyner and Kao find that although black students in the National Longitudinal Study of Adolescent Health attended schools that were on average 44% black, black students were 4 to 6 times more likely to report a black best friend than a best friend of another race. In an analysis exploiting detailed social network data within schools, Moody (2001) finds a strong positive relationship between the ethnic heterogeneity of a school and the amount of friendship segregation, suggesting that creating diverse schools might not be sufficient to promote friendship integration. However, Moody also finds that the relationship between friendship segregation and school heterogeneity is non-linear with friendship segregation peaking in moderately heterogeneous schools, and declining at the highest heterogeneity levels, and that school policies within diverse schools may influence the frequency of intergroup friendships.

Segregation within schools across classrooms, extracurricular activities, social settings, and friendship groups raises concerns that enrollment in a racially diverse school might not foster improved intergroup attitudes and relations. Standard contact theory, first developed by Allport (1954), maintains that prolonged contact between ethnic groups will lead to reduced prejudice, particularly if that contact occurs under conditions characterized by equal status among individuals from different groups, the sanction of authorities, and cooperative commitment to a common goal. If school desegregation is not accompanied by extensive intergroup contact within schools, or if that contact is not characterized by the conditions identified by Allport, then positive intergroup attitudes might not arise. Within school segregation and negative intergroup relations might help to explain why the literature examining the effects of desegregated schooling on racial attitudes has come to mixed conclusions.[3]

There is also some reason to suspect that within school segregation and poor intergroup relations can undermine the quality of the learning environment created in diverse schools. "Acting-white" is a common term used to refer to the hypothesis, first developed by Fordham and Ogbu (1986), that black students, and perhaps other nonwhite students, often face ridicule and other social sanctions for exerting effort and/or doing well in school. Studies have found that the "acting-white" phenomenon is more prevalent in suburban schools with substantial white populations than in predominantly black schools (Fryer & Torelli, 2005; Ogbu & Davis, 2003). Within-school segregation may provide an explanation. In a school where students of different racial and ethnic backgrounds form largely separate friendship groups, racial affiliation may become quite salient. If white students are also overrepresented in academically rigorous tracks, then aspirations to take advanced classes and efforts to achieve academically by a black student might raise questions about group loyalty among the student's black peers and elicit social sanctions.[4]

In this paper, we examine a set of schools established for the express purpose of reducing racial and economic isolation, and which have succeeded in providing students access to more diverse schools. We first estimate the amount of intergroup contact within these schools. Here intergroup contact is defined as the frequency of interaction between students from different racial and ethnic groups in the classroom, in social settings, on class assignments and in extracurricular activities. We also estimate the quality of intergroup relations, by which we mean the extent to which students perceive interactions between different racial and ethnic groups in the school to be characterized by the conditions identified in standard contact theory. That is the extent to which intergroup interactions are characterized by equal status among individuals from different groups, the sanction of authorities, and cooperative commitment to a common goal. The goal here is to determine the extent to which these diverse schools create the conditions that contact theory suggests are needed to breakdown prejudice and promote positive attitudes toward other racial and ethnic groups.

Next we ask whether the extent and quality of intergroup contact experienced by students helps to predict their perceptions of the academic environment in the school or their attitudes

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[3] See Schofield (1991) for a thorough review and Pettigrew and Tropp (2006) for a recent metanalysis.

[4] This explanation is consistent with the intuition behind the formal two signal model developed by Austen-Smith and Fryer (2005) and is explicitly discussed in Fryer (2006). Interestingly, Fryer (2006) reports that in his analysis of a national representative sample of high schools, "acting white" is more prevalent in integrated schools with *more* than expected cross-race friendships. He speculates that an above average number of intergroup friendships can make racial affiliations even more salient and can threaten the cohesion of both black and white friendship groups, thus eliciting stronger social sanctions for "acting white." In any case, the effects of friendship segregation within schools and other aspects of intergroup relations on the learning environment are far from clear.

towards people from other groups. We focus on perceptions of academic environment and intergroup attitudes, because creating positive learning environments and promoting positive intergroup attitudes are central goals of school desegregation. Although our data do not allow us to attribute causal relationships, our analysis does provide an indication of whether or not the frequency and quality intergroup contact within schools might be undermining the goals of racially integrated education.

Connecticut's Interdistrict Magnet Schools

In a 1996 ruling, the Connecticut Supreme Court held that as a result of racial, ethnic and economic isolation, Hartford public school students had been denied equal educational opportunity under the state constitution.[5] In response, the state has adopted a number of programs designed to provide students in the state's central cities and surrounding suburbs opportunities to attend schools together. The largest of these programs, both in terms of dollars spent and number of students affected, encourages and provides funding for interdistrict magnet schools. An interdistrict magnet school is operated by a local school district, regional educational service center, or institution of higher education. Each magnet has an educational theme, and all students in the school districts participating in the magnet are eligible to attend. The operators of an interdistrict magnet school may limit the number of seats available to residents from specific towns and must hold a lottery if there are more applicants than spaces. In evaluating and helping to develop magnet school plans, the Connecticut State Department of Education (CSDE) looks for a governance structure composed of at least three districts and an educational plan that will attract a diverse student body (CSDE, 2006).

Interdistrict magnet schools have several features that make them particularly relevant given recent federal court rulings that constrain school desegregation efforts. First, these schools are designed to integrate students across district lines, which in many regions of country is crucial for achieving racial integration. Second, participation in an interdistrict magnet school by both districts and students is entirely voluntary. Third, although the extent to which the state has achieved racial integration goals in the Hartford area is monitored by the court, the race of individual students is not used in determining admission to any interdistrict magnet school. Thus, this program offers a model of choice-based interdistrict desegregation that appears to satisfy current legal constraints.

As of 2007-08, the year from which the data for this study are drawn, 53 interdistrict magnet schools serving nearly 19,000 students were in operation in Connecticut. Of these, 20 schools served students in the high school grades in a full-day setting,[6] and 16 of these full-day magnet high schools are located in the Hartford or New Haven metropolitan areas. Among the students in these 16 schools, approximately 55 percent reside in the central cities of Hartford and New Haven, the rest reside in nearby suburbs. Magnet school students from these two central cities are slightly more likely to be white and have higher average test scores before entering high school than non-magnet school students from these cities. Suburban magnet school students, in contrast, are substantially more likely to be black or Hispanic, are more likely to be eligible for free lunch, and have lower average test scores than non-magnet school students from the same suburbs. Interdistrict magnet

[5] *Sheff v O'Neill*, 238 Conn. 1, 678 A.2d 1267(1996).

[6] In addition there were six half-day high school programs which serve students who spend part of the school day in their home district and part in the magnet school.

schools, then, serve to bring together relatively high achieving students from the central city with relatively disadvantaged students from the suburbs.[7]

Interdistrict magnet schools clearly provide students in New Haven and Hartford the opportunity to enroll in less racially and economically isolated schools (Bifulco, Cobb, & Bell, 2009). For instance, during the 2007-08 school year, the typical black student attending a non-magnet high school in Hartford was in a school in which 2.3 percent of the students were white and over 95 percent of the students were eligible for free or reduced price lunch. By comparison, the typical black student who was living in the city of Hartford and attending an interdistrict magnet high school was in a school where 22 percent of the students were white and 63 percent were eligible for free or reduced price lunch. Interdistrict magnet schools provide similar opportunities to escape racial, ethnic and economic isolation for Hispanic students and for students living in New Haven.

Study Sample and Measures

The data for this analysis are drawn from a survey of students in interdistrict magnet high schools conducted in May and June of 2008. The survey targeted the 15 interdistrict magnet high schools in the Hartford and New Haven areas plus one of the half-day magnets that had begun transitioning to a full day program, and whose ninth grade students were attending full-time. Due to cost considerations four interdistrict magnet high schools outside the Hartford and New Haven area were not included in the target sample. Also, because it would be difficult to distinguish the experience of students in their home school from their experience in the magnet schools, half-day magnet schools were also excluded from the target sample. Six schools in our target sample were not responsive to our requests to allow us to survey their students.

The Sample of Schools

The ten schools included in the study have a wide variety of student body compositions. In 2007-08, they range in size from ninth grade enrollments of 26 to 234, in percentages black from 27.8 to 68.6, in percentages white from 8.7 to 72.2, in percentages Hispanic from 0 to 42.2, in percentages free-lunch eligible from 18.4 to 100, and in mean 10th CAPT math scores from 210.0 to 268.2 (a difference of more than one student level standard deviation). Five of the six schools that declined to participate in the study have student body compositions in the middle part of these ranges.[8] Although we cannot rule out that unobserved differences between these schools and those that participated in the survey may have caused them to decline participation, these decliners are observationally similar to several of the participating schools. The one exception is a magnet school that is 83.7 percent male, 81.3 percent African-American, 16.7 percent Hispanic and only 1.7 percent white that declined to participate. A school with this composition is not represented among the schools that participated in the survey.

In contrast, the four interdistrict magnet schools outside the New Haven and Hartford area and thus outside the target sample for this study, are markedly different than the schools included in the study. In addition to being located elsewhere in the state, these schools tend to be larger (9th grade enrollments from 124 to 529) and to have higher percentages of white students (21.5 to 50)

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[7] These figures and those in the next paragraph were computed by the authors using data from the Strategic School Profiles and the Magnet School Racial Survey by Town of Residence, both compiled by CSDE.

[8] These five schools have ninth grade enrollments ranging from 43 to 127, percentages black from 42.5 to 60.2, percentages white from 11.6 to 26.0, percentages Hispanic from 22.8 to 34.1, percentage free-lunch from 51.2 to 100, and mean CAPT math scores from 210.0 to 236.

and lower percentages of African-American students (20.9 to 34.2) than most of the schools included in the study. Thus, while the results in this study may be relatively representative of full-day, interdistrict magnet high schools in the Hartford and New Haven areas, they are less likely to representative of interdistrict magnet schools elsewhere in the state.

The original study design called for conducting surveys in 10 purposively sampled non-magnet high schools as well. Only two of these schools agreed to participate, and we were unable to convince any non-magnet schools with levels of diversity similar to the magnet schools to participate in the study. Thus, a comparison group on non-magnet schools is not included in the analyses presented below. We do, however, briefly refer to the results in the two non-magnet schools who agreed to administer our survey in order to provide context for our findings on the interdistrict magnet schools.

All of the schools that participated in the study are more racially and ethnically heterogeneous than the typical school in the districts from which magnet school students are drawn. There is, however, variation in the amount of heterogeneity across these schools. For some of the analysis presented below, we found it useful to group these schools into three categories: in the four most heterogeneous schools no racial or ethnic group is in the majority; five of the schools are majority black with percentages black ranging from 52.8 to 68.6; and one school is majority white. The five majority black schools have a percent white ranging from 8.7 to 32.4 and a percent Hispanic ranging from 8.6 to 32.6 percent, and the majority white school is 72.2 percent white, 27.8 percent African-American, and has no Hispanic students.

The Student Level Sample

We attempted to survey the entire population of ninth graders in each school with varying levels of success. Response rates ranged from 45 to 94 percent across the ten schools, with a total response rate across the ten schools of 72 percent. Reasons for non-response include absence on the day the survey was administered or refusal to participate.[9] In total, we have survey responses from 621 ninth graders in these ten schools.

The non-responding students are more likely to be black. Across the 10 schools in the sample, 48.5 percent of ninth graders were African-American, but only 35.1 percent of survey respondents could be classified as African-American. The underrepresentation of African-Americans is largely offset by the overrepresentation of Hispanic students. While 26.1 percent of ninth graders in these 10 schools were Hispanic, at least 34.1 percent of our survey respondents are Hispanic. The underrepresentation of black students and overrepresentation of Hispanic students is most marked in the five schools that are majority African-American. As we show below, black students tend to report lower levels of intergroup interaction and lower quality intergroup relations than either white or Hispanic students. Thus, the overall frequency and quality of intergroup interactions in the interdistrict magnet schools might be somewhat lower than reported below, and the differences between heterogeneous and majority black interdistrict magnet schools might be more marked than reported.

Questionnaire and Measures

The purpose of the survey was to assess the academic climate in the schools and student attitudes including attitudes towards other racial groups. The questionnaire included items and scales adapted from existing survey instruments as well as items we developed ourselves.[10] In the

[9] In the school with a 45 percent response rate, the survey was administered by school staff, and we suspect that one or more of the ninth grade classrooms was missed.

[10] The sources from which existing scales and items were drawn are referenced in the discussion below.

summer and fall of 2007, a 130-item survey was piloted with nearly 200 students.[11] Factor analysis of item responses revealed over a dozen coherent measurement constructs. Revisions resulted in a final 100-item pencil and paper questionnaire that was self-administered by students in the school.

Two sets of items from the survey questionnaire help to gauge the extent of intergroup contact within each school. One set of questions ask the student to rate on a 5-point scale from never to everyday, how often he or she interacts with students from a different race or ethnicity in various activities including working together in class, playing games/sports/clubs, spending time socially, working together on assignments outside of class, and talking at the lunch table. Also, there is a question that asks how many of the student's 10 closest friends in school are from specific racial/ethnic groups with the choice of responding none, one or more than one. Friendships can be interpreted both as an indicator of the extent of intergroup contact, interaction with friends being one form of contact, as well as the quality of intergroup relations, as friendships are likely to involve interactions characterized by equal status and cooperation.

To measure the quality of intergroup interactions we use a well established scale to measure school interracial climate (Green, Addams, & Turner, 1988; Gaertner, et al., 1994). Derived from contact theory, this scale consists of 11 items designed to capture the extent to which intergroup interactions are characterized by equal status, communication, interdependence and supportive norms—the conditions which contact theory posits promote reduction of prejudice and positive intergroup attitudes.[12] In addition, students were asked to rate on a four-point scale ranging from "none" to "a lot"--"How much tension exists in your school between students of different racial or ethnic groups?"

In addition to measures of the extent and quality of intergroup contact, the survey provides indicators of student's perceptions of several other aspects of the school environment as well as measures of student attitudes toward other groups. In the analyses below we focus on two measures of students' perceptions of the academic climate at the school and two that measure students' attitudes toward other groups. The two measures of academic climate include a scale that indicates the student's perception of his or her peers' academic norms and another that indicates the extent to which the student perceives social sanctions for academic effort. The measure of attitudes towards other groups includes a rating of closeness to other groups including blacks, Hispanics, and whites and a scale indicating future multicultural interests. Details on the items used to construct these multi-item scales are provided in the appendix.

Finally, the questionnaire included a battery of questions on student background characteristics.[13] Table 1 presents descriptive statistics on each of the variables used in the analysis below. Among the students who participated in the survey, non-response on items related to the extent and quality of intergroup interaction, school climate, and student attitudes are quite low. In no case, do non-response rates on these items exceed 4.3 percent and for the majority of items are far lower. Thus, item non-response is unlikely to have much effect on the results reported below. Non-response was somewhat higher on the student background characteristics which were elicited at the end of the survey. Missing item values we imputed using the mean of students in the same school and of the same race. All the analyses below were also conducted dropping students with missing values on the measure in question, and results were virtually unchanged.

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[11] These included high school students participating in summer Upward Bound programs on the University of Connecticut campus, as a well as students in a high school located nearby the campus.

[12] Details on this scale are provided in the appendix.

[13] See appendix for description of how students were assigned to race/ethnicity categories.

Table 1
Sample Descriptives

Variable	Means	SD	# imputed	Variable	Means	SD	# imputed
Student Race/Ethnicity				*Perceptions of school environment & attitudes*[2]			
White	0.280	0.449	0	Peer academic norms	3.240	0.655	0
Black	0.283	0.451	0	Social sanctions for achievement	2.025	0.702	0
Hispanic	0.341	0.475	0	Closeness to whites[3]	5.572	1.546	24
Multirace	0.068	0.252	0	Closeness to blacks[3]	5.878	1.406	21
Friendship Measures				Closeness to Hispanics[3]	5.742	1.436	22
More than one white friend	0.775	0.418	22	Future multicultural interests[4]	2.736	0.754	13
More than one black friend	0.845	0.362	16	*Background Characteristics*			
More than one Hispanic friend	0.771	0.420	27	Age (in months)	182.1	6.549	49
Quantity of Contact Measures				Female	0.560	0.497	14
Do the following with students from a different ethnicity at least several times per week:				Home language other than English	0.256	0.437	3
				College educated mother	0.354	0.479	111
Work together in class	0.837	0.369	7	Neighborhood diversity[5]	2.473	1.204	18
Play games/sports/clubs	0.776	0.417	11	Specific place to study at home	0.660	0.474	16
Spend time socially	0.813	0.390	7	Daily newspaper at home	0.490	0.500	22
Work on class assignments	0.593	0.492	7	Computer at home	0.899	0.302	21
Talk at the lunch table	0.831	0.375	6	Attended an magnet before H.S.	0.328	0.470	32
Average frequency of interaction[1]	4.109	0.968	4	How frequently do you discuss school with a parent[6]	2.979	0.782	27
Quality of Contact Measures							
Average school interracial climate scale[2]	3.625	0.639	4				
Report some or a lot of racial tension	0.303	0.460	5				

1. Mean of responses to "how often you do each of the following" - Never (1), Once a Month (2), Once a Week (3), Several Times a Week (4), or Everyday (5) - across the five different activities listed in the rows immediately above. 2. See Appendix for a description of these measures, 1-5 scale unless otherwise indicated. 3. Scale from 1 to 7. 4. Scale of 1-4, 1=Not Interested and 4=Very Interested. 5. "How many people in your home NEIGHBORHOOD are from racial/ethnic groups that are different from your own?-1=Few, 2=quite a few, but less than half, 3=about half, 4=most. 6. Composite scale constructed from items asking about five different specific topics, scale of 1-4, 1=Never and 4=Often.

Analytic Issues and Methods

We present three sets of analysis. The first set examines the frequency and quality of intergroup contact across all of the interdistrict magnet schools in our sample. The purpose of this analysis is to determine the extent to which the conditions for the development of positive intergroup attitudes posited by contact theory are present. The second set of analyses examines variation in the frequency and quality of intergroup interactions across interdistrict magnet schools, and whether the nature of intergroup interactions is systematically related to the racial and ethnic composition of the school. The third set of analyses examines the extent to which students who report more frequent intergroup contact and who perceive higher quality intergroup relations also report more positive academic climate and intergroup attitudes. Our objective is to determine whether poor intergroup relations within a school might undermine the goals of school desegregation.

The students in our sample were selected using a clustered sampling design, which creates two issues for the analysis of intergroup contact across all of the magnet school students. First, sampling errors may be clustered within schools, which must be taken into account in conducting statistical tests of differences between black, white and Hispanic students. We address this issue by using a Huber-White variance estimator which is robust to clustering at the school level (Wooldridge, p. 57). Second, because white, black and Hispanic students are not evenly distributed across the schools in our sample, any differences between students from different racial/ethnic groups might be due either to differences across schools or differences across individuals within the same schools. To isolate the extent to which there are differences across groups within the same schools, we regress each individual level measure of intergroup contact on the race of the student and a set of school fixed effects.

To analyze variation across interdistrict magnet schools, we use the average responses of students in each school to construct school level indicators of the extent and quality of intergroup interactions. In addition we use a measure of friendship segregation index that can be interpreted as the ratio of the odds that a student reports more than one friend from the same ethnic group to the odds that a student reports more than one friend of different race or ethnicity.[14] As designed this measure is not mechanically dependent on the composition of the school, and thus allows comparisons for the level of friendship segregation across more and less heterogenous schools.

A primary concern in this analysis is that students who are more likely to perceive poor intergroup relationships might be expected to select different schools than students who are predisposed to perceive higher quality intergroup relations. For instance, it is shown below that black students are less inclined than other groups to report positive intergroup relations, which might lead to lower ratings of interracial climate in majority black schools than in other schools, even if more objective indicators of intergroup relations are similar across schools. To separate differences in the nature of intergroup relations in the school from systematic differences in the perceptions of different types of students, we regress individual student reports about intergroup interactions on school racial composition controlling for the full set of student background characteristics that were collected as part of the survey. These regressions are designed to determine if differences in average ratings of intergroup relations between magnet schools remain after controlling for observed differences between students who select into the different types of magnet schools.

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[14] For details on the construction of this measure see the appendix.

The third analysis examines whether students who have more frequent contact with other racial and ethnic groups or who perceive a more positive interracial climate in their school tend also to perceive a more positive academic environment and/or have more positive attitudes towards other groups. Ideally this analysis would examine the relationship between student perceptions and attitudes and school level measures of intergroup relations. Unfortunately, with only 10 schools we do not have enough statistical power to conduct that analysis. Instead we focus on the relationship between individual student perceptions and attitudes and individual student reports of intergroup interactions. If the quantity and quality of intergroup contact influences the goals of promoting positive learning environments and positive intergroup attitudes, then we would expect to see lower perceptions of academic environment and/or less positive attitudes towards other groups among students who experience less frequent and lower quality intergroup contact in their schools.

Specifically, we estimate a set of student level regressions. The dependent variables in these regressions are the measures of the student's perceptions and attitudes discussed above: perceptions of peer academic norms and social sanctions, closeness to other groups, and future multicultural interests. The independent variables of interest in these regressions are the frequency of intergroup interactions and perception of school racial/ethnic climate. Each regression includes controls for student background characteristics, and the model for each dependent variable is estimated separately for white, black and Hispanic students using ordinary least squares and standard errors robust to clustering within schools.

These regressions are intended as descriptive and do not allow causal attributions. For instance, if students who report frequent interactions with other groups also tend to report high levels of closeness with other groups, it is difficult to say whether the observed association is because frequent interactions improve attitudes or because students who feel close to other groups choose to interact with those groups more frequently. Because causal attributions cannot be made, the analysis here is not sufficient to establish that poor intergroup relations within schools undermine desegregation goals. However, since endogenous relationships between contact and attitudes are, in this case, likely to bias the estimated associations away from zero, failure to find a relationship between intergroup contact and student perceptions and attitudes would provide strong evidence that within school segregation does not undermine the quality of peer environments or the development of positive intergroup relations. Put another way, finding an association between intergroup contact and attitudes and perceptions is a necessary condition for maintaining that within school segregation is undermining these desegregation goals, even if evidence of such associations is not sufficient to demonstrate a causal link.

Results

The discussion of results is organized around the three sets of analysis described above, which examine: (1) the frequency and quality of intergroup relations reported by students in all of the interdistrict magnet schools; (2) variation in intergroup contact across interdistrict magnet schools; and (3) the relationship between the frequency and quality of intergroup contact and the goals of desegregated schooling.

The Frequency and Quality of Intergroup Contact in Interdistrict Magnet Schools

Table 2 presents indicators of how much students interact with students from other groups in school. The figures presented are averages across all of the magnet school students in our sample. These indicators suggest that there are generally high levels of intergroup contact within magnet schools. Between 77 and 84 percent of students report interacting with students from other groups

in class, in sports or club activities, socially, and at the lunch table at least several times a week, and the majority of students report working on class assignments outside of class with students from other racial/ethnic groups at least several times a week. Also, substantial majorities of students in each racial/ethnic group report more than one friend from a different racial or ethnic group.

The frequency of contact with students from other ethnic groups reported in these interdistrict magnet schools is substantially higher than that reported in the less diverse public schools that we were able to survey. Only 33 percent of white students in a predominantly white (89 percent), suburban high school that we surveyed reported more than one black friend and only 19 percent reported more than one Hispanic friend. Also, only 55 percent of white students reported interacting socially and only 29 percent reported working on class assignments with students from other groups several times a week. In a predominantly Hispanic (72 percent) and black (25 percent) central city high school, only 53 percent of Hispanic students and 42 percent of black students reported having more than one white friend.

Table 2

Measures of Intergroup Contact

	White students	Black students	Hispanic students	F-statistic[2]
Frequency of Interaction				
Do the following with students from a different ethnicity at least several times per week:				
Work together in class	.891	.750	.849	3.12*
Play games/sports/clubs	.822	.722	.764	1.62
Spend time socially	.851	.716	.849	4.96**
Work on class assignments	.552	.489	.684	15.63**
Talk at the lunch table	.868	.716	.877	7.20**
Average frequency of interaction[1]	4.21	3.80	4.23	12.89**
Other Group Friendships				
More than one white friend (%)	94.8	64.8	71.2	56.64**
More than one black friend (%)	71.8	96.0	84.4	19.52**
More than one Hispanic friend (%)	60.3	75.0	91.5	44.38**
Perceived Quality of Interaction				
Equal status	3.68	3.19	3.42	7.43**
Communication	4.41	4.07	4.25	7.46**
Interdependence	3.76	3.45	3.50	5.86**
Supportive norms	3.56	3.08	3.25	5.61**
Overall quality	3.85	3.45	3.61	14.99**
Report some or a lot of racial tension in school	.322	.261	.349	3.69*

1. Mean of responses to "how often you do each of the following" - Never (1), Once a Month (2), Once a Week (3), Several Times a Week (4), or Everyday(5) across the five different activities listed in the rows above. 2. For hypothesis that there are no differences between racial/ethnic groups.

* p<.10, ** p<.05.

Table 2 also presents indicators of the quality of intergroup contact along dimensions emphasized by contact theory and student reports on the level of racial tension in the school.

Without other diverse schools to provide comparisons, it is difficult to assess whether these values on the interracial climate scale represent high or low quality contact.

Despite generally high levels of intergroup interaction in magnet schools, there are also indications of some within-school segregation, at least across friendship groups. White, black and Hispanic students are each more likely to report having more than one friend of the same race/ethnicity than to report having more than one friend from another group. Of course, the figures in Table 2 average across all the magnet schools in our sample, and thus mix differences in friendship compositions that result from segregation across schools with differences due to within school segregation. To isolate within-school friendship segregation, we regressed each of three binary variables indicating whether or not a student reported having more than one white friend, more than one black friend and more than one Hispanic friend, on indicators of the student's own race/ethnicity and a set of school fixed effects.

The results of these regressions are reported in Table 3. The omitted category in these regression are white students, so the results in Table 3 indicate that black students are 24.3 percentage points less likely to report more than one white friend than are white students in the same school, and are 17.6 percentage points more likely than white students and 8.9 percent more likely than Hispanic students in the same school to report more than one black friend. Similarly, Hispanic students are nearly 20.3 percentage points less likely than white students in the same school to report more than one white friend and 23.4 percentage points more likely than white students and 12.8 percent more likely than black students in the same school to report more than one Hispanic friend. In the absence of within school segregation, the pool of potential friends within a school is the same for all students. If there were no within school friendship segregation and if race were not a salient consideration for friendship formation, we would expect that a student's own race would not influence the likelihood of reporting friends from any specific race or ethnicity. Thus, the results in Table 3 indicate significant amounts of segregation across friendship groups within schools.

Table 3
Indicators of Segregation Within Schools

	Black students	Hispanic students
More than one white friend	-0.243**	-0.203**
	(0.030)	(0.031)
More than one black friend	0.176**	0.087
	(0.048)	(0.056)
More than one Hispanic friend	0.106	0.234**
	(0.085)	(0.043)

Figures reported are coefficient estimates from individual level regressions of the variable identified in column one (the dependent variable) on race/ethnic categories controlling for school fixed effects. Figures in parentheses are robust standard errors adjusted for clustering within schools. The omitted category in each regression is white students, so figures can be interpreted as average difference from white students in the same school.
** $p < 0.05$.

Another finding from Table 2 worth noting is that black students report significantly less contact with other groups than either white or Hispanic students. This result may largely be a result of the fact that black students in this sample are much more likely to be a majority group within

their school than are either white or Hispanic students. However, black students also report significantly lower quality intergroup relations than white students and, to a lesser extent, Hispanic students.

Black students are concentrated in a different set of magnet schools than are white and Hispanic students, and so we can ask whether these differences in perceptions of interracial climate are due differences between racial and ethnic groups within schools or differences in perceptions across schools that are shared by all racial groups. To address this question we regressed individual student perceptions of intergroup relations on the student's race controlling for school fixed effects. The results are presented in Table 4 and indicate that both black and Hispanic students tend to report lower quality intergroup relations than white students in the same school, although the differences between black students and white students are more marked than the differences between Hispanic and white students.

Table 4
Differences in Quality of Intergroup Contact Across Races Within Schools

	Black students	Hispanic students
Equal status	-0.373**	-0.195
	(0.096)	(0.143)
Communication	-0.324**	-0.169*
	(0.101)	(0.088)
Interdependence	-0.175**	-0.167**
	(0.051)	(0.061)
Supportive norms	-0.253**	-0.128
	(0.105)	(0.118)
Overall school interracial climate scale	-0.281**	-0.165*
	(0.046)	(0.079)

Figures reported are coefficient estimates from individual level regressions of the variable identified in column one (the dependent variable) on race/ethnic categories controlling for school fixed effects. Figures in parentheses are robust standard errors adjusted for clustering within schools. The omitted category in each regression is white students, and so figures can be interpreted as average difference from white students in the same school.
* $p<0.10$ and ** $p< 0.05$.

In sum, we find high frequency of intergroup interactions and friendships in interdistrict magnet schools. Frequent intergroup interactions are reported despite significant amounts of segregation across friendship groups within schools. Also we find that black students report less frequent and lower quality intergroup interactions than white students, and to a lesser extent, Hispanic students, even within the same schools.

Variation Across Schools

Table 5 presents information on the variation across magnet schools in the extent of and quality of intergroup contact. The top panel describes the distribution of four measures across the ten schools in our sample. The friendship segregation index can be interpreted as the ratio of the odds that a student reports more than one friend from the same ethnic group to the odds that a

student reports more than one friend of different race or ethnicity. The average frequency of interaction indicates how frequently a student reports interacting with students from racial or ethnic groups other than their own in a variety of school activities. The average school interracial climate scale reflects students' perception of the quality of intergroup relations on the dimensions identified as important in standard contact theory. The last column describes variation in the percentage of students who report at least some racial tension at the school.

There is considerable variation across schools in the frequency and quality of intergroup contact. The lowest value of the friendship segregation index indicates that students are only 15 percent more likely to report more than one friend from their own racial or ethnic group than they are to report more than one friend from another group, indicating low levels of friendship segregation, while the high value indicates that students are 76 percent more likely to report more than one friend from their own group than from a group different than their own. Differences between the high and low values of both the average frequency of interaction and the average school interracial climate scale are more than one student level standard deviation. As many as 56 percent of students report some or a lot of racial tension in one of the schools in the sample while only 15 percent report that kind of tension in another school. In addition, the four measures presented in Table 5 are correlated across schools, so that the schools with relatively high frequency of contact tend also to have high quality contact (correlation=0.57), low percentages of student perceiving racial tensions (correlation= - 0.69), and lower levels of friendship segregation (correlation= - 0.63).

One factor that is a strong predictor of the quantity and quality of intergroup contact is the racial and ethnic heterogeneity of the school. As is shown in the bottom panel of Table 5, intergroup relations are significantly better in the four most heterogeneous schools, where no racial or ethnic group in the majority, than in the schools where one group is a majority. In the most heterogeneous schools there is less friendship segregation and significantly more intergroup contact, significantly higher ratings of interracial climate, and a significantly smaller percentage of students who report racial tension than in the schools where one group is in the majority.

Table 5

Variation in Intergroup Relations Across Interdistrict Magnet High Schools

	Friendship segregation index	Average frequency of interaction	Average school interracial climate scale	% report some or a lot of racial tension
High value	1.76	4.57	4.11	56%
Low value	1.15	3.52	3.35	15%
School level mean	1.30	4.05	3.61	30%
Median school	1.28	4.09	3.55	28%
Heterogeneous schools (4)	1.23	4.39	3.81	21%
Majority black schools (5)	1.36	3.85	3.46	33%
Majority white schools (1)	1.30	3.64	3.54	56%
F-Statistic	0.54	7.75**	4.35*	6.15**

F-statistics are for hypothesis that there are no differences in means between heterogeneous schools, majority black schools, and majority white schools computed using a school level ANOVA. * p<.10 and ** p<0.05.

As explained above, some schools might have lower average ratings of intergroup interactions not solely because of objective conditions in the school, but because they have students who are predisposed to perceive poor intergroup interactions. To examine this issue, we regressed individual students' frequency of interaction with other groups, perception of the school interracial climate, and whether or not the student reported some or a lot of racial tension on categorical indicators of whether the student's school is majority black or majority white, controlling for the full set of available student background characteristics.[15] The results of these regressions are presented in Table 6.

Table 6
Relationship between School Composition and Intergroup Relations, Controlling for Individual Student Characteristics

	Dependent Variable		
Independent Variable	Average frequency of interaction	School interracial climate rating	Reports some or a lot of racial tension
Majority black school	-0.329** (0.084)	-0.044 (0.062)	0.130** (0.056)
Majority white school	-0.412** (0.107)	0.126 (0.159)	0.417** (0.059)
Black	-0.382** (0.092)	-0.322** (0.043)	-0.090 (0.069)
Hispanic	-0.104 (0.109)	-0.168** (0.041)	0.021 (0.064)
Asian	0.129 (0.168)	-0.266** (0.097)	0.081 (0.229)
Other	-0.390** (0.161)	-0.472** (0.128)	0.685** (0.059)
Multirace	-0.026 (0.243)	-0.211 (0.127)	-0.191 (0.109)
Age (in months)	-0.009 (0.005)	-0.005 (0.004)	0.007** (0.002)
Female	-0.118 (0.084)	-0.019 (0.031)	0.130** (0.042)
Home language not English	-0.088 (0.079)	-0.057 (0.070)	0.086 (0.067)
College educated mother	-0.186** (0.093)	-0.013 (0.045)	0.038 (0.046)
Neighborhood diversity[1]	0.112** (0.025)	0.018 (0.027)	-0.027** (0.011)
Attended interdistrict magnet before H.S.	0.243** (0.071)	-0.032 (0.078)	-0.055 (0.050)
Specific place to study	0.061 (0.087)	0.244** (0.061)	0.003 (0.022)
Daily newspaper at home	-0.019 (0.065)	-0.083 (0.051)	0.109** (0.036)
Computer at home	0.381** (0.158)	0.072 (0.052)	-0.137 (0.079)
How frequently discuss school with parent	0.375** (0.054)	0.285** (0.051)	-0.088** (0.031)
R-square	0.330	0.308	0.207

Figures in parentheses are robust standard errors adjusted for clustering within schools.
** p<.05

[15] The friendship segregation measure is defined at the school level only and thus cannot be used as a dependent variable in these individual level regressions.

Even after controlling for differences in student background characteristics, students in majority black schools and in the majority white school report less frequent intergroup contact and more racial tension than in the more heterogeneous magnet schools. In contrast, differences in the ratings of interracial climate disappear after controlling for student background characteristics. It appears that the low ratings of interracial climate in majority black schools reported in Table 5 is due to the fact that blacks students, who are over-represented in these schools, tend to perceive lower quality intergroup relations than white students, even when the two groups are in the same school.

The findings that suggest less segregation and more positive intergroup relations in the most heterogeneous magnet schools are consistent with Moody's (2001) findings on the relationship between school heterogeneity and friendship segregation. Moody found that friendship segregation tended to be highest in moderately heterogeneous schools and lower in the most heterogeneous schools than in moderately heterogeneous schools. Similarly, we find that magnet schools that attract a moderately diverse student body have more friendship segregation, less frequent contact, and more racial tension than those magnets that attract the most racially and ethnically heterogeneous student bodies.

Relationship between Intergroup Contact, Academic Climate, and Racial Attitudes

The analysis above indicates that there is a substantially lower quantity and quality of intergroup contact in some magnet schools than in others. In this section, we examine whether students who have more frequent contact with other racial and ethnic groups or perceive a more positive interracial climate in their school tend also to perceive more positive academic environments and/or have more positive attitudes towards other groups. Our objective is to determine whether poor intergroup relations within a school might undermine desegregation goals. Specifically, we regress the measures of the student's perceptions and attitudes discussed above: perceptions of peer academic norms and social sanctions, closeness to other groups, and future multicultural interests on the frequency of intergroup interactions and perception of school racial/ethnic climate. Table 7 presents the results of this analysis. Each panel of the table presents a set of regression results for one of the six dependent variables examined. Each regression includes controls for student background characteristics, and the model for each independent variable is estimated separately for white, black and Hispanic students.

A student's rating of school interracial climate, which we interpret as an indicator of the quality of that student's intergroup interactions, is strongly associated with peer academic environment, particularly among black and Hispanic students. Students who rate school interracial climate higher tend to perceive higher academic norms among their peers, and this association is statistically significant among black and Hispanic students. The coefficient estimates in the top panel of Table 7 indicate that a one standard deviation increase in the racial climate rating is associated with approximately a 0.28 standard deviation increase in ratings of peer academic norms for black students and a 0.21 standard deviation increase for Hispanics.[16] Higher quality intergroup interactions are also associated with lower social sanctions for black and Hispanic students. The coefficient estimates indicate that a one standard deviation increase in the interracial climate ratings is associated with approximately a 0.09 standard deviation reduction in perceived social sanctions for achievement for black students and a 0.11 standard deviation reduction for Hispanic students.

Table 7

[16] This magnitude is calculated by dividing the coefficient on rating of school racial climate by the standard deviation in peer academic norms (reported in Table 1) and multiplying by the standard deviation of the school interracial climate scale (also reported in Table 1). Analogous calculations are used below to characterize the magnitude of other associations.

Relationship Between Intergroup Contact and Student Perceptions and Attitudes

	White students	Black students	Hispanic students
Peer Academic Norms			
Frequency of interactions	-0.071	-0.055	0.052
	(0.088)	(0.063)	(0.053)
Rating of school racial climate	0.250*	0.397**	0.294**
	(0.130)	(0.098)	(0.052)
Social Sanctions for Achievement			
Frequency of interactions	0.056	-0.055	0.093*
	(0.071)	(0.080)	(0.049)
Rating of school racial climate	-0.144	-0.133**	-0.175**
	(0.102)	(0.055)	(0.047)
Closeness to Whites			
Frequency of interactions	0.100	0.462**	0.531**
	(0.107)	(0.140)	(0.183)
Rating of school racial climate	0.317*	0.659**	0.552**
	(0.168)	(0.219)	(0.239)
Closeness to Blacks			
Frequency of interactions	0.492**	0.001	0.333
	(0.220)	(0.093)	(0.198)
Rating of school racial climate	0.880**	0.112	0.582
	(0.310)	(0.079)	(0.330)
Closeness to Hispanics			
Frequency of interactions	0.589**	0.356**	0.589**
	(0.202)	(0.159)	(0.099)
Rating of school racial climate	0.985**	0.625**	0.076
	(0.218)	(0.180)	(0.119)
Future Multicultural Interests			
Frequency of interactions	0.209**	-0.012	0.041
	(0.078)	(0.036)	(0.052)
Rating of school racial climate	0.227**	0.364**	0.426**
	(0.097)	(0.087)	(0.144)
Number of observations	174	176	212

Each regression estimated using OLS. Figures in parentheses are t-statistics based on standard errors robust to clustering within schools.
*p<.10 and ** p<.05.

The association between the frequency of intergroup contact and perceptions of academic environment is weaker and more ambiguous than in the case of school interracial climate ratings.

The frequency of contact, controlling for the rating of school interracial climate, is unrelated to perceptions of peer academic norms and social sanctions, with the one exception that after controlling for student background, Hispanic students who report more frequent intergroup contact also tend to report slightly higher levels of social sanctions for achievement.

The bottom four panels of Table 7 presents analyses of intergroup attitudes. Here, the quantity of contact is a strong predictor of closeness with other groups. More frequent interactions with other groups are significantly associated with greater feelings of closeness toward blacks and Hispanics among white students, toward whites and Hispanics among black students, and towards whites among Hispanic students. For instance, a one standard deviation increase in frequency of interactions is associated with an increase of 0.29 standard deviations in feelings of closeness of black students to whites and an increase of 0.34 standard deviations in closeness of white students to blacks. More frequent interaction with other groups is also associated with stronger interest in becoming involved in multicultural settings in the future among white students.

The rating of school racial climate is similarly associated with greater feelings of closeness to other groups, and also predicts stronger future multicultural interests among both black and Hispanic students. For instance, a one standard deviation increase in the quality of intergroup interactions for a black student is associated with a 0.20 and 0.18 standard deviation increase in closeness to whites and to Hispanics, respectively. A one standard deviation increase in a student's rating of school interracial climate predicts a 0.22 and 0.26 standard deviation increase in future multicultural interest for black students and Hispanic students, respectively.

In sum, higher quality intergroup contact as indicated by the student's rating of school interracial climate is associated with key outcomes that advocates of school desegregation seek to promote. Particularly, a higher rating of school interracial climate is associated with more positive peer academic norms and less prevalent social sanctions for achievement, particularly among black and Hispanic students, and greater feelings of closeness with other groups and stronger future multicultural interests. Higher frequency of interactions is also associated with more positive attitudes towards other groups, and stronger future multicultural interests among white students. The analyses here do not allow causal attributions, but are consistent with the idea that diverse schools with frequent intergroup contact and higher quality intergroup relations do more than less fully integrated schools to promote positive peer environments and positive intergroup attitudes.

Conclusions

Four key findings emerge from our analysis. First, there appear to be high levels of intergroup interaction within the magnet schools in our sample. Most students in these schools interact frequently and in many different venues with students from other racial and ethnic groups, and a substantial majority report having more than one friend from other racial and ethnic groups. Second, black students in these magnet schools report less frequent contact and lower quality intergroup relationships than do white students, and to a lesser degree Hispanic students. Third, there is substantial variation across interdistrict magnet schools in the frequency and quality of intergroup contact. The magnet schools that attract the most heterogeneous student bodies tend to have more frequent interactions between students from different groups, less friendship segregation and less racial tension than schools where one group a majority. Fourth, students who report high quality intergroup interactions also report more positive peer academic environments, more positive attitudes towards other racial and ethnic groups, and stronger future multicultural interests. We conclude by discussing the implications of these findings for desegregation policy and research.

The students in our sample report frequent interactions with students from other groups despite significant levels of friendship segregation within schools. Other studies have found significant friendship segregation within diverse schools generated by desegregation efforts (Halinan & Williams, 1989; Kao & Joyner, 2000; Moody, 2001). The findings here suggest that friendship segregation within diverse schools does not preclude frequent intergroup interactions. This finding is important because some research on intergroup relations emphasizes the importance of acquaintance and "weak ties" in improving attitudes towards other groups (Clotfelter, 2004). Some amount of friendship segregation, which might be expected among adolescents forming personal identities, need not undermine the goals of desegregated schooling.

That black students report less frequent intergroup contact and lower quality interactions than white or Hispanic students raises some concerns about Connecticut's interdistrict magnet schools. Because black students in our sample are more likely to be enrolled in schools where there group is in the majority, they have more opportunity to avoid intergroup contact, which helps to explain why they are less likely to report frequent contact. Even within the same school, however, black students tend to report lower quality intergroup interactions than white or Hispanic students. It is important to know if similar differences across racial groups occur in other desegregated schools, and to understand why black students might perceive lower quality intergroup interactions. Leaders of diverse schools may want to give special attention to the perspectives of black students to ensure conditions for them to experience positive intergroup interactions are present.

A second concern for Connecticut's interdistrict magnet school program is that the conditions that contact theory suggests are necessary for promoting positive intergroup attitudes are more fully established in some magnet schools than others. The key question is--why have some schools been able to establish more positive interracial climates? We find some evidence that a higher level of heterogeneity in a school is associated with more frequent and higher quality intergroup relations. This evidence is consistent with evidence from Moody's study of friendship formation in a nationally representative set of schools (Moody, 2001). Highly heterogeneous schools might help to create more frequent and higher quality intergroup interactions because significant numbers of students from several different groups might help to reduce the salience of race and ethnicity, because students have less opportunity to avoid intergroup contact, because one group can serve as a bridge between other groups, or perhaps simply because students predisposed toward positive intergroup contact are more likely to select the most diverse environments. Clearly, more research is needed to understand the link between school racial and ethnic composition and the quality of intergroup interactions.

Also some attention must be given to policies that school staff can control. Moody (2001) identifies several school policies that can improve intergroup interactions. These include encouraging racial mixing in extracurricular activities, limiting cross-grade contact and increasing within-grade activities, and minimize segregation across classrooms. Our results reinforce the idea that positive intergroup interactions do not occur automatically in diverse schools, even diverse schools of choice, and thus indicate that school leaders must make efforts to structure the social dynamics in a school in ways that encourage positive intergroup relations.

Our final finding concerning the relationship between intergroup interactions experienced by individual students and those students' perception of peer academic environment and attitudes toward other groups, suggests that the nature of intergroup contact within diverse schools does indeed matter for the more ultimate goals of desegregation policy. More specifically, the conditions identified by standard contact theory are associated with more positive peer academic environments and more positive attitudes toward other groups. Of course, attributing causal relationships between racial climate, academic environment and individual attitudes is difficult. Nonetheless, our findings

as a whole indicate that while efforts to promote racial and ethnic integration across schools remains important, school leaders must also devote attention to intergroup relations within diverse schools if the long-standing goals of integrated schooling are to be realized and maintained.

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Appendix: Details on Measures

Friendship Segregation Measure

The following matrix can be constructed for each school.

	More than one white friend	More than one black friend	More than one Hispanic friend
White students	D_{ww}	OD_{wb}	OD_{wh}
Black students	OD_{bw}	D_{bb}	OD_{bh}
Hispanic students	OD_{hw}	OD_{hb}	D_{hh}

The diagonal elements of the matrix, D_{ii}, are the proportions of students in each racial/ethnic group who report having more than one friend from the same racial group and the off-diagonal elements, OD_{ij} are the proportion of students in each racial/ethnic group reporting more than one friend from a specific, different racial/ethnic group.

The measure of friendship segregation can be computed by multiplying the sum of the diagonal elements by two and dividing that product by the sum of the off-diagonal elements. The resulting measure can be interpreted as the ratio of odds that a student in a school will report more than one same race friend to the average of the odds that a student will report more than one friend from a specific other racial/ethnic group. Because the proportions of students reporting more than one same race friend and more than one friend in other groups for each racial group are weighted equally, the resulting measure is not influenced by the overall racial composition of the school.

School Interracial Climate Scale

The items included in the school interracial climate scale ask students to indicate their level of agreement as strongly disagree (1), disagree (2), neutral (3), agree (4) or strongly agree (5) for each of the statements listed in Table A1. Past studies that have applied this scale in school settings have found high levels of internal consistency, strong evidence of construct validity, and have confirmed the four component factors (Green, Adams and Turner, 1988; Gaertner et al., 1994). The Cronbach alphas reported in Table A.1 are quite similar to those reported in these earlier studies. Scales for each factor are computed by averaging the responses to each item and an overall scale is computed by reverse coding the communication items and averaging across all 4 subcomponents.

Table A.1
Equal Status, Communication, Interdependence, and Supportive Norms Item Scores

	Mean	SD
Equal Status (α=0.718)		
Teachers at this school are fair to all groups of students.	3.53	1.29
All students in this school are treated equally.	3.27	1.30
Some students at this school get more support[1]	3.57	1.22
Communication (α=0.752)		
I talk to students of different races only when I have to.	1.83	1.07
My friends would think badly of me if I ate lunch with students of a different race.	1.64	0.95
Students of different races don't have much to do with each other at this school.	2.08	1.08
Interdependence (α=0.768)		
Students of different races in this school need each other.	3.22	1.03
Students of different races have important things to offer each other.	3.59	0.97
After students of different races get to know each other, they find they have a lot in common.	3.79	0.89
Supportive Norms (α=0.651)		
Teachers encourage students to make friends with students of different races.	3.19	1.08
In this school everybody is encouraged to be friends.	3.37	1.12

1. Reverse coded so that higher values represent disagreement

Measures of Perceptions and Attitudes

The items used in our measures of social sanctions, peer academic norms, closeness to other groups, and future multicultural interests are specified in Table A2. The items used in the social sanctions scale were drawn from the Patterns of Adaptive Learning Scales (Midgley & Maehr, 1999) and from the National Education Longitudinal Study. Cronbach alphas for each scale are reported in parenthesis next to the label for the scale. Each scale is computed by averaging responses across each item. In cases where the items in a scale were measured on a different response scale, responses were standardized prior to averaging.

Table A.2
Attitude and Perception Measures

	Mean	SD
Social Sanction[1] (α=0.684)		
It's important to me that I don't look smarter than others in class.	2.36	1.08
In this school getting good grades makes you less popular.	1.96	1.00
I usually avoid answering questions in class because I don't want other students to think I am trying too hard.	1.90	1.00
If I did well on a school assignment, I wouldn't want other students to see my grade.	1.87	1.07
Peer Academic Norms (α=0.655)		
Most of my friends care about doing well in school.[1]	3.64	0.94
Students at my school value academics.[1]	3.33	0.89
How many of your close friends try hard to do well in school?[2]	2.75	0.76
Social Closeness		
How close do you feel to each group?[3]		
Black	5.74	1.55
Latino/a	5.53	1.65
White	5.36	1.75
Asian	4.06	2.18
Multi-racial	5.55	1.66
How comfortable do you feel toward each group?[3]		
Black	6.00	1.51
Latino/a	5.95	1.49
White	5.81	1.63
Asian	5.15	2.09
Multi-racial	5.83	1.63
Future Multicultural Interest[4] (α=0.831)		
please indicate your own level of interest in each by checking either:		
Taking a foreign language class after high school.	2.64	1.05
Taking a course focusing on other cultures after high school.	2.26	1.00
Attending a racially/ethnically diverse college campus.	2.82	0.99
Speaking a foreign language.	3.05	1.00
Living in a racially/ethnically diverse neighborhood when you are an adult	2.81	0.95
Working in a racially/ethnically diverse setting when you are an adult.	2.92	0.94

1. Response scale for this item is strongly disagree (1), disagree (2), neutral (3), agree (4), strongly agree (5). 2. Response scale for this item is None (1), Some (2), Most(3), All (4). 3. Rate on a scale from 1-7, with 1=Not at All and 7=Extremely. 4. Response scale for all items is Not Interested (1), Somewhat Interested (2), Interested (3), Very Interested (4)

Racial/Ethnic Categories

Questions asking students to self-identify their race followed the exact form and wording of the 2000 U.S. Census. Students were asked identify as Hispanic or not separately from a question asking them to identify their race. The question offered both other and multiracial as a choice and also allowed respondents to check more than one response. An additional open-ended item asked the student to self-describe his or her ethnic heritage. For the analyses here, an attempt was made to

assign all students who responded to one or more of these questions to mutually exclusively categories according to the following rules.

Anyone who identified as Hispanic was assigned to the Hispanic category regardless of the response to the other questions.

Those who reported white only, black only, or Asian only in the question on race were assigned to those categories.

All individuals who responded Asian and Pacific Islander to the race question and the one person who identified solely as Pacific Islander was assigned to the Asian category.

16 students who identified as white and either Asian or American Indian were classified as white;

20 students who identified as black and either Asian or American Indian were classified as black;

35 of the students who did not identify as Hispanic and identified their race as other or did not answer the race question were assigned to white, black or Asian based on their response to the open-ended ethnicity question.

52 of the students who identified as non-Hispanic and multiracial were assigned to the categories white, black, or Asian based on their response to the open ended racial heritage questions.

An alternative set of analyses were run in which students assigned to a racial category by rules 4-7 above were assigned to either the other or the multiracial category, and all results reported were substantively similar.

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