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The Effects of Racial and Extracurricular Friendship Diversity on Achievement

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Abstract

This paper finds the effect of having friends of a similar race and who are involved in similar activities. It explores data which allows a peer group to be defined openly through self nominations. Using a strategy that corrects for the endogeneity of peer effects by instrumenting using variables at the “grade within school” level, it is shown that friendship diversity can help whites increase achievement. Although not much significance was found with other races, most of the strategies pushed towards the direction of racial diversity aiding achievement. Regarding extracurricular activities, it is found that there is a benefit in having friends in common individual academic activities, conditional on the respondent only belonging to academic or scholastic clubs. There are insignificant effects in having friends in common sports, conditional on the respondent only participating in sports.

JEL Classification Codes: C78, K42, L14

Keywords: National Longitudinal Study of Adolescent Health, Add Health, friendship formation, returns to diversity, scholastic achievement, school redistribution

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1 Introduction

Friendship formation itself is a very interesting process to uncover. However, it would lose a lot of meaning if there were not some ramifications on how one's friends affect the choices, behavior, and achievement of one's self. This chapter will move towards the direction of estimating peer effects instead of discerning the mechanism of how certain friendships form.

This paper attempts to answer if there is an effect of having different types of friends on achievement. For this analysis, an individual's achievement in GPA terms is estimated using an individual's friend's race or his racial friendship network heterogeneity and whether the individual's best same-gender friend is involved in similar extracurricular activities.

It is important to attempt an answer for the above problem due to many policy implications that may arise out of the issue. For example, school redistricting usually has the effect of creating diversity (through channels such as income, race, and behavior) for both the child who is being redistricted as well as for the school and the new peers of the redistricted child. If students on a college campus form cliques that only associate with a homogenous group, such as Asians only having Asian friends or football players always only associating with each other, should more forceable integration schemes be put into action? Perhaps it is best to keep the segregation going due to some returns of being around a homogenous environment. Perhaps student athletes and regular students should be apart even more than they already are, or perhaps they should live in the same dormitory. An answer to the question on how diversity (in this case, specifically racial and extracurricular diversity) affects outcomes such as achievement would certainly help in assessing the policies just listed.

This paper uses the National Longitudinal Study of Adolescent Health (Add Health) to take advantage of rich and real friendship networks in order to test various peer effects. The variables of major interest are GPA, whether someone has a best same-gender friend who is also of the same race, a heterogenous index measure to discover how diverse an individual's network really is, and indicators on whether best same-gender friends participated in one or more activity categories or specific clubs with the individual. Due to problems with endogeneity of the peer effects, ordinary least squares (OLS) is not the optimal estimation method. This chapter uses the "grade within a school" average on the basis of the endogenous variables in order to instrument for those variables, removes any bias caused by correlation with a disturbance term, and identifies the model. After going through all the scenarios, it is found

that as care is taken to control for endogeneity, the more it seems like racial heterogeneity becomes important. Another way to look at it is that racial homogeneity could become less important, which is what mainly happens to blacks, Hispanics to a degree, and Asians. However, the most powerful result is that by two measures of friendship (best same-gender friend and friendship network), whites perform better in a more heterogeneous environment. With regards to clubs, it is found that there is very little effect of the heterogeneity regarding a best same-gender friend also participating in an activity type on an individual's GPA. However, when breaking down the friends into those who actually share places in individual sports or individual academic-scholastic clubs, it is found that there is not much of an effect with regards to heterogeneity in sporting activities, but there is an academic benefit regarding homogeneity in academic-scholastic clubs.

The chapter is organized as follows. Section 2 reviews the recent literature on the subject. Section 3 goes meticulously through models, which builds to the one used to correct for the most bias in this instance. Section 4 describes the Add Health In-School survey further, describes variables, and presents summary statistics. Section 5 presents the results of the various models shown in section 3. Section 6 concludes the chapter and sets up the future. Appendix A has some additional tables of network data and model specifications that were a little extraneous to the chapter, but of interest nonetheless. It also contains first-stage regression coefficients for the instrumental variable (IV) regressions in the main body of the chapter. The results section also explains basically what instruments are potentially strong and trustworthy, what instruments are weak and possibly problematic, and how to interpret the results with this information.

2 Recent Literature

Diversity is defined by Nehring and Puppe (2002) as “an aggregate of the pairwise dissimilarities between [a set of] elements. (p. 1155)” Alesina and La Ferrara (2005) explore it in the job market. The costs of diversity are the “conflict of preferences, racism, and prejudices, (p. 762)” while the benefits are “varieties in abilities, experiences, and cultures. (p. 762)” These reasons can explain various trends that will be reported in this chapter, such as perhaps why there might be a return to having a best friend of the same race.

A paper that analyzes policies on diversity and achievement very much like the ones

outlined in section 1 is written by Angrist and Lang (2004). It analyzes Boston's Metropolitan Council for Educational Opportunity (Metco) program, which is a school redistricting program in the Boston metropolitan area. They studied the effect of the influx of poor performing minority students on affluent white students. They did not find an effect, with either ordinary least squares estimates or instrumental variables estimates. They did find that there was an effect on minority third graders, but due to the strange and localized nature of these effects, they concluded that there were few peer effects there. The story in this chapter is a little bit different, in that in Add Health, there is no burst of new people from far away suddenly coming into the school. However, the advantage that Add Health does have is that peer groups are extremely well defined, as students have to identify their friends to a surveyor.

Hoxby (2000) uses a very similar method to the one used in this chapter to identify peer effects in a classroom. Hoxby uses small grade level gender and race variations over consecutive years in order to identify the actual peer effect on achievement level. This chapter uses "grade within a school" variation of race and activity participation.

Mihaly (2008) also uses "grade within a school" variation, but uses the dependent variable as an indicator on if an individual drinks or smokes. Mihaly regresses it on the average of the individual's peers' behavior on drinking and smoking. To fix the endogeneity problem between an individual's behavior and peer behavior, the "grade within a school" averages of drinking and smoking are used as instruments. In fact, it can probably be argued that the instruments in that case are a bit more plausible than using a similar type of variation on the dependent variable which is in this chapter (GPA). The dependent, endogenous, and instrument variables in that paper are all based on the same behavior. However, results of the peer effects are somewhat similar across the two papers in that, when evolving from OLS to IV regressions, estimates sometimes swing across zero and become significant going the other way, which is what happens in this chapter to whites when dealing with racial heterogeneity/homogeneity.

Regarding activity participation, Broh (2002) shows that sports activities promote social ties in scholastic experiences, and that participation in most extracurricular activities in general improves achievement in most areas. Broh does not explicitly control for the friendships in such activities like in this chapter, but the results achieved in Broh's paper agree with this chapter on the benefits of extracurricular activities on their own. Braddock (1981) also agrees that sports are beneficial to academics.

3 Model

The model begins with a general educational production function of relevant independent variables available in the Add Health In-School Sample on GPA.

$$GPA_i = \alpha_0 + X_i\alpha_1 + R_i\alpha_2 + A_i\alpha_3 + F_{im}\alpha_4 + \epsilon_i \quad (1)$$

- i = Individual respondent, m = Relevant trait (race or activity)
- X_i = Personal characteristics
- R_i = Race indicator of the individual
- A_i = Extracurricular activities indicator of the individual
- F_{im} = Indicator on having a friend with certain characteristics
- ϵ_i = Error term

The dependent variable is the GPA of an individual student. X_i and R_i are generally characteristics that can be considered purely exogenous.¹ For the purposes of this analysis, club participation (A_i) will also be treated as an exogenous variable. This model can be estimated by OLS. The model above, though, is not without its issues, because it is implausible to believe that F_{im} is identified. For example, perhaps the effect that F_{im} imposes is actually due to peer GPA, which is not in the model. Therefore, it is necessary to adjust the model to the specification listed below.

$$GPA_i = \alpha_0 + X_i\alpha_1 + R_i\alpha_2 + A_i\alpha_3 + F_{im}\alpha_4 + I_j + I_k + \epsilon_i \quad (2)$$

- i = Individual respondent, j = School, k = Grade m = Relevant trait (race or activity)
- I_j = School fixed effects
- I_k = Grade fixed effects

Equation 1 has a problem in that there are many unobservables that can potentially bias estimation. At the school level, variables such as the quality of teachers, facilities in the school, and wealth of the neighborhood can certainly contribute to GPA. The grade level unobservables can include specific cohort effects such as within-grade teacher quality and

¹ R_i is separate from X_i due to expositional purposes, since racial peer effects are a large part of this chapter.

admissions criteria changes. Equation 2 incorporates fixed effects at both the school and the grade level in order to control for these effects at these levels. However, there is still an endogeneity problem with F_{im} (friendship variable). The correlation between having a friend of a certain trait may be correlated with unobservables, such as an individual's friend's GPA. For example, if an individual's friend's GPA is correlated with both the individual's GPA and the actual friendship characteristic in question, the estimate on having a friend with the trait in question can be biased. Specifically, in equation 2, if trait m is correlated with an unobservable, which also affects the dependent variable GPA, it is very possible that α_3 is either overestimated or underestimated due to the unobservable.

An attempt to mitigate the endogeneity of F_{im} can be made. A variable needs to be found that is only correlated to GPA through F_{im} , which can then serve as an instrument to correct a potential endogeneity problem. A two-stage least squares (2SLS) IV procedure can be instituted using the following specification.

$$F_{im} = \beta_0 + X_i\beta_1 + R_i\beta_2 + A_i\beta_3 + \overline{F_{jkm}}\beta_4 + I_j + I_k + \delta_i \quad (3)$$

$$GPA_i = \alpha_0 + X_i\alpha_1 + R_i\alpha_2 + A_i\alpha_3 + \hat{F}_{im}\alpha_4 + I_j + I_k + \epsilon_i \quad (4)$$

- $\overline{F_{jkm}}$ = School-grade average of having trait m for individual i
- \hat{F}_{im} = Linear predictor of F_{im} from equation 3

Equation 3 is the first stage of the 2SLS specification. Instruments include all of the independent variables in equation 2, in addition to the exclusion restriction which is the average of friendship characteristic m within individual i 's grade k in individual i 's school j . The implicit assumption here is that the excluded variable has to be exogenous and provides enough variation to be a strong instrument. Basically, within grade k of school j , the average of trait m should only affect an individual i 's GPA through individual i 's friendship variable F_{im} .

4 Data

4.1 Data Description

The data source that is explored in this chapter is the In-School portion of the National Longitudinal Study of Adolescent Health (Udry 2003).² In this chapter, the sampling scheme of the In-School survey is taken into account in order to weight the sample up to a population level survey. The sampling design is as follows.³ 132 schools were preselected with an unequal probability in order to keep costs down and manageable. Therefore, these schools are the primary stage units of the survey, and thus a clustering adjustment can be made to standard errors in order to correct for non-random sampling. Generally, clustering will tend to increase any standard errors in regressions and standard deviations in means. However, the sample is also stratified by region of the country, and the sampling weights offered reflect stratification ex-post.

The variables used in this analysis can be divided into categories according to the model in section 3. The dependent variable, GPA, is a measure of scholastic achievement. It is calculated the same way as in the previous chapter; it is the average of self-reported grades given in English, mathematics, science, and social studies, where an “A” is given a 4 and an “F” is given a 1. The variables that constitute X_i are as follows.

- Male: Indicates the individual’s gender
- Coll. Mom: Indicates if the individual’s mother has graduated from college or achieved a greater education⁴
- U.S.A.: Indicates if the individual was born domestically
- Live Dad: Indicates if the individual lives with a biological father⁵
- Health: Indicates if the individual reports having excellent health
- Unsafe: Indicates if the individual feels safe in the individual’s neighborhood⁶
- Care: Indicates if the individual feels that the mother cares for the individual⁷

²There is an overview of the survey introduced in Nathan (2008)

³Chantala and Tabor (1999) provide a very nice guide on the Add Health sampling scheme.

⁴This type of variable is often used as a proxy for family income when it is not available.

⁵It is a potential indicator on family quality.

⁶This type of variable also can be used as a proxy for family income when it is not available.

⁷This variable can capture a families unobserved environment.

- TV: Indicates if the individual watches one hour or less of television in a day⁸

The variables under R_i constitute races. The races are divided into the categories of white, black, Asian, Hispanic, and other.⁹ The reason why R_i is not included in X_i is that races are a key friendship characteristic analyzed in this chapter. It is obviously exogenous, though. The variables under A_i constitute being a member of a type of extracurricular activity. For the purposes of this analysis, the extracurricular activities are divided into two categories as defined in table 1.

Table 1: List of Clubs by Category

Academic-Scholastic	Sports
French Club	Baseball/Softball
German Club	Basketball
Latin Club	Field Hockey
Book Club	Football
Computer Club	Ice Hockey
Debate Team	Soccer
Drama Club	Swimming
Future Farmers of America	Tennis
History Club	Track
Math Club	Volleyball
Science Club	Wrestling
Band	Other Sport
Cheerleading/Dance	
Chorus/Choir	
Orchestra	
Newspaper	
Honor Society	
Student Council	
Yearbook	
Other Club	

In this chapter, individual club participation is taken as given. Also, note that the types of club participation are not mutually exclusive. Individuals may partake in any number of the activities in each of the categories. However, the following categories are constructed which

⁸This variable can capture a student's unobserved motivation and study habits.

⁹Anybody who marked down having any sort of Hispanic lineage is considered a Hispanic for this analysis. The other race category includes Native Americans, mixed races, "other" races, and not marking a race.

are mutually exclusive.

- Sport: Indicates if an individual participates in ONLY sporting activities
- Acad-Schol.: Indicates if an individual participates in ONLY academic or scholastic activities
- Mixedclub: Indicates if an individual participates in both sporting and academic-scholastic activities
- Noclub: Indicates if an individual participates in no activities

Add Health has branded individuals who have listed as being a participant in more than 10 activities as unreliable. For example, there are individuals who claim they participate in all the sports offered in the list of activities. Therefore, these individuals are dropped from the analysis.

The relevant peer effect variables F_{im} are presumed to be endogenous. The four variables dealing with race that are used in this analysis consist of the following.

- Same Race Fr.: Indicates whether an individual's best same-gender friend shares the individual's race¹⁰
- S. Hetero.: A heterogeneity index on an individual's send-network
- R. Hetero.: A heterogeneity index on an individual's receive-network
- S/R. Hetero.: A heterogeneity index on an individual's send/receive-network

The friendship variables are defined and asked in basically the same way as in the previous chapter. An individual can name up to five male and five female friends. It is encouraged by the surveyors that the best friend is included first. An individual's send-network is comprised of the set of individuals who an individual nominates as a friend as well as the individual. The number of ties in the network includes the number of friends who the individual nominates as well as any ties between those individuals, along with any friendship reciprocation by nominees back to the individual. For example, if individual i nominates friends p and q , these two ties are in i 's send-network. In addition, if p nominates q as a friend, then that tie is also in the i 's send-network. An individual's receive-network is analogous. It is comprised of the set of individuals who nominate i as a friend. The ties in the network include the ties to i along with

¹⁰The reason for treating friends as such is similar to the reason brought up in the last chapter. There are some inter-racial matters that confound the effects of having a cross-gender friend (Foeman and Nance 1999).

ties among those who nominate i as a friend, as well as if i reciprocates a nomination. An individual’s send/receive-network is the union of the send-network and the receive-network.

The following measure of racial heterogeneity is constructed by Add Health.¹¹

$$Heterogeneity_{iR} = 1 - \left[\sum_{m=1}^n \left(\frac{R_m}{en} \right)^2 \right] \tag{5}$$

- R_m = Number of individuals with same race (m) as i
- en = Total unique members of the network that have valid data on R
- n = Total number of traits of R in the network

An individual who has a very homogenous racial network will have a score approaching 0. An individual with a very heterogenous network will have a score that approaches 1.¹² The send-network is an accurate description of the individual’s network as the individual perceives it. The receive-network is an accurate description of the individual’s network as the people surrounding the individual perceive it. This chapter reports the send-network regressions in the results section, but receive-network and send/receive network regressions are reported in Appendix A.

The peer effect variables pertaining to extracurricular activities are also listed below.

- Same Act. Fr.: Indicates if an individual’s best same-gender friend participates in the same activity category (Sports, Academic-Scholastic)
- Common Club Fr.: Indicates if an individual’s best same-gender friend participates in at least one club WITHIN the same activity category

The distinction between the two variables lies in the fineness of the level of similarity. For example, a football player and an ice hockey player would share a similar activity (and would have the variable “Same Act. Fr.” coded with a one), but would not share a common club (and would have the variable “Common Club Fr.” coded as a zero). Perhaps effects would be stronger if the individuals are involved in common clubs, since they would be spending more

¹¹The structure of the formula is the same for all the three types of networks. What changes are the numbers in the equation, based on the counts of the three networks.

¹²Notice here that a network can be heterogenous to individual i even if all the others in the network are homogenous.

time with each other than if they just shared an overall activity category. The results seem to back this hypothesis.

As outlined in section 3, the peer effect variables just discussed are endogenous. The relevant instruments used here are the “grade within school” average of similar races and activity type participation to the individual. For example, the instrument for having a best friend of the same race as well as the homogeneity index for a white individual is the average of whites in the individual’s school, by grade. The instrument for having a best friend of the same activity category as well as the indicator on having a best friend in a shared specific club for an individual only involved in sports is the average of students who only participate in sports in the individual’s school, by grade. The assumption here is that the true effect on GPA is through the friend level variables, and not the “grade within school” variables. Sports participation across grades is actually quite variable. There is a clear trend that sports participation declines as an individual goes through high school. There is less variation with the other instruments across grades (race averages and potentially academic-scholastic club averages), so there is a danger of the instruments being suboptimal. Tables 27 and 28 in the appendix report the instrument coefficients and R^2 values for the first stages of the IV regressions reported in section 5.

4.2 Summary Statistics

Tables 2-4 display summary statistics for the relevant variables in this analysis. All means and standard deviations are corrected for probability weighting, stratification across regions, and clustering on schools, which brings these figures to the population level as opposed to the sample level. Observations are kept only if they have a value for the relevant variable, are in between 9th and 12th grade, and have valid population weights. The number N is the number of survey takers with relevant data in the appropriate cells. It is worth noting that there are about three times more whites than blacks or Hispanics, and that there are between three and four times more blacks and Hispanics than Asians in this survey.

Tables 2 and 3 cover the exogenous variables and how they vary along the four racial and two activity categories. Whites and Asians have the higher GPA’s relative to blacks and Hispanics. Also, blacks have the highest participation rate in sporting activities alone, while

Table 2: Summary Statistics: GPA, Race and Activity Variables

	All	White	Black	Hisp.	Asian	Sport	Acad-Schol.
GPA	2.586	2.664	2.406	2.366	2.944	2.460	2.678
	(0.0294)	(0.0319)	(0.0482)	(0.0561)	(0.0396)	(0.0315)	(0.0287)
<i>N</i>	48672	28030	6476	7572	2324	10372	12303
White	0.581					0.579	0.602
	(0.0343)					(0.0324)	(0.0407)
<i>N</i>	59326					12610	14386
Black	0.158					0.170	0.157
	(0.0270)					(0.0264)	(0.0342)
<i>N</i>	59326					12610	14386
Hisp.	0.135					0.134	0.114
	(0.0205)					(0.0176)	(0.0215)
<i>N</i>	59326					12610	14386
Asian	0.0349					0.0244	0.0389
	(0.006279)					(0.00444)	(0.00725)
<i>N</i>	59326					12610	14386
Sport	0.213	0.212	0.230	0.212	0.149		
	(0.0675)	(0.00852)	(0.0143)	(0.0117)	(0.0104)		
<i>N</i>	59326	32205	8525	10278	2824		
Acad-Schol.	0.238	0.247	0.237	0.202	0.266		
	(0.0790)	(0.00891)	(0.0206)	(0.0115)	(0.0249)		
<i>N</i>	59326	32205	8525	10278	2824		

Standard deviations in parenthesis

Table 3: Summary Statistics: Other Exogenous Variables

	All	White	Black	Hisp.	Asian	Sport	Acad-Schol.
U.S.A.	0.923	0.981	0.968	0.732	0.481	0.933	0.930
	(0.0115)	(0.00228)	(0.00753)	(0.0415)	(0.0494)	(0.0104)	(0.0112)
<i>N</i>	57710	31526	8292	9881	2758	12264	14081
Coll. Mom	0.304	0.309	0.299	0.238	0.542	0.292	0.300
	(0.0147)	(0.0173)	(0.0295)	(0.0124)	(0.0345)	(0.0145)	(0.0164)
<i>N</i>	57029	31633	8004	9643	2730	12092	14059
Live Dad	0.762	0.833	0.541	0.710	0.839	0.752	0.770
	(0.0125)	(0.00731)	(0.0159)	(0.0135)	(0.0187)	(0.0138)	(0.0128)
<i>N</i>	57765	31873	8148	9821	2762s	12277	14187
Health	0.286	0.273	0.328	0.296	0.301	0.359	0.214
	(0.00566)	(0.00665)	(0.00918)	(0.0100)	(0.0148)	(0.00844)	(0.00706)
<i>N</i>	57710	31708	8043	9468	2741	12348	14232
Unsafe	0.0856	0.0743	0.0848	0.114	0.104	0.0766	0.0897
	(0.00315)	(0.00286)	(0.00778)	(0.00557)	(0.0111)	(0.00486)	(0.00502)
<i>N</i>	53773	30568	7350	8439	2582	11503	13582
Care	0.862	0.885	0.841	0.824	0.841	0.853	0.881
	(0.00403)	(0.00377)	(0.00740)	(0.0101)	(0.0199)	(0.00650)	(0.00418)
<i>N</i>	57425	31736	8092	9749	2743	12187	14110
TV	0.249	0.290	0.119	0.214	0.298	0.224	0.244
	(0.0122)	(0.0127)	(0.00851)	(0.00868)	(0.0496)	(0.0112)	(0.0110)
<i>N</i>	57244	31715	8045	9519	2747	12369	14257

Standard deviations in parenthesis

Asians lead the way in participation when it comes to academic and scholastic activities alone. Only about 75% of Hispanics were born in the United States, while less than 50% of Asians were born in the United States. Asians are way ahead when it comes to mothers having at least a college degree, while blacks are well behind when it comes to biological fathers living at home.

Table 4 brings to light something encountered in the last chapter. That is, own-race friendships are clearly dominant over any friendships across races. With regard to the heterogeneity measures, all of them show that Hispanics are the most heterogenous, followed by Asians and blacks, and then whites. Also, more than 50% of individuals who are only involved in sporting activities have their best same-gender friend involved in one or more of those activities as well.

5 Results

The tables and discussion in this section are arranged in the following order. Racial effects for both variables of interest (best same-gender friend and send-network racial diversity index) are presented first. Activity effects are then presented next. Within each category, OLS with fixed school and grade effects (equation 2), and IV estimation using 2SLS (equations 3 and 4) are presented. The column labeled “All” includes all non-missing observations between 9th and 12th grade. All other columns are conditional on the column header. In all regressions, whites are the omitted racial independent variable, while those individuals not participating in any activities comprise the omitted activity group. Therefore, all racial variable coefficients are relative to whites, while all activity category variable coefficients are relative to non-participants.

Tables 5 and 6 analyze how GPA is affected by an individual’s best same-gender friend. After introducing OLS with fixed effects in table 5, the coefficient for whites is positive and weakly significant. Hispanics have a coefficient that is weakly significant on the negative side.

However, after instrumenting for the friend peer effect variables in table 6, whites have a highly significant negative coefficient on having a best same-gender friend who is also white. Also, even though they are insignificant, all friend coefficients for other races have negative

Table 4: Summary Statistics: Endogenous Variables

	All	White	Black	Hisp.	Asian	Sport	Acad-Schol.
Same Race Fr.	0.694 (0.0118)	0.817 (0.00967)	0.718 (0.0260)	0.471 (0.0523)	0.478 (0.0513)	0.676 (0.0133)	0.719 (0.0134)
<i>N</i>	43772	25212	6019	6715	2050	9094	11566
White Fr.	0.596 (0.0330)	0.817 (0.00967)	0.0518 (0.0107)	0.249 (0.0363)	0.257 (0.0456)	0.596 (0.0311)	0.604 (0.0410)
<i>N</i>	43772	25212	6019	6715	2050	9094	11566
Black Fr.	0.139 (0.0255)	0.0141 (0.00196)	0.718 (0.0260)	0.0941 (0.0182)	0.0290 (0.00722)	0.134 (0.0212)	0.150 (0.0344)
<i>N</i>	43772	25212	6019	6715	2050	9094	11566
Hisp. Fr.	0.107 (0.0154)	0.0478 (0.00432)	0.0776 (0.00720)	0.471 (0.0523)	0.0949 (0.0140)	0.115 (0.0154)	0.0968 (0.0164)
<i>N</i>	43772	25212	6019	6715	2050	9094	11566
Asian Fr.	0.305 (0.00638)	0.0130 (0.00212)	0.00580 (0.00143)	0.0290 (0.006220)	0.478 (0.0513)	0.0248 (0.00522)	0.0318 (0.00684)
<i>N</i>	43772	25212	6019	6715	2050	9094	11566
S. Hetero.	0.215 (0.0112)	0.153 (0.00878)	0.212 (0.0188)	0.431 (0.0117)	0.341 (0.0282)	0.223 (0.0120)	0.205 (0.0120)
<i>N</i>	40285	23495	5639	5864	1895	8298	10778
R. Hetero.	0.210 (0.0109)	0.143 (0.00808)	0.212 (0.0174)	0.425 (0.0127)	0.340 (0.0264)	0.212 (0.0110)	0.202 (0.0119)
<i>N</i>	44263	24948	6602	6805	2078	9255	11343
S/R. Hetero.	0.240 (0.0122)	0.174 (0.00958)	0.244 (0.0198)	0.450 (0.0120)	0.369 (0.0274)	0.244 (0.0125)	0.231 (0.0132)
<i>N</i>	47074	26237	7071	7377	2271	9880	12000
Same Act. Fr.	0.467 (0.00641)	0.470 (0.00663)	0.461 (0.0144)	0.494 (0.0142)	0.408 (0.0227)	0.529 (0.0148)	0.322 (0.00928)
<i>N</i>	41405	24187	5618	6134	1944	8593	11021
Common Club Fr.	0.419 (0.00566)	0.442 (0.00594)	0.375 (0.00959)	0.374 (0.0100)	0.438 (0.0217)	0.380 (0.0107)	0.425 (0.0105)
<i>N</i>	43772	25212	6019	6715	2050	9094	11566
Sport Fr.	0.197 (0.00786)	0.201 (0.00973)	0.193 (0.0177)	0.191 (0.00942)	0.155 (0.0116)	0.380 (0.0106)	0.0771 (0.00478)
<i>N</i>	43772	25212	6019	6715	2050	9094	11566
Acad-Schol. Fr.	0.235 (0.00881)	0.237 (0.103)	0.250 (0.240)	0.222 (0.0129)	0.251 (0.0259)	0.0854 (0.00515)	0.425 (0.0105)
<i>N</i>	43772	25212	6019	6715	2050	9094	11566

Standard deviations in parenthesis

Table 5: Shared Race of Best Friend on GPA-OLS

	All	White	Black	Hisp.	Asian
Same Race Fr.	0.0263** (0.0150)	0.0369** (0.0216)	-0.00361 (0.0365)	-0.0610* (0.0383)	0.0352 (0.0600)
Black	-0.177*** (0.0281)				
Hisp.	-0.173*** (0.0269)				
Asian	0.186*** (0.0375)				
Male	-0.0947*** (0.0205)	-0.0909*** (0.0259)	-0.153*** (0.0325)	-0.0654*** (0.0309)	-0.137*** (0.0416)
Sport	0.207*** (0.0192)	0.248*** (0.0211)	0.102*** (0.0425)	0.121*** (0.0370)	-0.0168 (0.0949)
Acad-Schol.	0.391*** (0.0210)	0.419*** (0.0280)	0.274*** (0.0436)	0.332*** (0.0291)	0.339*** (0.0740)
U.S.A.	-0.100*** (0.0234)	-0.0788* (0.0492)	-0.0627 (0.0772)	-0.0903*** (0.0397)	-0.146*** (0.0520)
Coll. Mom	0.163*** (0.0144)	0.191*** (0.0168)	0.0985*** (0.0420)	0.0836*** (0.0341)	0.0985*** (0.0391)
Live Dad	0.118*** (0.0139)	0.140*** (0.0202)	0.131*** (0.0285)	0.111*** (0.0293)	0.190*** (0.0681)
Health	0.139*** (0.0127)	0.157*** (0.0165)	0.0764*** (0.0348)	0.141*** (0.0348)	0.111*** (0.0419)
Unsafe	-0.119*** (0.0191)	-0.144*** (0.0245)	-0.122*** (0.0330)	-0.0851* (0.0513)	0.0591 (0.0714)
Care	0.175*** (0.0146)	0.163*** (0.0218)	0.123*** (0.0343)	0.173*** (0.0496)	0.219*** (0.0728)
TV	0.0992*** (0.0153)	0.114*** (0.0168)	0.0333 (0.0538)	0.0193 (0.0415)	0.0483 (0.0361)
<i>N</i>	33175	20463	4136	4315	1594

Standard errors in parentheses

* $p < .15$, ** $p < .10$, *** $p < .05$

Table 6: Shared Race of Best Friend on GPA-IV

	All	White	Black	Hisp.	Asian
Same Race Fr.	-0.0835 (0.0796)	-1.156*** (0.456)	-0.809 (1.295)	-0.339 (0.497)	-1.796 (1.807)
Black	-0.190*** (0.0292)				
Hisp.	-0.220*** (0.0453)				
Asian	0.145*** (0.0470)				
Male	-0.100*** (0.0206)	-0.150*** (0.0340)	-0.228** (0.119)	-0.0734*** (0.0329)	-0.223*** (0.0872)
Sport	0.209*** (0.0191)	0.283*** (0.0313)	0.110*** (0.0522)	0.118*** (0.0372)	-0.00482 (0.105)
Acad-Schol.	0.392*** (0.0209)	0.448*** (0.0318)	0.272*** (0.0470)	0.317*** (0.0415)	0.428*** (0.144)
U.S.A.	-0.108*** (0.0250)	-0.0177 (0.0663)	-0.0668 (0.0821)	-0.124* (0.0790)	-0.319** (0.182)
Coll. Mom	0.163*** (0.0146)	0.205*** (0.0199)	0.101** (0.0535)	0.0786*** (0.0367)	0.0534 (0.0868)
Live Dad	0.118*** (0.0141)	0.150*** (0.0258)	0.131*** (0.0287)	0.107*** (0.0308)	0.159* (0.105)
Health	0.140*** (0.0124)	0.172*** (0.0187)	0.0720** (0.0369)	0.141*** (0.0334)	0.186* (0.117)
Unsafe	-0.124*** (0.0200)	-0.194*** (0.0368)	-0.147*** (0.0634)	-0.0977** (0.0556)	0.0295 (0.107)
Care	0.176*** (0.0145)	0.171*** (0.0262)	0.119*** (0.0374)	0.174*** (0.0472)	0.154* (0.0949)
TV	0.0988*** (0.0151)	0.116*** (0.0169)	0.0257 (0.0677)	0.0147 (0.0450)	0.0121 (0.0888)
<i>N</i>	33175	20463	4136	4315	1594

Standard errors in parentheses

Instrument = Grade within school average of race

* $p < .15$, ** $p < .10$, *** $p < .05$

point estimates. So, according to this specification, friendship diversification seems to increase GPA. With regard to the other explanatory variables, being involved in a club of some sort increases GPA, except for Asians playing sports. Also, females are certainly performing better than males through all races. The other exogenous variables generally behave as expected for this regression and subsequent regressions reported below, except for being born in the U.S.A., which is generally either significant or has a very slight negative effect on GPA.

A similar pattern and direction hold true when the endogenous variable is changed to the heterogeneity index of an individual's send-network in tables 7 and 8. Whites go from having an insignificant index coefficient using OLS to a significantly positive index coefficient (meaning heterogeneity will increase GPA). The heterogeneity index for whites in this case has a standard deviation of about 0.153.¹³ Since the coefficient for whites is slightly larger than 1.5, a one standard deviation change upwards in the heterogeneity index would yield a GPA increase of slightly above 0.2 points. For blacks and Asians, although coefficients are not significant, there is a shift in point estimates to the positive, which is in favor of heterogeneity over homogeneity with regards to GPA. Hispanics, however, go from being very weakly significant on the positive side with the OLS estimates to having no significance with the IV specification. Once again, Asians who play sports are the only club participants who have a negative (but insignificant) coefficient. Tables 15-18 in the appendix list regressions with different friendship network variables. One set of tables has estimates using the receive-network, and the other set of tables has estimates using the send/receive-network.

Table 9 lists the OLS regression on having a best same-gender friend in the same activity category on GPA. The coefficient for those who only participate in academic or scholastic activities is weakly positively significant, meaning that homogeneity in friendship on activity lines mildly increases GPA. For the population at large (which includes those individuals who are in both types of activities and those individuals who are not in any activities), having a similar best same-gender friend on activity lines affects GPA positively. After instrumenting in table 10 with the "grade within school" average of similar club participation, however, all coefficients on having a best same-gender friend in the same activity category are insignificant.

¹³This number is calculated by taking the sample and keeping those who are between 9th and 12th grade as well as having non-missing values for the heterogeneity index.

Table 7: Send-Network Friendship Heterogeneity on GPA-OLS

	All	White	Black	Hisp.	Asian
S. Hetero.	0.0215 (0.0397)	-0.0138 (0.0495)	0.0611 (0.0750)	0.135* (0.0901)	-0.0317 (0.129)
Black	-0.172*** (0.0285)				
Hisp.	-0.178*** (0.0251)				
Asian	0.206*** (0.0360)				
Male	-0.0996*** (0.0215)	-0.0943*** (0.0266)	-0.138*** (0.0337)	-0.0628** (0.0359)	-0.149*** (0.0384)
Sport	0.220*** (0.0194)	0.258*** (0.0219)	0.112*** (0.0445)	0.127*** (0.0435)	0.00377 (0.0917)
Acad-Schol.	0.396*** (0.0220)	0.424*** (0.0294)	0.276*** (0.0424)	0.325*** (0.0314)	0.348*** (0.0740)
U.S.A.	-0.0907*** (0.0241)	-0.0850* (0.0519)	-0.0491 (0.0839)	-0.0797** (0.0426)	-0.117*** (0.0486)
Coll. Mom	0.164*** (0.0147)	0.190*** (0.0172)	0.0971*** (0.0445)	0.0846*** (0.0290)	0.0881*** (0.0420)
Live Dad	0.113*** (0.0144)	0.123*** (0.0214)	0.135*** (0.0305)	0.119*** (0.0330)	0.195*** (0.0716)
Health	0.133*** (0.0134)	0.156*** (0.0171)	0.0665** (0.0358)	0.131*** (0.0393)	0.102*** (0.0401)
Unsafe	-0.114*** (0.0205)	-0.136*** (0.0257)	-0.132*** (0.0354)	-0.0327 (0.0581)	0.0859 (0.0741)
Care	0.171*** (0.0156)	0.163*** (0.0228)	0.113*** (0.0345)	0.160*** (0.0531)	0.203*** (0.0580)
TV	0.0988*** (0.0159)	0.114*** (0.0173)	0.0336 (0.0574)	0.0398 (0.0453)	0.0420 (0.0415)
<i>N</i>	30589	19028	3908	3809	1464

Standard errors in parentheses

* $p < .15$, ** $p < .10$, *** $p < .05$

Table 8: Send-Network Friendship Heterogeneity on GPA-IV

	All	White	Black	Hisp.	Asian
S. Hetero.	0.149 (0.174)	1.574** (0.800)	1.074 (1.823)	-2.158 (12.37)	1.871 (2.763)
Black	-0.179*** (0.0307)				
Hisp.	-0.208*** (0.0459)				
Asian	0.189*** (0.0415)				
Male	-0.100*** (0.0214)	-0.0906*** (0.0251)	-0.175*** (0.0744)	-0.0259 (0.212)	-0.190*** (0.0588)
Sport	0.220*** (0.0192)	0.254*** (0.0236)	0.109*** (0.0448)	0.137*** (0.0612)	-0.0549 (0.104)
Acad-Schol.	0.395*** (0.0218)	0.423*** (0.0294)	0.253*** (0.0517)	0.376 (0.274)	0.346*** (0.0674)
U.S.A.	-0.0930*** (0.0245)	-0.0745 (0.0543)	-0.0365 (0.0929)	-0.0277 (0.300)	-0.233 (0.166)
Coll. Mom	0.165*** (0.0150)	0.205*** (0.0198)	0.0932** (0.0546)	0.0626 (0.135)	0.0505 (0.0774)
Live Dad	0.113*** (0.0146)	0.121*** (0.0267)	0.138*** (0.0372)	0.128** (0.0642)	0.193*** (0.0905)
Health	0.134*** (0.0133)	0.158*** (0.0173)	0.0651** (0.0365)	0.116 (0.0921)	0.116*** (0.0403)
Unsafe	-0.116*** (0.0208)	-0.164*** (0.0286)	-0.148*** (0.0524)	0.00634 (0.227)	0.0928 (0.0824)
Care	0.172*** (0.0156)	0.171*** (0.0244)	0.110*** (0.0365)	0.176** (0.0887)	0.122 (0.116)
TV	0.0995*** (0.0161)	0.122*** (0.0185)	0.0353 (0.0634)	0.0298 (0.0635)	0.0382 (0.0458)
<i>N</i>	30589	19028	3908	3809	1464

Standard errors in parentheses

Instrument = Grade within school average of race

* $p < .15$, ** $p < .10$, *** $p < .05$

Table 9: Shared Activity Category of Best Friend on GPA-OLS

	All	Sport	Acad-Schol
Same Act. Fr.	0.0436*** (0.0113)	0.0361 (0.0273)	0.0395** (0.0217)
Sport	0.206*** (0.0192)		
Acad-Schol.	0.388*** (0.0212)		
Male	-0.0948*** (0.0204)	-0.105*** (0.0400)	-0.113*** (0.0297)
Black	-0.178*** (0.0283)	-0.181*** (0.0480)	-0.185*** (0.0442)
Hisp.	-0.183*** (0.0256)	-0.186*** (0.0375)	-0.142*** (0.0379)
Asian	0.176*** (0.0382)	-0.0194 (0.0701)	0.311*** (0.0606)
U.S.A.	-0.104*** (0.0234)	-0.0825 (0.0568)	-0.109*** (0.0326)
Coll. Mom	0.162*** (0.0144)	0.138*** (0.0235)	0.202*** (0.0229)
Live Dad	0.118*** (0.0139)	0.0897*** (0.0339)	0.103*** (0.0213)
Health	0.138*** (0.0125)	0.152*** (0.0287)	0.145*** (0.0319)
Unsafe	-0.119*** (0.0191)	-0.183*** (0.0472)	-0.112*** (0.0381)
Care	0.174*** (0.0146)	0.179*** (0.0386)	0.177*** (0.0318)
TV	0.0987*** (0.0154)	0.00450 (0.0259)	0.135*** (0.0265)
<i>N</i>	33175	6746	9231

Standard errors in parentheses

* $p < .15$, ** $p < .10$, *** $p < .05$

Table 10: Shared Activity Category of Best Friend on GPA-IV

	All	Sport	Acad-Schol
Same Act. Fr.	0.153 (0.122)	0.201 (0.649)	3.240 (3.358)
Sport	0.203*** (0.0199)		
Acad-Schol.	0.286*** (0.0235)		
Male	-0.0918*** (0.0220)	-0.148 (0.166)	0.525 (0.693)
Black	-0.167*** (0.0259)	-0.195*** (0.0712)	0.116 (0.333)
Hisp.	-0.171*** (0.0293)	-0.183*** (0.0387)	0.0905 (0.212)
Asian	0.144*** (0.0377)	-0.0176 (0.0719)	0.197 (0.200)
U.S.A.	-0.108*** (0.0245)	-0.0928 (0.0724)	-0.0984 (0.111)
Coll. Mom	0.151*** (0.0141)	0.138*** (0.0238)	0.160*** (0.0602)
Live Dad	0.119*** (0.0150)	0.0956*** (0.0433)	0.0981** (0.0572)
Health	0.134*** (0.0118)	0.148*** (0.0287)	0.154*** (0.0628)
Unsafe	-0.125*** (0.0194)	-0.179*** (0.0502)	-0.121 (0.0881)
Care	0.166*** (0.0172)	0.177*** (0.0411)	0.113 (0.131)
TV	0.0933*** (0.0156)	0.00470 (0.0261)	0.137*** (0.0666)
<i>N</i>	30477	6746	6533

Standard errors in parentheses

Instrument = Grade within school average of activity

* $p < .15$, ** $p < .10$, *** $p < .05$

However, there is a change when looking at best friends who share participation in at least one common club within a specific activity category. Table 11 presents OLS results. Here, all coefficients on having a best same-gender friend in at least one common club are significant. In the “All” and the “Sport” category, more homogeneity with this type of friend leads to a slightly higher GPA, while more heterogeneity in the “Acad-Schol.” category leads to a slightly higher GPA. After instrumenting with the same variables as in table 10, it actually turns out that individuals who only participate in academic or scholastic activities get a better GPA in homogenous friendships with their best friend (table 12). The coefficients in the other two columns turn out to be insignificant after instrumenting. As discussed in section 4, a possible reason for the differences in significance for the last two IV regressions (tables 10 and 12) can be attributed to a greater influence of having a best friend in the exact same club(s) versus just having a best friend in a similar activity category.

As an added test to see how prevalent friendship effects can be, the sample is divided into movers and non-movers.¹⁴ Non-movers should have more significance on their peer effect variables, due to the fact that they have been around longer and potentially have established friendships. Tables 13 and 14 confirm this hypothesis, as the peer effect coefficients on non-movers are insignificant. The peer effect coefficients on movers generally follow the same significance patterns and directions as the full sample. When thinking of actual policies to change student behavior, it must be taken into account that they may have some lag to their effects, as tables 13 and 14 seem to indicate.

Tables 27 and 28 in the appendix have the instruments used in all the IV regressions, as well as all of the 1st stage coefficients on those instruments. Notice that some appear weak (especially on the Hispanic regressions), which could explain some insignificance in the IV regressions conditional on the relevant group. Also, there is a potential weak instrument in each of the activity regressions, which include the sports regression on the best same-gender friend in a common club and the academic-scholastic regression on the best same-gender friend in a certain activity category. Not coincidentally, these IV estimates are insignificant.

¹⁴The “mover” variable is crudely constructed by first isolating individuals between 10th and 12th grade. If a 10th grader has been in the school for one year, an 11th grader in the school for one or two years, or a 12th grader in the school for one, two, or three years, then they are counted as movers. Note that there may be a measurement problem if schools are not traditionally separated between middle and high school in 9th grade.

Table 11: Shared Common Clubs of Best Friend on GPA-OLS

	All	Sport	Acad-Schol
Common Club Fr.	0.0689*** (0.0158)	0.0902*** (0.0274)	-0.0614*** (0.0266)
Sport	0.240*** (0.0240)		
Acad-Schol.	0.440*** (0.0263)		
Male	-0.0838*** (0.0207)	-0.0994*** (0.0390)	-0.109*** (0.0309)
Black	-0.179*** (0.0287)	-0.189*** (0.0504)	-0.183*** (0.0450)
Hisp.	-0.192*** (0.0251)	-0.185*** (0.0384)	-0.176*** (0.0375)
Asian	0.164*** (0.0383)	0.00452 (0.0702)	0.272*** (0.0643)
U.S.A.	-0.105*** (0.0244)	-0.0635 (0.0595)	-0.129*** (0.0330)
Coll. Mom	0.159*** (0.0150)	0.134*** (0.0241)	0.202*** (0.0239)
Live Dad	0.117*** (0.0138)	0.0786*** (0.0351)	0.0971*** (0.0223)
Health	0.133*** (0.0130)	0.154*** (0.0286)	0.133*** (0.0325)
Unsafe	-0.125*** (0.0187)	-0.185*** (0.0492)	-0.103*** (0.0380)
Care	0.177*** (0.0152)	0.175*** (0.0417)	0.184*** (0.0335)
TV	0.0956*** (0.0154)	0.00127 (0.0275)	0.131*** (0.0258)
<i>N</i>	31609	6415	8829

Standard errors in parentheses

* $p < .15$, ** $p < .10$, *** $p < .05$

Table 12: Shared Common Clubs of Best Friend on GPA-IV

	All	Sport	Acad-Schol
Common Club Fr.	0.407 (0.287)	0.188 (1.993)	0.753*** (0.339)
Sport	0.400*** (0.136)		
Acad-Schol.	0.522*** (0.162)		
Male	-0.0717*** (0.0247)	-0.109 (0.189)	-0.0173 (0.0631)
Black	-0.174*** (0.0260)	-0.199 (0.195)	-0.129*** (0.0510)
Hisp.	-0.167*** (0.0312)	-0.181*** (0.0783)	-0.0335 (0.0601)
Asian	0.142*** (0.0367)	0.0168 (0.257)	0.230*** (0.0828)
U.S.A.	-0.106*** (0.0252)	-0.0657 (0.0751)	-0.157*** (0.0385)
Coll. Mom	0.139*** (0.0155)	0.131*** (0.0493)	0.112*** (0.0336)
Live Dad	0.115*** (0.0149)	0.0777*** (0.0378)	0.0764*** (0.0311)
Health	0.117*** (0.0169)	0.147 (0.139)	0.0861*** (0.0407)
Unsafe	-0.122*** (0.0175)	-0.178 (0.150)	-0.104*** (0.0513)
Care	0.162*** (0.0198)	0.171** (0.0874)	0.147*** (0.0469)
TV	0.0872*** (0.0170)	0.00218 (0.0290)	0.0971*** (0.0425)
<i>N</i>	29001	6415	6221

Standard errors in parentheses

Instrument = Grade within school average of activity

* $p < .15$, ** $p < .10$, *** $p < .05$

Table 13: Racial Friendship Regression Coefficients on Movers-IV

Movers	All	White	Black	Hisp.	Asian
Same Race Fr.	-0.144 (0.175)	0.959 (0.963)	0.222 (1.999)	-0.777 (4.300)	-5.150 (12.02)
<i>N</i>	5477	2884	850	792	483
S. Hetero.	-0.149 (0.357)	-2.758 (2.730)	0.0329 (2.788)	-1.120 (2.300)	235.5 (7820.7)
<i>N</i>	5081	2693	810	714	444
Non-Movers	All	White	Black	Hisp.	Asian
Same Race Fr.	-0.0939 (0.0779)	-1.345*** (0.523)	-2.061 (1.486)	-0.298 (0.369)	-2.869 (2.939)
<i>N</i>	27698	17579	3286	3523	1111
S. Hetero.	0.244* (0.165)	1.756*** (0.834)	2.259 (1.557)	5.826 (39.07)	2.801 (3.312)
<i>N</i>	25508	16335	3098	3095	1020

Standard errors in parentheses

* $p < .15$, ** $p < .10$, *** $p < .05$

Table 14: Activity Friendship Regression Coefficients on Movers-IV

Movers	All	Sport	Acad-Schol.
Same Act. Fr.	-0.0953 (0.212)	-0.525 (1.250)	3.055 (3.974)
<i>N</i>	5083	1053	1098
Common Club Fr.	-0.105 (0.579)	-1.857 (4.923)	0.570 (0.421)
<i>N</i>	4685	973	1013
Non-Movers	All	Sport	Acad-Schol.
Same Act. Fr.	0.129 (0.114)	0.290 (0.651)	4.849 (5.928)
<i>N</i>	25394	5693	5435
Common Club Fr.	0.371 (0.298)	0.420 (1.858)	0.867*** (0.399)
<i>N</i>	24316	5442	5208

Standard errors in parentheses

* $p < .15$, ** $p < .10$, *** $p < .05$

Therefore, paying attention to IV regressions with potentially strong instruments is much more beneficial for any sort of inference. In the appendix, tables 19-26 remove an individual's club participation variables from all the regressions listed above. In some instances, the magnitudes rise, but all of the meaningful coefficients in the regressions on racial lines remain the same, so similar conclusions can be drawn.

6 Conclusion

Uncovering the achievement effects of different types of racial and extracurricular friendships is an idea that can be fraught with danger. The biggest danger is that the peer effect estimates may in fact be biased due to endogeneity problems. This chapter chronicles a model in steps from OLS with no fixed effects, to an OLS model with school fixed effects and grade fixed effects, and finally to a model that uses exogenous exclusion restrictions at the "grade within a school" level to instrument for endogenous peer variables. Using a rich data set in Add Health where peer networks can be constructed, it is possible to ascertain, with proper instrumenting, how much peer diversity along racial and extracurricular lines can actually help achievement.

The results suggest that, to some extent, OLS using fixed school and grade effects can be biased towards homogeneity in having friends, based on racial lines. Almost all racial peer variables were biased in the direction towards homogeneity, while instrumenting led to estimates that were insignificant on GPA or that even favored heterogeneity. In two IV regressions, whites could increase their GPA by a little less than 1.2 points by having same-gender friends of a different race. Somewhat less abruptly, an increase in the send-network heterogeneity of an individual white person by one standard deviation would increase GPA by just a little more than 0.2 points. Whites were clearly affected the most by the composition of their best same-gender friend's race. With regards to extracurricular activities, homogeneity yields higher GPA's among academic or scholastic activity participants, but it is inconclusive on how it affects those individuals who participate in sports activities. Results, though, may be tempered by weak instruments on some specifications.

Although there are certain strong results in this analysis, it would be premature to say that peer diversity would be the certain cause of higher achievement. However, future work

to estimate causality better could involve the simulation of friendship assignments instead of taking the network as given in a reduced form specification, which is what this chapter presents. Nevertheless, the result of racial friendship heterogeneity increasing achievement (especially amongst whites) can potentially set a precedent of tolerance and understanding over isolation and segregation with regards to race.

A Appendix: The Effects of Racial and Extracurricular Friendship Diversity on Achievement

Table 15: Receive-Network Friendship Heterogeneity on GPA-OLS

	All	White	Black	Hisp.	Asian
R. Hetero.	0.0262 (0.0363)	-0.0318 (0.0455)	0.141** (0.0754)	0.167* (0.101)	-0.101 (0.100)
Black	-0.172*** (0.0281)				
Hisp.	-0.171*** (0.0235)				
Asian	0.233*** (0.0360)				
Male	-0.0998*** (0.0208)	-0.102*** (0.0257)	-0.120*** (0.0319)	-0.0773*** (0.0347)	-0.117*** (0.0362)
Sport	0.213*** (0.0188)	0.255*** (0.0225)	0.101*** (0.0447)	0.155*** (0.0423)	-0.0636 (0.0782)
Acad-Schol.	0.389*** (0.0200)	0.425*** (0.0277)	0.309*** (0.0423)	0.275*** (0.0321)	0.257*** (0.0569)
U.S.A.	-0.0790*** (0.0249)	-0.0364 (0.0499)	-0.0814 (0.0832)	-0.0618** (0.0313)	-0.140*** (0.0436)
Coll. Mom	0.160*** (0.0142)	0.185*** (0.0165)	0.0966*** (0.0375)	0.0753*** (0.0318)	0.104*** (0.0470)
Live Dad	0.103*** (0.0160)	0.118*** (0.0231)	0.129*** (0.0291)	0.0881*** (0.0313)	0.176*** (0.0587)
Health	0.135*** (0.0124)	0.160*** (0.0162)	0.0753*** (0.0344)	0.0934*** (0.0382)	0.111*** (0.0363)
Unsafe	-0.122*** (0.0224)	-0.144*** (0.0250)	-0.112*** (0.0384)	-0.0710 (0.0540)	0.0925 (0.0875)
Care	0.158*** (0.0159)	0.159*** (0.0234)	0.0909*** (0.0272)	0.133*** (0.0579)	0.190*** (0.0739)
TV	0.0936*** (0.0145)	0.105*** (0.0175)	0.0500 (0.0535)	0.0724** (0.0412)	0.0484 (0.0405)
<i>N</i>	32574	19943	4329	4205	1556

Standard errors in parentheses

* $p < .15$, ** $p < .10$, *** $p < .05$

Table 16: Receive-Network Friendship Heterogeneity on GPA-IV

	All [†]	White	Black	Hisp.	Asian
R. Hetero.	0.176 .	1.782*** (0.798)	0.895 (2.267)	13.27 (31.56)	0.385 (1.357)
Black	-0.183 (0)				
Hisp.	-0.208 (0)				
Asian	0.212 .				
Male	-0.0999 (0)	-0.0978*** (0.0246)	-0.137*** (0.0559)	-0.00313 (0.187)	-0.109*** (0.0523)
Sport	0.213 .	0.251*** (0.0250)	0.0941*** (0.0436)	0.181 (0.139)	-0.0719 (0.0713)
Acad-Schol.	0.388 .	0.409*** (0.0265)	0.283*** (0.0702)	0.236 (0.195)	0.266*** (0.0608)
U.S.A.	-0.0829 (0)	-0.0275 (0.0495)	-0.0716 (0.0862)	-0.587 (1.267)	-0.172** (0.0943)
Coll. Mom	0.160 .	0.187*** (0.0170)	0.0920*** (0.0425)	0.0385 (0.164)	0.0898 (0.0672)
Live Dad	0.104 .	0.119*** (0.0307)	0.121*** (0.0369)	0.475 (0.914)	0.167*** (0.0684)
Health	0.135 .	0.164*** (0.0163)	0.0696* (0.0445)	-0.0409 (0.325)	0.113*** (0.0359)
Unsafe	-0.124 (0)	-0.173*** (0.0311)	-0.115*** (0.0428)	-0.0421 (0.161)	0.0971 (0.0905)
Care	0.158 .	0.164*** (0.0254)	0.0862*** (0.0347)	0.145 (0.129)	0.186*** (0.0722)
TV	0.0940 .	0.105*** (0.0156)	0.0509 (0.0568)	0.128 (0.161)	0.0418 (0.0411)
<i>N</i>	32574	19943	4329	4205	1556

Standard errors in parentheses

Instrument = Grade within school average of race

* $p < .15$, ** $p < .10$, *** $p < .05$

†: Standard errors not calculable

Table 17: Send/Receive-Network Friendship Heterogeneity on GPA-OLS

	All	White	Black	Hisp.	Asian
S/R. Hetero.	0.00414 (0.0434)	-0.0668 (0.0565)	0.153*** (0.0627)	0.0582 (0.101)	-0.0710 (0.112)
Black	-0.170*** (0.0273)				
Hisp.	-0.170*** (0.0236)				
Asian	0.225*** (0.0343)				
Male	-0.103*** (0.0207)	-0.104*** (0.0260)	-0.132*** (0.0289)	-0.0734*** (0.0348)	-0.121*** (0.0398)
Sport	0.215*** (0.0188)	0.255*** (0.0218)	0.114*** (0.0419)	0.159*** (0.0380)	-0.0481 (0.0727)
Acad-Schol.	0.392*** (0.0203)	0.425*** (0.0280)	0.306*** (0.0405)	0.297*** (0.0291)	0.291*** (0.0589)
U.S.A.	-0.0832*** (0.0245)	-0.0573 (0.0501)	-0.127** (0.0758)	-0.0541 (0.0380)	-0.105*** (0.0494)
Coll. Mom	0.162*** (0.0136)	0.190*** (0.0160)	0.0893*** (0.0372)	0.0829*** (0.0282)	0.0963*** (0.0418)
Live Dad	0.108*** (0.0140)	0.122*** (0.0199)	0.131*** (0.0308)	0.0953*** (0.0294)	0.189*** (0.0569)
Health	0.133*** (0.0126)	0.159*** (0.0169)	0.0687*** (0.0338)	0.0994*** (0.0358)	0.113*** (0.0347)
Unsafe	-0.115*** (0.0218)	-0.131*** (0.0246)	-0.113*** (0.0357)	-0.0685 (0.0541)	0.0850 (0.0824)
Care	0.158*** (0.0158)	0.159*** (0.0226)	0.0869*** (0.0268)	0.129*** (0.0554)	0.199*** (0.0603)
TV	0.0939*** (0.0141)	0.105*** (0.0165)	0.0328 (0.0512)	0.0693** (0.0408)	0.0714** (0.0355)
<i>N</i>	34509	20915	4626	4551	1702

Standard errors in parentheses

* $p < .15$, ** $p < .10$, *** $p < .05$

Table 18: Send/Receive-Network Friendship Heterogeneity on GPA-IV

	All [†]	White	Black	Hisp.	Asian
S/R. Hetero.	0.216 .	1.653*** (0.794)	0.865 (1.781)	8.893 (20.78)	0.471 (1.320)
Black	-0.185 (0)				
Hisp.	-0.216 (0)				
Asian	0.201 .				
Male	-0.104 (0)	-0.0985*** (0.0247)	-0.150*** (0.0507)	-0.0584 (0.0697)	-0.126*** (0.0383)
Sport	0.214 .	0.254*** (0.0243)	0.107*** (0.0423)	0.107 (0.156)	-0.0575 (0.0658)
Acad-Schol.	0.390 .	0.415*** (0.0278)	0.285*** (0.0565)	0.190 (0.269)	0.297*** (0.0625)
U.S.A.	-0.0869 (0)	-0.0497 (0.0502)	-0.106 (0.0867)	-0.290 (0.555)	-0.139* (0.0852)
Coll. Mom	0.163 .	0.200*** (0.0176)	0.0821** (0.0452)	0.0975* (0.0623)	0.0810 (0.0584)
Live Dad	0.109 .	0.124*** (0.0257)	0.131*** (0.0328)	0.193 (0.240)	0.178*** (0.0620)
Health	0.133 .	0.164*** (0.0170)	0.0631* (0.0424)	0.108 (0.0801)	0.111*** (0.0377)
Unsafe	-0.118 (0)	-0.163*** (0.0265)	-0.125*** (0.0546)	-0.137 (0.177)	0.0842 (0.0808)
Care	0.158 .	0.164*** (0.0240)	0.0847*** (0.0287)	0.105 (0.120)	0.190*** (0.0583)
TV	0.0951 .	0.112*** (0.0170)	0.0331 (0.0533)	0.182 (0.304)	0.0675** (0.0371)
<i>N</i>	34509	20915	4626	4551	1702

Standard errors in parentheses

Instrument = Grade within school average of race

* $p < .15$, ** $p < .10$, *** $p < .05$

†: Standard errors not calculable

Table 19: Shared Race of Best Friend on GPA-OLS (NO CLUBS)

	All	White	Black	Hisp.	Asian
Same Race Fr.	0.0335*** (0.0156)	0.0560*** (0.0238)	-0.0105 (0.0356)	-0.0845*** (0.0396)	0.0429 (0.0653)
Black	-0.170*** (0.0316)				
Hisp.	-0.181*** (0.0300)				
Asian	0.219*** (0.0396)				
Male	-0.155*** (0.0186)	-0.153*** (0.0232)	-0.205*** (0.0283)	-0.118*** (0.0288)	-0.204*** (0.0386)
U.S.A.	-0.0936*** (0.0249)	-0.0809* (0.0506)	-0.0675 (0.0789)	-0.0848*** (0.0414)	-0.132*** (0.0527)
Coll. Mom	0.201*** (0.0159)	0.234*** (0.0184)	0.126*** (0.0457)	0.0992*** (0.0338)	0.113*** (0.0390)
Live Dad	0.138*** (0.0149)	0.168*** (0.0220)	0.146*** (0.0275)	0.129*** (0.0295)	0.215*** (0.0717)
Health	0.175*** (0.0130)	0.203*** (0.0162)	0.0835*** (0.0340)	0.158*** (0.0333)	0.126*** (0.0424)
Unsafe	-0.140*** (0.0200)	-0.175*** (0.0274)	-0.134*** (0.0294)	-0.0793* (0.0503)	0.0553 (0.0816)
Care	0.193*** (0.0162)	0.192*** (0.0239)	0.118*** (0.0330)	0.176*** (0.0509)	0.236*** (0.0846)
TV	0.116*** (0.0164)	0.131*** (0.0176)	0.0408 (0.0557)	0.0300 (0.0432)	0.0763** (0.0411)
<i>N</i>	33175	20463	4136	4315	1594

Standard errors in parentheses

* $p < .15$, ** $p < .10$, *** $p < .05$

Table 20: Shared Race of Best Friend on GPA-IV (NO CLUBS)

	All	White	Black	Hisp.	Asian
Same Race Fr.	-0.0868 (0.0914)	-1.343*** (0.431)	-0.777 (1.291)	-0.515 (0.482)	-1.807 (1.767)
Black	-0.184*** (0.0343)				
Hisp.	-0.232*** (0.0527)				
Asian	0.174*** (0.0513)				
Male	-0.161*** (0.0190)	-0.223*** (0.0309)	-0.273*** (0.116)	-0.125*** (0.0290)	-0.306*** (0.108)
U.S.A.	-0.101*** (0.0265)	-0.00889 (0.0714)	-0.0714 (0.0833)	-0.138** (0.0799)	-0.306** (0.179)
Coll. Mom	0.201*** (0.0162)	0.256*** (0.0222)	0.127*** (0.0556)	0.0897*** (0.0387)	0.0690 (0.0854)
Live Dad	0.139*** (0.0151)	0.182*** (0.0292)	0.144*** (0.0272)	0.121*** (0.0318)	0.188** (0.107)
Health	0.176*** (0.0128)	0.228*** (0.0196)	0.0789*** (0.0366)	0.157*** (0.0318)	0.199** (0.115)
Unsafe	-0.145*** (0.0210)	-0.238*** (0.0403)	-0.158*** (0.0633)	-0.0992** (0.0530)	0.0244 (0.110)
Care	0.194*** (0.0163)	0.203*** (0.0311)	0.115*** (0.0388)	0.177*** (0.0489)	0.171** (0.0965)
TV	0.116*** (0.0163)	0.135*** (0.0185)	0.0330 (0.0678)	0.0217 (0.0483)	0.0409 (0.0864)
<i>N</i>	33175	20463	4136	4315	1594

Standard errors in parentheses

Instrument = Grade within school average of race

* $p < .15$, ** $p < .10$, *** $p < .05$

Table 21: Send-Network Friendship Heterogeneity on GPA-OLS (NO CLUBS)

	All	White	Black	Hisp.	Asian
S. Hetero.	0.0253 (0.0456)	-0.0197 (0.0596)	0.0979 (0.0804)	0.176** (0.0910)	-0.0250 (0.146)
Black	-0.166*** (0.0319)				
Hisp.	-0.189*** (0.0281)				
Asian	0.235*** (0.0385)				
Male	-0.159*** (0.0194)	-0.156*** (0.0237)	-0.190*** (0.0303)	-0.115*** (0.0343)	-0.214*** (0.0384)
U.S.A.	-0.0864*** (0.0257)	-0.0858* (0.0535)	-0.0571 (0.0872)	-0.0754** (0.0438)	-0.102** (0.0509)
Coll. Mom	0.202*** (0.0166)	0.234*** (0.0190)	0.124*** (0.0486)	0.103*** (0.0302)	0.102*** (0.0419)
Live Dad	0.132*** (0.0154)	0.151*** (0.0234)	0.148*** (0.0302)	0.135*** (0.0332)	0.214*** (0.0753)
Health	0.170*** (0.0137)	0.203*** (0.0162)	0.0762*** (0.0345)	0.148*** (0.0374)	0.120*** (0.0413)
Unsafe	-0.138*** (0.0219)	-0.170*** (0.0290)	-0.146*** (0.0314)	-0.0369 (0.0606)	0.0883 (0.0843)
Care	0.188*** (0.0178)	0.190*** (0.0254)	0.109*** (0.0333)	0.162*** (0.0553)	0.223*** (0.0744)
TV	0.115*** (0.0169)	0.128*** (0.0179)	0.0427 (0.0593)	0.0529 (0.0460)	0.0840** (0.0463)
<i>N</i>	30589	19028	3908	3809	1464

Standard errors in parentheses

* $p < .15$, ** $p < .10$, *** $p < .05$

Table 22: Send-Network Friendship Heterogeneity on GPA-IV (NO CLUBS)

	All	White	Black	Hisp.	Asian
S. Hetero.	0.145 (0.203)	1.694*** (0.757)	1.033 (1.843)	-0.182 (10.37)	1.825 (2.407)
Black	-0.173*** (0.0360)				
Hisp.	-0.216*** (0.0561)				
Asian	0.220*** (0.0460)				
Male	-0.160*** (0.0193)	-0.153*** (0.0236)	-0.218*** (0.0663)	-0.111 (0.131)	-0.261*** (0.0639)
U.S.A.	-0.0886*** (0.0260)	-0.0743 (0.0555)	-0.0451 (0.0961)	-0.0672 (0.250)	-0.217 (0.154)
Coll. Mom	0.203*** (0.0170)	0.251*** (0.0210)	0.119*** (0.0578)	0.0997 (0.0984)	0.0644 (0.0734)
Live Dad	0.132*** (0.0156)	0.149*** (0.0294)	0.149*** (0.0353)	0.137*** (0.0591)	0.212*** (0.0914)
Health	0.171*** (0.0136)	0.205*** (0.0171)	0.0748*** (0.0357)	0.146** (0.0737)	0.126*** (0.0453)
Unsafe	-0.140*** (0.0224)	-0.201*** (0.0310)	-0.160*** (0.0501)	-0.0308 (0.196)	0.0950 (0.0879)
Care	0.188*** (0.0179)	0.199*** (0.0281)	0.107*** (0.0372)	0.165** (0.0850)	0.144 (0.0985)
TV	0.116*** (0.0171)	0.137*** (0.0194)	0.0435 (0.0645)	0.0517 (0.0529)	0.0781* (0.0503)
<i>N</i>	30589	19028	3908	3809	1464

Standard errors in parentheses

Instrument = Grade within school average of race

* $p < .15$, ** $p < .10$, *** $p < .05$

Table 23: Receive-Network Friendship Heterogeneity on GPA-OLS (NO CLUBS)

	All	White	Black	Hisp.	Asian
R. Hetero.	0.0407 (0.0402)	-0.0236 (0.0545)	0.197*** (0.0750)	0.179** (0.0991)	-0.103 (0.0943)
Black	-0.167*** (0.0302)				
Hisp.	-0.186*** (0.0258)				
Asian	0.257*** (0.0375)				
Male	-0.163*** (0.0197)	-0.170*** (0.0236)	-0.186*** (0.0313)	-0.116*** (0.0328)	-0.174*** (0.0388)
U.S.A.	-0.0814*** (0.0250)	-0.0452 (0.0510)	-0.0966 (0.0851)	-0.0668*** (0.0290)	-0.127*** (0.0466)
Coll. Mom	0.199*** (0.0164)	0.231*** (0.0190)	0.125*** (0.0424)	0.0930*** (0.0344)	0.109*** (0.0457)
Live Dad	0.125*** (0.0170)	0.148*** (0.0249)	0.144*** (0.0297)	0.104*** (0.0317)	0.190*** (0.0598)
Health	0.174*** (0.0129)	0.208*** (0.0153)	0.0845*** (0.0324)	0.113*** (0.0364)	0.123*** (0.0380)
Unsafe	-0.145*** (0.0240)	-0.174*** (0.0288)	-0.126*** (0.0384)	-0.0800 (0.0557)	0.0883 (0.102)
Care	0.175*** (0.0192)	0.189*** (0.0267)	0.0940*** (0.0264)	0.129*** (0.0611)	0.208*** (0.0851)
TV	0.108*** (0.0149)	0.117*** (0.0179)	0.0539 (0.0552)	0.0809** (0.0408)	0.0872** (0.0449)
<i>N</i>	32574	19943	4329	4205	1556

Standard errors in parentheses

* $p < .15$, ** $p < .10$, *** $p < .05$

Table 24: Receive-Network Friendship Heterogeneity on GPA-IV (NO CLUBS)

	All	White	Black	Hisp.	Asian
R. Hetero.	0.168 (0.212)	1.840*** (0.787)	0.863 (2.303)	11.75 (29.31)	0.458 (1.179)
Black	-0.177*** (0.0370)				
Hisp.	-0.218*** (0.0578)				
Asian	0.238*** (0.0467)				
Male	-0.163*** (0.0197)	-0.163*** (0.0242)	-0.197*** (0.0445)	-0.0335 (0.196)	-0.168*** (0.0509)
U.S.A.	-0.0847*** (0.0247)	-0.0356 (0.0500)	-0.0870 (0.0897)	-0.528 (1.166)	-0.164** (0.0920)
Coll. Mom	0.199*** (0.0163)	0.232*** (0.0197)	0.119*** (0.0470)	0.0565 (0.152)	0.0914 (0.0626)
Live Dad	0.125*** (0.0172)	0.148*** (0.0326)	0.136*** (0.0412)	0.443 (0.843)	0.181*** (0.0677)
Health	0.173*** (0.0130)	0.213*** (0.0163)	0.0790** (0.0444)	-0.0103 (0.318)	0.124*** (0.0401)
Unsafe	-0.147*** (0.0247)	-0.204*** (0.0342)	-0.127*** (0.0418)	-0.0522 (0.149)	0.0932 (0.104)
Care	0.175*** (0.0193)	0.193*** (0.0287)	0.0896*** (0.0360)	0.144 (0.123)	0.203*** (0.0827)
TV	0.108*** (0.0149)	0.118*** (0.0163)	0.0544 (0.0578)	0.126 (0.142)	0.0792** (0.0461)
<i>N</i>	32574	19943	4329	4205	1556

Standard errors in parentheses

Instrument = Grade within school average of race

* $p < .15$, ** $p < .10$, *** $p < .05$

Table 25: Send/Receive-Network Friendship Heterogeneity on GPA-OLS
(NO CLUBS)

	All	White	Black	Hisp.	Asian
S/R. Hetero.	0.0141 (0.0498)	-0.0626 (0.0698)	0.211*** (0.0681)	0.0763 (0.100)	-0.0847 (0.111)
Black	-0.165*** (0.0298)				
Hisp.	-0.183*** (0.0257)				
Asian	0.251*** (0.0362)				
Male	-0.166*** (0.0193)	-0.171*** (0.0236)	-0.194*** (0.0276)	-0.115*** (0.0331)	-0.184*** (0.0415)
U.S.A.	-0.0836*** (0.0250)	-0.0655 (0.0506)	-0.137** (0.0769)	-0.0552* (0.0360)	-0.0891** (0.0517)
Coll. Mom	0.202*** (0.0157)	0.236*** (0.0180)	0.117*** (0.0421)	0.102*** (0.0309)	0.104*** (0.0411)
Live Dad	0.130*** (0.0148)	0.152*** (0.0213)	0.145*** (0.0309)	0.112*** (0.0302)	0.208*** (0.0604)
Health	0.170*** (0.0129)	0.206*** (0.0158)	0.0772*** (0.0326)	0.120*** (0.0339)	0.125*** (0.0360)
Unsafe	-0.137*** (0.0232)	-0.162*** (0.0279)	-0.129*** (0.0346)	-0.0756 (0.0552)	0.0884 (0.0940)
Care	0.176*** (0.0189)	0.191*** (0.0255)	0.0888*** (0.0261)	0.126*** (0.0577)	0.213*** (0.0724)
TV	0.109*** (0.0146)	0.119*** (0.0170)	0.0356 (0.0526)	0.0794** (0.0407)	0.111*** (0.0398)
<i>N</i>	34509	20915	4626	4551	1702

Standard errors in parentheses

* $p < .15$, ** $p < .10$, *** $p < .05$

Table 26: Send/Receive-Network Friendship Heterogeneity on GPA-IV
(NO CLUBS)

	All	White	Black	Hisp.	Asian
S/R. Hetero.	0.204 (0.218)	1.715*** (0.757)	0.820 (1.797)	6.765 (19.32)	0.558 (1.169)
Black	-0.179*** (0.0366)				
Hisp.	-0.225*** (0.0544)				
Asian	0.229*** (0.0437)				
Male	-0.166*** (0.0192)	-0.164*** (0.0236)	-0.206*** (0.0421)	-0.0945 (0.0748)	-0.193*** (0.0415)
U.S.A.	-0.0869*** (0.0248)	-0.0574 (0.0505)	-0.118 (0.0902)	-0.235 (0.520)	-0.129* (0.0825)
Coll. Mom	0.202*** (0.0159)	0.247*** (0.0191)	0.110*** (0.0497)	0.110*** (0.0467)	0.0860* (0.0554)
Live Dad	0.130*** (0.0152)	0.154*** (0.0273)	0.144*** (0.0322)	0.183 (0.210)	0.196*** (0.0656)
Health	0.170*** (0.0129)	0.212*** (0.0169)	0.0721** (0.0422)	0.126** (0.0643)	0.122*** (0.0410)
Unsafe	-0.141*** (0.0238)	-0.195*** (0.0291)	-0.138*** (0.0533)	-0.126 (0.163)	0.0874 (0.0919)
Care	0.177*** (0.0191)	0.196*** (0.0278)	0.0868*** (0.0295)	0.107 (0.106)	0.202*** (0.0667)
TV	0.110*** (0.0150)	0.127*** (0.0178)	0.0356 (0.0543)	0.164 (0.277)	0.107*** (0.0410)
<i>N</i>	34509	20915	4626	4551	1702

Standard errors in parentheses

Instrument = Grade within school average of race

* $p < .15$, ** $p < .10$, *** $p < .05$

Table 27: First Stage Coefficients, IV Regressions-Race

Instrument		All	White	Black	Hisp.	Asian
Same Race Fr.	Same Race Average (grade/school)	0.673* (0.0398)	0.573* (0.119)	0.739* (0.289)	1.056* (0.473)	0.552 (0.329)
	R^2	0.296	0.0824	0.150	0.314	0.273
S. Hetero.	Same Race Average (grade/school)	-0.262* (0.0272)	-0.444* (0.0419)	-0.545* (0.182)	-0.0797 (0.117)	-0.339 (0.187)
	R^2	0.339	0.194	0.230	0.111	0.247
R. Hetero.	Same Race Average (grade/school)	-0.259* (0.0255)	-0.413* (0.0594)	-0.339* (0.175)	0.0622 (0.166)	-0.528* (0.137)
	R^2	0.335	0.168	0.226	0.134	0.224
S/R. Hetero.	Same Race Average (grade/school)	-0.241* (0.0280)	-0.427* (0.0391)	-0.466* (0.184)	0.0540 (0.108)	-0.474* (0.155)
	R^2	0.368	0.230	0.280	0.190	0.247

Standard errors in parenthesis

* = Potential strong instrument

Table 28: First Stage Coefficients, IV Regressions-Activities

Instrument		All	Sport	Acad-Schol.
Same Act. Fr.	Same Activity Average (grade/school)	0.839* (0.0575)	0.857* (0.217)	0.242 (0.170)
	R^2	0.0500	0.115	0.083
Common Club Fr.	Same Activity Average (grade/school)	0.344* (0.0508)	0.292 (0.245)	1.100* (0.158)
	R^2	0.355	0.0714	0.0856

Standard errors in parenthesis

* = Potential strong instrument

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