Informal Mentors and Education: Complementary or Compensatory Resources?*

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Abstract

Few studies have examined the impact that mentoring (i.e., developing a special relationship with a non-parental adult) has on educational achievement and attainment in the general population. In addition, prior research has yet to clarify the extent to which mentoring relationships reduce inequality by enabling disadvantaged youth to compensate for a lack of social resources or promote inequality by serving as a complementary resource for advantaged youth. Results from a nationally representative sample of youth show (1) a powerful net influence of mentors on the educational success of youth and (2) how social background, parental, peer, and personal resources condition the formation and effectiveness of mentoring relationships. The findings uncover an interesting paradox—that informal mentors may simultaneously represent compensatory and complementary resources. Youth with many resources are more likely than other young people to have mentors, but those with few resources are likely to benefit more from having a mentor—particularly teacher mentors—in their lives.

Sociological research has long recognized the contributions of significant others in the educational process (Sewell, Haller, and Ohlendorf 1970). Research has tended to focus on the contributions of parents, peers, and teachers (e.g., Conley 2001; Crosnoe, Johnson, and Elder 2004; Downey and Pribesh 2004), with little attention to other individuals in the social networks of youth (but see Cheng and Starks 2002; Hofferth, Boisjoly, and Duncan 1998). However, an emerging line of work has begun to study the role of mentors in the lives of young people (for reviews, see DuBois, Holloway, Valentine, and Cooper 2002; Jacobi 1991). Mentors are non-parental adults who take a special interest in the lives of youth. They step outside their normal social roles as teachers, relatives, youth workers, ministers, and

employers, by helping to guide young people in the adult transition with advice, emotional support, and by serving as role models.

Much of the work on mentoring examines relations with *formal* mentors, or adults who volunteer in organized mentoring programs like Big Brothers/Big Sisters, designed as interventions for youth who are "at-risk" or who experience substantial disadvantage. Fewer studies investigate *informal* mentoring—or naturally occurring mentoring—even though most young people report a relationship with an informal mentor (Beam, Chen, and Greenberger 2002; McDonald, Erickson, Johnson, and Elder 2007). Scholarship on informal mentoring has been limited due to an almost exclusive focus on the role of mentoring in the lives of disadvantaged youth. Consequently, little is known about its impact on the educational performance and attainment of America's youth.

Furthermore, most research fails to examine the interdependence of informal mentors and other social relationships. Studies typically hold constant the resources available to youth by sampling narrowly defined disadvantaged populations. When broader populations are examined, the effects of mentoring tend to be assessed independently of other potential resources. These strategies mask issues of selection as well as the extent to which existing resources condition the effectiveness of mentoring relationships. Without examining mentoring as a component of a larger constellation of social relationships among youth, past studies have been unable to identify whether informal mentors enable youth to compensate for a lack of available social resources or complement the wealth of resources maintained by the advantaged (Hamilton and Hamilton 2004; Rhodes 2002). The focus on mentors among disadvantaged youth implies that mentoring helps at-risk youth "catch up" to their more fortunate contemporaries. Yet, informal mentoring may actually be more prevalent and more effective for advantaged youth.

We address these issues through an empirical examination of the National Longitudinal Study of Adolescent Health (Add Health). First, we assess the impact of informal mentoring on the educational success of young people. In doing so, we draw from the Add Health Academic Achievement study (AHAA), which links Add Health respondent information to high school transcript data in order to examine scholastic performance in high school. We also investigate educational attainment through self-reported survey information in Wave 3 of Add Health. These outcomes refer to distinct though related processes, with achievement referring to the educational performance of students during the high school years and educational attainment generating insights into longer-term educational trajectories and prospects for socioeconomic careers. In combination, these perspectives provide a more nuanced understanding of the specific contexts in which mentors are likely to matter the most. Second, we investigate the specific types of mentors (relatives, friends, teachers, or community members) that have the greatest influence on educational performance and attainment. Third, we situate the relationship between informal mentoring and educational success within the context of a broader set of potential resources (including those linked to social background, parents and peers, school, and the individual). In other words, we consider whether the availability of these various social resources condition the formation and effectiveness of mentoring relationships.

As this study shows, mentors have a strong positive impact on both performance in high school and on educational attainment overall, even after controlling for other resources on which youth may draw. Relatives, friends, teachers, and community-based mentors all contribute to educational success. The findings also show that mentoring can serve as both a compensatory and a complementary resource for young people. Mentoring relationships are more likely to form among youth with an abundance of other resources to draw upon, thereby highlighting the complementary role that mentoring plays for the socially

advantaged. The results regarding the effectiveness of mentoring are more mixed. Mentoring relationships with relatives result in more positive educational attainment for advantaged than disadvantaged youth. Relatives of resourceful adolescents most likely possess valuable expertise on education. However, teacher mentors have a substantial impact on the educational attainment of disadvantaged youth. Consequently, this study shows (1) how mentoring relationships can contribute to individual educational success and (2) how mentoring can promote both greater equality and inequality in society.

THE IMPACT OF MENTORING RELATIONSHIPS ON EDUCATION

By focusing on the influence of social relationships on educational success, this study follows a tradition of research on social capital. Much of the initial emphasis on social capital has been on the controlling and constraining aspects of relationships (e.g., Coleman 1988). However, this research is more squarely aligned with recent conceptualizations of social capital that highlight the importance of resources embedded in social networks (Kim and Schneider 2005; Lin 2001; Maeroff 1998; Stanton-Salazar 2001; Stanton-Salazar and Dornbusch 1995). In this way, we note that mentors serve as vital resources that youth may draw upon to achieve academic success.

Mentors are non-parental adults in the lives of young people, typically several years older than their protégés, and may come from different relationships: relatives, older siblings and friends, teachers, coaches, clergy, employers or coworkers (Rhodes 1994). What distinguishes typical non-parental adult relationships from mentoring relationships—for example, teachers from teacher mentors—is that a mentor steps outside of the boundaries of his/her typical role to take a special interest in a young person, offering advice and support to help that young person find his/her way in the social environment (Jacobi 1991). Consequently, mentors represent a potentially important resource for youth during the transition to adulthood and beyond.

Compared to mentoring, other predictors of educational success have received far greater attention from research: for example, social background and the resources indexed by parents, peers, schools and individual attributes. First, a number of social background factors are associated with educational performance, including race (Wiggan 2007) and neighborhood characteristics (Garner and Raudenbush 1991). Second, numerous studies have documented how parents can positively influence their children's education through the effective surveillance and sanctioning (Coleman and Hoffer 1987) and by providing information and encouragement about educational opportunities (Kim and Schneider 2005; Stanton-Salazar and Dornbusch 1995). Third, while many studies have examined the negative influence of peers (e.g., Woodward and Fergusson 2000), they can also serve as a positive resource for young people. Friendship networks can influence educational achievement by promoting school engagement, providing social support, and offering a set of behavioral models (Crosnoe, Cavanagh, and Elder 2003; Nora, Cabrera, Hagedorn, and Pascarella; Robertson and Symons 2003). Fourth, youth also draw from resources available in the school environment. Prior research shows that smaller class sizes (Mosteller 1995) and schools with fewer enrollees (Kuziemko 2006) contribute substantially to student learning. Furthermore, student-teacher relationships create school environments that can facilitate student engagement and reduce rates of dropout (Lee and Burkam 2003). Lastly, young people also bring their own personal resources to social interactions and environments and they can influence their overall educational trajectories. For example, researchers have long recognized that aspirations and aptitude have a strong impact on educational attainment (e.g., Sewell, Haller, and Ohlendorf 1970).

Mentoring is distinct from these other resources, yet few have examined its impact on education. Most research on the mentoring of adolescents comes from the "risk & resilience" tradition in developmental psychology. This work shows that mentors enable "at-risk" youth to adapt to significant adversity in their lives (e.g., Masten and Coatsworth 1998). Even in the face of serious threats to their developmental well-being (e.g., neighborhood disadvantage, childhood poverty, abuse, etc.), young people often are able to become competent, well-adjusted adults (Luthar, Cicchetti, and Becker 2000). Resilience depends in large part on access to and participation in nurturing relationships with non-parental adults (Werner and Smith 1982; Werner and Smith 2001).

Most of the empirical research on mentoring draws from samples of disadvantaged youth (e.g., Rhodes, Ebert, and Fischer 1992) or examines formal mentoring programs that match at-risk youth to adult volunteers or mentors (e.g., Rhodes, Grossman, and Resch 2000). The results from these studies show that these relationships generally have a positive impact on the lives of disadvantaged youth (DuBois, Holloway, Valentine, and Cooper 2002). However, little is said about the role that mentoring plays in the larger youth population. Mentors may (or may not) play an instrumental role in the lives of youth who do not experience similar adversity. Furthermore, the emphasis on mentoring in formal programs fails to address the effectiveness of mentoring that occurs in natural environments.

The few studies that have examined naturally-occurring mentoring relationships report that between 75 and 80 percent of youth have an informal mentor (Beam, Chen, and Greenberger 2002; McDonald, Erickson, Johnson, and Elder 2007). The results of both quantitative and qualitative research show that young people tend to benefit from having informal mentors in their lives (Ianni 1989; Maeroff 1998; Rhodes, Contreras, and Mangelsdorf 1994; Stanton-Salazar 2001; Williams and Kornblum 1985; Zimmerman, Bingenheimer, and Notaro 2002). For example, Stanton-Salazar and Spina (2003) outline numerous examples of how non-parental adults provide advice, emotional support, and role modeling to help Mexican-American youth turn around their lives. In particular, they emphasize the emotional support provided by mentors, as expressed by the following quote from a respondent: "… [mentors] make you feel like you're not the only one that's going through this, that there are other people like you that've succeeded" (248).

Studies of informal mentoring are valuable, but they are primarily based on small, regional samples of at-risk or disadvantaged populations such as pregnant teenagers, lower-income African Americans, Hispanics, or urban youth (e.g., Klaw and Rhodes 1995; Sanchez and Reyes 1999; Zimmerman, Bingenheimer, and Notaro 2002). Consequently, much remains unknown about informal mentoring in the lives of youth within the general population. One exception, though, is the research of DuBois and Silverthorn (2005), who have analyzed the public use version of the Add Health data and found that youth who identified informal mentors were more likely to complete high school and attend college.

We extend their research in a number of ways. First, we analyze the relationship between mentoring and educational outcomes using the full set of data from the Add Health study rather than the more restrictive public use sample. We also draw from a richer set of information from Add Health. That is, we conduct analyses on multiple waves of survey data, including the youth in-home interviews, in-school surveys, parent interviews, peer network data, school administration data, and high school transcripts. This approach allows us to analyze a more extensive set of control variables and expand the set of dependent variables to examine educational performance in high school and overall educational attainment. Based on evidence from prior studies, we anticipate that informal mentoring relationships have a positive effect on educational performance (grades in high school) and on educational attainment (highest degree received). We also expect this relationship to be

independent of the social background and other resources from which youth can draw. With these issues in mind, we propose that:

> H1: Mentoring will be positively related to educational performance and attainment.

As noted earlier, mentors vary in the social roles they fill for young people. Consequently, we examine variation in the effect of mentoring on educational outcomes across different social roles. We expect all types of mentors—relatives, friends, teachers, and community members—to positively influence educational performance and attainment. However, teacher mentors should have a greater impact than other mentors in view of their central role in the educational process and the kinds of knowledge, skills, and ethics they impart to young people.

> H2: Relative, friend, teacher, and community mentors will positively influence the educational performance and attainment, but teachers are likely to have the greatest impact.

Two additional hypotheses follow on mentoring in context.

INFORMAL MENTORING IN CONTEXT

Mentors are merely one resource in a constellation of other potential resources (Higgins and Thomas 2001). While studies have examined the independent influence of mentoring on various outcomes, few have examined mentoring within the broader context of adolescent relationships and environments (Hamilton and Hamilton 2004). The kinds of resources and environments (e.g., coaches, friends' parents, religious youth groups, etc.) available to youth should affect the likelihood of mentoring relationships and condition their effectiveness.

The second part of our analysis therefore explores how mentoring interacts with these other resources to produce unique relationship configurations and educational outcomes. Understanding these patterns of interaction are useful because they help to specify the role that mentoring plays in either promoting equality in society or in perpetuating existing inequities. In the risk and resilience literature, the focus on at-risk youth implies that mentoring relationships help disadvantaged youth to catch up with their more advantaged peers. This is a plausible expectation, especially in the context of formal mentoring programs which target at-risk youth, but informal mentoring relationships that develop naturally may not follow this pattern. These relationships may only enhance existing inequalities by enabling advantaged youth to achieve even greater success, while leaving disadvantaged youth to fend for themselves. Cumulative advantage/disadvantage theories imply that social resources tend to accumulate for individuals who start out with many advantages in life (DiPrete and Eirich 2006; O'Rand 2006). Consequently, one of the more pressing questions in research on mentoring is whether mentoring resources compensate for a lack of other social resources or complement the resources of those rich in social capital (see Darling, Hamilton, and Shaver 2003; McDonald, Erickson, Johnson, and Elder 2007; Rhodes 1994).

Answering this question requires an understanding of how existing resources both facilitate selection into and condition the effectiveness of mentoring. Selection processes are substantively important because they lead young people either into or away from such relationships, ultimately influencing chances for educational success or failure (Caspi 2004). Personal resources, for example, should be considered important determinants of selection into mentoring relationships since they are not formed at random. Competent, intelligent, goal-oriented adolescents are likely to be more able to engage in relationships with non-parental adults (Sewell, Haller, and Portes 1969). At the same time, these skills tend to make

youth more attractive as relationship partners to adults who are inclined to mentor young people. Therefore, we anticipate that mentoring relationships are more likely to form among youth who are academically gifted, physically attractive, and/or gregarious and easy to get along with.

Furthermore, access to a variety of social environments (e.g., athletic teams, employment) facilitates the development of mentoring relationships (Barajas and Pierce 2001; Hamilton and Hamilton 2005; Mortimer 2003). Significant others are also more likely to form relationships with young people with whom they share similar cultural values (Stanton-Salazar and Dornbusch 1995). In this way, race/ethnicity and neighborhood disadvantage structure access to informal mentors. Prior research has shown that young blacks living in disadvantaged inner-cities have relatively few adults in their communities that they can depend on for guidance and positive role models (Newman 2000; Wilson 1987). Finally, youth with many of the social resources described earlier would seemingly be more likely than disadvantaged youth to develop useful relationships with non-parental adults. These resources facilitate access to environments rich in social capital and help to provide youth with the skills necessary to engage in these relationships and to identify their usefulness. Some evidence indicates that advantaged youth are more likely to develop informal mentoring relationships (Zimmerman, Bingenheimer, and Behrendt 2005), suggesting that access to mentoring is indeed complementary rather than compensatory.

> H3: Youth with extensive social resources (in terms of social background, parental, peer, school, and personal resources) will be more likely to form mentoring relationships.

The effectiveness of mentoring relationships also depends on existing resources. For example, studies of resilience consistently show that intelligent youth are more likely to show resilience when faced with a variety of personal and environmental risks (Sameroff, Gutman, and Peck 2003). This evidence suggests that personal resources are important factors that condition the effects of the larger environment. The same has been shown for parental, peer, and community resources (Rhodes, Contreras, and Mangelsdorf 1994). Mentoring may unlock benefits that are latent within the existing resources of young people (Anderson 1990). In other words, advantaged youth may be better equipped to benefit from the opportunities afforded by mentoring relationships. However, other research has found the exact opposite: that mentoring may be more beneficial for at-risk youth. For example, evidence from qualitative interviews reveals that support from teachers, coaches, and other school personnel has a greater impact on the lives of youth from lower and working class backgrounds than from the middle and upper class (Stanton-Salazar). This is consistent with findings from quantitative analyses which demonstrate that contact with teachers outside of the classroom is negatively and significantly associated with dropping out among at-risk youth, but not for the socially advantaged (Croninger and Lee 2001). Disadvantaged youth therefore have more to gain from mentoring relationships and more to lose from not having them. Consequently, we expect that while at-risk youth are least likely to develop informal mentoring relationships, they are more likely to benefit from them than are the socially advantaged (Rhodes 2005). In this way, the effectiveness of mentoring relationships may serve as both compensatory and complementary resources.

> H4: The effectiveness of mentoring on educational performance and attainment will be greatest for youth with few social resources (in terms of social background, parental, peer, school, and personal resources).

METHODOLOGY

Data

This study is based on data from the National Longitudinal Study of Adolescent Health (Add Health) and the Adolescent Health and Academic Achievement (AHAA) study, which is an extension of Add Health. Add Health is a nationally representative study of adolescents in grades 7 through 12 in the US in 1994. The data include in-depth interviews with adolescents and their parents, which provide detailed information regarding child outcomes, family and peer relationships and school and neighborhood characteristics. Add Health used a multistage, stratified, school-based, cluster sampling design. Included in the sample were students from 80 high schools (both public and private), and a corresponding feeder junior high or middle school. While some minority racial/ethnic groups were sampled in proportion to their size within the US population, smaller racial/ethnic groups were oversampled. Additional information on the study can be found in Harris, Florey, Tabor, Bearman, Jones, and Udry (2003). Add Health data in this study include the in-school survey (1994), three waves of in-home interviews (1995, 1996, and 2001), the parent survey (1994) and the school administrator survey (1994).

As part of Wave III of Add Health, respondents were asked to sign a high school transcript release form authorizing the collection of their official transcripts from the last high school they had attended (see www.cpc.unc.edu/projects/addhealth). Approximately 91 percent of respondents complied resulting in the collection of over 12,000 transcripts. The AHAA team subsequently developed a variety of indicators of students' course-taking and performance throughout their high school experience (see www.prc.utexas.edu/ahaa).

The nationally representative component of Add Health (with valid sample weights) at Wave III included 14,322 participants, a response rate of 76 percent. This was the baseline sample for this study because mentors were assessed at Wave III. We removed 170 respondents from the sample who did not have valid data on whether they had a mentor and described the relationship with this person. A small number of variables in our analyses had relatively large amounts of missing data, due in part to the inclusion of data from various sources within the Add Health data archive and the AHAA (ranging from 5 to 39 percent of cases). Following previous studies using Add Health and AHAA (e.g., Riegle-Crumb, Farkas, and Muller 2006), we treated these cases using embedded dummy variables (Hardy and Reynolds 2004). This procedure creates a dichotomous indicator for missing data and recodes the substantive variable to its sample mean. The remaining variables had negligible amounts of missing data and were treated with list-wise deletion. This resulted in 9,216 cases with valid data for 12th-grade GPA (from AHAA) and 12,621 for highest degree achieved. To ensure temporal ordering for the analysis of the contexts that condition the formation of mentoring relationships (H3), we restricted analyses of mentors' prevalence (Table 3) to only 6,819 cases; 4,433 respondents reported that their mentor became important before Add Health's initial data collection. In other words, by limiting the analysis predicting mentoring relationships in this way, we attempted to make certain that analyses represent how the characteristics of adolescents conditioned the formation of mentoring relationships and not the effect of mentoring on youth characteristics.[1] Those excluded here were included in all other analyses.

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[1]An additional sample weight was created so the ratio of respondents with mentors was the same in this reduced sample as the original sample. A disproportionate number of those removed who reported having an adult relative as mentor. Analyses (not reported here) suggest that respondents excluded for this reason were older, more likely to live with both biological parents and had lower PVT scores. Furthermore, the results in Table 4 do not differ substantially from analyses (not reported here) when these respondents were included.

Because Add Health is clustered by school and cases had an unequal probability of being selected into the sample, biased coefficients and underestimated standard errors are likely. To correct for this, all models were estimated using the SURVEY commands in STATA, which provides correct estimates of coefficients and standard errors (Chantala 2002).

Measures

Dependent variables—Twelfth-grade GPA was taken from the AHAA and represents the average of all courses taken for the entire senior year. Highest degree achieved came from the Wave III in-home interview data; it is an ordinal measure with five categories—less than high school degree, high school degree or GED, some college but no degree, a two-year college degree, and a four-year college degree or more.

Mentoring—All mentoring data come from the Wave III in-home interviews and were reported by the young person. Informal mentors were identified with the following question: "Some young people know adults, other than their parents, who make an important positive difference in their lives. Some do not. Has an adult, other than your parents or step-parents, made an important positive difference in your life at any time since you were 14 years old?" If there was more than one influential adult, respondents were asked to report only on the most important.

The mentor's social role, or relationship to the young person, was identified by the respondent as an adult relative (brother, sister, grandparents, aunt, uncle, spouse or partner), friend, teacher (teacher or guidance counselor, coach/athletic director), or community member (minister, priest, rabbi, or religious leader, employer, co-worker, neighbor, friend's parent, doctor/therapist/social worker, other). It is important to note that most of these roles are formal roles, and some place adults in positions where they are expected to contribute to the development of young people (e.g., teacher, minister, etc.). However, the mentoring behaviors themselves, or the perception that someone in one of these roles is a mentor occurs informally. We do not consider any of the roles listed above as occurring within formal mentoring organizations, which is a requirement for identifying formal mentors.

Social background—*Race-ethnicity* was coded White, Black or African American, Hispanic, American Indian or Native American, and Asian or Pacific Islander. In Add Health, Hispanic ethnicity is assessed using a separate question than race. In our variable, those who reported Hispanic ethnicity were coded as Hispanic regardless of their racial classification. The *Neighborhood Disadvantage* variable was developed to identify the concentrated disadvantage associated with racially-segregated urban neighborhoods (Sampson, Morenoff, and Earls 1999). The scale used data from the 1990 US Census and is measured at the block-group level. Five items were included: percent below the poverty line, percent receiving public assistance, percent unemployed, percent female-headed families with children, and percent black. The items were submitted to a principle components factor analysis and only one factor was extracted with factor loadings ranging from .72 to .89. In creating the summed scale, individual items were weighted by their factor scores.

Parental Resources—In the parent survey, the responding parent reported the total household before tax *income*. We also included whether or not the responding parent was a member of the *PTA* as a measure of intergenerational closure. Living in a *Two-Parent Biological Family* was coded 1 if the young person lived with both biological parents and 0 for all other family types. *Highest Parent's Education* was measured using the Parent-Report. The responding parent was asked: "How far did you go in school?" and "How far did your current spouse or partner go in school?" Parent education was the higher of the two reports. If a parent report was not available, we used the Wave I Child In-Home data (when

available) or the In-School data. *Relationship with Parents* consisted of the mean score of four items concerning the quality of the parent-child relationship. Youth said whether they (1) felt close to their mothers/fathers, (2) felt that their mothers/fathers were warm, (3) felt that they communicated well with their mothers/fathers, and (4) were satisfied with their relationships with mothers/fathers. Responses were rated on a 5-point scale, which ranged from 1 ("not at all" for the first item, "strongly disagree" for the remaining three) to 5 ("all the time" for the first item, "strongly agree" for the remaining three). Mean scores were calculated for these items (Cronbach's alpha equals .86 for fathers and .90 for mothers). The mean of the mother and father scores were used.

Peer Resources—Respondents were asked to nominate up to 10 friends (5 male and 5 female*). Number of Friends* is the sum of the respondents' total nominations. When one of the nominated friends was also a member of the Add Health sample, it was possible to match the nominations with the Transcript data. The *Mean Friends' 9th Grade GPA* was the mean of the average grade for the entire school year for all nominated friends who could be matched with valid Transcript data. This variable was used as a predictor of 12th grade GPA and educational attainment (see Table 2). For the analysis of the mentoring antecedents (see Table 3 and the Appendix), we used *Mean Friends' Wave I GPA*, which was the mean of the average grade for all nominated friends who had a valid Wave I data. *Peer Network Centrality* was measured using the Bonacich Centrality measure (Bonacich 1987), which is an ego-based measure of centrality that is weighted by the centrality of those to whom ego is tied.

School Resources—We used two questions from the in-school survey to assess the *student/teacher environment* at school. Respondents reported how often they had trouble getting along with teachers at their school and how much they agreed that teachers at their school treat students fairly. The mean of these two items was calculated for each school. School administrators gave an estimate of the *average class size* in their school. They also reported on the overall *school size*. The response categories presented to them were (1) small (1 – 400), (2) medium (401 – 1000), and (3) large (1001 – 4000).

Personal Resources—Interviewers were asked to rate each respondent's attractiveness in terms of their *physical appearance* and *personality*. Responses ranged from 1 "very unattractive" to 5 "very attractive." Respondents' *college aspirations* were assessed using the following question: "How much do you want to go to college?" Responses ranged from 1 (low) to 5 (high). The Add Health Picture Vocabulary Test (*PVT*) is an abridged version of the Peabody Picture Vocabulary Test—Revised (Dunn 1981) which was designed to measure hearing vocabulary for Standard American English. Scores were standardized by age to have a mean of 100 and standard deviation of 15. To account for some of the difficulties with the timing of the formation of mentoring relationships and Add Health's measurement of mentoring, we used two different measures of GPA. The analysis of 12 grade GPA and highest degree achieved (see Table 2) used *ninth-grade GPA*, which was taken from the AHAA and is the average of all courses taken for the entire 9th-grade year. We used the self report of grades from Wave I to create a measure of GPA in the analysis predicting mentoring relationships (see Table 3 and Appendix).

Additional variables—We controlled for a number of additional variables. *Age* is measured in years at the time of the Wave 3 interview. Gender is indicated with a dummy variable for *female* (male = reference category). *Private school* is also a dummy variable (private school = 1, public school = 0). *Extracurricular activities* are measured by summing the affirmative responses to a list of activities that students reported being involved in, including school academic clubs (e.g., math, French), sports teams, and student government.

Respondents reported the number of hours they *worked* for pay during a typical non-summer week. We created categories representing 0 hours, between 1 and 20 hours and 20+ hours. Descriptive statistics for all variables are presented in Table 1.

Analysis

The analysis proceeds in three stages. First, we model 12th-grade GPA and highest degree achieved using ordinary least squares regression and the ordinal logit model (Long 1997), respectively. This set of analyses controls resources that are related to education in order to assess the independent effects of mentoring (H1) and whether a mentor's social role has an impact on the educational process (H2). Second, we investigate whether the prevalence of mentoring relationships for youth depends on their advantaged or disadvantaged status, as indicated by social background and parental, peer, school, and personal resources (H3). To ensure that our measures of advantage/disadvantage condition the formation of mentoring relationships as opposed to being their result, we only include respondents in this portion of the analysis who reported that their mentor became important *after* Wave I. Third, we test whether the effect of mentoring relationships on educational outcomes depends on resources available to youth (H4). Specifically, we examine interactions between having a mentor (in particular their social role) and other resources, such as parents' socioeconomic status, friends' grades, positive student/teacher environment, educational aspirations, etc. Positive interactions between youth resources and mentoring would indicate that mentoring effectiveness is greatest among youth with many resources; negative interactions suggest that mentors are more effective for disadvantaged youth who lack resources.

RESULTS

First, we assess the impact that informal mentors have on the educational achievement and attainment of young people. Models 1 – 3 in Table 2 report the slope coefficients from OLS regression on 12th grade GPA. It is important to note that because we control for 9th grade GPA, the results for the first three regression models report the relationship between mentoring and a young person's change in GPA between 9th and 12th grade. Model 1 estimates the relationships between GPA and various resources and serves as a baseline for testing the independent effect of mentoring on grades.

On average, young women display a greater increase in grades over the course of high school than young men. Students who attended private schools had smaller increases in grades compared to those in public schools, perhaps because private school students had higher GPAs beginning in 9th grade (mean GPA for students in private schools was 2.94 compared to 2.57 in public schools). Black and Asian youth show less change in GPA relative to Whites. Parental resources (living with biological parents, highest parent's education, and quality of relationship with parents) are all positively related to change in grades. Among peer resources, only friends' average GPA is significantly related to grades —young people have higher grades when their friends are high achievers. Having a positive student/teacher environment in the school is associated with more student achievement. Being more physically attractive is also positively related to an increase in grades from freshman to senior year. In Model 2, we find having a mentor is highly significant and positively related to higher grade achievement, even after controlling for all of the other independent variables. The control variables changed little with mentoring included in the regression model. The results in Model 3 show that all of the social roles of mentors except for friends contribute to significant increases in grades.

Models 4 – 6 in Table 2 focus on highest degree achieved and report the odds ratios from ordinal logistic regression on this outcome. Odds ratios represent the factor change in the odds of an event occurring for a unit change in the independent variable. Odds ratios higher

than one represent an increase and ratios lower than one indicate a decrease in the odds of the outcome. For example, the odds ratio for age in Model 4 is 1.415, indicating that a year increase in age increases the odds of obtaining more education by a factor of 1.415, or about 42 percent. Alternatively, the odds ratio for working 21 hours or more per week is .892 (though not statistically significant) means that intensive work experience decreases the odds of higher educational achievement by a factor of .892 (or by about 10 percent) relative to not working.

Model 4 reports the baseline results before examining whether having a mentor affects educational attainment. Older youth completed more schooling, but they also had more time to advance through higher education.[2] Young women achieved higher levels of education, as have students who participate in extracurricular activities and attend private school. Black, Hispanic and Asian youth tend to rank higher on educational attainment when controlling for other resources while youth from disadvantaged neighborhoods end up with lower attainment. Higher incomes and having a parent in PTA are both associated with increases in the odds of further educational advancement. Parents' education and living with both biological parents are positively related to attainment, but the quality of the parent relationship is not. Number of friendships, friends' GPA, and being more central in one's peer network are all positively related to attainment. School resources, however, are not significantly related to the highest degree attained. Being more personally attractive, having higher educational aspirations as well as higher grades as freshman, and scoring higher on the PVT are all significantly predictive of advancement in educational attainment. Having a mentor is also beneficial for educational attainment (Model 5). Youth with a mentor are 53 percent more likely to advance to the next level of education when compared to youth who report not having a mentor. Teacher mentors are most strongly related to attainment, but relative, friend, and community mentors also have positive and significant effects (Model 6).

To summarize the analysis thus far, informal mentors have a positive impact on young people's education, lending strong support to hypothesis 1. These findings are consistent with the literature that concludes that mentors are significant influences on the education of young people. The effect of mentoring remains strong and statistically significant even after controlling for the effects of other resources (including social background, parent, peer, teacher, and personal resources) that are known to influence education.

We turn next to whether the resources of students facilitate the formation of mentoring relationships. Table 3 reports the predicted probabilities of having a mentor with a particular social role for advantaged and disadvantaged youth. These results are based on the multinomial logistic regression reported in Appendix A.[3] We present our findings as predicted probabilities because this approach allows us to create hypothetical profiles of youth that have substantive meaning. (See Table 3 for a description of the profiles.) To avoid extreme and unrealistic estimates, we use the 20th and 80th percentiles to represent youth who are advantaged and disadvantaged in terms of resources. For example, we compare the probabilities of having mentors for youth from advantaged social backgrounds (Whites and Asians + those in the 20th percentile for neighborhood disadvantage) to youth from disadvantaged social backgrounds (Blacks, Hispanics, and Native Americans + those in the 80th percentile for neighborhood disadvantage).[4]

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[2]To examine whether this influenced our results, we compared analyses of highest degree achieved in Table 3 for a younger (age 18 – 21) and an older (age 22 – 27) cohort (results not shown). We found no substantive differences in the effects across the two groups.
[3]To calculate predicted probabilities for a particular social role, that response category must be set as the reference category in the multinomial logistic equation. For instance, the Appendix reports odds ratios for the analysis used to calculate predicted probabilities of not having a mentor (which we report as having any kind of mentor for a more straightforward interpretation). Thus, results in the Appendix are actually the results of only one of five equations that were used to calculate the entire set of predicted probabilities.

Overall, disadvantaged youth are significantly less likely to report having a mentor than advantaged youth across each of the categories modeled. Youth from advantaged social backgrounds identify a mentor 66 percent of the time compared to 62 percent for youth from disadvantaged backgrounds, but this difference is not statistically significant. Parental resources do, however, significantly predict having a mentor. Having advantaged peer resources such as having more friends, having friends with higher GPAs, and being central in one's peer network increases the chances of having a mentor—68 percent for advantaged versus 61 for the disadvantaged. School resources are unrelated to identifying a mentor. Personal resources such as having a more attractive personality and physical appearance, higher educational aspirations and intelligence display the largest gap in the probability of having a mentor. Seventy-four percent of these advantaged youth have mentors compared to only 53 percent of the disadvantaged. A young person who faces all of these disadvantages only has a 44 percent likelihood of having a mentor, while advantaged youth have an 82 percent chance. Although no respondents in the sample are disadvantaged or advantaged in all of these ways, this difference provides a sense of the power that resources exert on the possibility of having a mentoring relationship.

The overall pattern of advantaged youth being more likely to have a mentor persists regardless of the mentor's social role, although in some cases there are no differences in the predicted probabilities or the differences were not statistically significant. Level of parental resources significantly predicts the probability of having a teacher mentor: 20 percent of youth with advantaged parental resources identify a teacher mentor, compared to 14 percent for youth with few parental resources. Personal resources contribute significantly to the likelihood of having a teacher mentor or a mentor in the community. The combined advantage vs. disadvantage comparison suggests that social resources play an important role in channeling youth into mentoring relationships, especially those with teachers and community members.

Finally, we examine the interactions between mentors' social role and the resources available to young people to determine the extent to which mentoring relationships unlock existing resources or compensates for a lack thereof. We used models 3 (for GPA) and 6 (for Highest Degree Achieved) from Table 2 as baselines and estimated a series of models that included a single interaction term between the mentor's social role and a youth resource. In Table 4, we report only the interaction coefficients from these models. To decrease the likelihood of chance results, we only present interactions that were significant at $p < .01$. For the most part, negative interactions indicate that mentors are compensatory while positive interactions involve complementary resources.

Few of the interactions proved to be statistically significant for the models predicting educational performance in high school. No clear patterns of association emerged, suggesting that mentoring has a similar impact on the educational achievement of those with both few and many social resources. However, the educational attainment interactions reveal two notable patterns. First, mentoring from relatives interacts with several of the personal resource variables in a positive direction, suggesting they complement existing personal resources in educational attainment. In other words, relatives in the mentor role are more effective among youth who already have substantial personal resources. Second, teacher mentoring interacts negatively with indicators from each of the resource domains (with the exception of school resources). Note that the only positive interaction for teacher mentors is with neighborhood disadvantage, which is coded in the opposite direction (higher values

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[4]We conceptualize private school, extracurricular activities and employment as environments that might be conducive to the formation of mentoring relationships but not resources per se. We therefore include these variables in the logistic regression, but hold them constant in the calculation of predicted probabilities.

indicate greater disadvantage) compared to the other variables (where higher values refer to greater advantage).

It is important to keep in mind that these coefficients represent *interaction* effects and cannot be interpreted in isolation from their main effects. For example, the interaction coefficient for teacher and white or Asian is −.427 (see Table 4). The negative valence of the coefficient indicates that the change in odds of having a mentor is smaller for white or Asian youth compared to youth from other racial-ethnic backgrounds. Whether or not this ultimately means that teacher mentors harm white or Asian youth depends on the magnitude of the interaction *and* main effects. To clarify the interpretation of interaction effects and provide a sense of their substantive importance, we plot the change in probability of attending college across different levels of resources for youth who report a relative and teacher mentor in figures 1a and 1b. These figures incorporate both interaction and main effects. The values of resources measured as continuous variables (presented on the category axis) represent the 20th, 40th, 60th, and 80th percentiles.

Figure 1a reveals the complementary role of relatives as mentors. Youth with these mentors are more likely to attend college than those without, but the gap between the two is greatest among youth with the greatest amount of personal resources. By contrast, the compensatory nature of mentoring relationships is shown in Figure 1b by large differences in the probability of attending college when resources are low and small differences when resources are high. For example, youth with parents whose education is limited have only a 35 percent probability of attending college. But if they have a teacher as a mentor, their chances improve to 65 percent. Children of highly educated parents are very likely to go on to college, regardless of whether they have a teacher as mentor (75%) or not (67%). In other words, the negative interaction indicates that the help of teacher mentors is less consequential for the advantaged than it is for the disadvantaged. As such, relative mentors serve as complementary resources for educational attainment, whereas teacher mentors have a compensatory impact on educational attainment.

DISCUSSION AND CONCLUSION

Informal mentoring is an important and understudied resource for youth in their educational careers. In a nationally representative sample of youth, we find that exposure to the mentoring of an adult is associated with greater educational success, both in terms of educational performance in high school and in overall educational attainment. The effect of mentoring on education remains strong even after controlling for social background, parental, peer, school, and personal resources. Mentors vary by social role in their affect on youths' educational outcomes. Not surprisingly, young people with teachers as mentors tend to have greater educational success, while having an older friend as a mentor is unrelated to grade improvement in high school.

Contrary to usual expectations, much of the evidence shows that mentoring relationships that develop naturally have the potential for contributing to—rather than reducing—social inequality. First, youth have unequal access to the benefits of informal mentoring. Overall, those with an advantaged background are more likely than the disadvantaged to have an informal mentoring relationship. In other words, mentoring is most common among youth who already possess a wealth of social resources. Second, relatives appear to be more effective as mentors for the educational attainment of youth who have many personal resources on which to draw. This suggests that young people with a great many personal resources are in a better position than others to take advantage of the guidance, advice, and support provided by relatives in the mentor role. In these ways, mentoring primarily serves as a complementary resource for advantaged young people.

These findings are consistent with prior research which indicates that middle and upper class students develop a broader network of support relationships than lower and working class students (e.g., Ianni 1989). Future research should investigate in greater detail the micro-processes which link youth to informal mentors. For example, recent research suggests that some individuals may possess a "social intelligence" that enables them to establish rapport and manage social interactions with relative ease (Goleman 2006). Young people with these abilities would be more likely than others to establish and maintain relationships with non-parental adults. At the same time, other researchers have noted that a failure to engage in relationships with adults is often a purposive response to disadvantage on the part of youth. That is, some young people in disadvantaged social environments tend to develop a "defiant individualist character," which involves extreme competitiveness, mistrust, and self-reliance (Sánchez-Jankowski 1991). Such attitudes limit help-seeking efforts, produce social isolation, and are likely to impede both academic and personal development (Stanton-Salazar 2001).[5]

At the same time, disadvantaged youth benefit significantly when they develop relationships with mentors. Their presence is related to substantial improvements in the educational fortunes of disadvantaged youth, even in those instances when mentoring does not provide benefits as profound as those for more advantaged youth. Furthermore, compelling evidence on the compensatory role of teacher mentoring for educational attainment is encouraging. Consistent with prior research (Stanton-Salazar 2001), we find that the influence of teacher mentors on educational attainment is greatest among the most disadvantaged youth. This highlights an interesting paradox. Teacher mentors simultaneously serve as complementary and compensatory resources for young people. On the one hand, they are complementary in prevalence, with advantaged youth being most likely to identify a teacher as a mentor. On the other hand, they are compensatory in effectiveness, with disadvantaged youth gaining more from having a teacher as a mentor. Disadvantaged youth are least likely to have teacher mentors, but they are the most likely to benefit from them.

Of course, the mentoring module available in the Add Health dataset has a number of limitations.[6] First, the fact that the mentoring module is measured concurrently with educational attainment leaves open the possibility that the responses may be influenced by educational attainment. Second, youth were asked to identify only the "most influential" mentor. Some studies find that youth identify a variety of individuals in their social networks that provide mentoring functions (e.g., Darling, Hamilton, Toyokawa, and Matsuda 2002). It is possible that youth who have multiple mentors, either simultaneously or serially, experience even greater gains in their academic careers. Moreover, when youth have had multiple mentors in their lives, the question wording might lead individuals to recall long-lasting mentors more often than mentoring relationships that are more ephemeral in nature. Therefore, when compared to the full population of mentoring relationships, it is reasonable to assume that this measure may be biased toward long term mentoring relationships, although we cannot be certain on this point given the available data. However, this potential bias is unlikely to alter the findings in a substantial way. Prior research shows that even temporary assistance from mentors often has long term consequences for developmental trajectories (Stanton-Salazar and Spina 2003).

Third, we are limited at present in our ability to assess the influence of mentor characteristics on youth educational outcomes. For example, youth outcomes are likely dependent as much on mentor quality as they are on youth resources. Youth with higher levels of personal resources could benefit more from having a relative as mentor because

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[5]We thank one of the reviewers for directing our attention to this line of research.
[6]We thank the anonymous reviewers for pointing out these limitations.

their relatives come from advantaged social backgrounds themselves and consequently have skills that the relatives of disadvantaged youth are less likely to have (Anderson 1999). Similarly, teacher mentors may help disadvantaged youth not just because teachers are key in the educational careers of young people, but also because they come from more advantaged backgrounds themselves and thus have more to contribute to adolescent success. Add Health data, however, do not contain measures of the social class or status of mentors that would be necessary to test these ideas empirically. As such, we regard these issues as problems for further investigation.

Overall, this study validates the efforts of formal mentoring programs to match disadvantaged youth with non-parental adults. Not only are these youth at-risk of countless negative life events and disappointments during the transition to adulthood, they are also (not coincidentally) at-risk of failing to develop an important relationship with a non-parental adult. With this in mind, additional programs are needed to link disadvantaged youth to adults outside the family. Such initiatives would supplement the gaps in informal mentoring relationships and help young people succeed in educational settings. Based on the findings presented here, advances in the area of teacher mentoring offer the greatest promise for reducing social inequities. These relationships provide the greatest compensatory benefits for disadvantaged youth, while their relative absence among the disadvantaged highlights a potential target for social intervention programs. Programs that facilitate the development of mentoring relationships between at-risk youth and teachers therefore deserve priority in policy considerations.

The current investigation also contributes to the research literature on educational achievement and attainment. Social and behavioral scientists have long emphasized the constraints, social control mechanisms, and norm-enforcement activities that are designed to keep youth on the "right track" (Dika and Singh 2002). More recently, scholars have convincingly argued for the importance of supplementing this perspective with one that views social relationships as providing valuable resources for youth to draw upon when making the transition to adulthood (Kim and Schneider 2005). This research is aligned with the latter strategy. Success in the educational process is often accompanied by help from caring adults in the lives of young people. Mentors play an important role in that process. Research on formal mentoring relationships have identified a variety of mechanisms by which mentors influence the lives of young people (Rhodes, Grossman, and Resch 2000; Stanton-Salazar and Dornbusch 1995), yet little is known about those that operate in these informal relationships. Future research would profit from in-depth investigations of their specific mechanisms of mentoring.

This study also demonstrates the importance of the social context surrounding informal mentoring relationships. More research attention is needed on how the timing of mentoring is related to its character and effectiveness since the timing of life transitions can have substantial developmental effects (Elder and Shanahan 2006). The establishment of mentoring relationships is a potential life-altering event when experienced at a pivotal time in a person's life. As such, we need to better understand not only the short-term gains from social relationships, but also how these experiences contribute to longer-term patterns of attainment and resource accumulation across the life course.

Appendix

Antecedents of Informal Mentor Relationships: Odds Ratios from Multinomial Logistic Regression

	Relative	Friend	Teacher	Community
Age	.820***	.852***	.713***	.909**
Female	1.554***	1.240*	1.184	.969
Private School	1.225	.824	1.035	.696
Extracurricular Activities	1.015	1.033	1.057*	.995
Work				
1 - 20 hours	1.239	1.325*	1.122	1.207
21+ hours	.789	1.479*	.877	1.040
Social Background				
Race-ethnicity				
White	---	---	---	---
Black	1.041	.932	.944	.707*
Asian	.846	1.209	1.041	.906
Hispanic	.934	.901	.699*	.851
Native American	1.120	1.638*	.961	.797
Neighborhood Disadvantage	.982	1.003	.754	.952
Neighborhood Disadvantage - Missing	1.442*	.887	1.295*	1.042
Parental Resources				
Family Income (in $1,000)	1.001	1.000	.999	1.000
Family Income - Missing	.923	.998	.895	.911
Parent in PTA	.892	.827	.989	.888
Parent in PTA - Missing	1.171	.920	.901	.729
2-Parent Biological	1.384**	.957	1.260*	1.122
Highest Parent's Education	1.067	1.127*	1.221***	1.164**
Relationship with Parents	1.142	1.040	.988	.947
Peer Resources				
Number of Friends	1.045*	1.068**	1.063**	1.062***
Friends' Mean Wave I GPA	.877	1.115	1.096	1.030
Peer Network Centrality	1.089	.932	.861	.822
Peer Network Centrality - Missing	1.399	1.408	.989	1.026
School Resources				
Student/Teacher Environment	.952	1.983	1.230	.821
Student/Teacher Environment - Missing	.633	.508*	1.104	.793
Average Class Size	1.000	1.004	1.003	1.001
School Size	1.105	.992	1.245*	1.026
Personal Resources				
Physical Attractiveness	.961	.870	.911	.985
Personality Attractiveness	1.142	1.094	1.073	1.080
College Aspirations	1.095	1.038	1.262***	1.164**
Wave I GPA	1.235*	.987	1.426***	1.039

	Relative	Friend	Teacher	Community
Picture Vocabulary Test	.998	1.016[***]	1.026[***]	1.025[***]
Picture Vocabulary Test Missing	1.447	1.167	1.190	1.132

Notes: No Mentor is reference category. N = 7,840.

[*]
$p < .05$

[**]
$p < .01$

[***]
$p < .001$; two-tailed tests.

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Figure 1a.
Interaction between Having a Relative as Mentor and Youth Resources on Highest Degree
Achieved: Probability of Attending College
Note: The category axis represents the 20th, 40th, 60th, and 80th percentiles
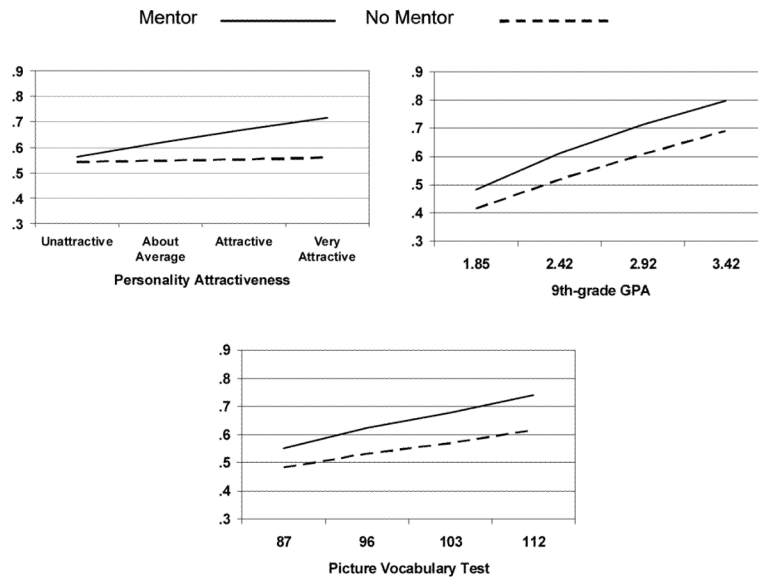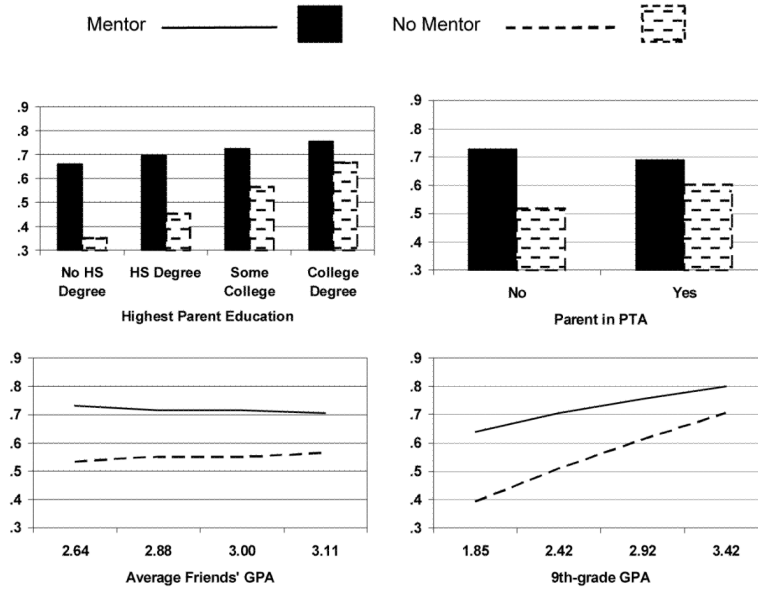
Figure 1b.
Interaction between Having a Teacher as Mentor and Youth Resources on Highest Degree
Achieved: Probability of Attending College
Note: The category axis for continuous variables represents the 20th, 40th, 60th, and 80th
percentiles

Table 1

Informal Mentoring and Education: Descriptive Statistics

	Mean	SD	Min	Max
12th Grade GPA [a]	2.75	.73	0	4
Highest Degree Achieved	2.71	1.08	1	5
Age	21.72	1.82	18	27
Female	.49	.50	0	1
Private School	.07	.26	0	1
Extracurricular Activities	1.64	2.12	0	15
Work				
0 hours	.47	.50	0	1
1 - 20 hours	.41	.49	0	1
21+ hours	.12	.32	0	1
Social Background				
Race-ethnicity				
White	.65	.48	0	1
Black	.16	.36	0	1
Asian	.04	.20	0	1
Hispanic	.12	.32	0	1
Native American	.03	.17	0	1
Neighborhood Disadvantage	.55	.43	0	3
Neighborhood Disadvantage - Missing	.14	.35	0	1
Parental Resources				
Family Income (in $1,000)	45.82	40.74	0	999
Family Income - Missing	.21	.41	0	1
Parent in PTA	.33	.44	0	1
Parent in PTA - Missing	.12	.32	0	1
2-Parent Biological	.57	.49	0	1
Highest Parent's Education	2.80	1.01	0	4
Relationship with Parents	3.26	.66	1	4
Peer Resources				
Number of Friends	6.43	3.46	0	10
Friends' Mean 9th Grade GPA	2.86	.43	0	4
Friends' Mean 9th Grade GPA - Missing	.39	.49	0	1
Friends' Mean Wave I GPA	2.89	.53	1	4
Peer Network Centrality	.83	.52	0	4
Peer Network Centrality - Missing	.32	.47	0	1
School Resources				
Student/Teacher Environment	3.60	.14	3	4
Student/Teacher Environment - Missing	.28	.45	0	1
Average Class Size	25.60	4.94	10	39
School Size	2.22	.71	1	3

	Mean	**SD**	**Min**	**Max**
Personal Resources				
Physical Attractiveness	3.57	.86	1	5
Personality Attractiveness	3.60	.83	1	5
College Aspirations	4.44	1.02	1	5
Picture Vocabulary Test	100.55	14.09	10	137
Picture Vocabulary Test - Missing	.05	.22	0	1
9th Grade GPA	2.60	.89	0	4
Wave I GPA	2.89	.75	1	4
Mentoring				
Mentor	.75	.44	0	1
Social Role				
Relative	.26	.44	0	1
Teacher	.19	.39	0	1
Friend	.13	.34	0	1
Community	.16	.37	0	1

Notes: N = 12,621.

[a]Valid N = 9,216

Table 2

Influences on Educational Achievement and Attainment

	12th Grade GPA[a]			Highest Degree Achieved[b]		
	(1)	(2)	(3)	(4)	(5)	(6)
Age	−.007	−.005	−.004	1.373***	1.381***	1.387***
Female	.204***	.203***	.204***	1.312***	1.298***	1.301***
Private School	−.113*	−.110	−.110	1.842***	1.860***	1.842***
Extracurricular Activities	.008	.007	.007	1.058***	1.055***	1.052***
Work						
0 hours	---	---	---	---	---	---
1 - 20 hours	−.023	−.028	−.026	1.052	1.036	1.044
21+ hours	−.043	−.049	−.046	.891	.879	.889
Social Background						
Race						
White	---	---	---	---	---	---
Black	−.076*	−.078*	−.077*	1.760***	1.755***	1.754***
Asian	−.116*	−.114*	−.115*	1.373	1.387	1.376
Hispanic	−.037	−.035	−.035	1.225	1.247	1.250
Native American	−.031	−.031	−.028	.814	.818	.823
Neighborhood Disadvantage	−.028	−.029	−.031	.826	.823*	.824*
Neighborhood Disadvantage - Missing	.010	.008	.006	.926	.919	.912
Parental Resources						
Family Income (in $1,000)	.001**	.001**	.001**	1.003***	1.003***	1.003***
Family Income - Missing	−.021	−.020	−.019	.970	.973	.973
Parent in PTA	.017	.019	.018	1.217***	1.226***	1.222***
Parent in PTA - Missing	.041	.043	.042	.986	.990	.982
2-Parent Biological	.058**	.058**	.057**	1.579***	1.579***	1.573***
Highest Parent's Education	.044***	.041***	.041***	1.443***	1.431***	1.435***
Relationship with Parents	.035*	.035*	.035*	1.045	1.042	1.042

	12th Grade GPA[a]			Highest Degree Achieved[b]		
	(1)	(2)	(3)	(4)	(5)	(6)
Peer Resources						
Number of Friends	.004	.003	.003	1.020	1.015	1.015
Friends' Mean 9th Grade GPA	.102***	.101***	.100***	1.174**	1.167*	1.163*
Friends' Mean 9th Grade GPA - Missing	.004	−.001	.000	1.155	1.126	1.125
Peer Network Centrality	.008	.010	.011	1.152*	1.157*	1.159*
Peer Network Centrality - Missing	.119	.116	.119	.824	.813	.820
School Resources						
Student/Teacher Environment	.255*	.250*	.246*	1.381	1.343	1.331
Student/Teacher Environment - Missing	−.090	−.085	−.089	1.021	1.045	1.029
Average Class Size	−.002	−.002	−.002	.990	.990	.990
School Size	−.084**	−.085**	−.086**	1.283**	1.278**	1.269**
Personal Resources						
Physical Attractiveness	.035**	.036**	.037**	1.028	1.035	1.038
Personality Attractiveness	.015	.013	.012	1.089*	1.079*	1.079*
College Aspirations	.023	.021	.020	1.489***	1.482***	1.477***
Picture Vocabulary Test	.002*	.002	.002	1.026***	1.025***	1.024***
Picture Vocabulary Test - Missing	−.008	−.009	−.010	1.038	1.033	1.028
9th Grade GPA	.556***	.553***	.551***	2.301***	2.290***	2.268***
Mentoring						
Mentor		.103***			1.529***	
Social Role						
Relative			.100***			1.501***
Friend			.059			1.400***
Teacher			.151***			1.987***
Community			.088**			1.303***
Constant	−.483	−.514	−.491			
N	9,216	9,216	9,216	12,621	12,621	12,621

Notes:

NIH-PA Author Manuscript

NIH-PA Author Manuscript

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[a]Unstandardized coefficients from OLS Regression.

[b]Odds ratios from ordered logistic regression.

*
p < .05

**
p < .01

***
p < .001; two-tailed tests

Table 3

Predicted Probabilities of Having a Mentor from Multinomial Logistic Regression for Advantaged[a] and Disadvantaged[b] Youth

	Mentor	Mentor's Social Role			
		Relative	Friend	Teacher	Community
Social Background					
Advantage	66	11	15	18	22
Disadvantage	62	13	16	15	18
Parental Resources					
Advantage	**68**	14	14	**20**	20
Disadvantage	**60**	10	16	**14**	20
Peer Resources					
Advantage	**68**	12	17	17	21
Disadvantage	**61**	12	14	15	20
School Resources					
Advantage	64	11	19	16	18
Disadvantage	65	12	14	18	21
Personal Resources					
Advantage	**73**	12	13	**23**	**25**
Disadvantage	**53**	11	17	**10**	**15**
Full Model					
Advantage	**82**	11	15	**32**	**24**
Disadvantage	**44**	9	15	**7**	**13**

Notes: N = 7,840—Includes only respondents whose mentors became important after Wave I to ensure temporal ordering. Bolded predicted probabilities represent statistically significant differences (i.e., did not have overlapping 95% confidence intervals) within resource type and social role. Within a row of the table, the sum of mentor's social roles may not equal the report of mentor due to rounding.

[a] Advantage: Social Background—White or Asian, .24 neighborhood disadvantage, Parental Resources—$58k parental income; Participates in PTA, lives with both biological parents, a parent with a college degree, 3.75 connection to parents; Peer Resources—nominated 10 friends, 3.3 Mean friends' Wave I GPA, 1.16 peer network centrality; School Resources—4 teacher/student environment, 20 students per class at school, 2 (401–1000 students) school size; Personal Resources—very attractive physically, very attractive personality, high aspirations to attend college, 113 PVT score, 3.5 GPA.

[b] Disadvantage: Social Background—Black, Hispanic, or Native American, .78 neighborhood disadvantage; Parental Resources—$23k parental income; Does not participate in PTA, does not live with both biological parents, highest parent education is high school diploma, 2.5 connection to parents; Peer Resources—nominated 4 friends, 2.5 Mean friends' Wave I GPA, .34 peer network centrality; School Resources—3.5 student/teacher environment, 30 students per class at school, 3 (1001–4000 students) school size; Personal Resources—unattractive personality, physically unattractive, low aspirations for college, 87 PVT score, 2.0 GPA.

Table 4

Interactions between Mentoring and Other Resources

	Relative	Friend	Teacher	Community
12th Grade GPA				
White or Asian			−.109	
Student/Teacher Environment				.351
Parent in PTA		.138		
Number of Friends	−.020			
Highest Degree Achieved				
White or Asian			−.427	
Neighborhood Disadvantage			.409	
Parent in PTA			−.505	
Highest Parent's Education			−.268	
Friends' Average GPA			−.433	
Personality Attractiveness	.173			
9th Grade GPA	.187		−.288	
Picture Vocabulary Test	.013		−.019	

Note: To reduce the potential of reporting chance results, we only present coefficients that are significant at $p < .01$; two-tailed tests.