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UNRAVELING THE IMPACT OF NETWORK COMPOSITION ON EDUCATIONAL OUTCOMES: A STUDY OF MEXICAN-ORIGIN YOUTH

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Abstract

The Hispanic-origin population in the United States has made a significant strides in educational attainment in recent years. However, Mexican-origin youth continue to face challenges in completing their education, with lower rates of college enrollment and degree attainment compared to other racial and ethnic groups. This study examines the role of peer and friendship networks in contributing to educational disparities between Mexican-origin and non-Mexican students. It explores the influence of the socioeconomic backgrounds of peers and friends on the educational outcomes of Mexican-origin youth.

Drawing on data from the National Longitudinal Study of Adolescent to Adult Health, the study examines the composition of social networks and the influence of network resources on educational achievement. The data include information on students' peers' socioeconomic backgrounds as well as friendship nominations, enabling the construction of social networks. By separately analyzing the role of peers and friends, the study investigates the unique effects of these relationships on students' educational progress.

The findings reveal significant differences in the socioeconomic backgrounds of friends and peers between Mexican-origin and nonMexican students. While the formal schooling of network alters positively affects college transition for non-Hispanic white students, there is little evidence to suggest that socioeconomic resources in peer or friend networks contribute meaningfully to the educational outcomes of Mexican-origin students. This suggests that addressing structural disadvantages beyond peer and friend networks may be more effective in supporting educational advancement among Mexican-origin youth.

The study highlights the need to consider resources beyond formal schooling that are most relevant to the educational progress of Mexican-origin students. It also underscores the importance of understanding the broader context of structural constraints faced by Mexican-origin youth and the potential limitations of network-based interventions in addressing educational disparities. The findings

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contribute to the existing literature on educational inequality and provide insights for policymakers and educators seeking to improve educational outcomes for Mexican-origin students.

Introduction

The Hispanic-origin population in the United States has achieved several important schooling gains in the last two decades. Conferrals of master's and doctoral degrees to Hispanics nearly doubled in the past 10 years (Snyder et al. 2016), and rates of medical school completion continue to rise among both Hispanic and Mexican-origin persons (Association of American Medical Colleges 2014). Moreover, recent cohorts of Latino youth exhibit college enrollment rates that are comparable to or higher than that of U.S.-born whites and Blacks (Fry and Lopez 2012). Despite these gains, completed schooling of Mexican-origin youth is among the lowest of all racial-ethnic groups in the U.S. (Nunez and Crisp 2012˜; Gandara and Contreras 2009´). One-half of Asians, one-third of whites, less than one-fourth of Blacks, and less than one-tenth of Mexicanorigin adults have a Bachelor's degree (Snyder et al., 2016). This achievement gap is not exclusive to the foreign-born, as second- and third generation Mexican-American students continue to lag behind non-Mexican peers (Ortiz and Telles 2017).

Structural constraints—including the resource-poor schools that many Mexican-origin students attend— account for some disparities in attainment (Crosnoe 2007; Loeb et al. 2005; Rubio 2012; Saporito and Sohoni 2007). Mexican-origin youth are also recipients of lower expectations (Benner and Mistry 2007) and less praise from teachers (Suarez-Orozco et al., 2010´; Suarez-Orozco ´ et al. 2009). And in the absence of intervention by students themselves or their parents, English language learners are disproportionately tracked away from college preparatory classes (Kanno and Kangas 2014; Gonzalez et al., 2003´).

Our study begins by investigating a similar but distinct resource constraint: whether the socioeconomic background of peers and friends influences the educational outcomes of Mexican-origin and non-Mexican youth. When students are surrounded by advantaged peers, they gain access to college-going capital and culture that facilitates educational progression; this includes mentorship on standardized tests as well as advice on college applications and financial aid (Legewie and Diprete, 2012; Stanton-Salazar and Spina 2005). These resources shared within networks are stratified by race and ethnicity (Duong et al., 2016; Perna and Titus 2005; Reardon 2016). Following a large and influential body of work (Gandara and Contreras 2009´ ; Ream and Rumberger 2008; Stanton-Salazar 2001), we investigate whether the composition of peer and friendship networks contributes to educational disparities between Mexican-origin students and their non-Mexican counterparts.

We argue that an insidious combination of across- and within-generation schooling experiences may severely limit the network composition of Mexican-origin youth. The accumulation of intergenerational disadvantage means that Mexican-origin students are less likely to have college-educated parents than students from other racial and ethnic groups (Crosnoe and Lopez Turley 2011´ ; Rumbaut and Cornelius 1995). Mexican-origin students may also be less likely to have *peers* with college-educated parents due to schoolbased segregation. And racial and ethnic homophily in friendship formation—defined as the tendency to form friendships with others from the same racial and ethnic origin (Kao and Joyner 2006; McPherson et al. 2001; Quillian and Campbell 2003)—suggests that within schools, Mexican-origin students may be less likely to have *friends* with college-educated parents. In this way, systematic exclusion from resource-rich networks may compound resource hurdles for Mexican-origin students (Gandara 1995´ ; Gandara and Contreras ´ 2009; Suarez-Orozco et al., 2009´).

To effectively test whether peer and friendship networks explain education disparities among Mexicanorigin and non-Mexican youth, we navigate a number of data assembly and identification challenges. It is necessary to observe the socioeconomic background of students' peers and friends. In formal terms, this amounts to observing the backgrounds of "alters" in adolescents' school- based social networks. Ideally these data are *reported* by network alters to minimize the correlated measurement error that arises when a student reports the attainment of family members and friends (Ridolfo and Maitland 2011). It is also necessary to follow students forward in time to observe their completed schooling. These data demands are accompanied by interpretation challenges; understanding the unique effects of peer and friend characteristics on students' schooling progress requires attention to the nonrandom way in which the composition of schools and friendships are formed. Put simply: peer effects are difficult to disentangle from other types of confounding (Angrist 2014; Hoxby 2000; Manski 1993).

We draw from two rounds of the National Longitudinal Study of Adolescent to Adult Health (Add Health) to conduct a rigorous analysis of the role of network resources in the education achievement of Mexican- and non-Mexican origin youth. The first round of data collection includes a census of all students in sampled schools, which allows us to measure the socioeconomic backgrounds of students' peers. The data also include friendship nominations, making it possible to build information on students' social networks in adolescence. While peers provide students access to a wide and diverse pool of resources, friendship networks may be particularly effective in transmitting resources: they are highly accessible, influential, and based on a significant degree of trust (Alvarado and An 2015; Hallinan and Williams 1990; Mora and Oreopoulos 2011). It will thus be important to separately examine the role of peers and friends. Because the data are longitudinal, we can study educational attainment into early adulthood.

We test whether Mexican-origin students have social networks that are distinct with respect to the formal schooling of parents of peers and friends, and assess whether differences in network composition between Mexican-origin and non-Mexican students contribute to educational disparities. We consider whether variation in socioeconomic composition within schools, expressed as the percent of friends and grademates with college-educated mothers, contributes to variation in the likelihood of transitioning into college. Our quasiexperimental study design sidesteps several threats to interpretation that arise when assessing the influence of students' friends and peers on education trajectories.

We find large, significant differences in the socioeconomic backgrounds of the friends and peers of Mexican-origin students relative to non-Mexican students. Several of these differences persist when we consider students attending the same schools. We find that formal schooling in the families of network alters increases the probability of transitioning to college among non-Hispanic whites. By contrast, we find little evidence that socioeconomic resources in peer or friend networks contribute meaningfully to schooling outcomes among Mexican-origin students. Our findings suggest that efforts to support continued increases in schooling among Mexican- origin students may be better focused on other sources of structural disadvantage. The findings also point to the importance of considering resources *beyond* formal schooling that are most relevant for the education progress of Mexican-origin youth.

1. Mexican student achievement and progression to college: Patterns and explanations

Nearly 40 percent of foreign-born Mexican youth and 24 percent of second-generation Mexican American youth do not finish high school (Driscoll 1999; Fry 2002; NCES 2016); these are among the highest drop-out rates in the nation. Educational lags persist after high school, as second- and third generation Mexican students exhibit significantly lower rates of college attendance than their white, Asian, Black, and non-Mexican counterparts (Cherng et al. 2013; Keller and Tillman 2008). Differences in students' educational expectations are also

striking. A smaller share of Mexican-origin youth expect to attend college than other racial groups, including other Hispanics (Hao and Bonstead-Bruns 1998). Because expectations are closely associated with academic performance and the accumulation of human capital (Feliciano and Rumbaut 2005; Hanson 1994), they are an important indicator of emerging educational inequalities.

Explanations for disparities in expected and actual schooling outcomes typically focus on individual- and family-level factors, emphasizing the lower socioeconomic status of Mexican families (Crosnoe and Lopez Turley 2011´). Thirty-three percent of the Mexican-origin student population lives in poverty (Musu-Gillette et al., 2010), and in spite of having spent substantial time in the U.S., the attainment and earnings of Mexicanborn parents are significantly lower than other foreign-born populations (Portes and Rumbaut 2001; Villarreal and Tamborini 2018). Given the strong intergenerational correlation in educational attainment across time and place for all families (Haveman and Wolfe 1995; Hertz et al., 2007), and the low levels of attainment that continue to afflict Mexican adults (Feliciano and Lanuza 2017), Mexican-origin youth face multiple constraints when attempting to enroll or complete college.

Moreover, Mexican immigrants who earned a college degree outside of the U.S. receive significantly lower returns than those from other countries of origin (Portes and Rumbaut 2001). Constrained family resources create additional commitments that prevent students from focusing on their studies (Allard 2015; Bradley and Renzulli 2015; Jordan et al. 1996; Lys 2009; Mcneal 1997). It is thus not surprising that Mexican-origin youth are more likely than their Black or white counterparts to be 'pulled out' of high school because of familyrelated responsibilities (Bradley and Renzulli 2015; Jordan et al., 1996; Mcneal 1997).

While intergenerational disadvantages may partially account for the lowered attainment of Mexican-origin youth, limited access to resource-rich social networks may also contribute to pervasive educational disparities. To the extent that shared values, beliefs, and norms encourage school success (Bankston III 2004), all youth are likely to benefit from the capital produced in networks. To be sure, Mexican-origin parents exhibit high educational expectations for their children (Feliciano and Lanuza 2016; Portes and Rumbaut 2001), provide emotional support, and are regularly engaged in the schooling process (Rios-Aguilar and Kiyama 2012; Solorzano et al. 2000; Yosso 2005); these attributes are each correlated with child well-being and academic success. However, formal knowledge and information access is also required to tangibly guide youth through the college-going process (Kirk et al., 2011).

Consistent exposure to a network of peers and friends with educated parents serves as a knowledge repository for the college-going process, cultivates a culture of achievement, and increases college expectations as well as actual completion (Cohen et al., 2003; Coleman 1988; Edgerton and Roberts 2014). Put differently: students surrounded by socioeconomically advantaged networks accrue specialized knowledge and skills that shape their educational goals and attainment. This process is highlighted by the status attainment literature, which asserts that friends, parents, and other adults set expectations that shape student behavior (e.g. Sewell et al. 1969; Sewell et al. 1970). If college-educated parents bolster their children's educational plans because they invest time in school-based activities or simply share knowledge about their college-going experience, students will benefit from interacting with peers/friends born to educated parents and with those parents themselves.

A similar logic underpins "closed network" explanations, which argue that resources are explicitly monopolized by well-resourced individuals (e.g., Parkin, 1979). In the context of formal schooling, closed networks inhibit college progression (Gandara and Contreras ´ 2009; Stanton-Salazar 2001; Stanton-Salazar and Spina 2005) by reducing the transmission of vital information needed to enter the higher education pipeline (Fernandez-Kelly 1995´ ; Kim et al. 2005). In this way, students from low-income families face limited opportunities to accrue

knowledge and capital that would otherwise allow them to excel in dominant institutions (Conchas 2001; Gandara and Contreras 2004´ ; Morgan and Gelbgiser 2014; Suarez-Orozco et al., 2010´).

We argue that the educational disparities found among Mexican-origin youth are shaped by the dual effects of (i) the intergenerational legacy of socioeconomic disadvantage and (ii) homophily in closed networks. In adolescence, friendships are more likely to form among students who share similar characteristics, including race, ethnicity, country of birth, and parental education. This may happen as a result of preferences for friends of similar backgrounds or as a result of explicit discrimination and cross-group avoidance, particularly by advantaged groups (i.e., white students). Because Mexican-origin youth are more likely to form friendships with other Mexican-origin and Latina/o youth—*and* because they are more likely to be raised in lower-income families—Mexican-origin students may be unable to access networks that are rich in *formal* schooling experiences.

1.1. Peer influence on school outcomes

The benefits of network ties to students from families with significant formal education may operate in several ways. First, parents may directly interact with the peers of their children. These adults may act as mentors or sources of information who cultivate college- going habits and expectations (Stanton-Salazar 2001, 2011; Stanton-Salazar and Spina 2003). Second, youth may benefit from tapping into peer groups that have amassed knowledge about the transition to post-secondary school from their own parents. Adults from higher socioeconomic backgrounds provide fertile ground for their own children to go to college (Gamoran et al. 2016; Hamilton et al. 2018; Horvat et al. 2003; Lareau and Horvat 1999; Rendall et al. 2009), often acting as "college concierges" to provide career support (Hamilton et al., 2018). If youth tap into their networks to garner information about schooling, such as college entry requirements or the importance of enrollment in Advanced Placement courses, and Mexican-origin youth systematically belong to networks with fewer college-educated adults who cannot provide such knowledge, disparities in college progression may be exacerbated (Ream and Rumberger 2008; Stanton-Salazar 2001; Stanton-Salazar and Dornbusch 1995).

Peers with college-educated parents could also share norms that allow students to develop different perceptions toward education (Calarco 2018; Coleman 1988; Edgerton and Roberts 2014; Legewie and Diprete 2012; Stanton-Salazar and Spina 2005). These norms may spillover to influence the educational goals of classmates through mutual influence or peer pressure (Bankston III and Caldas 1996; Carbonaro 1998; Reyes and Jason 1993). Because peers influence the types of courses students enroll in Crosnoe and Muller (2014) and their educational plans (Cheng and Starks 2002), a large network of advantaged peers may create a "culture of achievement," that boosts college expectations and later attainment (Hanushek et al., 2003; Thrupp 1999) regardless of the socioeconomic background of individual students.

Overall, this body of work suggests that peers serve as intuitional agents who transmit information to other students about school programs, college admissions, and career goals (Stanton-Salazar and Dornbusch 1995). On the one hand, because peers can be close friends, acquaintances, or near strangers (Carbonaro and Workman 2016), they may have an overall weak impact on attainment outcomes. On the other hand, youth may be influenced by the values and behaviors exhibited in school settings by dominant peer groups. Empirical evidence generally supports the latter possibility. Students who are surrounded by peers with college-educated parents are less likely to drop-out (Bifulco et al., 2011) and are more likely to enroll in college after high school (Bifulco et al., 2014). Youth from socioeconomically advantaged families also perform more favorably if they attend schools with similarly advantaged students (Portes and Macleod 2005, 2009; Rumberger and Willms 1992). Moreover, peers play a key role in shaping students' educational expectations (Carbonaro and Workman 2016; Cheng and Starks 2002) and the selection of academic programs in secondary school (Rosenqvist 2018).

1.2. The role of friends and friendship networks

In contrast to peer networks, friendship ties are relationships that are built on reciprocity, trust, and regular, meaningful interaction (Alvarado and An 2015; Mora and Oreopoulos 2011). It would thus not be surprising if friendship networks are especially powerful sources of information sharing, guidance, and cultural diffusion.

Indeed, evidence suggests that students' educational outcomes are associated with the schooling plans of friends (Alexander and Campbell 1964; Hallinan and Williams 1990). It is difficult to compare the influence of peers and friends on student attainment across studies, but the potential effects of friends appear substantial. For instance, Cherng et al. (2013) assert that having a best friend with a college-educated parent increases the odds of college completion by 60 percent. Yet, some suppose that distant friendship ties are particularly influential in the schooling outcomes of youth; this could be because students rely on weaker ties to develop normative frames for behavior and action (Carbonaro and Workman 2013).

Others explicitly consider the role of friends on achievement among Hispanic and Mexican-origin youth. Based on a survey of 500 high school students in Northern California, Gandara et al. (2004) ´ find that Mexican-origin youth disproportionately form friendships with peers of similar ethnic backgrounds, and that the lack of academic-related capital in the "closed" networks of Mexican-origin youth represents a significant barrier to achievement. Similarly, Ream and Rumberger (2008) demonstrate a correlation between having "school-oriented" friends and a lowered probability of drop-out among Mexican-American adolescents. Flashman (2014) argues that friends' academic achievement explains about one-sixth of the gap between the GPA of Hispanic and white students.

Immigrant generation, acculturation, socioeconomic status, race/ethnicity, or school-level poverty may moderate the effect of network ties on achievement (Crosnoe et al., 2003; Greenman 2013; Ream and Rumberger 2008).[12] For instance, Crosnoe and Muller (2014) argue that students with college-educated parents reap the most benefits from engaging with peers from high socioeconomic backgrounds, but there is variation by race and ethnicity.[3] This heterogeneity also emerges in studies of friendship networks. Among Texas high school seniors, white students with four or more college-bound friends are significantly more likely to apply to 4-year colleges than Hispanic students with the same number of college-bound friends (Alvarado and Lopez Turley 2012´). And in an analysis of close friendships, Alvarado and An (2015) argue that having a collegebound friend increases college expectations and the probability of enrolling in advanced placement courses among Hispanic students, but that these benefits appear most consistent for whites.

We build on this research to examine how schooling inequality is reproduced through peer and friendship networks, with a focus on the Mexican-origin population in the U.S. We examine important arguments put forward by other scholars (Ream and Rumberger 2008; Stanton-Salazar 2001; Stanton-Salazar and Dornbusch 1995) with a nationally-representative, and longitudinal data source that allows us to follow students into adulthood and separately estimate peer and friendship effects with attention to several key sources of bias. Although there are many ways to measure the socioeconomic composition of networks, we focus on college educated mothers as a key network resource. Our study thus follows a large literature that links maternal education to later child well-being and attainment (e.g. Currie and Moretti 2003; Harding et al., 2015;

[1] Some argue that students who rely more heavily on their peers for college-going information tend to apply to less selective college (Hill et al.

[2]). Others emphasize the importance of the 'quality' of potential peers (e.g., Stanton-Salazar and Spina 2005).

[3] Immigration scholars suggest that low SES students may face difficulties connecting with higher socioeconomic status peers, and that acculturation and language use moderates this relation (Stanton-Salazar and Dornbusch 1995).

Rosenzweig and Wolphin 1994).[1] We use the share of friends with college-educated mothers and the share of grademates with college educated mothers to capture potential resources embedded in students' networks. We compare the magnitude of parental, friend, and peer effects to provide further insight into the interpersonal transfer of resources on educational expectations and progression.

Given the extensive literature that highlights the benefits of advantaged significant others in networks, we test the following hypotheses:

Hypothesis 1. We anticipate Mexican-origin youth will have access to networks with fewer college-educated mothers than non- Mexican youth.

Hypothesis 2. We anticipate that access to a higher proportion of peers and friends with college-educated mothers will be associated with educational expectations, progression to college, and completed years of schooling.

Hypothesis 3. Disparities in the availability of resource-rich friends will account for a portion of the college gap between Mexican- origin and non-Mexican youth.

2. Data and methods

This study uses data from multiple rounds of the National Study of Adolescent to Adult Health (Add Health). Add Health is a school- based study that follows a cohort of youth to adulthood. At Wave 1, an in-school questionnaire was administered to a nationally representative sample of students in grades 7 through 12 during the 1994-95 period; a selection of this in-school sample was also interviewed at home. And, in later waves, these youth—the *in-home* sample—were followed longitudinally and interviewed at different intervals. Wave 4 occurred in 2007–08 when respondents were between the ages of 24 and 32. We use data from Wave 1 and Wave 4.

In this paper, we use two analytic samples. The first links information about adolescent educational expectations from the in-school sample to friends' and grademates characteristics in Wave 1 (N = 44,369). The second follows the in-home sample into Wave 4. We include respondents who have matched friendship data in Wave 1 and who are successfully re-interviewed and report completed education at Wave 4 (N = 7,415). Note that reliance on the unique friendship data in Add Health does reduce sample size, as some students do not report friends (see Table S4 and S5 for attrition information). This is a limitation shared with all studies that rely on friendship data in the Add Health Study (e.g., Balbo and Barban 2014; Card and Guiliano 2013; Cherng et al. 2013; Fujimoto and Valente 2012; Goodreau et al. 2009; Haynie 2001; Mueller and Abrutyn 2015; Vaquera and Kao 2008).

Maternal education is collected during the in-school survey, providing values for all students in the school. We draw on literature that argues college completion represents a significant transition that signals prestige (Card, 1999; Hout, 2012) and the accumulation of credentials/skills that are specific to college-going culture (Lareau and Horvat 1999; Hamilton et al., 2018). We measure whether these mothers have completed college. We then use three predictors to describe this potential resource in students' social networks. The first describes the percent of *grademates*, or students within the same grade at the same school, with mothers who have completed college. When students report instead on a stepmother or female guardian instead of a biological mother, we use this information instead. When calculating the percentage of grademates with college-educated mothers, we exclude the respondent's own mother's education from the numerator and denominator (Angrist 2014; Bifulco et al., 2014).

[1] Though we focus on mothers' education, we conduct parallel analyses that use a combined measure of parental attainment: whether mothers or fathers have completed college. Given the strong correlation between the educational attainment of mothers and fathers (Haveman and Wolfe 1995), it is not surprising that results (available upon request) are substantively identical.

We generate a similar measure to describe the education of mothers of nominated friends. In the in-school questionnaire, respondents are asked to nominate up to ten of their closest friends; nominations are linked to the survey responses from those students. Using the same measure of maternal education, we calculate the proportion of reported *friends* with a college-educated mother. To capture a potentially important nonlinearity in the association between friends' parents' resources and our outcomes of interest, we create a third, dichotomous indicator that signals adolescents do not report any friends with mothers who have completed college.

We use this information to predict three schooling outcomes. The first describes a contemporaneous measure of schooling expectations collected in the first survey wave, when students were adolescents. Respondents were asked: "On a scale from 'No chance' to 'It will happen' what do you think are the chances that you will graduate from college?". There are a total of 9 possible response categories that we measure continuously. Educational expectations reflect access to resources as well as the perceived advantages of perusing a given level of schooling, making them strong predictors of later attainment (Domina et al. 2011). We then follow students when they are between the ages of 24 and 32 to measure completed years of schooling; this allows us to capture whether resource-rich networks provide skills and knowledge that further expose youth to the education system. To test whether networks uniquely impact the progression to college, a period that is characterized by prestige and substantial financial costs (Diaz and Fiel 2021), we also generate a dichotomous measure indicating any college attendance, defined here as completed education beyond high school.

2.1. Analytical strategy

Estimating the effect of friendship traits is complicated by non-random selection into schools and the tendency toward homophily in friendship networks (Manski 1993). As such, we estimate a set of specifications represented by Equation (1) which are the bases for a subsequent decomposition analysis:

$$yisc = \alpha c + \beta s + xisc\varphi + \theta Xisc + \varepsilon isc \quad (1)$$

where y_{isc} is a measure of educational attainment by age 24–32 for individual i from school s and cohort c; X_{isc} is a measure that characterizes the education of friends' mothers when respondents are adolescents (ages 11–19). In separate specifications, X_{isc} references the percentage of grademates whose mothers have a college degree, the percentage of friends whose mothers have a college degree, or a dichotomous indicator that signals *none* of adolescents' friends have a mother who earned a college degree. In Eq. (1), α_c is a cohort-specific fixed effect; β_s is a school fixed effect; x_{isc} represents a vector of student-level covariates, including students' race and ethnicity, nativity, gender, age, and mothers' educational attainment; ε_{isc} is a random error term which might be correlated across observations from the same school. While school fixed effects account for the reasons students are sorted across different schools (including ranking, demographic composition, curriculum), grademate fixed effects allow us to compare students in the same grade; this is particularly important as older students have had more time to solidify their networks and educational plans. Because multiple students attend the same school, we use robust standard errors that are clustered at the school-level.

The analyses rely on across-cohort variation in the composition of student's peers and friends. This approach exploits the fact that parents may choose schools based on known characteristics but will have much less information about year-to-year variation in the characteristics of grademate cohorts *within* that school (Angrist and Lang 2004; Hoxby 2000; Lavy and Schlosser 2011). As a result, differences in cohort composition among students who are close in age and who attend the same school should be unrelated to student unobserved traits (i.e. quasi-random). Our identification strategy relies on the assumption that, conditional on school and grade, the composition of grademates is random. To evaluate this assumption, we conduct a series of balancing tests. Balancing tests are used in order to check whether our key independent variables, maternal education of peers

and friends, are associated with sociodemographic factors before and after we adjust for school- and grade fixed effects. Thus, we regress observed covariates on the percentage of grademates (and then the percentage of friends) whose mothers have a college degree, with and without the inclusion of school- and grade fixed effects. This supplemental analysis (discussed below and available in Tables S2 and S3 in our Supplemental Materials) considers whether selection into peer or friendship networks persists after accounting for student and school characteristics. If selection into peer or friendship networks does not persist after adjusting for fixed effects, then one may assume that exposure to peers' or friends' maternal education is as good as random within schools and across grades.

Leveraging variation in cohorts within schools requires that population variability in the predictors of interest—peers' and friends' parental education—is not entirely subsumed in school-specific characteristics. Table S1 (see Online Supplement) describes residual variation in these measures after accounting for school and grade fixed effects. We observe a residual 5 percentage point standard deviation in the share of peers with college-educated mothers (4 percentage points among Mexican-origin students), and a residual 25 percentage point standard deviation in the share of friends with college-educated mothers (19 percentage points among Mexican students), providing sufficient variation to test the study's hypotheses.

We then conduct a Kitagawa (Oaxaca-Blinder) decomposition to evaluate the contribution of friends' mother's education on differentials in adult attainment (Jann 2008). If the returns to friends' mother education are positive, they may help explain ethnic differences in completed education. The decomposition approach also allows us to investigate the contribution of specific covariates to the attainment gap. A decomposition yields an apportioning of the variance of the mean differences across groups, and is represented in the model below:

$$\bar{Y}M - \bar{Y}N\bar{M} = XNM(\beta M - \beta NM) + (XM - XNM)\beta M \quad (2)$$

Outcome at Wave 1				
College expectations (0 = low, 8 = high)	5.92	0.13	6.63	0.05
Selected Demographics at Wave 1				
Male	42.56%		47.80%	
Age	15.27	0.25	15.12	0.10
Born outside of the U.S.	16.63%		7.76%	
Mother's education	11.40	0.25	13.62	0.09
Panel B. Longitudinal Sample	Mexican-origin		All other students	

The left side of Equation (2) represents the difference in average years of completed education by ages 24– 32 . On the right side of the equation, the first term, $\hat{X}_{NM}(\hat{\beta}_M - \hat{\beta}_{NM})$, represents the coefficients component, as described above. The second term, $(\hat{X}_M - \hat{X}_{NM})\hat{\beta}_M$, represents differences in mean completed education due to compositional (or endowment) differences. In other words, it

Table 1

Descriptive Statistics, Wave 1 and Wave 4 Samples, weighted.

Panel A. Cross-sectional Sample	Mexican-origin		All other students	
	N = 2,186		N = 42,183	SD
	Mean or %	SD	Mean or %	

N = 314 N = 7101 SD

Mean or %	Mean or %			
Outcomes at Wave 4				Asian, non-Hispanic 4.20%
Completed Education (years)	13.81	0.17	14.58	0.08
Any college	67.49%		80.86%	
Peer/Friend Characteristics at Wave 1				
% Grademates with college-educated mothers	31.48%		30.00%	Other Hispanic, non-Mexican 6.17%
% Friends with college-educated mothers	18.28%		29.22%	
% No friends with college-educated mothers	46.62%		28.89%	White, non-Hispanic 71.13%
Friends mothers' education (in years)	12.24	0.28	13.50	0.08
Selected Demographics at Wave 1				Other race, non-Hispanic 4.69%
Male	49.52%		45.40%	
Age	14.81	0.28	14.71	0.13
Born outside of the U.S.	13.98%		5.64%	
Mother's education	12.03	0.27	13.51	0.07
Black, non-Hispanic			13.54%	

Note: Weighted descriptive statistics with unweighted number of observations (N) presented. represents the amount education levels would change if Mexican-origin students had the same *levels* in the predictor variables as non- Mexican students. All decomposition estimates include school and grade fixed effects. As a result, variation is estimated from grademate/friend measures within schools and across grades.

3. Results

Table 1 presents summary statistics from the Wave 1 and 4 samples. As adolescents, Mexican-origin youth are substantially less likely to express expectations of completing college relative to other students. As adults, Mexican-origin respondents complete about 14 years of education while their non-Mexican counterparts complete nearly 15 years of education. About 67 percent of Mexican- origin youth and 81 percent of nonMexican youth made the transition to college. The average respondent was approximately 15 years old when surveyed during the first round of data collection. About 17 percent of Mexican-origin youth and 8 percent of non- Mexican youth are born outside of the US. The mothers of Mexican-origin students completed about 11 years of education, whereas mothers of non-Mexican origin youth earned about 14 years of education.

We first ask whether Mexican-origin youth have access to fewer education resource-rich networks than nonMexican youth (Hypothesis 1). Table 2 contains the percentage of grademates and friends with collegeeducated mothers as well as the percentage of students who lack friends with a college-educated mother. Panel A shows comparisons between Mexican-origin and non-Mexican students, and Panel B extends comparisons to other racial groups. About 31 and 30 percent of grademates of Mexican-origin and non-Mexican youth have college-educated mothers. However, only 18 percent of Mexican-origin students' friends' have mothers who completed college; this is a substantially lower percentage than found among non-Mexican youth (29 percent). Moreover, 47 percent of Mexican-origin youth have *no* reported friends with college-educated mothers. This figure is less than 29 percent for non-Mexican students. Panel B shows the breakdown of peer and friend characteristics by racial group. T-tests are used to compare group means, with Mexican-origin youth

serving as the comparison group. The majority of differences are concentrated among friends rather than peers, and the largest disparities exist between Mexican-origin and non-Hispanic Asian youth. Mexican-origin youth have significantly fewer network ties to college-educated adults among their friends and peers relative to nonMexican youth, and the magnitude of this difference varies considerably by race and ethnicity. **Table 2** Racial and ethnic differences in grademate and friend characteristics.

	Avg. % grademates with college-educated mothers Col. 1	Avg. % friends with college-educated mothers Col. 2	% Students with zero friends with college-educated mothers Col. 3
PANEL A			
Mexican-origin	31.48%	18.28%	46.62%
All other students	30.00%	29.22%	28.89%
Difference	1.49%	10.93%	− 17.73%
p-value	.52	***	**
PANEL B			
Other Hispanic	28.33%	25.93%	38.50%
Difference	− 3.16%	7.65%	− 8.12%
p-value	0.15	*	0.15
Black, non-Hispanic	32.34%	29.21%	33.95%
Difference	0.86%	10.93%	− 12.66%
p-value	0.79	***	0.06
Asian, non-Hispanic	37.08%	44.53%	17.06%
Difference	5.60%	26.24%	− 29.55%
p-value	0.07	***	***
White, non-Hispanic	29.34%	29.21%	27.37%
Difference	− 2.15%	10.93%	− 19.25%
p-value	0.39	***	**
Other Race	29.14%	25.57%	34.81%
Difference	− 2.34%	7.29%	11.80%
p-value	0.31	*	0.089
PANEL C: Average Differences Among Students in the Same Schools Mexican vs all other students			
Difference	2.39%	− 13.87%	14.01%
p-value	0.196	***	*

Note: Columns 1 and 2 represent the average share of grademates and friends whose mothers who have completed college. Column 3 shows the average share of students who report no friends with a college educated mother. Estimates are weighted. Differences are obtained from a *t*-test of means (unequal variances assumed). Panel C shows the differences between non-Mexican relative to Mexican youth, once school effects have been netted out. Each estimate is a result of a regression with the corresponding grademate or friend characteristic as

the outcome, and an indicator of Mexican status as the predictor all the while controlling for school fixed effects. *p < .05, **p < .01, ***p < .001.

These differences are shaped in part by school segregation along ethnicity and socioeconomic lines. We next ask whether disparities persist among students attending *the same* schools. We re-calculate differences in the share of grademates and friends with educated mothers after removing across-school variation (Panel C). Within schools, Mexican-origin students and non-Mexican students have a nearly identical share of grademates with college-educated mothers. The differences in the socioeconomic backgrounds of friends are sizeable, even when comparing students in the same schools. After accounting for school effects, the share of friends with college educated mothers is 14 percentage points lower for Mexican-origin youth relative to their non-Mexican peers. The share of Mexican- origin youth who name no friends with college educated mothers is 14 percentage points larger than youth in their schools who are not Mexican. Thus, the types of schools that students attend can account for some, but not all, differences in networks rich in formal schooling.

We then examine within-school variation to test Hypotheses 2 and 3 while addressing the confounding introduced by segregation processes. To test Hypotheses 2, we leverage variation in networks *among* Mexicanorigin students, and separately among their non- Mexican peers. This variation is described in the Analytical Strategy section of the manuscript. Hypothesis 3 speaks to the variation in Table 2, Panel C, which shows within school average differences in peer (grademates) and friend maternal education composition between Mexican-origin and all other students. In other words, the differences displayed in Panel C are the basis of our decomposition analyses, which examine the extent to which these peer and friendship characteristics explain educational disparities between Mexican-origin and non-Mexican students.

3.1. Completed years of education

We hypothesized that access to a higher proportion of peers and friends with college-educated mothers would be associated with multiple education outcomes (Hypothesis 2), including completed years of schooling, the progression to college in adulthood, and educational expectations in adolescence. Results predicting completed years of attainment are shown in Table 3; Panel A contains coefficients from a set of regressions that include a vector of individual and family covariates (shown in Table 1) as well as school and grade fixed effects. Panel B highlights results from a Kitagawa (1955) decomposition.

We first consider the impact of attending school with classmates whose mothers are college-educated. For Mexican-origin students, we observe a set of moderately sized but imprecisely estimated associations between the percentage of peers with college-educated mothers and educational attainment. A 4 percentage point (one standard deviation) difference in the share of classmates with college educated mothers is associated with onetenth of a year of schooling (Column 1: 2.4 × 0.04). The corresponding standard error is nearly as large as the estimated coefficient. A 19 percentage point difference (one standard deviation) in the share of friends with college educated mothers is associated with 0.07 years of additional schooling (Column 3: 0.39 × 0.19). Having no reported friends with college-educated mothers is associated with a quarter-year reduction in school. The confidence intervals around both estimates are wide and include zero.

Table 3

Predicting years of completed education in Wave 4 using peer characteristics and decomposition.

Panel A: Estimated Coefficients Col. 1 Col. 2 Col. 3 Col. 4 Col. 5 Col. 6

Mexican-origin All other Mexican-origin All other Mexican-origin All other

% Grademates w/college-educated mother 1.30**

2.42

2.09 0.40

% Friends w/college-educated mother			0.39	0.99***		
	0.54			0.12		
No Friends have college-educated mothers					− 0.28	− 0.56***
					0.20	0.05
Own mother's education (in years)	0.06	0.20***	0.07	0.19***	0.07	0.19***
0.04	0.02	0.04		0.02	0.04	0.02
Panel B: Attributable Variation to Mean Differences						
% Grademates w/college-educated mother						
	0.01					
0.05						
% Friends w/college-educated mother			0.06			
0.09						
No friends have college-educated mothers					0.09	
				0.07		
Own mother's education (in years)	0.11	0.12			0.12	
0.07	0.07				0.07	
Panel C: Group Differences Decomposed						
Total completed years of education	13.81	14.64	13.81	14.64	13.81	14.64
N	314	7,097	314	7,101	314	7,101

Notes: Panel A includes controls for age and place of birth as well as school and grade fixed effects. Panel B shows results from the decomposition analyses. Columns 1 and 2 include the key independent variable percent grademates with college-educated mothers. Columns 3 and 4 include the key independent variable percent Friends with college educated mothers. Columns 5 and 6 include the key independent variable of having no friends with college-educated mothers. Key predictors and covariates are measured at Wave 1 and include respondent's gender, age, nativity, race/ethnicity, maternal education, and a dummy for whether the student is missing mother's education. College-educated mothers are defined as those who have completed college; standard errors listed below coefficients. *p < .05, **p < .01, ***p < .001.

Among non-Mexican students, we observe estimates that are more precisely estimated and in 2 of the 3 specifications, much larger in size. A 5 percentage point (one standard deviation) larger share of peers with college educated mothers is associated with 0.065 additional years of schooling; a 25 percentage point larger share of friends with college-educated mothers is associated with an additional quarter year of schooling. NonMexican students who have no nominated friends with college-educated mothers also complete significantly fewer years of schooling (0.56 years) than those who have at least one friend with a college educated mother. To test whether coefficients statistically differ between Mexican-origin and non-Mexican youth, we estimate pooled regressions with a corresponding interaction term (Online Supplement tables S12 and S13). The effect of having no friends with college educated mothers is significantly smaller for Mexican-origin youth in relation to non-Mexican youth.

Turning to the decomposition analyses (Panel B), we find that ties to friends from highly-educated families account for a portion of the gap in completed education among Mexican-origin and non-Mexican youth: having no friends with college-educated parents accounts for a difference in attainment by about one-tenth of a year. As expected, the network indicators presented here explain a smaller amount of the disparity than does the education of respondents' own mothers, a well-established predictor of attainment. With respect to other measures in the specifications, we observe that male Mexican-origin students complete about 0.47 fewer years than their female counterparts, whereas U.S.-born Mexican-origin students complete 0.84 additional years of schooling than Mexican-origin students. This pattern is consistent across the specifications presented in Table 3.

3.2. College progression

Average years of completed schooling may mask important discontinuities around key education transitions. Because continuation beyond high school appears to be a key point of divergence in schooling trajectories for Mexican-origin youth, we also examine whether access to socioeconomically advantaged peers influences the probability of college attendance. Table 4 presents a similar analysis using linear probability models to predict college attendance. We observe a small association between the percent of grademates with college-educated mothers and the transition into college for Mexican-origin youth. Mexican-origin youth with a 4 percentage point larger share of grademates with highly educated mothers are about 0.6 of a percentage point (or about 1 percent) more likely to attend college themselves. The association with the share of friends with highly educated mothers is also small. Mexican- origin youth with no reported friends with college-educated mothers are about 2 percentage points (about 3 percent) less likely to attend college than Mexican-origin youth with social ties to higher-SES families.

By contrast, we observe that the associations are larger for non-Mexican students. Having a one standard deviation larger share of grademates and friends with college educated mothers is associated with 1 percentage point and 2.8 percentage points increase, respectively, in the probability of college attendance. Having no reported friends with college educated mothers is associated with an 8 percentage point (~10 percent) reduction in the probability of college attendance. Additional tests with pooled, interacted models show that the estimates on the two measures of the friend network characteristics are significantly different between Mexican-origin students and their non-Mexican peers.

Given the very small effects estimated for Mexican-origin students, we would expect that the network measures contribute at most marginally to Mexican-origin students' lower probability of transitioning to college than their peers from other ethnic backgrounds. Results from the decomposition analysis confirms this (Table 4, Panel B).

3.3. Expectations

One of the mechanisms through which network-based resources is theorized to operate is the development of students' belief that college is a viable pursuit. We turn now to specifications that test the association between peer and friendship resources and students' educational expectations in adolescence. This analysis more directly investigates whether significant others facilitate a culture of achievement vis-a-vis expectations for college completion. ` Table 5 presents estimates from the Wave 1 sample that predict the degree to which students expect to attend college; this is measured using a continuous indicator ranging from 0 to 8 (Panel A). For Mexican- origin students, the association between formal schooling among grademates and their own college expectations are close to zero. We observe a similarly small estimate on formal schooling among friends' mothers; a 19% difference (one standard deviation) in the share of friends with college educated mothers is associated with 0.05 of a unit on the expectations scale (Column 3: 0.26×0.19). Not having friends with college-educated mothers does not significantly influence the education expectations of Mexican-origin youth.

By contrast, the associations with grademates and friends are both substantively larger and statistically significant for non-Mexican youth. A one standard deviation difference in the share of friends with collegeeducated mothers is associated with about a fifth of a unit difference in expression of expectations for college (Column 4: 0.25 × 0.76). Having no reported friends with college-educated mothers is associated with more than half a unit difference on the college expectations scale. A pooled analysis indicates that the three estimates among non-Mexican youth are all significantly different from those estimated for Mexican-origin youth (Online Supplement Tables S12 and S13). As in the previous set of estimates, in Panel B, results from the decomposition suggest that the gap in expectations for college attainment cannot be attributed to variation in peer or friendship variables.

3.4. Balance tests

Although our identification strategy exploits a quasi-random design and school and grade fixed effects, there are still concerns that the measures of peer and friendship groups are contaminated by respondents engaging in networks that bear similarities to their own characteristics. We thus conduct a series of balancing tests for both analytic samples. Tables S2 and S3 present estimates for the Wave 4 **Table 4**

Predicting progression to college using peer characteristics and decomposition.

Panel A: Estimated Coefficients	Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6
	Mexican-origin	All other	Mexican-origin	All other	Mexican-origin	All other
% Grademates w/college educated mother	0.15	0.20*				
	0.25	0.08				
% Friends w/college educated mother	0.02		0.11***			
	0.09		0.02			
No friends w/college educated mothers			− 0.02		− 0.08***	
			0.06		0.01	
Own mother's education (in years)	0.01	0.02***	0.02	0.02***	0.02	0.02***
	0.01		0.00	0.01	0.00	
Panel B: Attributable Variation to Mean Differences						
% Grademates w/college-educated mother	0.00					
0.00						
% Friends w/college-educated mother	0.00					
	0.01					
No Friends w/college-educated mothers					0.01	
					0.02	
Own mother's education (in years)	0.02	0.03			0.03	
	0.02		0.02		0.02	
Panel C: Group Differences Decomposed						
Proportion who attended college	0.69	0.82	0.69	0.82	0.69	0.82
N	314	7,097	314	7,101	314	7,101

Notes: Panel A includes controls for age and place of birth as well as school and grade fixed effects. Panel B shows results from the decomposition analyses. Columns 1 and 2 include the key independent variable percent grademates with college-educated mothers. Columns 3 and 4 include the key independent variable percent

Friends with college educated mothers. Columns 5 and 6 include the key independent variable of having no friends with college-educated mothers. Key predictors and covariates are measured at Wave 1 and include respondent's gender, age, nativity, race/ethnicity, maternal education, and a dummy for whether the student is missing mother's education. College-educated mothers are defined as those who have completed college; standard errors listed below coefficients. *p < .05, **p < .01, ***p < .001.

Table 5

Predicting educational expectations using peer characteristics and decomposition.

Panel A: Estimated Coefficients	Col. 1	Col.2	Col.3	Col.4	Col.5	Col.6
	Mexican-origin	All other	Mexican-origin	All other	Mexican-origin	All other
% Grademates with college-educated mothers	0.07	0.92*				
	0.89	0.43				
% Friends with college-educated mother	0.26		0.76***			
	0.32		0.08			
No friends with college-educated mothers			− 0.23		− 0.57***	
			0.17		0.04	
Own mother's education (in years)	0.12***	0.20***	0.12***	0.19***	0.12***	0.19***
	0.02	0.01	0.02		0.01	0.02	0.01	
Panel B: Attributable Variation to Mean Differences						
% Grademates with college-educated mother	0.00					
0.04						
% Friends with college-educated mother	0.04					
0.05						
No friends with college-educated mother			0.07			
			0.05			
Own mother's education (in years)	0.21***		0.20***		0.20***	
	0.04		0.05		0.04	
Panel C: Group Differences Decomposed						
College expectations	5.8	6.56	5.8	6.56	5.8	6.56
N	2,186	42,140	2,186	42,183	2,186	42,183

Notes: Panel A includes controls for age and place of birth as well as school and grade fixed effects. Panel B shows results from the decomposition analyses. Columns 1 and 2 include the key independent variable percent grademates with college-educated mothers. Columns 3 and 4 include the key independent variable percent Friends with college educated mothers. Columns 5 and 6 include the key independent variable of having no friends with college-educated mothers. Key predictors and covariates are measured at Wave 1 and include respondent's gender, age, nativity, race/ethnicity, maternal education, and a dummy for whether the student is missing mother's education. College-educated mothers are defined as those who have completed college; standard errors listed below coefficients. *p < .05, **p < .01, ***p < .001.

sample and the in-school sample, respectively. The first four columns illustrate when each demographic measure is regressed on the percent of grademates with a college educated mother, and estimates are separately generated for Mexican-origin and all other students. If the school and grade fixed effects remove confounding associations,

we would expect that the large, statistically significant associations in Columns 1 and 3 become smaller and not statistically distinguishable from zero in Column 2 and 4.

We observe that controlling for grade and school fixed effects removes the majority of observed confounding from the longitudinal grademate estimates (Online Supplement Table S2, Columns 2 and 4). As expected, this is not the case for resource-rich friendship networks (Table S2, Columns 6 and 8); results appear more imbalanced, which may be reflective of homophily in friendship groups. Table S3 shows balancing results for the in-school analytic sample and we observe a similar pattern. In the columns that correspond to the percent of grademates with mother's education, the fixed effects remove most significant associations; this is not the case for friendship networks. This is consistent with previous work on friendship sorting. Fletcher and Ross (2018) use a set of tools to argue that the bias from sorting into friendship is relatively minor after controlling for school fixed effects. Nevertheless, it is important to interpret the estimates on the friendship network measures as associations, a small part of which may reflect the process by which people choose friends.

We have no theoretical reason to believe that friendship sorting on educational background would be fundamentally different by race and ethnicity—i.e., it is unlikely that *only* non-Mexican students form friendships based in part on family background. We thus conclude that the difference in coefficients by Mexican ethnicity likely captures differences in the value of formal schooling in networks for students' educational outcomes, and is not merely a reflection of unobserved group differences in educational homophily in friendship formation.

4. Discussion

The progression to college represents a significant transition to adulthood that is linked to occupational status, earnings potential, and upward mobility. Despite recent educational gains achieved by the Mexicanorigin population, rates of college attendance and completion remain unevenly distributed. Mexican-origin students of first, second, and third generations attend college at lower rates than nearly every other ethnic or immigrant population (Ortiz and Telles 2017; Snyder et al., 2016; Telles and Ortiz 2008). While school quality and students' socioeconomic background undoubtedly account for ethnic disparities in attainment, scholars also suggest that the social ties of Mexican-origin students contribute to this pervasive educational gap (Stanton-Salazar 1997, 2001). Peers and friends that surround students may act as brokers of information and access; while some social ties may facilitate college-going attitudes and behaviors, others may be less influential or effective at transmitting such information. Given that the Mexican-origin population experienced a long history of immigration, poverty, and discrimination within the U.S., the information shared in the social networks of these youth may be less effective at transmitting necessary capital for the transition to college. To the extent that certain types of knowledge represent dominant ideologies, only some forms of network exchange may be rewarded by majority populations or institutions (Stanton-Salazar 1997).

This study is explicitly designed to complement ongoing efforts that examine the schooling trajectories of Mexican-origin students. We implement a formal test of the peer-effects hypothesis put forward by others (Gandara 1995´ ; Gandara and Contreras 2009´ ; Stanton-Salazar and Spina 2000, 2005) by obtaining data on thousands of students in schools across the U.S. Our study is thus able to demonstrate how the intergenerational legacy of past group disadvantage operates with homophily in friendship formation to shape the socioeconomic resources within peer and friend groups for Mexican-origin students. We examine how this process disproportionately lessens Mexican-origin students' ties to college-educated adults. The disparity is striking: Mexican-origin students are 2.5 times as likely to list zero friends with college-educated parents than are Asian students. And though students' networks comprise many people beyond the families of their friends and peers,

friend networks in adolescence represent a regular source of interaction, information, and influence (Brown et al. 2004; Csikszentmihalyi and Larson 1984).

In light of this difference, we might expect that socioeconomic differences in social networks shape the schooling trajectories of Mexican-origin students. To answer this question as rigorously as possible, we compare Mexican-origin students *in the same schools* who have different socioeconomic resources in their friend and peer networks. We do the same for their non-Mexican peers. Results indicate that exposure to a higher concentration of resource-rich peer and friend groups yields significant gains in both educational attainment and expectations for non-Mexican students; students who do not have friends with college educated mothers also experience a significant penalty with respect to their college expectations and attainment. The finding elevates previous arguments regarding the relevance of friendship networks for college outcomes. And while the majority of our estimates for Mexican-origin students are in the anticipated direction, coefficients are significantly smaller in magnitude than results for non-Mexican youth. That we do not observe similar trends across racial/ethnic groups suggests that returns to resource-rich networks may indeed be weaker for Mexican-origin youth.

Perhaps most importantly, we find little evidence that differences in resource-rich networks within schools result in reduced attainment. At most, networks with limited formal schooling explain a difference in attainment by about one-tenth of a year between Mexican-origin and non-Mexican youth. Gaps in college progression and expectations are not explained by variation in peer or friendship networks. Within schools, the contribution of students' own mother's education accounts for a larger portion of the aforementioned gaps. Though decomposition estimates are typically sensitive to the comparison group employed, non-Mexican youth are arguably an appropriate comparison, given the extensive conceptual and empirical work that emphasizes differences between these populations.[1] While our findings suggest that efforts to bolster peer support would yield minimal returns to Mexican-origin students, policies that reduce structural barriers to attainment (e.g., tuition costs) and encourage positive interactions with significant others could prove especially beneficial for vulnerable populations.

Other studies highlight the importance of school quality, neighborhood resources, and extra-peer factors as relevant to the college progression of Mexican-origin students (Crosnoe 2007; Loeb et al., 2005; Rubio 2012; Saporito and Sohoni 2007). The results here underscore the importance of exploring these factors. In making this argument, several points warrant consideration. Students likely acquire information and support for their attainment from a variety of interpersonal relationships—not solely through advantaged peer and friend networks. As documented by Stanton-Salazar and Spina (2005), youth may also seek out academic encouragement from extended family and kin, or from friendships that provide consistent emotional support. School-based studies provide an unusual opportunity to describe the resources in students' peer and friend networks with information provided *by peers and friends* themselves. However, research on these networks would undoubtedly benefit from considering significant others within students' larger environment—including neighbors, community activities, recreation leagues, church-based youth groups, among others.

Processes related to racialization, stigmatization, and discrimination may also curtail the extent to which these youth do/can benefit from resource-rich peers and friends. Exploring these possibilities is a promising avenue of future research. And while our decompositions cannot assess whether network resources have differential impacts for respondents at the top/bottom of the educational distribution, future work should consider the possibility that peer effects may vary alongside educational outcomes.

[1] See Suh's research on the gender wage gap for more detail on the potential bias in the decomposition estimates by reference group: http://www. aabri.com/manuscripts/08076.pdf.

The findings have specific implications for studying the impact of in-school tracking programs. Though tracking is a fairly common practice, immigrant-origin youth are disproportionally tracked into less rigorous programs that inadequately prepare students for college. In fact, studies document that English Language Learner (ELL) students are subject to extreme tracking (e.g., Lüdemann and Schwerdt 2013) and are less likely to attend college. The effects of tracking are thought to affect attainment through many mechanisms, including teaching quality and skill development. An additional mechanism occurs when tracking influences the composition of peer and friend networks. In the present study, our peer measures are grade-specific and do not reflect students' class-specific peers. However, if this mechanism is operating, it should work in part through reported friend networks. We find little evidence that formal schooling in the families of friends has a meaningful impact on students' education trajectories. To the extent that tracking impacts Mexican-origin students, it may be occurring through pathways other than indirect effects on the formation of friendships. It is nevertheless possible that structural constraints within schools hinder the formation and development of college-going culture among certain networks (Evans 2016).

This study focuses on Mexican-origin students to implement tests of theorized mechanisms related to educational progression for Mexican-origin youth. We pursued supplemental analyses that instead decomposed the gap between Latino and all other students. As seen in Tables S15 and S16 in the Online Supplement, peer and friendship variables do not explain much of the gap in college progression among Latino and all other students. When comparing Latino (except Cuban) and all other students, we find similar results in our decomposition: peers' and friends' mother's education explains very little of the gap in attainment.

A final reflection on the differences in findings between Mexican-origin and non-Mexican youth underscores a broader critique of the way that schooling-related capital is measured in large-scale cohort studies. This study tests associations with a specific type of networked resource: formal schooling among parents. By contrast, parents of friends may contribute in important ways to schooling outcomes that extend *beyond formal schooling* (Yosso 2005). Usefully, the Add Health asks about parental engagement and parental expectations for student schooling, two resources on which Mexican-origin students exhibit much less disadvantage. These are asked only in the in-home sample, which precludes developing the type of rigorous analysis used here to assess the implications of these resources in networks. Looking forward, understanding how, when, and under what circumstances Mexican-origin youth leverage resources in peer networks would unambiguously be strengthened by a richer assessment of capital that adults provide to adolescents. This requires innovation in measurement and survey tools regularly deployed in U.S. educational studies. Further, our finding that the association between parental education and educational outcomes differs between Mexican and non-Mexican youth suggests potential heterogeneity in the intergenerational transmission of education. This, too, may inform the little explanatory power of peer-based educational resources.

More generally, an important body of work posits that we must be critical of the terms we use to describe and define certain subgroups of students. Research on Latina/o youth has become largely deficit-focused as well as crisis-centered (Gandara and Con´ treras 2009) and, thus, a reconceptualization that considers schools as 'at risk institutions' as opposed to using 'at risk' to describe students has been put forward (e.g., Darder 2012). Such a perspective is in line with efforts to emphasize the strengths of minority and immigrant communities—and underscores the value of community cultural wealth in the production of adolescent outcomes (Yosso 2005). Integrating formal network analysis with this line of research will be an important step forward in scholarship on educational mobility.

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Supplementary data to this article can be found online at https://doi.org/10.1016/j.ssresearch.2021.102694.

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