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Families, Social Capital and Educational Continuation

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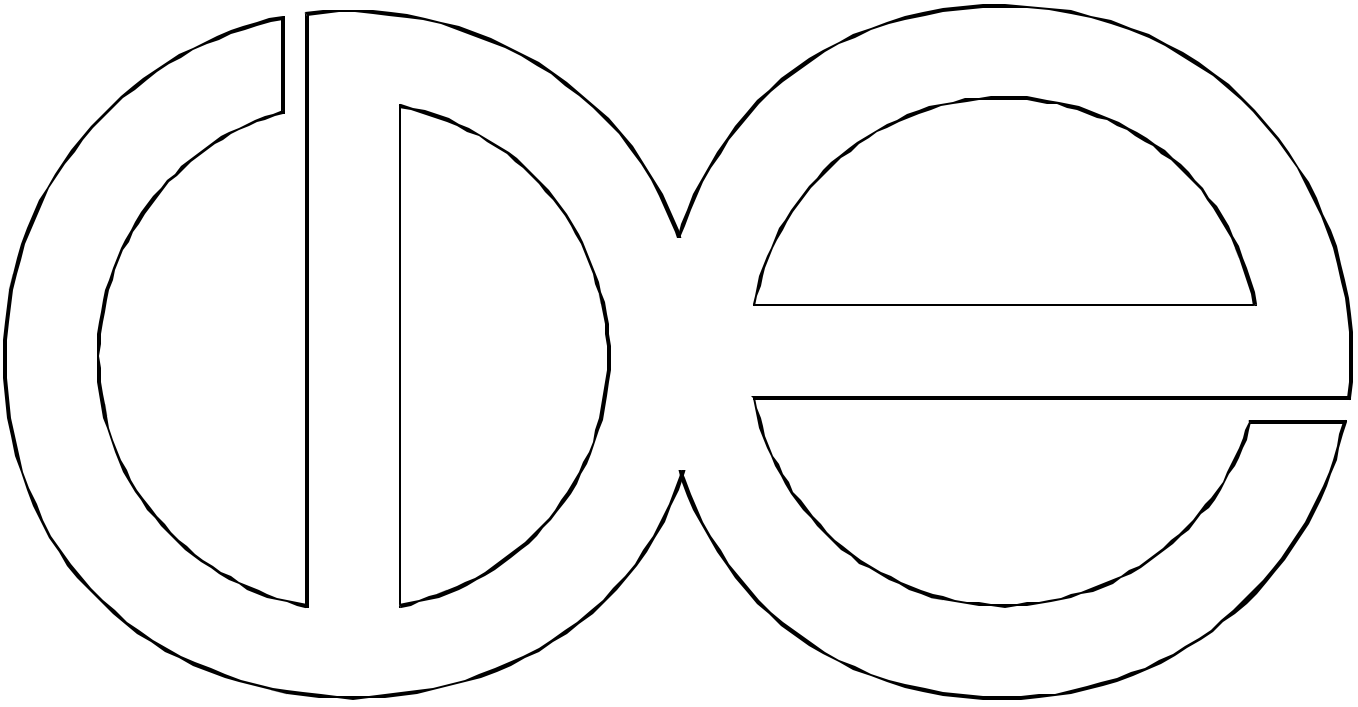

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Abstract

Using four waves of the National Educational Longitudinal Survey (NELS), we study the influence of social capital on the probability of making three educational transitions: high school graduation, entering any post-secondary education, and entering a four-year post-secondary institution. We investigate several hypotheses suggested by recent theoretical and empirical work on the concept of social capital. Our results show that money can be used to invest in social capital (e.g., residential stability) just as it can be used to invest in human capital. We also find that the forms of social capital (family structure, residential stability, and Catholic school attendance) affect educational attainment in part through the measured quality of social relationships and assistance associated with these different forms of social capital. Our results suggest that recent theoretical and empirical work with the concept of social capital has introduced a set of ideas that may be fruitful for understanding better the ways in which parents and communities can influence the wellbeing of children and adolescents.

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INTRODUCTION

A long tradition of research has examined how families facilitate the educational attainment of their children. Much of this research concentrates on the roles of family income (financial capital) and parental education (human capital) in determining educational trajectories for children. In 1988, Coleman suggested that a third type of family resource--social capital--influences many aspects of child wellbeing. Coleman defined social capital as inhering in the relations between actors and among actors, e.g., in the relations between parents and children. He also argued that social capital serves as a mechanism through which the effects of income and parental education are transmitted from parents to children. He argued, for example, that income and education would have smaller effects in families with low social capital than in families with high social capital. Since his introduction of social capital into the realm of familial influences on children, various studies have found that some concrete measures of social capital, e.g., the presence of two parents and going to a Catholic school, influence educational attainment. The purpose of this paper is to synthesize some of the recent theoretical and empirical work using the concept of social capital, and to test some specific hypotheses suggested by this work.

Using four waves of the National Educational Longitudinal Survey (NELS), we study the influence of social capital on the probability of making three educational transitions: high school graduation, entering any post-secondary education, and entering a four-year post-secondary institution. We investigate five major hypotheses: H_1 (Investment Hypothesis):

Families use their income to invest in the social capital of their children. The income of families, for example, is associated with residential stability. H_2 (Quality Hypothesis): The forms of social capital influence the quality of social capital. Parents in two parent families, for example, are more likely to know the parents of their children's friends. H_3 (Assistance Hypothesis): The forms of social capital affect the assistance available to the individual. Parents in two parent families, for example, have more frequent discussion of school activities with their children. H_4 (Outcomes Hypothesis): The positive outcomes (e.g., college attendance) associated with a specific form of social capital are due to measured and unmeasured assistance provided via that form of social capital (e.g., parent-child discussion of school activities explains, in part, the effects of family structure on educational attainment). And, finally, H_5 (Conditional Hypothesis): The effects of other forms of social capital are conditional on whether or not the adolescent resides in a two-parent family.

BACKGROUND

Our research builds on past research that has tried to link social capital and educational outcomes. Research prior to the birth of the social capital concept in mainstream sociological research established that one indicator of social capital, family structure, influences high school completion (See, for example; Blau and Duncan, 1967; Duncan, 1965; Mare, 1980). It is well documented that children who grow up in single-parent families are about twice as likely to drop out of school as children who grow up in intact families (Astone and McLanahan, 1991; Mare, 1980; McLanahan and Sandefur, 1994). Coleman also identified some other indicators of social capital. These include residential stability and attending a school surrounded by a

religious community. His own research and the research of others suggest that these variables are related to different aspects of child and adolescent wellbeing, including educational attainment (see, for example, Furstenberg and Hughes, 1995; Teachman et al., 1996; 1997).

Although these factors can influence educational attainment in a number of ways, the focus in Coleman's theory and in subsequent work is on these factors as measures of the relationships that a focal individual has with other people, and with the assistance that can be obtained via these relationships. As Astone et al. (1999) point out, social capital is a characteristic of an individual that arises from his/her relationships with other people. A two-parent family, for example, is not by nature preferable to a one-parent family, but two parents working together can provide more social control, more social support, more information, and greater access to individuals and institutions outside the family than one parent working alone. Attending a school surrounded by a religious community provides more social control, more contact with other adults, and a greater sense of involvement and community than attending most large public schools. Residential stability enhances the number and strength of social relations that adolescents have with others.

Further, Coleman argued that social capital not only directly influenced the wellbeing of children, but that it also influenced the ability of parents to pass on the benefits of financial and human capital to their children. As he put it in his discussion of the connections between human capital and social capital in the family, "If the human capital possessed by parents is not complemented by social capital embodied in family relations, it is irrelevant to the child's educational growth" (Coleman, 1988, p. S110). Teachman et al. (1997) found some evidence using the NELS data that social capital did establish a context within which the human and

financial capital of parents is converted into success in school. This seemed to be truer of income than of education.

Recent Theoretical Innovations

Coleman's approach to conceptualizing and measuring social capital has been criticized on a number of grounds. One principal complaint is that social capital is just a new name for concepts that social scientists have been studying for some time. Portes (1998) and Carbonaro (1998), for example, point out that investigating the impact of social relationships (social capital) on wellbeing is not really a new idea. This is certainly true, but the real test of using social capital as a conceptual tool is whether it leads to new insights into social relationships and their impact on the lives of individuals. One can see the work on human capital as a parallel. Social scientists were certainly aware of the importance and effects of education and training on productivity prior to the introduction of the concepts of human capital and investments in human capital, but the theoretical development using these concepts moved us far beyond our previous understanding of these effects. The utility of social capital as a concept will only be clear after several years of theoretical development and empirical research. Another way to put this is that we will not know if it is a useful idea until we have used it for some time.

A second problem with Coleman's initial theory of social capital is that it does not make distinctions among different aspects of social capital (Astone et al., 1999; Portes, 1998; Sandefur and Laumann, 1998). Portes (1998), for example, argues that it is important to be more systematic in using the concept. He distinguishes among three aspects of social capital: possessors of social capital, sources of social capital, and resources available through social

capital. Sandefur and Laumann (1998) prefer a simpler distinction between forms and benefits. Teachman, et al. (1997) distinguish between general (e.g., family structure) and specific (e.g., relationships with parents) forms of social capital. Further, Portes and Sandefur and Laumann argue that not only may some forms of social capital have real benefits for individuals, but other forms of social capital may have harmful effects. A high school student, for example, may have a strong relationship with her friends, but if these friends are heavy drug users who engage in unprotected sex, this form of social capital may impair rather than enhance the wellbeing of the student. Astone et al. (1999) suggest that we distinguish among three dimensions of social capital, forms of social capital (e.g., family structure), the quality of social capital (e.g, the quality of relationships between parents and children), and the resources available via a form of social capital (e.g., advice and information from the parents).

Other researchers have tried more systematically to explore the parallels between social capital and human capital. Hofferth, Boisjoly, and Duncan (1999), for example, explore the idea of investing in social capital to build up stocks of social capital that can be drawn on in times of need. They point out that social capital is different from social support networks in that it is the existence of the relationship that defines social capital whereas it is the actual transfer of goods and services that defines social support networks. Social capital, then, is a resource on which individuals can draw. They then ask whether investment in social capital or altruism is the base on which these relationships are built. That is, do individuals expect to receive help from friends and relatives because they have provided such assistance in the past and expect reciprocity, or do individuals expect to receive help simply because of the existence of the

relationship. Their results suggest that exchange and investment are characteristics of friend-based linkages but not family-based linkages.

Families can also invest in the social capital of their children in more direct ways. Just as families can use their income and wealth to invest in the human capital of their children, they can use their income and wealth to invest in the social capital of their children. One of the more obvious ways in which this occurs is in the relationship between income and residential stability. Although high-income families are generally more geographically mobile than low-income families, they are less mobile during critical periods in the childhood of their children than low-income families. This protects the social networks, friendships, and contacts within which the children and parents operate.

These criticisms and theoretical developments suggest ways to refine the theory of social capital. Regardless of the terminology used, conceptual and empirical clarity would seem to require distinctions among the social relationships that form social capital, the quality of these relationships, and the assistance that comes from being involved in these relationships. To the extent that it is possible, we should measure and examine the effects of all three aspects of social capital. Our approach then is to use Coleman's original definition of social capital, i.e., social capital inheres in the relations between actors and among actors, as referring to the forms of social capital. A family, for example, provides one form of social capital; teachers and other school personnel provide another form of social capital; and friends constitute another form of social capital.

It is important, however, to look at the quality of social capital as well as the forms of social capital. The quality of the relationships between parents and their children may be

influenced by whether a child resides in a two-parent or one-parent family, but this quality is not determined by the structure of the family. The quality of the relationships between parents and children may vary widely across different two-parent families and across different one-parent families.

Families can provide assistance through parental involvement in the lives of their children. Relationships with teachers can lead to access to information and opportunities that enhance the educational performance of children. Friends constitute perhaps the most obvious form of social capital that can provide assistance that may increase the likelihood of bad outcomes. Belonging to a group of friends or peer group that is involved in self-destructive behavior may "assist" the individual in self-destruction.

This conceptualization of social capital in terms of forms, quality, and assistance suggests that the forms of social capital are associated with the quality of relationships and with the amount of assistance provided via these forms, and that the effects of the forms of social capital occur through this assistance. Not all of the assistance associated with social capital may be measured in the data. Consequently, forms of social capital may have effects on wellbeing that are not completely channeled through the assistance measured in any data set.

Hagan et al. (1996) suggested another theoretical innovation. They were concerned with two principal measures of social capital suggested by Coleman: family relationships and geographical mobility. Coleman argued that the presence of two parents and the closeness of the relationship between a child and her parents would enhance the wellbeing of the child. Further, he argued that geographical mobility, more specifically, changes in schools, disrupted the social relationships outside the family and impaired the wellbeing of the child. Hagan et al.

posed the question of whether the effects of migration might be less for children in strong families. Their results suggested this was the case, i.e., the harmful effects of migration were more pronounced in families with uninvolved fathers and mothers who were not supportive of their children than in families where the fathers were involved and the mothers were supportive. Tucker et al. (1998) reached a similar conclusion. Children who moved an average or above average number of times were not significantly harmed if they resided in families in which both biological parents are present, but for children in other types of families, geographical mobility had adverse outcomes.

Social capital theory, and previous empirical research, places a great deal of emphasis on the family as a form of social capital. Yet, Coleman also felt that relationships outside the family were also very important, hence, the emphasis on residential stability and schools surrounded by a strong community of active and involved parents and teachers. Residential stability and strong communities can compensate for weak families; statistically these are simply additive effects. Hagan et al. (1996) and Tucker et al. (1998), however, are proposing something different, i.e., the ability of strong families to make another form of social capital less important—an interaction effect in statistical terms.

Theoretically, this introduces a somewhat unusual set of predictions about the effects of strong families on the effects of other influences on outcomes. Coleman himself argued that strong families would enhance the transmission of social capital and human capital, so the obvious hypothesis would be that strong families should also enhance the effects of other forms of social capital, i.e., the effects of residential stability should be stronger for strong families than

for weak families. This is the opposite of the predictions and findings of Hagan et al. (1996) and Tucker et al. (1998).

Further, it is important to note the differences between the findings of Hagan et al. (1996) and Tucker et al. (1998). In the former article, the emphasis is on interactions between a form of social capital (residential stability) and the quality of parent-child relations while in the later article, the emphasis is on interactions between two forms of social capital (residential stability and family structure).

These criticisms, theoretical innovations, and past empirical research suggest a number of hypotheses to investigate, including the five considered in this paper. The first hypothesis is what we might refer to as the investment hypothesis. The forms, quality, and assistance available via social capital vary with family income. This variation occurs because families use their income to invest in social capital just as they invest in other resources that help their children. The second hypothesis we label the quality hypothesis. The forms of social capital affect (but do not determine) the quality of social capital. The third hypothesis is the assistance hypothesis. That is, strong and stable social capital should result in more measurable assistance relative to weak and unstable social capital. We should find, for example, that the more often individuals change schools, the less connected they are with their teachers and the less connected their parents are with the schools. A fourth hypothesis refers to the outcomes associated with forms of social capital and we refer to it as the outcomes hypothesis. The effect of a form of social capital on an outcome is due to the measured and unmeasured assistance received via that form of social capital. For example, the impact of changing schools on educational attainment is in part due to the reduced contact between parents and schools

associated with changing schools. The fifth and final hypothesis refers to the ways in which the effects of the other forms of social capital may be conditional on the strength of the family. There are theoretical reasons to expect both stronger effects of other forms of social capital in strong families and weaker effects in weak families.

DATA AND METHODS

To study the relationship between social capital and educational transitions, we use the National Educational Longitudinal Study (NELS). Data collection for NELS began with a cohort of eighth graders in 1988. Three follow-up data collection efforts captured data on the original sample in 1990 (first follow-up), 1992 (second follow-up), and 1994 (third follow-up). NELS data allow for the analysis of various educational continuation decisions up to the decision to enroll in a post-secondary institution. For this reason, our analysis focuses on high school completion, post-secondary *enrollment*, and the decision to enroll in a two-year versus a four-year post-secondary institution. The data do not allow us to study college completion since most participants have not had time to finish college by 1994.[1]

On the other hand, NELS data are still particularly well suited for our purposes. Its longitudinal nature allows for the analysis of expected educational outcomes with important covariates measured at earlier points in time. Moreover, NELS contains contextual information from students' parents, teachers, and school administrators. In addition, these data focus on interactions between each group and the student respondents.

Following Mare (1980), we use a continuation odds logit model to examine which students successfully complete the three school transitions proposed. We use the social capital

variables of students at the base year of data collection, the first follow-up and the second follow-up, since we assume that social capital investment during these formative years will have payoffs, in terms of later educational attainment. This approach makes it possible to compare the coefficients of variables across transitions because logit coefficients are not affected by the variance of the dependent variable. Consequently, we can examine whether the effects of social capital are larger for some transitions than for others.

Measures

We measure three forms of social capital, family structure, number of times the student changed schools, and Catholic high school attendance.[2] Although Coleman also proposed the number of siblings as a measure of social capital, we use it as a control variable. Coleman viewed siblings as competitors for the time and attention of parents, but siblings can also be a source of information, advice, and experiences for an adolescent. The number of siblings may have both positive and negative effects on educational attainment.

Table 1 provides some descriptive statistics for these and other measures in our work. Our measure for family structure takes into account family structure at the first wave and family structure at the third wave. Almost half of the sample (48.5%) is in the stable intact category, individuals whose families remain intact from the 8th through the 12th grade. Sixteen percent are in other types of families that remain stable during this period, while almost 20 percent of the sample experiences some sort of change in family structure. Another 16 percent have missing information on family structure at either the baseline year or at the second wave. It is likely that most of the latter group have some sort of non-intact family structure.

Insert Table 1 about here.

Table 1 shows that almost 75 percent of the students did not change schools except for ordinary promotions within school districts from the 8th through the 12th grades. On the other hand, over 8 percent experienced two or more changes from the 8th through the 12th grades. Approximately 10 percent of the students were in a Catholic school in at least one wave of the survey.

One measure of the quality of social capital is whether the parents of the focal adolescent know the parents of his/her friends (as reported by the parents in waves 1 and 3). Coleman referred to this as intergenerational closure. A second measure is the adolescent's perceptions of the helpfulness of the teachers.

Coleman placed a good deal of emphasis on intergenerational closure. One could argue that it is a form of social capital, but we view it as a measure of the quality of social capital. It is an indicator of the integration of the adolescent and his/her parents into the community. Parents were asked in both the base year and the second follow-up about whether or not they knew the parents of their children's friends. For each of five of their children's friends, parents were asked "Do you know the parents of your child's (first, second,…, fifth) friend?" Since we have five variables and two waves of data, we have a total of 10 variables indicating whether or not parents knew the parents of their children's friends. To measure the degree of closure, we totaled the responses to the 10 questions and created a new variable, closure. The value of closure ranges from 0-10, and Table 1 shows that the variable has a mean value of 5.4, indicating that the average child's parents knew 5 out of the maximum of 10 of the parents of their children's friends in the combined two waves of data.

Student's Perceptions of School/Teachers is generated from six variables—two questions asked in three waves. In the base year, first follow-up, and second follow-up, students were asked how much they agreed with the following: the teaching is good at this school, and teachers are interested in students. These variables all loaded on one factor in a factor analysis. The six variables were standardized and those with missing values were set to zero, the mean for a standardized variable. We then summed the standardized scores for the final composite variable.

Different forms of social capital can provide different resources or assistance to the individuals that posses them. One thing that parents can provide to children is advice. So, we use the adolescent's reports about the discussion of school activities with their parents as a measure of the assistance available via social capital.

Six variables were used to create the measure of family discussion of school activities. Three questions about family discussion of school issues were asked in both the base year and in the second follow-up for a total of six questions. The questions ask children how often they talk with parents about their school program, their activities at school, and their studies. All of these variables loaded onto one factor in a factor analysis. Students who had dropped out between the base year and the second follow-up were not asked these three questions in the second follow-up. We substituted the lowest possible score for these cases since we expect these children to have minimal discussion about school programs, activities, and studies. The six variables were then standardized and those with missing values were coded to zero (the mean for a standardized variable). We summed the values of the standardized variables to create the final composite variable for school discussion.

Family income (financial capital) is measured by a 15-category parental income variable ranging from 1 indicating no family income to 15 indicating more than $200,000 in annual income. Education or parental human capital is measured by the average of the mother's and father's education, which is coded into six categories. If the student lives with just one parent, that parent's education is used as the human capital indicator. The parent's education measure ranges from 1 to 6, where 1 indicates less than a high school degree and 6 indicates a professional degree. We also include race, gender, region, number of siblings, and whether a sibling dropped out of school as control variables in the models.

The dependent variable is educational transitions. Almost 90 percent of the students finished high school. Of these, 72 percent attended college, and of these, 59 percent went first to a four-year college.

Methods

The effects of income and family structure on Catholic school attendance and the number of school changes are estimated using ordered logit models. The effects of the forms of social capital on intergenerational closure, perceptions of the helpfulness of teachers, and discussion of school with parents are estimated with ordinary least squares regression models. The effects of social capital on students' school continuation rates are assessed with a logistic response model that models a series of dichotomous variables representing each of the three transitions. Students who do not successfully complete the first transition are assigned a value of 0 for the transition-one dichotomous variable (i.e., high school completion); students who completed the transition are assigned a value of 1. Given that a student completes a transition,

he/she is eligible for assignment to the second dichotomous transition variable (i.e., post-secondary attendance). Given that a student attends a post-secondary institution, he/she is eligible for assignment to the third dichotomous transition (i.e., four-year v. two-year attendance). The log odds of making a transition is given by the log odds of students who make a transition compared to those who do not make the transition given that all of them made the previous transition. The equation for the model takes the form:

$$\log_e (p_{ij} / 1- p_{ij}) = \beta_{j0} + \sum_k \beta_{jk} X_{ijk} ,$$

where p_{ij} is the probability that the *i*th individual will make the *j*th school transition, X_{ijk} is the value for the *i*th individual deciding whether to make the *j*th transition on the *k*th independent variable, and the β_{jk} are parameters to be estimated from the data (Mare, 1980, p. 297). This model allows the effects of the independent variables to vary across transitions (j), but in this paper, we constrain the effects of the independent variables to be the same across the three transitions.

RESULTS

The Investment Hypothesis

The investment hypothesis states that families will invest their money in social capital for their children. Among the forms of social capital measured in our data in which families can invest are Catholic school attendance and residential stability. Figure 1 shows a model of the relationships we expect to see under the investment hypothesis.

Figure 1: Investment Hypothesis: Families use their income to invest in the social capital of their children.

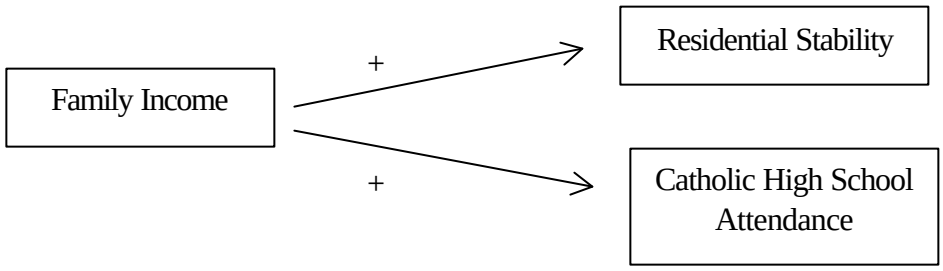


Table 2 contains the results of estimating models in which Catholic school attendance (Column 1) and the number of school changes (Column 3) are the dependent variables. These models are estimated using an ordered logit model. For each variable, no Catholic school attendance or no school changes serve as the reference category, and the three intercepts represent constants for each successive value of the dependent variable.

Insert Table 2 about here.

The results show that family structure and family income affect both Catholic school attendance and the number of school changes. Those families that are stable two-parent families throughout adolescence are more likely to send their adolescents to Catholic schools and are less likely to change school districts while the focal child is in the 8th through 12th grades than are other types of families. The likelihood of Catholic school attendance increases with family income and the likelihood of changing school districts decreases with income. These results are consistent with the view that families use their income to invest in private school attendance and residential stability. Investing in private school attendance can be seen both as an investment in human capital and in the social capital of the children. The likelihood of

Catholic school attendance also increases with parental educational attainment, but parental education does not affect the number of school changes.

The Quality Hypothesis

The quality hypothesis states that the quality of social capital will vary with the forms of social capital. We use intergenerational closure as one measure of the quality of social capital. Figure 2 shows a model of the relationships we expect to see under the quality hypothesis.

Figure 2: Quality Hypothesis: The quality of social capital will vary with the forms of social capital.

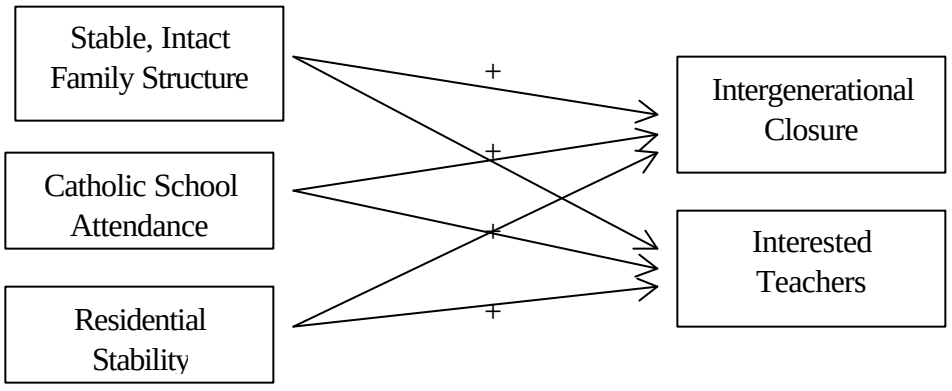


Table 3 contains the results of estimating two ordinary least squares regression models in which intergenerational closure is the dependent variable. Model 1 includes measures of parental income and education as well as a set of control variables. Model 2 adds the measures of the forms of social capital. The results for Model 1 show that intergenerational closure increases with the income and the education of the parents. This suggests that higher SES parents are

more likely to know more of their children's friends. The number of friends' parents known by the respondent's parents is lower for those whose sibling has dropped out of school, and decreases with the number of siblings. This makes sense since the parents probably know a smaller number of each of their children's friends' parents as the number of children increases. Intergenerational closure is higher in rural and suburban areas, especially the former, than in urban areas and higher in the South and Midwest than in the Northeast and West. Intergenerational closure is lower when the respondent is male and when the respondent is black, Hispanic, Asian/Pacific Islander, or other race. The significance of the flag variables for missing family income, missing parental education, or missing sibling dropout is likely due to the fact that missing values on these variables are associated with changes in family structure either before or during the study period.

Insert Table 3 about here.

Model 2 contains our three measures of the forms of social capital, family structure, the number of interview waves in a Catholic school, and the number of school changes. The results show that those in stable family situations, whether they be intact or non-intact, have higher intergenerational closure than those whose family situations have changed or for whom there is missing information. Closure increases with the number of waves in a Catholic school, and decreases with the number of school changes. In sum, the evidence suggests that each of the forms of social capital is associated with intergenerational closure, after controlling for several indicators of family background. This provides strong support for the Quality Hypothesis.[3]

We also used the perceptions of the helpfulness of teachers as a measure of the quality of social capital. Table 4 contains the results of estimating two models in which the adolescent's perception of his/her teachers' interest in students serve as the dependent variable. The results for Model 1 suggest that family income has marginally significant effects on this perception, whereas parental educational has pronounced effects. Adolescents in rural and suburban areas have less favorable impressions of their teachers than do adolescents in urban areas. Boys report less favorable impressions of their teachers than do girls. Hispanics and Asian/Pacific Islanders report more favorable impressions of their teachers than do the other racial groups.

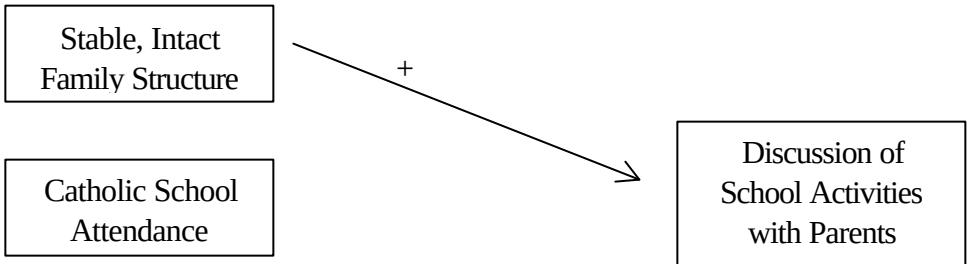
Insert Table 4 about here.

In Model 2, we see that the perceptions of teachers are more favorable among adolescents in stable two parent families than in other types of families. Further, the positive perceptions of teachers increases with the number of waves in a Catholic school and decreases with the number of school changes. These results support the quality hypothesis.[4]

The Assistance Hypothesis

We use the discussion of school activities as reported by the adolescents as measures of the assistance provided by parents. Figure 3 is the model of relationships we expect under the assistance hypothesis.

Figure 3: Assistance Hypothesis: Strong and stable social capital should result in more measurable assistance relative to weak and unstable social capital.



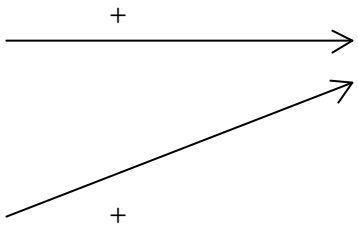


Table 5 shows that higher family income and higher parental education are associated with higher levels of discussion of school activities. The discussion of school activities is less in those families where a sibling dropped out of school, and decreases with the number of siblings. Adolescents in rural, urban, and suburban areas do not differ in levels of family discussion of school activities, but levels are higher in the South, West, and Midwest than in the Northeast. Male adolescents report less discussion of school activities than female adolescents. The results for race suggest that Asian/Pacific Islanders discuss school activities less, but this seems contradictory to what other research has suggested.

Insert Table 5 about here.

In Model 2, we add our three measures of the forms of social capital. Adolescents in stable intact families seem to experience higher levels of discussion of school activities than adolescents in the three other family situations. Also, the level of discussion of school activities declines with the number of school changes. We find no significant effect, however, of attending a Catholic school on the discussion of school activities at home. Overall, though, these results support the assistance hypothesis.[5]

The Outcomes Hypothesis

To reiterate, the outcomes hypothesis states that the effect of a form of social capital is due to the measured and unmeasured quality of the relationships in that form of social capital and the assistance provided via that form of social capital. The effect of changing schools, for example, is due in part to its association with the reductions in intergenerational closure brought about by changing schools. Figure 4 shows a model of the relationships we expect to see under the assistance hypothesis.

Figure 4: Outcomes Hypothesis: The effect of a form of social capital is due to the measured and unmeasured quality of the relationships in that form of social capital and the assistance provided via that form of social capital.

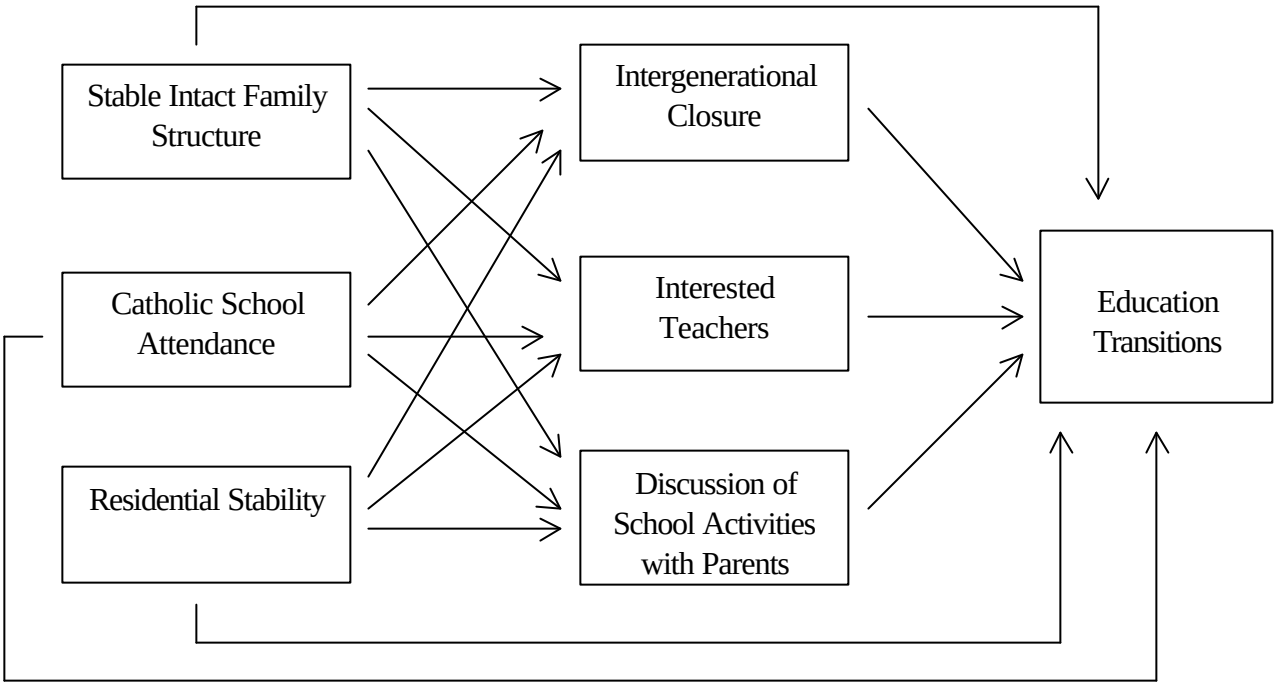


Table 6 contains the results of three models that allow us to test this hypothesis. Model 1, the baseline model, looks at the effects of family income, parental education, and the control

variables on the educational transitions. The results show that the likelihood of finishing high school, going on to post-secondary school and initially attending a four year college increases with income and parental education. The likelihood of these events increases with the 8th grade GPA and achievement test scores of the adolescents. The likelihood of these events is lower for those whose siblings dropped out of school, and decreases with the number of siblings. Those in rural and suburban schools are less likely to continue their education than those from urban schools. Those in the West are less likely to continue than those in other regions of the country. Finally, boys are less likely to continue their education than are girls. Blacks, Hispanics, and Asian/Pacific Islanders are more likely to continue their education than are white students. The higher likelihood of educational continuation for blacks and Hispanics may seem surprising, but it is consistent with other research on educational outcomes when controlling for parental education and income.

Insert Table 6 about here.

Model 2 adds the forms of social capital to the models. The results for Model 2 show that the likelihood of making each educational transition is higher for those in stable intact families than those in other types of family situations. Further, it increases with Catholic school attendance, and decreases with the number of school changes. These results support the arguments of Coleman about the importance of these forms of social capital in the lives of adolescents. Further the results show how one form of social capital can compensate for other forms of social capital. Attending a Catholic school during all three waves, for example,

increases the log of the odds of educational transitions by 0.681, (3 x .227). This is larger than the effect of any type of family structure.

Model 3 shows that each measure of quality and assistance is also associated with educational transitions. Further, the addition of these variables explains parts of the effects of the forms of social capital. But, they explain more of the effects of family structure than they do the effects of attending a Catholic school or the number of school changes. The negative effects of living in a stable non-intact family or missing family structure, for example, become insignificant, while the negative effect of Catholic school attendance and the number of school changes declines by a little over 10 percent. Obviously there are other benefits of the forms of social capital that are not measured in Table 6.

The Conditional Hypothesis

The conditional hypothesis suggests that residential stability will have different effects for individuals in strong families than for individuals in weak families. For our initial test of this hypothesis, we simplify things a bit by using a two category family structure variable, stable intact families v. non-intact families. We then look at interactions between the effect of this dichotomous variable and the effects of the number of school changes on educational transitions. The results for these models appear in Table 7.

Insert Table 7 about here.

Model 1 is very similar to Model 3 in Table 6, except for the two category measure of family structure. Model 2 contains an interaction between changing schools and family

structure. These results show no significant interactions between family structure and changing schools.

SUMMARY AND CONCLUSIONS

In our paper we utilize data from four waves of the National Educational Longitudinal Survey to examine five hypotheses suggested by Coleman's work on social capital and recent theoretical and empirical innovations building on his approach. We follow the suggestions of a number of recent commentators on Coleman's work. Following Astone et al. (1999), we conceptually and empirically distinguish between three aspects of social capital, the forms of social capital, the quality of the relationships in these forms, and the assistance provided by forms of social capital.

Our results suggest that families use their income to invest in the social capital of their children. This is reflected in the fact that the likelihood of residential stability and attendance at Catholic schools increases with family income. Our results also show that parents know more of their children's friends' parents when the family is stable throughout the high school years, when the children attend Catholic schools, and when the family is residentially stable. Adolescents from stable intact families have more favorable perceptions of their teachers than adolescents from other types of families, and perceptions of teachers are more favorable for those attending Catholic schools and those whose families do not move during the high school years. Adolescents from stable intact families also discuss school more often with their parents

than do adolescents from other types of families. This does not vary with Catholic school attendance, but is more likely for those whose families are residentially stable.

Our results also show that the forms, quality, and assistance that compose social capital affect high school graduation and college attendance. Part of the effect of family structure on educational attainment is due to its association with the quality of relationships in which adolescents are involved and the assistance provided by these relationships.

We find no evidence of an interaction between family structure and changing schools. This interaction was suggested by Coleman and by the recent findings of Hagan et al. (1996) and Tucker et al. (1998). We plan to explore in more depth interactions between different types of family structure and residential stability, as well as interactions between intergenerational closure (a measure of quality) and residential stability and between discussion of school (a measure of assistance) and residential stability.

Although it is useful to look at different dimensions or aspects of social capital, empirically distinguishing among these dimensions is more difficult than conceptually distinguishing among them. Intergenerational closure, for example, could be seen as a measure of a form of social capital, the quality of social capital, and/or assistance provided by social capital. These difficulties are, in part, due to the fact that existing data were not collected with measuring the different dimensions of social capital in mind.

Nonetheless, we feel that recent empirical and theoretical work with the concept of social capital is beginning to demonstrate that it is a useful tool for understanding some of the

ways in which families can influence the educational attainment and other aspects of wellbeing of their children. The National Educational Longitudinal Survey and other data permit us to measure, although imperfectly, some key aspects of social capital and their effects on children and adolescents.

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ENDNOTES

[1] The National Center for Educational Statistics does plan to sponsor another wave of data collection of the individuals in NELS. This will permit an assessment of college completion as well as early labor force participation.

[2]Coleman, others, and we use Catholic school attendance as an obviously imperfect measure of social capital. The assumption we make is that individuals who attend Catholic schools are involved in a more close knit community than those who do not. Other schools, both public and private, can provide a close knit community of children, parents, and teachers. Further, other aspects of Catholic school attendance beyond social capital may influence educational attainment.

[3]We also estimated a model in which intergenerational closure in the 12th grade was the dependent variable and we included intergenerational closure in the 8th grade as an independent variable. Parental income and education and each of the three forms of social capital had significant effects on intergenerational closure in this model as well.

[4]We also estimated models in which 12th grade perceptions were regressed on the variables of Models 1 and 2 along with 8th and 10th grade perceptions as independent variables. In these models none of the effects of the forms of social capital were statistically significant at the .05 level.

[5] We estimated models in which 12th grade discussion of school activities was regressed on the full set of independent variables including 8th grade discussion. In these models, family structure,

the number of school changes, family income, and parental education continued to have significant effects on the discussion of school activities in the 12th grade.

Table 1: Descriptive Statistics for Variables Included in the Analysis (Weighted)

	Percent
Family Structure	
Stable Intact	48.5
Stable Other	16.2
Changed Structure	19.3
Structure Missing	15.9
Interview Waves in Catholic School	
None	91.1
One	3.6
Two	1.3
Three	4.0
School Changes	
None	74.2
One	16.8
Two	5.8
Three or more	3.3
Education Transitions	
High School Graduate	87.9
College (for h.s. graduates)	71.9
4-yr. Coll. (for college attendees)	58.7
Have a Sibling Who Dropped Out	9.0
Urban	26.0
Suburban	43.6
Rural	30.4
Gender	
Male	50.1
Female	49.9
Race	
Asian/Pacific Islander	3.5
Hispanic	10.3
Black, Not Hispanic	13.3
White, Not Hispanic	71.4
Native American	1.4
Region	
Northeast	18.5
Midwest	26.8
South	34.5
West	20.2

Mean Number of Siblings = 2.305

Family Income (range 1-15) Mean = 9.672
where 9 = $20,000-$24,999 and 10= $25,000-34,999

Parental Education (range 1-6) Mean = 3.047
where 3 = voc/trade school and 4 = 2 years of college

Intergenerational Closure (range 0-10) Mean = 5.418

Parent-Child Discussion of School (range –10.24-8.02)

Perceptions of School/Teacher Index (range –16.84-9.91)

Source: Calculations with the National Educational Longitudinal Survey (NELS).

Table 2: The Effect of Income and Family Structure on Catholic School Attendance and Number of School Changes

Variable	Catholic School Attendance		Number of School Changes	
	Beta	Standard Error	Beta	Standard Error
Intercept 1	-2.818 ***	0.202	-3.295 ***	0.149
Intercept 2	-2.623 ***	0.201	-2.189 ***	0.140
Intercept 3	-2.066 ***	0.200	-0.816 ***	0.137
Family Structure				
Stable Non-Intact	-0.224 **	0.097	0.426 ***	0.069
Changed Structure	-0.365 ***	0.094	0.763 ***	0.060
Family Structure Missing	-0.497 ***	0.101	0.609 ***	0.066
Financial and Human Capital				
Family Income	0.096 ***	0.018	-0.039 ***	0.011
Parent's Education	0.113 ***	0.030	0.031	0.022
Controls				
Sibling droppout	-0.784 ***	0.172	0.119	0.081
Number of siblings	0.003	0.021	0.062 ***	0.015
Rural	-2.151 ***	0.107	-0.575 ***	0.064
Suburban	-0.943 ***	0.067	-0.424 ***	0.057
Male	0.002	0.061	-0.068	0.047
South	-1.024 ***	0.088	-0.780 ***	0.061
West	-1.219 ***	0.115	-0.504 ***	0.069
Midwest	0.055	0.074	-0.925 ***	0.068
Black	-0.457 ***	0.120	0.070	0.077
Hispanic	-0.258 **	0.107	0.080	0.074
Asian/Pacific Islander	-0.869 ***	0.125	-0.121	0.099
Other Race	-1.420 ***	0.476	0.400 **	0.182
Flag for missing family income	0.470 ***	0.136	-0.209 *	0.123
Flag for missing parent's edu	0.489 **	0.225	0.426 ***	0.164

Source: Calculations with data from the National Educational Longitudinal Survey
*p<.10, **p<.05, ***p<.01

Table 3:The Effects of Forms of Social Capital on Intergenerational Closure

Variable	Model 1 Beta		Model 1 Standard Error	Model 2 Beta		Model 2 Standard Error
Constant	2.563	***	0.143	2.982	***	0.151
Social Capital Forms						
Family Structure - Stable Non-Intact				-0.069		0.069
Family Structure - Changed				-0.432	***	0.066
Family Structure - Missing				-0.489	**	0.172
Interview Waves in Catholic School				0.229	***	0.035
Number of School Changes				-0.412	***	0.041
Financial and Human Capital						
Family Income	0.190	***	0.012	0.165	***	0.012
Parent's Education	0.383	***	0.022	0.379	***	0.022
Controls						
Sibling dropout	-0.316	***	0.091	-0.266	***	0.090
Number of Siblings	-0.079	***	0.017	-0.068	***	0.017
Rural	0.881	***	0.067	0.838	***	0.069
Suburban	0.139	**	0.063	0.157	**	0.063
Male	-0.224	***	0.049	-0.221	***	0.048
South	0.332	***	0.065	0.280	***	0.065
West	-0.082		0.078	-0.107		0.078
Midwest	0.386	***	0.068	0.259	***	0.068
Black	-0.683	***	0.085	-0.624	***	0.085
Hispanic	-0.687	***	0.084	-0.684	***	0.084
Asian/Pacific Islander	-1.883	***	0.102	-1.899	***	0.101
Other Race	-1.126	***	0.254	-1.045	***	0.252
Flag - Missing Parent's Education	-0.572	*	0.300	-0.833	***	0.129
Flag - Missing Family Income	-0.797	***	0.131	-0.507	*	0.297
Flag - Missing Sibling Dropout	-0.994	***	0.155	-0.976	***	0.154

*p<.10, **p<.05, ***p<.01

a. Flag variables indicating mean substitution on other variables were introduced into these models,

Source: Calculations with the National Educational Longitudinal Survey (NELS).

Table 4: Effects of Forms of Social Capital Forms on Perceptions of Teachers

Variable	Model 1 Beta		Model 1 Standard Error	Model 2 Beta		Model 2 Standard Error
Constant	-0.806	***	0.184	-0.553	***	0.199
Social Capital Forms						
Family Structure - Stable Non-Intact				-0.223	**	0.096
Family Structure - Changed				-0.151	*	0.089
Family Structure - Missing				-0.208	**	0.098
Interview Waves in Catholic School				0.220	***	0.046
Number of School Changes				-0.267	***	0.052
Financial and Human Capital						
Family Income	0.027	*	0.015	0.008		0.016
Parent's Education	0.278	***	0.029	0.276	***	0.030
Controls						
Sibling dropout	-0.160		0.118	-0.124		0.120
Number of Siblings	0.022		0.021	0.030		0.021
Rural	-0.364	***	0.087	-0.313	***	0.090
Suburban	-0.567	***	0.081	-0.524	***	0.082
Male	-0.231	***	0.063	-0.227	***	0.063
South	0.154	*	0.084	0.136		0.086
West	0.079		0.099	0.085		0.100
Midwest	-0.079		0.088	-0.162	*	0.089
Black	-0.064		0.111	-0.013		0.113
Hispanic	0.481	***	0.104	0.517	***	0.106
Asian/Pacific Islander	0.249	*	0.130	0.226	*	0.131
Other Race	-0.310		0.287	-0.167		0.291
Flag - Missing Parent's Education	0.569	**	0.237	0.594	**	0.240

*p<.10, **p<.05, ***p<.01

a. Flag variables indicating mean substitution on other variables were introduced into these models,
Source: Calculations with the National Educational Longitudinal Survey (NELS).

Table 5: Effects of Forms of Social Capital on the Discussion of School Activities

Variable	Model 1 Beta		Model 1 Standard Error	Model 2 Beta		Model 2 Standard Error
Constant	-3.091	***	0.183	-2.438	***	0.198
Social Capital Forms						
Family Structure - Stable Non-Intact				-0.264	**	0.095
Family Structure - Changed				-0.601	***	0.089
Family Structure - Missing				-0.543	***	0.098
Interview Waves in Catholic School				0.093		0.045
Number of School Changes				-0.439	***	0.052
Financial and Human Capital						
Family Income	0.192	***	0.015	0.160	***	0.016
Parent's Education	0.677	***	0.029	0.682	***	0.030
Controls						
Sibling dropout	-0.665	***	0.117	-0.583	***	0.119
Number of Siblings	-0.145	***	0.021	-0.134	***	0.021
Rural	0.108		0.087	0.069		0.090
Suburban	0.013		0.080	-0.003		0.082
Male	-1.149	***	0.063	-1.169	***	0.063
South	0.422	***	0.083	0.344	***	0.085
West	0.291	***	0.098	0.260	**	0.100
Midwest	0.268	**	0.088	0.137		0.089
Black	-0.108		0.111	-0.032		0.113
Hispanic	-0.241	**	0.103	-0.270	*	0.105
Asian/Pacific Islander	-1.186	***	0.129	-1.234	***	0.131
Other Race	-1.085	***	0.286	-0.955	***	0.290
Flag - Missing Sibling Dropout	-0.300		0.190	-3.170	*	0.192

*p<.10, **p<.05, ***p<.01

a. Flag variables indicating mean substitution on other variables were introduced into these models,

Source: Calculations with the National Educational Longitudinal Survey (NELS).

Table 6: Effects of Social Capital Forms and Benefits on Educational Transitions -- Outcomes Hypothesis: Baseline, Forms and Benefits Models

Variable	Model 1 Beta		Model 1 Standard Error	Model 2 Beta		Model 2 Standard Error	Model 3 Beta		Model 3 Standard Error
Constant	-4.026	***	0.130	-3.595	***	0.138	-3.199	***	0.154
Transition 2	-1.767	***	0.043	-1.810	***	0.044	-1.950	***	0.050
Transition 3	-2.938	***	0.049	-3.030	***	0.050	-3.220	***	0.058
Social Capital Benefits									
Intergenerational Closure							0.059	***	0.007
Parent-Child Interaction							0.095	***	0.005
School-Child Relationship							0.013	***	0.005
Social Capital Forms									
Family Structure - Stable Non-Intact				-0.088	*	0.048	-0.046		0.050
Family Structure - Changed				-0.345	***	0.045	-0.285	***	0.048
Family Structure - Missing				-0.228	***	0.049	-0.154		0.132
Interview Waves in Catholic School				0.227	***	0.027	0.225	***	0.030
Number of School Changes				-0.340	***	0.026	-0.317	***	0.030
Financial and Human Capital									
Family Income	0.099	***	0.008	0.082	***	0.008	0.072	***	0.009
Parent's Education	0.284	***	0.016	0.302	***	0.016	0.255	***	0.018
Controls									
GPA (grade 8)	0.745	***	0.026	0.703	***	0.027	0.621	***	0.030
Achievement Score (grade 8)	0.063	***	0.002	0.063	***	0.002	0.059	***	0.002
Sibling dropout	-0.477	***	0.056	-0.450	***	0.057	-0.444	***	0.063
Number of Siblings	-0.052	***	0.011	-0.042	***	0.011	-0.034	***	0.012
Rural	-0.169	***	0.044	-0.144	***	0.046	-0.167	***	0.052
Suburban	-0.105	**	0.042	-0.093	**	0.043	-0.106	**	0.049
Male	-0.073	**	0.032	-0.083	**	0.033	-0.001		0.037
South	-0.067		0.043	-0.097	**	0.044	-0.116	**	0.049
West	-0.258	***	0.050	-0.269	***	0.051	-0.265	***	0.058
Midwest	0.071		0.045	-0.018		0.046	0.002		0.051
Black	0.485	***	0.056	0.533	***	0.058	0.584	***	0.063
Hispanic	0.339	***	0.051	0.327	***	0.053	0.397	***	0.062
Asian/Pacific Islander	0.409	***	0.073	0.417	***	0.075	0.668	***	0.087
Other Race	0.003		0.138	0.062		0.141	0.210		0.179

*p<.10, **p<.05, ***p<.01

a. Flag variables indicating mean substitution on other variables were introduced into these models, but were not significant.

Source: Calculations with the National Educational Longitudinal Survey (NELS).

Table 7: Conditional Effect of Social Capital Forms on Educational Transitions

Variable	Model 1 Beta	Model 1 Standard Error	Model 2 Beta	Model 2 Standard Error
Constant	-3.093 ***	0.154	-3.085 ***	0.154
Transition 2	-1.949 ***	0.050	-1.949 ***	0.050
Transition 3	-3.222 ***	0.058	-3.222 ***	0.058
Interactions				
School Changes x Non-Intact Family			0.060	0.059
Social Capital Benefits				
Intergenerational Closure	0.059 ***	0.007	0.058 ***	0.007
Parent-Child Interaction	0.095 ***	0.005	0.095 ***	0.005
School-Child Relationship	0.013 **	0.005	0.012 **	0.005
Social Capital Forms				
Non-Intact Family Structure	-0.280 ***	0.039	-0.295 ***	0.042
Interview Waves in Catholic School	0.221 ***	0.030	0.221 ***	0.030
Number of School Changes	-0.313 ***	0.030	-0.350 ***	0.047
Financial and Human Capital				
Family Income	0.063 ***	0.009	0.063 ***	0.008
Parent's Education	0.260 ***	0.018	0.261 ***	0.018
Controls				
GPA (grade 8)	0.618 ***	0.030	0.617 ***	0.030
Achievement (grade 8)	0.059 ***	0.002	0.059 ***	0.002
Sibling dropout	-0.429 ***	0.063	-0.430 ***	0.063
Number of Siblings	-0.033 ***	0.012	-0.033 ***	0.012
Rural	-0.170 ***	0.052	-0.171 ***	0.052
Suburban	-0.108 **	0.049	-0.108 **	0.049
Male	-0.007	0.037	-0.007	0.037
South	-0.117 **	0.049	-0.116 **	0.049
West	-0.264 ***	0.058	-0.264 ***	0.058
Midwest	0.000	0.051	0.000	0.051
Black	0.602 ***	0.063	0.604 ***	0.063
Hispanic	0.389 ***	0.061	0.391 ***	0.062
Asian/Pacific Islander	0.647 ***	0.087	0.649 ***	0.087
Other Race	0.210	0.179	0.213	0.179

*p<.10, **p<.05, ***p<.01

a. Flag variables indicating mean substitution on other variables were introduced into these models, but were not significant.

Source: Calculations with the National Educational Longitudinal Survey (NELS).

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