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Educational Attainment and Kinship Ties: Does Kin Network Density Predict High School Graduation?

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EDUCATIONAL ATTAINMENT AND KINSHIP TIES: DOES KIN NETWORK
DENSITY PREDICT HIGH SCHOOL GRADUATION?

by

SARAH ROCHE

Under the Direction of Amy Spring, PhD

ABSTRACT

This paper attempts to address a gap in the literature, which does not account for the role of extended kin in the social fabric of the neighborhood. More specifically, this project seeks to answer whether the neighborhood effect on the chances of high school graduation may be confounded by the density of kin ties. My specific research questions are: 1) does kin network density affect high school graduation rates? And 2) does kin network density confound the correlation between neighborhood disadvantage and high school graduation? Using data from the Panel Study of Income Dynamics, U.S. decennial censuses, and the American Community Survey, I assess the density of the kinship network, measured as average number of extended kin within three miles, and likelihood of high school graduation. Results suggest that kin density affects high school graduation, but there is no confounding relationship between neighborhood effect and kin density.

INDEX WORDS: Kinship, kin network, kin ties, social capital, neighborhood

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by

SARAH ROCHE

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Georgia State University

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2018

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by

SARAH ROCHE

Committee Chair: Amy Spring

Committee: Tomeka Davis

James Ainsworth

Electronic Version Approved:

Office of Graduate Studies

College of Arts and Sciences

Georgia State University

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1 INTRODUCTION

Many of the most pressing and interesting questions about the wellbeing of individuals requires an understanding of the social context within which those individuals operate. Part of that context is our family, both immediate and extended kin. Family is a significant force of socialization in the life of children. Therefore, it makes sense that there exists substantial evidence linking parents' social networks to the child's own life outcomes (Coleman 1988; Kana'iaupuni 2005). These networks may be comprised of neighbors, coworkers, family friends, the parents of the child's friends, and extended family members.

Additionally, a great deal of research on children and youth has focused on the role of the neighborhood. Neighborhoods are an important social setting and have in fact been shown to matter for all kinds of individual level outcomes across the life course, from educational attainment to socio-behavioral outcomes to future earnings (Harding 2003; Humphrey and Root 2017; Chetty and Hendren 2016). Some neighborhood research has focused on the role of social networks, but that work has overwhelmingly focused on either institutional ties through schools or weak ties with neighbors (Sampson, Morenoff and Gannon-Rowley 2002; Fasang, Magino and Bruckner 2014). Sharkey and Faber call for neighborhood research to move away from a dichotomous perspective and examine more closely the ways in which neighborhood contexts interact with other social contexts and identities across space and time (2014). This paper attempts to address such a gap in the existing literature, which does not adequately account for the role of extended kin in the social fabric of the neighborhood.

To address this gap, I use the Panel Study of Income Dynamics (PSID) which has collected data on a nationally representative sample of families since 1968. Most significantly, the PSID has a genealogic design which means multiple generations in different households are included

in the study. Additionally, I was able to attach neighborhood level data from the Census to each household. Therefore, the data allows for analysis of these extended family networks within a neighborhood context. Using high school graduation as the outcome, logistic regressions are run on a measure of neighborhood disadvantage and of kin network density. Based on insights from the literature, the full regression model is also stratified by socioeconomic status. I find that kin density has a negative effect on chances of high school graduation and that this effect is stronger for those of low socioeconomic status. This indicates that dense kin networks affect the education of low-income individuals negatively, many of whom are already faced with a disadvantaged neighborhood context.

1.1 Background

One early and important work in this area is Carol Stack's 1974 book "All Our Kin." Stack lived for a time among some of the residents of a low-income area she called "The Flats" and tracked the interactions between households; both kin and non-kin. Stack discovered that many of the families in The Flats met their day to day needs through what she called a "domestic circle of kin" (Stack 1974: 28). This circle consisted of households tied to one another through reciprocal giving or "swapping." Many of these households were related in some way, but if the household was part of the exchange network they were considered kin, whether or not they were actually related. One particular aspect of these networks that Stack noted was the very practical realization that all participants in the network live in geographic proximity (Stack 1974). Thus, it can be argued that neighborhood geography matters for the functioning of kin networks and vice versa. The premise of this paper is that these processes may interact in some manner to produce effects on youth outcomes, particularly chances of high school graduation.

1.1.1 Kin networks and education

Kin contacts have become increasingly important as American adults have come to participate in fewer social networks in recent decades (Putnam 2001; McPherson, Smith-Lovin and Brashears 2006). In fact, more than half of Americans' "discussions of important matters" are with family and family members make up the bulk of our admittedly short list of confidants (McPherson, Smith-Lovin and Brashears 2006). Prior research specifically on kin has focused mostly on support exchange (Sarkisian and Gerstel 2004) and specific behaviors associated with giving and receiving support (Taylor et al. 2013) rather than on family interactions (feelings of closeness, frequency of contact, conflict, and so forth) Kin research has also primarily focused on spouse, sibling or parent/adult child relationships (Raley 1995 as cited in Daw, Verdery and Margolis 2016). In addition to the direct impact of kinship ties on social interaction and social support, it is possible that there is an outsized effect of kin on the socialization, social capital and social control of youth, especially for those youth who participate in tight knit networks such as those described by Stack. However, these data are currently lacking.

Studies of parents' networks' impact on outcomes for children have largely ignored the role of extended family in favor of a focus on parental social capital. This is especially true of studies in an educational context, many of which operationalize social capital as either parental investment or intergenerational closure (Carbonaro 1998; McNeal 1999; Yan 1999; Perna and Titus 2005). Generational closure is a form of social control resulting from a dense, closed network among parents of children who are friends or schoolmates (Coleman 1988). These studies have primarily replicated Coleman's (1988) prototypical findings, which is that families with dense social networks to other families in the school, or who spend time with their children on academic related pursuits at home or at school, have a positive effect on children's academic

success. In general, this strand of research has focused on the benefits of closure, especially among the middle class, for their child's educational achievement. However, it is worth noting that Fasang, Magino and Bruckner found that informal social closure (relationships among parents that extended outside of the school context as friends or neighbors) had a negative impact on educational outcomes in high-poverty schools (2014).

Social network theory is a theoretical framework that argues that it is features of the relationships, or ties, between and among people that are worth studying. This is in contrast to the more traditional social capital view that is concerned with the individual resources that are brought to bear on a relationship by the various members. Subsequently, there has been a growing interest in measuring social networks as a way of gleaning more detailed information about the processes through which our social characteristics influence and/or are influenced by features of our social and material realities. In American sociology, most of the focus of social network research has been on extra-familial social ties that accrue a benefit to members such as those between closely knit ethnic communities, members of clubs or civic organizations, or well-informed acquaintances (Portes and Manning 1986; Putnam 2001; Granovetter 1973).

In general, close social ties are expected to provide a wide range of benefits. Briggs points out that there are two types of supportive ties: those that allow low-income individuals to get by, a la Stack, and those that provide for "social leverage" or connect low-income individuals to resources that might improve chances for social mobility (1997: 202). As an example of the latter, Granovetter's study of weak ties (1973) shows how job seekers were more successful when they had a wider network of acquaintances to draw from rather than depending on a smaller but denser social network. However, researchers have also pointed out that not all social connections are beneficial. For example, work in low-income communities has also pinpointed

the existence of “draining ties,” that is, social connections that ask for more support than they give (Curley 2009; Kleit 2010). Therefore, depending on whether family ties are supporting or draining, the effect on education could be either positive or negative. Curley finds that some individuals practice avoidant techniques so as to not be sucked into draining relationships (2009). It could be that for certain people in certain situations avoiding draining ties becomes complicated, especially for those who are susceptible to social sanctions, vulnerable to family demands or neighborly obligations, or dependent on the source for some reason.

Studies that have examined extended kin support by demographic groups have shown that black families tend to be larger and tend to be more of the same generation (a greater number of children per family means more aunts and uncles for the next generation, but that because of a higher mortality rate, there are fewer grandparents) (Loury 2006; Daw, Verdery and Margolis 2016). There also seems there may be an interaction effect of socioeconomic status by gender on the ways in which kinship ties impact education. Based on the work of Dominguez and Watkins (2003), family expectations around gendered labor can inhibit the attempts of young women to pursue further education and/or work. If young adults are in a position where they are unable to form their own household, this could create a situation where potentially draining ties are unavoidable. On the other hand, Castiglia (1999) supposes that extended family support can be critical for women with children to continue their education.

Only two studies were identified that have looked at extended family and education. Mollegaard and Jaeger found that grandparents affect educational outcomes, primarily through cultural capital as opposed to social or financial capital (2015). However, this data comes from Denmark and may not translate fully to the U.S. context. In another paper by Jaeger using the Wisconsin Longitudinal Study and the National Longitudinal Survey of Youth, the extended

family was found to have a greater impact on educational outcomes for lower-SES families (2012). There was no significant effect until the model was parsed by SES, in which case years of schooling completed increased for low-SES youth as the socioeconomic and demographic characteristics of extended family (grandparents, aunts and uncles in this study) increased.

1.1.2 Neighborhood effects and education

While empirical studies of social networks and education are few and far between, studies of neighborhood effects on education proliferate. The neighborhood effects and education literature can be dated back to a 1991 paper by Garner and Raudenbush that found a significant effect of neighborhood deprivation on educational attainment in Scotland. Quite a few early studies of neighborhood effects looked at high school drop-out rates (Crane 1991, Foster & McLanahan 1996, Harding 2003, Crowder & South 2003). Other studies of neighborhood and education have looked at graduation rates and academic achievement as measured by standardized tests (Leventhal & Brooks-Gunn 2000, Ainsworth 2002). These studies have typically found an effect of the characteristics of a neighborhood on educational outcomes in the expected direction; that is, neighborhoods that are considered more disadvantaged tend to have a negative effect on educational achievement and attainment. However, other studies have not found significant effects (Briggs, Popkin and Goering 2010, Brooks-Gunn et al. 1993). But again, there is a dearth of information linking families within a neighborhood context to education.

Within the literature, attempts have been made at examining the ways in which social networks and neighborhoods interact, but to date this work has been limited to networks comprised of weak ties such as neighbors, parents of the child's friends, or connections through neighborhood institutions, such as schools (Sampson, Morenoff and Gannon-Rowley 2002).

There is less work on the social-interactive processes of neighborhoods and education, despite a substantial literature on neighborhood effects and education more generally. However, while these papers do not always include socio-interactive processes or social networks as part of their theoretical framework or empirical models, occasionally researchers will acknowledge the importance of these factors. For example, Crowder and South (2003) find neighborhood effects on drop-out rates to be stronger for recent in-movers to more disadvantaged neighborhoods. They argue that this is likely due to the interruption of social networks and lack of access to new sources of social capital available to those who have resided in the area longer.

Furthermore, Wodtke, Harding and Elwert's (2011) study on the compounding effect of exposure to disadvantaged neighborhoods over time is worth a mention. In this study, the authors were able to estimate length of exposure to disadvantaged neighborhoods and measure the impact of said exposure on high school graduation. The results showed a drastic decrease in chances of high school graduation for those students who had the greatest exposure to disadvantage. On the surface, these findings appear to contradict those of Crowder and South (2003). However, the Wodtke et al. study does not take into account length of exposure to a *particular* disadvantaged neighborhood, but rather length of exposure to disadvantaged neighborhoods all told. Since distressed families are more likely to move frequently, there could be an effect of both being uprooted from social networks as well as increased exposure to the other deleterious effects of poor neighborhoods. This lends further weight to the need to parse out the role of social ties from other neighborhood effects. Particularly as these two processes would lead to very different policy responses.

1.1.3 Networks in neighborhoods

Currently there are several broad strands of theorized mechanisms by which neighborhoods matter for various outcomes. Galster (2012) groups the 15 pathways he has identified in the literature into four categories: social-interactive (social capital, social cohesion, and so forth), environmental (for example, toxin exposure), geographic (state, region, metro features) and institutional (access to goods and services). Many researchers acknowledge that there may also be some combination or interaction of suggested mechanisms in play. In the sociological literature, most attention has been paid to institutional and social-interactive factors. Institutional factors include quality of schools, housing stock, and access to transportation, healthcare, retail, etc. In this scenario it is the presence or absence of public services, the physical condition of the neighborhood, and access to quality jobs and good schools that is driving the difference in outcomes across neighborhoods (Card and Krueger 1993; Condrón and Roscigno, 2003; Wilson 1997). These features of neighborhoods are fairly easy to measure.

On the other hand, social-interactive factors have been equally of interest, but proven much more difficult to operationalize and measure. According to Wilson (1987 as cited in Ainsworth 2002), there are four social-interactive mechanisms theorized to mediate the neighborhood effect on educational outcomes. Those are: collective socialization, social control, social capital, and differences in occupational opportunity. Likewise, Briggs (1997) provides a list of social-interactive explanations for neighborhood effects. He organizes these into four categories: contagion theories (peer influence), collective socialization (social norms), competition theories (scarce resources), and relative deprivation (social comparison). However, Sampson, Morenoff and Gannon-Rowley (2002) point out that these disparate social-interactive factors may not in fact represent unique constructs and the literature may be muddying the

waters. They conduct a meta-analysis and pull out four areas that appear to be independent constructs: social ties/interaction, norms and efficacy, institutional resources, and patterns of daily activity.

A lot of work on social cohesion or other similar concepts (again see earlier point about whether these are indeed distinct constructs), has tended to use ties to neighbors as an important component of social-interactive neighborhood effects. However, as many social theorists have pointed out, the neighborhood is not a monolith. There is a great variety in neighborhood structure and the neighborhoods themselves are dynamic, with people moving in and out all the time. Ties to neighbors in this case may not always be a good measure of social support, social cohesion, and so on. For instance, an interesting study by Caughy, Campo and Muntaner (2003) found that families with many connections to their neighbors in low-income communities had higher rates of child behavior problems while in higher income communities, families with few connections to their neighbors had higher rates of challenging child behavior. Other studies have also found that there is an especially strong relationship between neighborhood poverty and having less dense social networks (Tigges, Browne and Green 1998; Small 2007), although that is not to say that social networks and the kind of reciprocal exchange that Stack noted does not still exist in those communities (for a more recent study of this phenomenon see Raudenbush 2016).

Few of the studies examining social-interactive processes in neighborhoods address kin separately from social ties more broadly. However, one fascinating study does examine kin support and addresses physical proximity as it relates to interactions among the network. In this study the authors looked at the social networks of low-income women of color and found that intergenerational support depended on three factors: physical proximity, the ability to engage in

reciprocal exchange (both sides have time and resources to participate in an exchange relationship), and a willingness or ability to withstand family tensions (Dominguez and Watkins 2003). The authors go on to argue that the social control, kin-scription (enforcing gendered labor in the family network), and emotional reliance on family support networks can discourage the development of social ties for socioeconomic mobility (Dominguez and Watkins 2003). One older study on the social networks of urban black Americans does make a point of gathering information about extended kin. However, in the final analysis the author groups friends and family together as a qualitatively different tie than those of neighbors, disallowing for examining the role of family specifically (Martineau 1977).

1.1.4 Variation in kin networks and neighborhoods by race and class

One further variable that is worth investigating in this context is the role of socioeconomic status. Investigations into family support and socioeconomic status indicate that reliance on extended family networks *for socioeconomic mobility purposes* seems to exist primarily in middle-class or upwardly mobile families (Bubriski and Descartes 2007). The argument goes that lower-income families or families in concentrated poverty are using networks in survival mode, which is focused more on day to day exchanges and tit for tat favors such as those seen in Stack's work. And that upper-class and professional families move so frequently and so far, presumably for work opportunities, that they become distanced from their kin networks. And as previously mentioned, there appear to be less dense networks in low-income communities (Tigges, Browne and Green 1998; Small 2007) and when dense networks do exist, outcomes are negatively impacted (Caughy, Campo and Muntaner 2003; Fasang, Magino and Bruckner 2014).

With regards to racial differences in frequency of interaction and support given and received, studies have found mixed results (Sarkisian and Gerstel 2004; Taylor et al. 2013). But it has been found that lower-income individuals, less-educated individuals and blacks tend to reside closer to their kin than middle-class individuals, individuals with more education or whites (Connidis 2001). As it happens, the location of kin not only impacts individuals' decisions to move, but also their choice of destinations (Long 1988; Geist and McManus 2008; Dahl and Sorenson 2010; Kan 2007; Boyd 2008; Dawkins 2006). Kin location thus determines, at least in part, the likelihood of living in neighborhoods of varying socioeconomic status and racial/ethnic isolation. Presumably, this leads to varying and unequal outcomes, including educational outcomes, which can be traced back to settlement patterns of individuals and their kin.

The literature on geographic mobility and socioeconomic status also suggest that choices about whether to move and where are more heavily influenced by family networks among lower-income families. For example, in an important 2006 paper Casey Dawkins, utilizing data from the Child Development Supplement to the PSID, found that families with nearby kin and whose children were more socially invested in the neighborhood were less likely to move neighborhoods and that this relationship was strengthened for low-income families. Additionally, Skobba & Goetz (2013) found that families within the lowest socioeconomic bracket prioritized relationships over neighborhood factors in their mobility decisions. While many parents consider the child's education in choosing neighborhoods, the relative lack of viable school options for lower-income families combined with more immediate needs regarding access to affordable housing, transportation, employment or supportive communities means education is less likely to be part of the calculus for lower-income families in choosing neighborhoods (Skobba and Goetz 2013).

Since the existence of and utilization of extended kin networks appears to vary by class, and U.S. neighborhoods are often organized along socioeconomic fault lines (Massey and Denton 1993), and educational outcomes are heavily influenced by family's socioeconomic status, it seemed worth asking whether and how family socioeconomic status might affect the interplay of family, neighborhood and high school graduation. In summary, our connections to kin matter. In particular, it might be argued that kinship networks matter more for the outcomes of low-income families despite the fact that low-income families are less likely to have dense social networks in the first place. Thus, my study of the association between density of kin-networks and neighborhood effects on education seem especially pertinent to the literature on the geography of social networks.

1.2 Theoretical Model

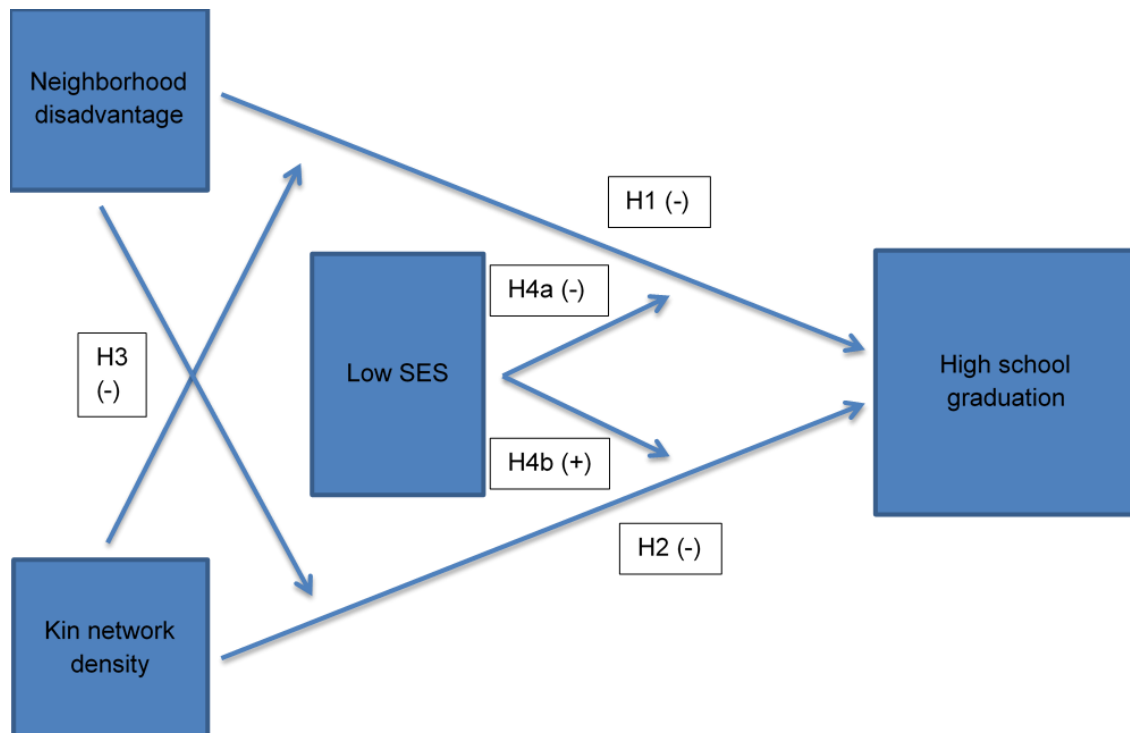


Figure 1 Theoretical Model

Given 1) the negative correlation between neighborhood disadvantage and high school graduation, 2) the anticipated negative correlation between extended kin networks and education, and 3) the anticipated positive correlation of kin network density on neighborhood disadvantage it is expected that kin networks might explain away some of the relationship between neighborhoods and educational outcomes and that all three relationships will be strongest among the lowest socioeconomic strata. As shown in Figure 1, the theoretical model in this study suggests that kin networks may serve as a confounder in the relationship between neighborhood disadvantage and high school graduation.

1.3 Hypotheses

1. Measures of neighborhood disadvantage will have a negative correlation with high school graduation rates.
2. Measures of kin network density will be negatively correlated with high school graduation rates.
3. Kin network density will explain some of the neighborhood effect on high school graduation rates.
4. All three of the prior anticipated relationships will be strengthened for individuals with low socioeconomic status.

2 RESEARCH DESIGN AND METHODS

2.1 Data

This study relies on data from the PSID for the years 1985 to 2013 and tract-level decennial census data. A set of neighborhood-level measures for both PSID respondents and their kin is created using the Neighborhood Change Database, which contains measures from the 1980, 1990, 2000 and 2010 Census as well as from the 2005-2009 American Community

Survey, through a process described in Spring et al. (2017). An important limitation of the data is that the data-set is limited to kin who are directly related to the initial study participants and does not include full kin networks for respondents who marry into the family. Despite this limitation, the PSID contains more detailed information on kin networks than most other large-scale nationally-representative datasets.

2.2 Measures

High school graduation or GED (general equivalency diploma) completion by age 25 serves as the dependent variable in this study. High school graduation is an important life milestone as children mature to adulthood and it is a social marker that is heavily influenced by both family relationships and neighborhood context. Furthermore, high school graduation is a common outcome in both the social networks and neighborhood effects literature and thus is a sensible outcome for a study seeking to understand how social networks and neighborhood effects might relate. Education is also a convenient choice because it is one of the four indicators commonly used as a measure of socioeconomic status (the others being income, wealth and occupational status). Moreover, for those of us especially interested in impacts on youth, high school performance or graduation is a useful measure as it occurs closer in time to the treatment (exposure to neighborhoods). For these reasons the dependent variable in this study is a nominal measure of high school graduation or GED attainment.

In choosing age 25, I wanted to allow for students and young adults who took longer than average to complete their high school education or to launch into adulthood. This could be because of life events such as having a child or dealing with significant loss, it could be that student's education is delayed by interactions with the criminal justice system or other institutions, or it could be that personal factors such as motivation, need for employment or

intellectual ability might lead students to take longer than average to graduate. Additionally, the PSID is not given annually and I wanted to avoid the problem of censuring participants. These concerns led to the determination of graduation by age 25.

There are two key independent variables: neighborhood disadvantage and number of extended kin within a 3-mile radius. The first variable is a neighborhood index measure comprised of proportion receiving welfare, proportion under the federal poverty line, proportion unemployed and proportion who never completed high school or received a GED.

Neighborhoods are defined as U.S. Census Tracts. These measures of neighborhood disadvantage were taken from the Neighborhood Change Database. The chosen measures were determined in consultation of prior work such as Turney and Harknett (2010), Morenoff, Sampson and Raudenbush (2001), and Sampson, Raudenbush and Earls (1997). To avoid the problems of multi-collinearity within the models, due to high levels of correlation between these four measures of disadvantage, it was determined that a neighborhood disadvantage index was appropriate.

The second independent variable was a measure of kin density. Following Spring (2017) I was able to link geocoded data about kin neighborhoods to the individual. This allowed me to calculate the number of extended kin living within a certain mile radius. I ran several regressions at different distances before choosing how I would define proximity. Did simply living within the same metro area have the same effect as living practically next door? Table 1 below shows the results of those regressions. There was a significant drop in number of kin between miles 1 and 2 and miles 2 and 3. Further, the impact of this distance, measured by the logit coefficient, on high school graduation dropped the most between miles 3 and 4. Therefore, I chose 3-miles as my definition for proximity. Additionally, when considering the theoretical consequences of

nearby kin and neighborhood effects anything much further than 3-miles is a distance that could not be easily and regularly traversed without a car. Several key studies highlighted the importance of proximity for the functioning of kin networks (Stack 1974, Dominguez and Watkins 2003). The only other study reviewed that utilized a proximity measure used a distance of 2-miles (Sarkisian and Gerstel 2007).

Table 1 Differences in Kin Density on High School Graduation by Distance

	Mean / %	SD	Min	Max	Logit coefficients	Difference in coefficients	N
Number kin in 1 mile	.9512	1.93	0	17.29	-.104		4306
Number kin in 2 miles	1.337	2.39	0	20	-.116	-.012	4306
Number kin in 3 miles	1.705	2.89	0	20.31	-.114	.002	4306
Number kin in 4 miles	2.006	3.25	0	23	-.092	.022	4306
Number kin in 5 miles	2.288	3.57	0	23.92	-.082	.010	4306
Number kin in 10 miles	3.038	4.25	0	25.77	-.072	.002†	4306
Number kin in 15 miles	3.454	4.56	0	28.67	-.064	.0016†	4306
Number kin in 20 miles	3.755	4.80	0	28.67	-.061	.0006†	4306
No kin in the data	17.12%	.377	0	1			4306

† Difference between coefficients divided by 5 to get average per mile.

Prior research suggests that it is exposure to kin and neighborhood effects during childhood that would affect high school completion (Wodtke, Harding and Elwert 2011), thus each of the independent variables were averaged across childhood (0-18). Control variables include the race of the household head (used as a proxy for race of the respondent since that data is unavailable) and gender of the respondent as well as a number of household measures which were averaged across the childhood (ages 0-18). The household measures used are based on those used by Wodtke (2011) and they are: family income measured in 1000s of U.S. dollars standardized for year 2000, whether or not the family owned their home, family size, whether or not the family had moved in the last year, whether or not the head of the household was married, whether or not the head of the household was employed, whether the family lived in public housing and whether the family received rent assistance. The total number of observations during this time is also included as a control measure; allowing me to account for length of exposure.

No extended kin in the metro area is a proportion of respondents who had no kin within the MSA over the years observed. Sex is measured as proportion male. The head of household's level of education is measured in years completed. The racial categories are proportions of the head of household of each race. Racial composition of the neighborhood is not included in the model for two reasons: first it is highly correlated with the measures included in the disadvantage index and did not contribute much to the specificity of that measure and second, I am primarily aiming for a neighborhood measure of socioeconomic status and including race seemed unnecessary.

Based on my final hypothesis regarding the role of socioeconomic status, I also created an ordinal measure of high, mid and low SES. This variable is comprised of family money (total family taxable income, year prior) and head of household education (years completed). These variables were standardized and then combined in an index measure. I then divided this variable into three equal tertiles.

2.3 Analyses

The research design calls for three models. Model 1 is a logistic regression of high school completion on an index measure of neighborhood disadvantage averaged across the childhood, as described above. Model 2 is a logistic regression of high school completion on kin density, measured as number of extended kin within a 3-mile radius, averaged across the childhood. Model 3 will be a logistic regression of high school graduation on density of kin network and neighborhood disadvantage. Finally, the full model will be run a second time stratified by family socioeconomic status. Each model contains the full complement of controls. Since the expectation is that neighborhood disadvantage and kin density are closely linked, all three models should be similar enough to compare across. Furthermore, these controls serve to account

for as much unobserved heterogeneity, including selection bias, as possible. This will ensure that the regression models represent to the extent possible the actual effect of the independent variables.

There are two major hurdles to adequately measuring neighborhood effects: selection bias and compounded effects over time. The first issue is a common trial of sociological research. When dealing with nonexperimental designs, as is the case with most sociological data, it is impossible to fully control for a selection effect. In other words, it is possible that there are characteristics inherent to the types of people who choose certain types of neighborhoods that could be creating the effect we see. The Gautreaux project (Rosenbaum 1995) and the Moving to Opportunity experiment (Briggs, Popkin and Goering 2010) provided researchers the opportunity to control for selection bias through random assignment and studies based on these experiments have offered up additional important findings about neighborhood effects. The second challenge of addressing length of exposure is one that is just gaining attention in the statistical methods literature. In this study, time is controlled for by accounting for number of childhood observations and taking a childhood average of neighborhood and family variables instead of using point in time measures.

Participants were dropped if they were missing on the dependent variable or missing on any geographic identifying variables disallowing me from linking the tract data to the individual and family data. All other missing values were set to the variable mean.

3 RESULTS

Summary statistics for all of the variables are found in Table 2. High school graduation or GED attainment is measured as percent of respondents for whom this is true by age 25. Neighborhood disadvantage, number of kin living within 3 miles, and all of the household

variables are childhood averages for all observations from ages 0-18. Several things of note: a higher number of participants than anticipated had no kin within the MSA, 17%. The mobility rate also appeared rather high at 19%, and in fact the 2015 Census showed a national mobility rate of 11.2% (U.S. Census 2016). There is also a high percentage Black, but the PSID is designed to oversample from this population.

Table 2 Summary of Variables

	N (Obsv)	Mean / %	SD	Min	Max
Graduated high school by age 25 (yes=1)	4306	87.06%	.336	0	1
Neighborhood disadvantage (child avg)	4306	1.53	2.59	0	17.92
Number of kin living within 3 miles (child avg)	4306	1.71	2.89	0	20.31
No extended kin in the data (no kin=1)	4306	17.12%	.377	0	1
Family income (in \$1,000s, child avg)	4306	54.80	49.35	0	1151.07
Family owns their own home (child avg)	4306	60.43%	.431	0	1
Family size (child avg)	4306	4.41	1.32	0	13
Head of household married (child avg)	4306	69.21%	.406	0	1
Head of household employed (child avg)	4306	81.37%	.311	0	1
Family lives in public housing (child avg)	4306	6.25%	.190	0	1
Family receives rental assistance (child avg)	4306	2.72%	.114	0	1
Family moved at least once since January prior (child avg)	4306	18.92%	.243	0	1
Head of household level of education in years	4131	13.06	2.77	0	20
Sex of respondent (male=1)	4306	47.28%	.499	0	1
Number of observations over childhood (child avg)	4306	8.57	5.04	1	16
Head of household race/ethnicity is Black	4243	40.47%	.49088	0	1
Head of household race/ethnicity is Asian	4243	00.87%	.09298	0	1
Head of household race/ethnicity is Other	4243	1.22%	.1100	0	1
Head of household race/ethnicity is Latino	4243	6.69%	.2499	0	1
Head of household race/ethnicity is White	4243	50.75%		0	1

Note: All household variables are averaged over the childhood, ages 0-18. Family income is standardized to year 2000 dollars.

Table 3 shows the results of logistic regressions of high school graduation on neighborhood disadvantage and kin density. Unlike much of the literature (Sharkey 2012, Harding 2003, Crowder & South 2003, Ainsworth 2002), I did not find a significant negative correlation between neighborhood disadvantage and likelihood of high school graduation by age 25. However, in some neighborhood studies when controlling for family level variables, the neighborhood effect becomes insignificant; which is what has happened here (see Wodtke, Harding and Elwert 2011 for a discussion of over-controlling in neighborhood studies). Essentially many family level variables that are expected to affect neighborhood choice are also

in turn affected by the neighborhood. Thus, inserting these variables as controls in a logistic regression model can lead to controlling away part of the neighborhood effect, leading to insignificant results. Hypothesis 1 is therefore not supported.

The second hypothesis expressed an expectation that there would be a negative correlation between density of kinship ties and high school graduation. Results indicate a highly significant negative relationship and hypothesis 2 is supported. For every additional kin member living within a 3-mile radius, the odds of graduating high school were reduced by 5.5%.

Although findings on the benefits of kin for education have been mixed, I predicted a negative association. There are two main reasons why I do not expect any negative effect among the low-income tertile to cancel out due to the positive influence of kin ties at the higher SES tertiles. As mentioned above, lower income families have larger families and are likely to live closer to family. Therefore, those ties are probably overrepresented in the sample. Since I have controlled for family socioeconomic status, family size and a number of other variables that might account for this negative relationship, the reason for this finding must be understood as a function of the density of the kin ties.

The most interesting question this paper addresses is: what is the relationship between kinship density and neighborhood disadvantage and is some of the neighborhood effect being explained by near-by kin? The third hypothesis suggests yes, some of the neighborhood effect might be explained by density of kin-ties. Model 3, which includes both neighborhood disadvantage and density of kin-ties, shows the odds ratio of kin density unaffected. There is a slight decrease in the odds ratio of neighborhood disadvantage, but the finding remains insignificant. While hypothesis 3 is not supported, the continuing effect of kin density in the model signifies its importance. Additionally, the fact that the three models are so similar suggests

that these variables are closely related, although it is not clear from my analyses the nature of that relationship.

Interesting findings in Table 3 include the fact that those with no extended kin in the MSA are 1.4 times more likely to graduate, although this finding is only significant in the first model. As might be expected, mobility and family size have a significantly negative effect on graduation across all three models. Being male is also a risk factor for high school graduation, with males being 21.9% less likely to graduate in model 3. Also as might be expected, parental employment, a married head of household, parental education and higher household income are all positively associated with chances of graduation across the models. But of particular interest are the differences by racial group. Blacks, Latinos and Asians are all more likely to graduate high school than whites in neighborhoods with high levels of disadvantage or when living in dense kin networks. The likelihood of graduation for Asians in this scenario is an astounding 19.68 times greater than whites in the combined model.

Table 3 Logit Models of High School Graduation by Neighborhood Disadvantage and Kin Density

	Model 1		Model 2		Model 3	
	<i>or</i>	<i>(se)</i>	<i>or</i>	<i>(se)</i>	<i>or</i>	<i>(se)</i>
<i>Neighborhood attributes</i>						
Disadvantage Index	.987	.021			.995	.021
<i>Density of kin</i>						
Number of kin living within 3 miles			.945 ***	.015	.945 **	.015
No extended kin in the data	1.41 *	.231	1.25	.210	1.25	.210
<i>Household attributes</i>						
Family income (in \$1,000s)	1.01 ***	.003	1.01 ***	.003	1.01 ***	.003
Family owns their own home	1.31	.213	1.31	.210	1.30	.212
Family size	.877 **	.034	.880 **	.034	.881 **	.034
Head of household married	1.41 *	.217	1.44 *	.222	1.44 *	.222
Head of household employed	1.57 **	.259	1.58 **	.260	1.57 **	.261
Family lives in public housing	1.03	.252	1.01	.244	1.01	.50
Family receives rental assistance	1.73	.698	1.81	.739	1.80	.736
Family moved at least once since January prior	.451 ***	.093	.446 ***	.091	.443 ***	.091
Head of household education in years	1.48 ***	.039	1.47 ***	.039	1.47 ***	.039
Sex of respondent (male=1)	.779 *	.081	.781 *	.081	.781 *	.081
Number of observations over childhood	1.04 **	.012	1.04 **	.012	1.04 **	.012
Head of household race/ethnicity is Black	1.32 *	.181	1.41 *	.190	1.42 *	.199
Head of household race/ethnicity is Asian	22.39 **	21.14	19.42 **	18.21	19.68 **	18.56
Head of household race/ethnicity is Other	.895	.375	.910	.381	.915	.384
Head of household race/ethnicity is Latino	3.31 ***	.870	3.23 ***	.833	3.26 ***	.852
N of observations		4117		4117		4117

Note: All variables are averaged over the childhood, ages 0-18. Family income is standardized to year 2000 dollars. White is the reference category for race/ethnicity.

*p < .05, **p < .01, ***p < .001

Finally, table 4 shows the results of a stratified model where the full logistic regression model was run by socioeconomic tertiles. The negative impact of living in a disadvantaged neighborhood on chances of high school graduation remains insignificant. This seems counter to what we know about the effects of concentrated poverty, but again some studies have shown a lack of effect when controlling for various household variables such as those included in my models (Briggs, Popkin and Goering 2010; Brooks-Gunn et al. 1993). However, kin density is no longer significant in the two highest tertiles and only retains its significance among the lowest socioeconomic category. This fits what we know about the way kinship ties function differently by socioeconomic class (Tigges, Browne and Green 1998; Small 2007; Skobba and Goetz 2013).

Within the lowest socioeconomic tertile, risk factors include high levels of geographic mobility and family size. Protective factors include household income and whether the head was married. Perhaps most interesting is the finding that in the lowest SES category all racial groups, with the exception of “other,” had a significantly higher chance of graduating high school than the reference category of white. The most stable predictor of high school graduation across all SES categories is level of parental education.

Table 4 Logit Models of High School Graduation by Neighborhood Disadvantage and Kin Density, stratified by Socioeconomic Status

	SES 1 (low)		SES 2 (mid)		SES 3 (high)	
	<i>or</i>	<i>(se)</i>	<i>or</i>	<i>(se)</i>	<i>or</i>	<i>(se)</i>
<i>Neighborhood attributes</i>						
Disadvantage Index	.993	.024	1.05	.060	1.10	.110
<i>Density of kin</i>						
Number of kin living within 3 miles	.935 **	.018	.951	.036	1.00	.067
No extended kin in the data	1.14	.231	1.34	.533	1.36	.735
<i>Household attributes</i>						
Family income (in \$1,000s)	1.01 **	.004	1.01 *	.007	1.00	.005
Family owns their own home	1.23	.246	1.19	.434	1.78	.945
Family size	.856 **	.039	.959	.093	.910	.135
Head of household married	1.64 **	.308	1.18	.415	1.34	.740
Head of household employed	1.38	.261	2.04	.869	1.43	1.09
Family lives in public housing	.931	.260	1.56	1.08	.309	.339
Family receives rental assistance	1.79	.818	2.30	2.54	12.27	33.39
Family moved at least once since Jan. prior	.400 ***	.096	.861	.473	.987	.863
Head of household education in years	1.35 ***	.050	1.80 ***	.187	1.21 **	.085
Sex of respondent (male=1)	.867	.111	.688	.164	.487 *	.154
Number of observations over childhood	1.05 **	.015	1.03	.027	.983	.036
Head of household race/ethnicity is Black	1.89 ***	.335	1.03	.311	.653	.248
Head of household race/ethnicity is Asian	15.15 **	14.38	1		1	
Head of household race/ethnicity is Other	1.10	.603	.921	1.00	.278	.235
Head of household race/ethnicity is Latino	3.71 ***	1.12	3.04	2.16	.980	.785
N of observations	1410		1300		1386	

Note: All variables are averaged over the childhood, ages 0-18. Family income is standardized to year 2000 dollars. White is the reference category for race/ethnicity.

*p < .05, **p < .01, ***p < .001

4 DISCUSSION

This study examined what effect the density of extralocal kinship ties had on chances of high school graduation. By extralocal I mean residing in proximal neighborhoods, which for the purposes of this study was defined as within a 3-mile radius. Although prior research has shown

some effect of kin and social capital on educational attainment (Jaeger 2012; Loury 2006; Coleman 1988; McNeal 1999; Yan 1999; Perna and Titus 2005), no study had yet examined geographically concentrated extended kin networks. Because prior research has shown a significant effect of the neighborhood on educational outcomes (Garner and Raudenbush 1991; Ainsworth 2002; Harding 2003), and social-interactive factors have been theorized to be one set of mechanisms at work in neighborhoods (Galster 2012; Briggs 1997; Sampson, Morenoff and Gannon-Rowley 2002) it seems possible that some of the neighborhood impact on education is the result of social networks operating within the neighborhood context. Therefore, this study set out to answer a set of related questions: Does kin network density affect high school graduation rates? And does kin network density explain the correlation between neighborhood disadvantage and high school graduation?

Strengths of this study include the large nationally representative sample, the panel and genealogic design of the PSID and the use of geocoding to link neighborhood measures to the already rich and robust data on individuals and their families over generations. Any unobserved heterogeneity can be mitigated by the panel design. The major limitation of this study is the observational design, leading to caution in over interpreting the causality in the models presented. Furthermore, due to the data available any extended family households connected through marriage are not included in the design, perhaps weakening the observed effects.

Results show that dense extralocal kin networks have a significantly negative effect on chances of high school graduation. However, there was no significant effect of neighborhood disadvantage either on its own or in a combined model, making it impossible to determine what relationship, if any, neighborhood disadvantage has with kin density. When the regressions are run without the controls, there is a highly significant and negative effect of both neighborhood

disadvantage and kin density on chances of high school graduation and the two independent variables appear to have a confounding effect on one another. But this relationship disappears when controlling for household and individual level factors. Future studies could consider these questions while using different statistical analyses that allow for better controls of the temporal and spatial facets of neighborhoods (Crowder and South 2011; Wodtke, Harding and Elwert 2011; Vogel and South 2016).

The fact that when the effects are parsed by socioeconomic status, the findings only remain significant at the lowest tertile suggests that I have captured Briggs (1997) supporting ties, Wilson's (1987) social isolation, Stack's (1974) exchange networks, Curley's (2009) draining ties or any number of other proposed mechanisms that hint at the negative social capital sometimes found in dense networks among lower-income individuals. In a study of neighborhoods and supporting versus leveraging ties in Chicago, Small finds that the biggest predictor of size and type of network (smaller and more supporting ties as opposed to leveraging) is neighborhood poverty. Small thus convincingly argues, "residential segregation is one of the most important conditions shaping the networks of the poor" (2007: 339).

One question that arises from current policy initiatives focused on mobility vouchers is, does relocation break up social networks? Some studies have asked this question with varying conclusions. Some studies, like Moving to Opportunity, found that many families eventually found their way back to their neighborhood of origin, or at least back to neighboring neighborhoods that exhibited similar features leading some researchers to posit that the disruption in social networks was too much for some participants (Briggs, Popkin and Goering 2010). Other studies found that individuals' social networks did not gain leveraging ties so much as gave an opportunity to drop draining ties during relocation (Curley 2009).

But when those draining ties come from family it might prove more difficult to cut those relationships out due to social control, kin-scription or a sense of family obligation (Dominguez and Watkins 2003). Stack makes mention of a family member (Anne) who married up the socioeconomic ladder and moved away. Anne no longer allowed her family to discipline her children and was no longer allowed to discipline her nieces and nephews in turn once she was not part of the daily exchange network (1974: 77). A key feature of these dense networks is their embeddedness, that is that everyone in the network is also connected to everyone else. This is important because while an individual may drop a draining tie here and there or pick up a bridging or leveraging tie somehow, the core of the network tends to remain the same. Only very rarely does someone, like Anne, happen along who almost completely leaves behind the old exchange network in favor of an entirely new social network. It seems that rather than relocation disrupting networks in and of itself, some individuals use relocation to reinforce a desired social distance. But for others, relocation simply adds an extra complication to the otherwise continuous functioning of the exchange network.

One conclusion that can be drawn is that the structural nature of cities and neighborhoods matter greatly for the reproduction of inequality, to either preserve advantage or concentrate disadvantage. Studies show that cities or counties with greater levels of inequality have some of the worst outcomes for those at the bottom (Krivo et al. 2013; Chetty and Hendren 2016). This is also true in national comparisons: countries with greater levels of inequality have worse outcomes, even when the absolute wealth of the nation is great (Wilkinson and Pickett 2009). Furthermore, inequality endures across time, in families and neighborhoods (Sharkey and Faber 2014). Extended kin networks I argue are doing two things then: 1) they are keeping families that might otherwise be upwardly mobile stuck in disadvantaged neighborhoods, thus leading these

families to also experience the effects of these neighborhoods over multiple generations and 2) they are keeping these families stuck in areas of greater social isolation, which means they are less likely to encounter any possible ties for leveraging upward mobility.

It is impractical, not to mention unethical, to socially engineer the disruption of family ties. Therefore, it seems both the best and most moral policy path is to address structural inequality. Given the need for social policy that will both accomplish what it sets out to and will be a good use of resources, it is important to have policy based in sound scientific research. Thus, the areas of neighborhood effects and kinship ties may continue to be rich sources of new information that can inform and guide local, as well as national, policy.

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