

**NEIGHBORHOOD IMPACT ON ADOLESCENT MOTHERS' EDUCATIONAL
OUTCOMES**

A Thesis

submitted by

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Abstract

Amongst youth, adolescent mothers seem to be one of the most vulnerable groups in terms of developmental outcomes. According to previous studies, there are multiple circumstances that may combine with the circumstances of teenage pregnancy and parenting to affect the likelihood that teen mothers continue to attain their high school diploma or GED, or that threaten the disruption of educational activities. Although the body of literature dealing with adolescent parenthood is quite large, the focus of most of the research is on individual factors, and very little research on adolescent parents has focused on the impact of community and neighborhood factors. Scholars have demonstrated the importance of neighborhood context on children and youth development, both directly and indirectly, through community, school, and family level influences (Leventhal & Brooks-Gunn, 2000). The purpose of this study was to understand the extent of neighborhood influences on young mothers' educational outcomes. Using data from the Massachusetts Healthy Families Evaluation, Second Cohort (MHFE-2), the study examined the direct impact of selected neighborhood level constructs (income and ethnic/racial composition), participants' perceptions of their neighborhood, and Healthy Families Massachusetts (HFM) program utilization of home visits on teen mothers' (N=474) educational outcomes. The indirect impact of selected neighborhood constructs was also examined through participants' perceptions of the neighborhoods and HFM program utilization. The multinomial logistic regression analyses revealed that the percentage of minorities in a given neighborhood (for White participants), mothers' awareness of neighborhood resources, and number of home visits

they received were significant predictors of adolescent mothers' educational outcomes.

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Introduction

The focus of this research is on examining the extent of neighborhood influences on young mothers' educational outcomes. Previous research has demonstrated the importance of neighborhood context on child and youth development, both directly and indirectly, through community, school, and family level influences (Leventhal & Brooks-Gunn, 2000). Amongst youth, adolescent mothers seem to be one of the most vulnerable groups in terms of developmental outcomes. As adolescent mothers are already in a stressful situation, addressing potential social and environmental supports for this group, such as the presence of powerful role models, multiple social networks, high-quality schools, and pregnancy/parenting supports, is particularly crucial to support these youth in their parenting and student roles.

The first goal of this thesis research is to investigate the *direct* impact of selected neighborhood level constructs (poverty, residential instability, and ethnic/racial composition) on teen mothers' educational outcomes. In addition, it aims to investigate the *indirect* impact of these neighborhood constructs through participants' perceptions of the neighborhoods, and also of participation in home visiting program- Healthy Families Massachusetts (HFM).

In this thesis I begin with a brief outline of the literature about educational attainment among adolescent mothers. Then, I describe the conceptual framework that has informed the current research, with a focus on existing research on the dimensions of neighborhood structure, as well as perceptions of neighborhood selected for this study. I also review the literature on home visiting programs and their impact on the educational trajectories of

adolescent mothers. In addition I describe the methods, results and discussion of this study.

Chapter 1: Literature Review

The focus of this study was neighborhood influences on young mothers' educational outcomes. Although the body of literature dealing with adolescent parenthood is quite large, the focus of most of the research is on individual factors, and very little research on adolescent parents has focused on the impact of community and neighborhood factors. I begin this chapter by reviewing the literature on patterns of educational attainment among adolescent mothers in order to present the importance and complexity of the problem. The present study was aimed at identifying the impact of neighborhood structural and social processes on adolescent mothers' educational outcomes; therefore, I provide an overview of the conceptual framework that has informed the current research, with a focus on existing research on the dimensions of neighborhood structure, as well as perceptions of neighborhood. Finally, I review the literature on home visiting programs and their impact on the educational outcomes of adolescent mothers.

Educational Attainment among Adolescent Mothers

Schooling is critical to teen mothers throughout their lives. Scholars have found that the level of schooling women obtain affects not only the quality of their own life in light of their occupation, their income, and their risk of poverty; but also mothers' education is likely to influence the children's lives indirectly, including children's health and academic achievement (Lesko 1995; Hofferth, Reid, & Mott, 2001; Davis-Kean, 2005). Being a good mother and rearing children consume time and energy that could otherwise be spent on education and it is reasonable to expect that teen

mothers are less likely than their peers to complete high school and secondary education. Therefore, if we consider the importance of education for women, especially teen mothers, helping adolescent mothers achieve higher educational attainment is a valuable policy.

Several studies have examined different patterns of educational attainment amongst teenage mothers. While some research has illustrated that teenage childbearing has a negative influence on secondary school completion and is positively associated with early school withdrawal (Astone & Upchurch, 1994), this finding is not completely consistent across the literature, depending on how secondary educational attainment is defined (as a high school diploma or as either a diploma or General Educational Development (GED)) and by what age it is attained (Hofferth et al., 2001). For example, on the one hand, researchers showed that attainment of a high school diploma was significantly lower among adolescent mothers, and GED attainment was slightly more common (Perper, Peterson & Manlove, 2010; Hofferth, 2008). Other researchers have found that teenage mothers are less likely to earn either a diploma or a GED by the age of 24 (Fletcher & Wolfe, 2008; Moore & Waite, 1977). Furthermore, research has shown that educational attainment is even worse for those who had their child before the age of 18 (Perper et al., 2010). On the other hand, Upchurch and McCarthy (1990) found that high school graduation is more common than dropping out among teenage mothers. In addition, some studies have found no negative effect of giving birth as a teen on their level of schooling attained (Hotz, Williams McElroy, & Sanders, 2005).

It is clear that teenage pregnancy is not the sole reason for lower levels of educational attainment among young women. Different studies show that there are various individual, family, and community level factors that have been demonstrated to affect youth educational outcomes (Ahn, 1994; Jones et al., 1999; McElroy, 1996; Upchurch 1993; Upchurch & McCarthy, 1990). Ahn (1994) showed that it is a combination of early childbearing, family background differences, and individual heterogeneity that influenced the likelihood of high school completion among one sample of adolescent mothers. Also some other researchers showed that age at first birth, the number of children, and race have been identified as other moderators of secondary educational attainment and the type of secondary degree completed (McElroy, 1996; Perper et al., 2010; Upchurch, 1993).

Yet other studies have explored certain school and community context variables, such as school characteristics and formal mechanisms of support for pregnant or parenting teenagers in schools and communities, as moderators of the relationship between teenage pregnancy and high school completion (Upchurch & McCarthy, 1990; Mahler, 1999; Luttrell, 2003). For example, Manlove (1998) found that attendance at a school characterized by a majority of high SES students or a low proportion of minority students reduced the risk of adolescent pregnancy for White students only. Also Moore (1998) illustrated that the perception by either students or teachers that their school had low crime rates decreased the likelihood of adolescent childbearing for White and Black students.

Taken together, these findings suggest that among adolescent mothers, there are multiple circumstances that may combine with the circumstances of

teenage pregnancy and parenting to affect the likelihood that teen mothers continue to attain their high school diploma or GED, or that threaten the disruption of educational activities. Several scholars have focused only on how individual level factors influence education and have identified the association between race, teenage pregnancy and birth, and dropping out. For example Upchurch's (1993) study documented that Hispanic adolescent young women who became mothers before the age of 18 were least likely to graduate compared with African-American and White young mothers. Also Mahler (1999) found that the likelihood of dropping out of school increases the likelihood of teenage birth, but only for White and Hispanic adolescents. In several situations, the differences in educational outcome by race get interpreted as the individuals' personal responsibility for being unable to complete high school; it is important to keep in mind that larger context and circumstances may contribute to this circumstance. In this study, I addressed the question of whether neighborhood structural factors also contribute to the educational outcomes of teenage mothers. Focusing on these factors enabled me to examine how larger circumstances come into play instead of focusing only on how individual level factors influence education.

Conceptual Framework

In this paper I used the distinction that Nicotera (2007) makes between 'environment' and 'place' to guide the conceptualization of my study. Nicotera (2007) has explained the conceptual nature of the neighborhoods in the perspective of "environment" and "place." The environmental aspect of the environment–place framework represents the objective, structural qualities of

neighborhoods (such as average income levels, and race and ethnic diversity). The “place” aspect of this framework represents the subjective characteristics of the neighborhood as perceived by its residents, such as its norm model, danger, and support as seen by the residents. As Nicotera claims, employing measures that account for both neighborhood structural characteristics and perceived social processes in the same study can provide the best of both ends of the environment-place continuum.

Using this framework for the purposes of my research, I incorporated both environment and place components of neighborhoods to examine neighborhood influences on young mothers’ educational outcomes. In order to account for the "environmental" aspect, I selected neighborhood structural dimensions (that is, neighborhood median income, and race/ethnicity composition of the neighborhood) based on the literature review. In order to account for the "place" aspect, I used participants' perception of safety, connection, awareness of resources, and high school quality of neighborhood. In addition, I also used the individual level data that included HFM program utilization to evaluate the impact of that home visiting program on teen mothers’ educational outcomes (See Figure1).

Structural Dimensions of Neighborhoods

Researchers suggest that the impact of neighborhoods increases during adolescence compared with earlier childhood periods. The growing need for autonomy during the second decade of life implies that adolescents spend more time outside of the home and usually with peers and neighbors (Leventhal, Dupere & Brooks- Gunn, 2009). In the past decade, several

studies examined the influences of neighborhood structure (e.g., SES, and residential mobility) on adolescents' outcomes and showed that neighborhoods affect children's well-being through school readiness and achievement, behavioral and emotional problems (externalizing and internalizing), and sexuality and childbearing (for review, see Leventhal & Brooks-Gunn, 2000).

Among different neighborhood structural dimensions, socioeconomic status (SES), residential mobility, and racial/ethnic composition of neighborhoods have been identified as significant influences on youth outcomes (Leventhal & Brooks-Gunn, 2000). The research findings on these dimensions are briefly summarized in the following paragraphs.

Poverty, the first characteristic of neighborhoods in my research, has been shown to negatively influence child health and development along a number of dimensions. After accounting for individual and family background characteristics, the most consistent finding was that high SES neighbors had positive effects on adolescent achievement outcomes (Leventhal, Dupere & Brooks-Gunn, 2009). Being in a mid-to high-SES neighborhood creates pathways to other opportunities for children and can influence a child's chance of graduating high school (Leventhal & Brooks-Gunn, 2000).

Wilson (1987) has explained that the consequences of poverty concentration include social isolation, and lack of access to opportunity structures through lack of proper role models, stable social networks, and school quality; these all have a negative effect on both the neighborhood and individual. In addition, a sizeable body of research indicates that community socioeconomic characteristics shape the composition and quality of local institutions, such as child care and school, and that this, in turn, influences

achievement (Leventhal & Brooks-Gunn, 2000; Sampson, Morenoff, & Gannon-Rowley, 2002). In these contexts, the availability of social support in school and local institutions may be a particularly important protective factor for adolescent mothers, who are exposed to high levels of stress and anxiety, but may find refuge and relief in positive social connections (Dixon, Browne, & Hamilton-Giachritsis, 2009). Therefore, since these studies indicate that SES is an important dimension of neighborhood structure for youth outcomes, I included a measure of *average income levels* as a potential predictor of educational outcomes. However, in this study I focused specifically on extent of this variable in the block group.

Racial/ethnic composition is the second dimension of neighborhood structure which was investigated in this study. Racially-concentrated neighborhoods may have a strong impact on teenage mothers through their encouragement of strong social ties among the individuals. Some research shows persistent patterns of poorer school outcomes for minorities, especially African Americans and Latinos; Scholars have explained the achievement gaps of this population in two different ways. First, these achievement gaps are widely seen as the result of historical and ongoing discrimination in the form of segregated and unequal schools in the United States (Kozol, 2005; Orfield, Losen, Wald, & Swanson, 2004). Some researchers also explain these gaps as a result of differential access to economic resources and related "environmental" risk factors, stating that minority youth are more likely to both attend poorly funded schools and grow up in families and neighborhoods with fewer resources (Grogan-Kaylor & Woolley, 2010). Second, racial composition may represent characteristics of neighborhoods that are critical

for social and human capital (e.g., proximity of neighbors and social cohesion, and accessibility to community resources). It has been shown that in the racial and ethnic minority concentrated neighborhoods, there is strong social capital among the individuals in the neighborhood which can be beneficial for them. But, these also result in the lack of possibility to bridge social capital with other people outside of the neighborhood (Ream & Stanton-Salazar, 2007).

Research shows that sometimes it might be more beneficial for people to have more "weak" social ties than "strong" ones. Portes (1998) explained the negative consequences of strong social ties within ethnic communities but without ties to individuals outside these communities. This leads to restricted access to opportunities, less individual freedom, and therefore lack of access to opportunities to escape the constraints of the low resource neighborhoods, which may affect the students' school outcomes. Granovetter (1973, 1985) has discussed the values of the weak ties versus the strong ties. He has mentioned that the importance of weak ties is asserted to be that they are disproportionately likely to be bridges, as compared to strong ties, which should be underrepresented in that role. So the weak ties are more efficient than strong ties at reaching higher-status individuals since they can serve as bridges between individuals and subgroups, connecting the substantial social distance, and aiding economic and social mobility by providing the channels for flow of information and ideas.

In this research I used the racial and ethnic composition of neighborhood block groups as a potential predictor of educational attainment. Teenage mothers may then not be able to make social capital bridges with the individuals and organization out of their neighborhoods, and therefore may not

be aware of or able to use the supportive resources that can encourage and help them to continue their education.

Finally, the third dimension of neighborhood structure that was of interest for this study was residential instability. Teen mothers need to have a strong social network in their community of individuals who understand their situation and provide support that helps them to continue their education while they take care of their babies at the same time. Ream and Stanton-Salazar (2007) noted that academic achievement is adversely impacted by instability in social relationships that accompany particularly high rates of student transience and residential mobility of their families, since moving interrupts the social relations with the people in the school, the neighborhood, and the community. It is clear that mobility during high school diminishes the likelihood of completing education on time, and research has shown that the strongest impact of mobility is on student prospects for graduation from high school (Rumberg, 2003). The social capital explanation for the negative association between moving and school performance is that moving often damages social ties that inhere in family relations and in community organization and that are useful for the cognitive or social development of a child or young person (Coleman, 1988). Furthermore, in neighborhoods with a high rate of residential mobility, families do not have a sense of belonging to the neighborhood and thereby low levels of social efficacy. According to the collective efficacy model, the social cohesion among neighbors and their willingness to intervene on behalf of the common good determine the ability of communities to regulate the behaviors of their members and consider the well-being of neighborhood (Sampson, Raudenbush, & Earls, 1997).

Residents in neighborhoods with low social efficacy would have limited ability to regulate youth behavior according to prosocial norms. This may result in engaging in antisocial behaviors, such as skipping school and gang activities, and disrupt adolescents' educational attainment and thereby affect their achievement. Therefore, the absence of proper role models may discourage students from attending school and encourage them to join in antisocial activities. Although I intended to include residential instability as an additional independent variable, these data were not available at the time of analysis, and I excluded this potential predictor of educational outcomes.

In addition to the direct influence of neighborhoods on children and youth development, neighborhood structure may affect youth outcomes indirectly through several social processes mechanisms (Leventhal & Brooks-Gunn, 2000). Below I will explain some of these potential mechanisms, including HFM program participation, and participants' perception of their neighborhoods.

Home Visiting and HFM Program Utilization

One of the potential pathways which moderate the impact of neighborhood structure on adolescent outcomes is the availability of social and institutional resources for adolescents. According to the institutional resources model, the quality, quantity, and diversity of community resources mediate neighborhood effects (Leventhal & Brooks-Gunn, 2000). Resources can be defined as any symbolic or material good beneficial to an individual (Small, 2006). This may include social capital, information, and emotional support and instrumental services. Moreover, some researchers defined social and

institutional resources as the availability, accessibility, affordability, and quality of learning, social, and recreational activities, child care, schools, and medical facilities. These services could influence the well-being of individuals and families (Leventhal, Dupéré, & Brooks-Gunn, 2009; Leventhal & Brooks-Gunn, 2000; Neuman & Celano, 2001).

Home visitation is a method of service delivery that has been growing in popularity for the past several years. Home visitation programs are intended to impact a wide variety of outcomes such as improving child, and maternal outcomes and preventing child abuse and neglect. The motivation behind these programs is the belief that early childhood constitutes an ideal opportunity to identify at-risk families and improve future outcomes through home-based interventions (LeCroy & Krysik, 2011). Healthy Families Massachusetts (HFM) is one of these social and institutional resources that provide social, emotional and information services for teenage mothers through the home visiting program. HFM is a comprehensive, voluntary, and newborn home visiting program for all first-time parents ages 20 and under in the state of Massachusetts. HFM provides parenting support, information, and services to young parents, beginning prenatally or until the child turns one and continuing until the child's third birthday.

Understanding how different patterns of program usage enhance or impede the benefits of home visitation is essential to maximizing its impact (Reynolds, Methieson, & Topitzes, 2009). The popular perception in the field is that —"more is better." For example, Howard and Brooks-Gunn (2009) observed that programs with a greater number of planned visits were more effective in preventing child maltreatment, and that the families that benefit

the most are those that receive the highest number of services. In addition, Kahn and Moore (2010), in a review of 66 home visiting program evaluations, noted that program intensity (as the number of visits within a particular time period) is one of the important factors for the effectiveness of these programs. They illustrated that programs that lasted for more than one year and provided an average of four or more home visits per month over that time period had more positive outcomes than did long-term programs with monthly or fewer visits. Nievar and Van Egneren (2010) have drawn similar conclusions in their meta-analysis of home visiting. They suggested that a threshold of two visits per month is necessary to produce substantive outcomes.

Among different indicators of child and parental outcomes, one of the key aspects of these programs is helping mothers set achievable goals, such as encouraging mothers to pursue school education. Since most of the home visiting programs focus on child outcomes, there are limited numbers of studies that examined the impact of home visiting on maternal outcomes such as maternal educational attainment. Among those studies, the impact of home visiting programs on teen mothers' educational outcomes was shown to be mixed among different home visiting programs. For example, the Hawaii Healthy Start program showed that the early indicators of maternal life course, including success in attaining personal educational goals, did not differ between experimental and control group mothers (Duggan et al., 1999)

. On the other hand, for example, Healthy Families Arizona examined involvement in training or school as an indicator of maternal outcomes, to see whether the person had enrolled and was attending training or school for advancement. A key aspect of the program is helping mothers set concrete goals and encouraging mothers to pursue training and school opportunities. The results, based on self-reports, showed that there was a significant difference favoring the Healthy Families Arizona group on enrollment in

school or training (LeCroy & Krysik, 2011). This is an important finding because gains in education and training can have hand in on reducing poverty which is strongly related to poor child outcomes (Aber & Nieto, 2000; Lindsey, 2004).

By reviewing the current literature on home visiting programs and considering the goal of HFM regarding encouraging educational attainment among parents, in my research, I investigated whether HFM program utilization (as one of the possible social and institutional resources for teenage mothers) has played a role in explaining the relationship between neighborhood structure and adolescent mothers' educational outcome. I examined the impact of HFM program utilization on educational outcomes of teenage mothers as well as its impact as mediators of neighborhood structural variables on teen mothers' educational outcome.

Participants' Perception of the Neighborhood as "Place"

According to social organization theory, community social organization is the ability of a community to realize the common values of its residents and maintain effective social controls (Sampson, 2002). Based on this theory, neighborhood structural factors are of prime importance in explaining behavior through their ability to promote or negate neighborhood organization (Leventhal & Brooks-Gunn, 2000). In other words, the quality and use of social capital and other resources have important roles in how adolescents understand their chances for success. Therefore availability and accessibility of other institutional resources that can provide social and informational support are helpful for adolescents mothers to figure out how

they can play both parent and student roles at the same time. For example, they can provide opportunities for positive interactions among adolescents, help them to overcome the stressful situations such as providing information about child care centers with suitable prices, and also programs that help them to figure out the best way that they can finish high school or get their GED.

Although the availability of such supportive resources is highly important, it is also critical for adolescent mothers to know that these services are available. Scholars have demonstrated that one of the most important ways that individuals can get information and access valuable resources is through their social ties (Small, 2006). They argued that organizational ties are also important as much as individual social ties. He defined organization ties as the ties of neighborhood institutions in which the residents participate. Based on this argument, availability of resources in the community and neighborhood that inform adolescent mothers about the other available out of community resources, such as government support, will be necessarily for adolescent mothers, especially for those who live in disadvantaged neighborhood environments with high poverty, high rate of residential instability and racial segregation.

Based on the literature discussed above, I expected that participants' perception of their neighborhood, and HFM program utilization will each play a role in explaining the association between the neighborhood structure and adolescent mothers' educational outcomes. The proposed research is designed to address the relations of these factors. The specific research questions are delineated in the following section.

Research Questions

1. Do selected structural characteristics of neighborhoods (neighborhood poverty, and racial/ethnic composition) predict adolescent mothers' educational outcomes?
2. Does the participants' perception of the neighborhood (e.g., of safety, connection, awareness of institutional resources, and high school quality) predict adolescent mothers' educational outcomes? Does it moderate the impact of key neighborhood structural factors on the educational outcomes of adolescent mothers?
3. Does HFM program utilization play a role in the educational outcomes of teenage mothers? Does it moderate the impact of key neighborhood structural characteristics?

Research Hypothesis

Based on the research questions and the literature that documents the importance of neighborhood structure and neighborhood social processes for adolescents' development, the study tested three main hypotheses:

1. Block group mean income would be positively associated, and percentage of minorities in the block group would be negatively associated with adolescent mothers' educational outcomes.
2. Participants' perception of the neighborhood would be positively associated with adolescent mothers' educational outcomes, and would significantly moderate the impact of key neighborhood structural factors on the educational outcomes of adolescent mothers.

3. HFM program utilization would be positively associated with adolescent mothers' educational outcomes, and would significantly moderate the impact of key neighborhood structural factors on the educational outcomes of adolescent mothers.

Chapter 2: Method

The study is based on data from the second-cohort investigation of the Tufts University Massachusetts Healthy Families Evaluation (MHFE-2), which was designed to evaluate the Healthy Families Massachusetts (HFM) program. HFM is a comprehensive, voluntary, newborn home visiting program for all first-time parents ages 20 and under in the state of Massachusetts. Based on the *Healthy Families America* (HFA) model for home visiting, HFM provides parenting support, information, and services to young parents, beginning prenatally and continuing until the child's third birthday. The program's main goals are to prevent child abuse and neglect, promote optimal growth and development in infancy and early childhood, support positive maternal outcomes (e.g., maximal educational attainment and economic self-sufficiency), and prevent repeat early pregnancies. HFM program services include home visits, goal-setting activities, group-based activities, and linkages and referrals to other resources (Goldberg et al., 2009).

MHFE-2 Study Design

The Massachusetts Healthy Families Evaluation (MHFE) evaluates both the implementation and the effectiveness of HFM. MHFE-2 is six-year randomized, controlled trial (RCT) being conducted by a team of independent researchers from Tufts University; data collection began in February 2008. MHFE-2 designed not only to assess whether or not HFM is meeting its long-term goals, but also to examine the ways in which participants' personal,

family, program, and community contexts influence and/or explain program utilization and program outcomes.

MHFE-2 consists of two major sub-studies:

- 1) The Impact Study, which uses quantitative methods to evaluate HFM program effects, by identifying the existence of differences in outcomes, if any, between the program and control groups.
- 2) Integrative Study, which uses a mixed methods (qualitative and quantitative data) approach with a smaller sample of participants, with the goal of understanding the reasons behind any observed differences, which is focused on specific issues (e.g., community context, program character, and school experience, etc.) among participants and programs from particular communities. It allows for a more concentrated and comprehensive understanding of the contextual factors that influence participants' trajectories as they transition both to parenthood and adulthood.

The Impact Study includes data generated from multiple sources, including public agency administrative data (including Massachusetts Departments of Elementary and Secondary Education (DESE), Transitional Assistance (DTA), Public Health (DPH), and Children and Families (DCF)), program data, and telephone interviews with individual participants. In addition to the Impact Study Intake Interview, MHFE-2 participants who have enrolled in the Integrative Study are invited to participate in a research visit in their homes. The research visits include a semi-structured interview, and completion of written questionnaires. Participants are interviewed at three time points: enrollment (T1), 12 months post-enrollment (T2), and 24 months post-enrollment (T3). For the present study I used quantitative data from the

Integrative Study, from Time 1 (soon after participant enrolls in the program) and Time 2 (approximately one year after Time 1).

Sample and Recruitment Procedures for MHFE-2

Recruitment Procedures: There are two “levels” of recruitment: randomly assigning participants to a program group (called the Home Visiting Services group (HVS)) or control group (Referrals and Information Only group (RIO)), and enrollment into either the Impact or Integrative Study. In the first level, participants were recruited to voluntarily participate in the evaluation if they met the eligibility requirements of being female, sixteen to twenty years of age, able to speak either English or Spanish, and cognitively able to provide informed consent. Then, an algorithm randomly assigned each participant to either the (HVS) (the program group), or the (RIO) (the control group). Second, every participant who consented to the evaluation was considered to be in the Impact Study, and was asked to sign a consent allowing Tufts to access her administrative data from the state agencies. After enrollment, each participant was given the option of participating in a ½ hour phone interview only (Impact Study Only), or of participating in the phone interview *and* a 2-hour Research Visit (Integrative Study), and depending on which she chose, the participant was assigned to either of the two studies.

Sample: The Time One (T1) Impact Study Sample consists of 707 participants (84% of those recruited by HFM), who signed the release and completed an Intake Interview. Of the 837 initial recruits, 82% (n = 688) completed a T1 Intake Interview and signed an agency records release. In addition, 19 of the participants who had “missed the window” for participating in the T1 Intake

Interview gave MHFE-2 permission to have access to their agency data, and completed a one- time truncated Agency Only Intake Interview. At T1, the Integrative Study Sample consists of 477 participants (67% of the Impact Study Sample), who also agreed to the Research Interview. Participants were, on average, 18.7 years old at the time of enrollment into the evaluation. About 60% of participants were pregnant at the time of their Intake Interview with MHFE-2. MHFE-2 participants represent a racially/ethnically diverse population, with 40% who report themselves as White Non-Hispanic, 32% as Hispanic, 15% as Black Non-Hispanic, and 13% categorized as “Other”. The current study is based on data from both the HVS and RIO groups of the Integrative Study. The sample of this study consists of 474 first-time pregnant and parenting teenagers and represents the ethnic/racial diversity of the state of Massachusetts’ teen parenting population (36% White Non-Hispanic, 35% Hispanic, 21% Black Non-Hispanic, and 7.6% categorized as “Other” (this includes anyone who identified as more than one race or ethnicity).

Research Design for Present Study

This study used a short-term longitudinal design to examine the relationship between neighborhood structural factors and participants’ educational outcomes. In this regard, I examined neighborhood structural features including average income and racial/ethnic composition of block groups as independent variables, with educational outcome as the dependent variable. Although I intended to include residential mobility as an additional independent variable, these data were not ready at the time of analysis. In addition, I examined the role of participants' perception of their neighborhood

(including awareness of neighborhood resources, safety, connection, and schools quality) and HFM program utilization (including number of visits completed, number of groups attended, number of secondary activities, and program intensity) as potential moderators of the relationship.

Data for the current analyses were drawn from the Integrative Study portion of the MHFE-2 evaluation, and data were taken from both Time 1 (soon after participant enrolls in the program) and Time 2 (approximately one year after Time 1). I have used Time 1 data for neighborhood structural features data and participants' perception of their neighborhood. Time 2 preliminary data have been used for the HFM program utilization variables. For examining the dependent variable, I have used both Time 1 and Time 2 data to create mutually exclusive categories of educational status.

Selected Measures for Present Study

Demographic characteristics, such as maternal age and race/ethnicity of participants are typically associated with educational outcomes, but are not explanatory variables. Therefore, these variables served as controls in this study, and were derived from maternal demographic information (age at T1, and self-reported race/ethnicity). Independent variables included: (a) neighborhood structural variables (median income (in thousands) and percentage of minorities in the neighborhood); (b) participants' perceptions of the neighborhood (awareness of resources, neighborhood safety, neighborhood connection, and high school quality); (c) HFM program utilization (number of home visits, number of groups attended, number of secondary activities, and

program intensity). In addition, participants' perceptions of the neighborhood and HFM program utilization were tested as moderator variables.

Descriptions of all measures used to develop study variables are provided below.

Geographic Information Systems

Data for the neighborhood level data are based on a GIS (Geographic Information Systems) dataset extracted from MASSGIS for MHFE-2. These data were derived from public databases (e.g. MassGIS, U.S. Census), in order to characterize the communities in which participants live according to structural characteristics that represent potential indicators of community based assets and risk. The key structural variables include average income levels, and racial/ethnic composition of census-based block groups.

Intake Interview

The outcome variable is educational completion. I used the MHFE-2 Intake Interviews to derive data on educational outcomes; the derived variable consisted of a categorical variable with three categories (e.g., school completion, being in school, or not in school). The Intake Interviews are 30-minute semi-structured phone interviews. At each of the three annual data collection time points, MHFE-2 researchers collected information to understand characteristics of its participants such as demographic characteristics (e.g., age, ethnic background, and relationship status), and educational outcomes.

My Neighborhood Scale

Participants' perceptions of their neighborhoods have been assessed by the "My Neighborhood" Survey administered to Integrative Study participants at Time 1. This scale includes 51 items in 4 subscales: awareness of neighborhood resources, neighborhood safety, neighborhood connection, and schools quality. The questions vary from open-ended items such as "How long have you lived in your neighborhood" to subscale items such as "You have a close knit area", which are rated on a 4-point scale (e.g. strongly disagree, disagree, agree, and strongly agree) (See Appendix A). By using this scale I was able to use information from each subscale including the participants' perception of safety, resources, social connection, and school quality of their neighborhood.

Participant Data System (PDS)

Indicators of service utilization are largely derived from the PDS (Participant Data System). The PDS is the web-based management information system administered and maintained by Massachusetts Children's Trust Fund (MCTF). It provides information about different area of services utilization including: referrals, enrollment, and service level; pregnancy and birth information; service encounter records (frequency of home visits, content of home visits, etc.); assessments; status reports (completed at six-month intervals); goal-attainment records; and discharge records.

I included variables such as number of visits completed, number of groups attended, number of secondary activities, and program intensity. Secondary activities includes all of non-visit activities that occur as a part of

a home visiting program and represent a construct of program dosage, including phone calls, attempted phone calls, delivery of goods or documents (e.g., a food basket or an application for WIC), rides, mailings, emails, and text messages. It is also important to mention that these data is based on preliminary data that is expanded through PDS (Goldberg et al., 2009).

Plan of Data Analysis

The analysis was conducted in three stages. First, I conducted traditional quantitative data analysis to generate descriptive statistics and univariate exploratory analysis. By conducting univariate and bivariate exploratory analysis of all variables, I was able to assess that the assumptions of the general linear model are met. This initial analysis provided the opportunity to make appropriate adjustments to the data, such as examining the potential influence of outliers.

Second, I conducted correlation analysis to see the relationship between the dependent variable and independent variables, and also the relationship between the independent variables to see how these measures correlate and the consistency of their correlations.

Finally, I conducted multinomial logistic regressions to answer my research questions. I considered each of the two dimensions of neighborhood structure separately in order to flesh out how the qualities of neighborhood influence teen mothers' educational outcomes. The regression equations were designed to consider the multiple predictor and control variables unique to each of the specific research questions. Based on the results, I sought to

identify the best fitted overall prediction model as the best predictor for teen mothers' educational outcomes.

Chapter 3: Results

The present study was designed to address the following research questions:

1. Do selected structural characteristics of neighborhoods (neighborhood poverty, and racial/ethnic composition) predict adolescent mothers' educational outcomes?
2. Does the participants' perception of the neighborhood (e.g., of safety, connection, awareness of institutional resources, and high school quality) predict adolescent mothers' educational outcomes? Does it moderate the impact of key neighborhood structural factors on the educational outcome of adolescent mothers?
3. Does HFM program utilization play a role in the educational outcomes of teenage mothers? Does it moderate the impact of key neighborhood structural characteristics?

In this chapter I begin with the descriptive analysis of the dependent variable (*Educational Outcome*), as well as the predictor variables, including *Neighborhood Structural Characteristics* (Percentage of Minorities in the Neighborhood (in block group), and the Median Income (in thousands)), *Neighborhood Perceived Characteristics* (Neighborhood Connection, Safety, High School Quality, and Awareness of Resources), and *HFM Program Utilization* variables (Number of Home Visits, Number of Groups Attended, Number of Secondary Activities, and Program Intensity). Then, I describe the correlation analysis to examine bivariate correlations between demographic variables and the dependent variable, as well as the correlation among predictor variables. Finally, to address the research questions, I present the

results of the multinomial regression analyses, since there are three categories of Educational Outcome as dependent variable: "Completed High school/GED", "Still in High School/GED", and "Neither completed HS/GED, nor in school by T2."

Descriptive Analysis

As shown in Table 1, the 474 participants in the Integrative Study were, on average, 19.6 years old at the time of T2 Intake Interview, with a range of 17-22.67 years of age. Additionally, the sample was racially/ethnically diverse; 35.9 % of respondents self-reported as being White, 35.2 % of respondents self-reported as being Hispanic/Latino, 21.1% of respondents self-reported as being Black, and 7.6% self-reported as being of some other race.

As shown in Table 1, among the 474 participants, over half of the sample received the home visiting services (HVS) (57.8 %), while 42.2 % of the sample fit in the referral and information only (RIO) category and did not receive any home visiting services.

In order to have a better understanding of the distribution of variables, descriptive data analyses were conducted. Table 2 summarizes the means, standard deviations, and actual ranges of predictor variables (i.e., *Neighborhood Median Income, Neighborhood Percentage of Minorities, Neighborhood Safety, High School Quality, Neighborhood Connection, and Awareness of Neighborhood Resources, Number of Home Visits up to T2, Program Intensity up to T2, Number of Groups attended, and Number of*

Secondary Activities up to T2) and outcome variable (*Educational Outcome*) for 474 adolescents mothers.

The predictor variables of Neighborhood Structure show that the range of *Median Income* of neighborhood block groups of the sample is from \$7.47 to 133.3 (in thousands), with the mean and standard deviation of 38.02, and 18.08, respectively. The frequencies also show that the average *Percentage of Minorities in the Neighborhood* (per block group) is 41.00, with a standard deviation of 32.37.

The mean score for *Neighborhood Safety, Neighborhood Connection, and High School Quality* ranged from 0 to 12 with higher scores indicating more positive neighborhood characteristics. The average mean scores of *Neighborhood Safety, Neighborhood Connection, and High School Quality* are 4.85, 5.90, and 5.73 respectively; with a standard deviation for mean scores of *Neighborhood Safety, Neighborhood Connection, and High School Quality* as 2.66, 2.54, and 2.87 respectively.

As the last variable of this group, the total score for *Awareness of Neighborhood Resources* ranged from 12 to 96 with the average of 75.96 and the standard deviation of 21.58. The total score indicates the number of community organizations and resources participants report as present in their communities (See Table 2).

The frequencies of HFM program utilization based on preliminary data are reported in Table 2; the average *Number of Participants' Home Visits* up to T2 is 18.94, with the range of 0 to 55 visits. The *Number of Groups Attended* up to T2 ranges from 0 to 19, with the mean and standard deviation of 1.71, and 3.2, respectively. The third variable of this group, *Number of*

Secondary Activities, ranged from 0 to 122, with average of 18.87 and the standard deviation of 19.08. Finally, the range of *Program Intensity* is from 0 to 4.25, with the mean of 1.69 and standard deviation of 1.04. In addition, it is important to mention that in looking at the role of program utilization on adolescent mothers' educational outcomes, in the following multinomial analysis, cases from the sample were deleted if participants finished their high school/GED or were beyond high school/GED by T1.

In terms of the outcome variable, over half of the sample fit the *Completed High School or GED* (54%) category, 23.2% of the sample fit in *Still In High School or GED* category, and the remaining 13.1% fit the *Has not Completed High school/GED, not in school by Time 2*. In addition 9.5% of the sample is indicated as missing data (See Table 2).

Preliminary Analysis:

Bivariate correlations of dependent and categorical predictor variables for the multinomial logistic models were examined prior to conducting regression analyses and are shown in Table 4. *Educational outcome* (with 3 categories) was not significantly related to *HVS/ RIO* ($r=.016$), but it is positively and significantly correlated with *Self-reported Race* categories ($r=.155$). The compared mean of Participants Age and Educational Outcome indicates the relationship of participants' age and the educational outcome (See Table 3). Since these demographic variables (Race and Age) are correlated with the dependent variable, they are controlled in the regression analysis. By controlling participants' age, we are able to look at the relationship between our variables while we exclude the impact of age on the educational outcome. Also

since HVS/RIO was not correlated with the dependent variable, this variable is excluded from later regression analysis.

The bivariate correlations among the set of predictor variables are also listed in Table 5 and 6; analyses showed *Median Income* was negatively and significantly related to *Percentage of Minorities in the Neighborhood* ($r=-.51$), *Neighborhood Safety* ($r=-.221$), and *High school Quality* ($r=-.101$), which means that block groups with higher median incomes are associated with block groups that have lower proportions of minorities, and that participants in these block groups tend to perceive neighborhood safety and high school quality as low. In addition there is significant and positive relationship between *Median Income and Neighborhood Connection* ($r=.18$), which means that in block groups with higher median incomes participants tend to perceive greater neighborhood connection.

Moreover, *Percentage of Minorities in the Neighborhood* was negatively and significantly related to *Neighborhood Connection* and *Awareness of Resources* ($r= -.224$ and $-.12$), while positively and significantly associated with *Neighborhood Safety* ($r=.269$); this means that in block groups with lower proportions of minorities participants perceive high level of neighborhood connection and awareness of resources, but lower level of neighborhood safety.

Lastly, *Neighborhood Connection* was significantly associated with other neighborhood perceptions. It is negatively correlated with *Neighborhood Safety* ($r=-.337$) and *High School Quality* ($r=-.192$), but significantly and positively related to *Awareness of Resources* ($r=.144$), this means that neighborhoods with higher levels of perceived neighborhood connection are

associated with lower level of perceived neighborhood safety and high school quality, but higher level of awareness of resources. Also, there is a positive and significant relationship between *High School Quality* and *Neighborhood Safety* ($r=.46$), which means that neighborhoods with higher level of perceived neighborhood safety are associated with lower level of perceived school quality.

Table 6 summarizes the results of correlations computed among Program Utilization variables and Neighborhood Structure and Neighborhood Perception variables. There are significant and positive correlations among all of the program utilization variables (See Table 7). In addition *Number of Participant Home Visits* and *Number of Participant Groups attended* up to the Time 2 of Research Interview are negatively and significantly related to participant perceptions of *Neighborhood Connection* ($r= -.161, -.169$); this means that participants who report high levels of perceived *Neighborhood Connection* are the ones who received fewer number of home visits and attended few group sessions.

Multinomial Logistic Regression

The results of the multinomial logistic regression analyses are provided in Tables 7, 8, and 9, with the reference category as "*Completed High school or GED*". Below, I describe the results of the multinomial logistic regression analyses for each of the research questions.

Neighborhood Structural Characteristics as Predictors of Outcome

(Research Question # 1)

In consideration of the first hypothesis, the present results can neither significantly support nor reject the relationship of neighborhood structure and educational outcome. The relative odds of *Neighborhood Income and Neighborhood Percentage of Minorities in the Neighborhood* upon the *Educational Outcome* variable indicated that there were no differences between adolescent mothers *who Neither Completed HS/GED, nor in School by T2* and teen mothers who *Completed High school or GED* on neighborhood structural features. As shown in Table 7, the best fitting model (see M3) indicates that there was a significant relative ratio of the interaction of *Percentage of Minorities in the Neighborhood* and *White in the Still in school/GED* compared to *Completed high school/GED* (OR=.95, 95% CI=.91-.99). The results of the prototypical fitted plot shown in Figure 1, illustrates that in neighborhoods with a high proportion of minorities, White participants are more likely to be in school (compared to completed high school) than Non-White participants, but in neighborhoods with a low proportion of minorities, Non-White students are more likely to be in school (compared to completed high school) than White students (Figure 2). There were no differences between adolescent mothers *who Neither Completed HS/GED, nor were in School by T2* and teen mothers who *Completed High school or GED* on interaction of *Percentage of Minorities in the neighborhood and White*.

Perception of Neighborhood as Predictors of Outcome (Research Question # 2)

Results of the multinomial logistic regression analysis performed to examine the impact of participants' perception of their neighborhood on their educational outcome are presented in Table 8, with "*Completed High school or GED*" as the reference category. The present results can neither significantly support nor reject the relationship of Participant Perceptions of their neighborhood and their educational outcome except for the *Awareness of Neighborhood Resources* variable. *Neighborhood Connection, Neighborhood Safety, and High School Quality* did not influence any significant relative odds at any level of Educational Outcome when compared to *Completed High school or GED*. However, in support of the second hypothesis, the best fitting model (see M4) indicates adolescents mothers who *Completed High school or GED* were more likely to have higher *Awareness of Neighborhood Resources* than those in the *Still in High School or GED* (OR= .97, 95% CI =.96-.99). There were no differences between adolescent mothers *who Neither Completed HS/GED, nor in School by T2* and teen mothers who *Completed High school or GED* on Awareness of Resources.

In addition, the result shows that the participants' perceptions of their neighborhood do not moderate the impact of Neighborhood Structure on teen mothers' educational outcome (See Table 8, M5).

Program Utilization as Predictors of Outcome (Research Question # 3)

In looking at the role of program utilization on adolescent mothers' educational outcomes, cases from the sample were deleted if participants

finished their high school/GED or were beyond high school/GED by T1, or if there is no information about their educational outcome on T1 (missing data). In full sample of 474 participants, 199 were excluded for one or the other of these reasons, leaving a sample of 275 cases for this analysis. This sample includes participants who had not completed high school or GED by T1.

The final sets of multinomial regressions were performed to examine the correlates of the HFM Program Utilization and adolescent mothers' educational outcome, with "*Completed or Still in High School*" as the reference group (See Table 9). In consideration of the third hypothesis, these analyses indicate that adolescent mothers who are *Still in High School or GED* were more likely to receive more *Number of Home Visits* compared to those in the *Completed High school or GED* group (OR= 1.04, , 95% CI =1.00-1.09). However, there were no differences between adolescent mothers who were in the *Neither Completed HS/GED, nor In School by T2* and teen mothers who *Completed High school or GED* on *Number of Home Visits*. Similarly, the present results can neither significantly support nor reject the relationship of *Number of Group Attended, Number of Secondary Activity, and Program Intensity* and educational outcome for any level of educational outcome compared to *Completed High School or GED*, since they did not influence any significant relative odds.

Moreover, to answer the second part of the third question in terms of whether program utilization can moderate the impact of neighborhood structure on educational outcome, the results presented in Table 6 (see M5) indicates there was a marginal significant relative ratio in the *Still in High School or GED* (OR= 1.00,95% .1001-1.002), and significant relative ratio in

the *Neither Completed HS/GED, nor In School by T2* (OR= 1.00,95% .1001-1.003) compared to *Completed High School or GED* for the interaction of the *Percentage of Minorities in the Neighborhood* and *Number of Home Visits*.

The results of the prototypical fitted plot shown in Figure 3, illustrates that in neighborhoods with high proportions of minorities, White participants who received average number of visits are more likely to drop out than students who received either low or high number of visits.

Chapter 4: Discussion

The purpose of the present study was to understand the extent of neighborhood influences on young mothers' educational outcomes. The investigation sought to accomplish this by examining the direct impact of selected neighborhood level constructs (average income and ethnic/racial composition), participants' perceptions of their neighborhood, and HFM program utilization on teen mothers' educational outcomes. In addition, it aimed to investigate the indirect impact of selected neighborhood constructs through the participants' perceptions of the neighborhoods and HFM program utilization. Among our various predictor variables only the *impact of Percentage of Minorities in the Neighborhood* (for White participants), *Awareness of Neighborhood Resources*, and *Number of Home visits* were significantly supported by the regression analyses. The findings were mainly that *Awareness of Neighborhood Resources* was positively associated with, and significantly predictive of adolescent mothers' educational outcome. In addition teen mothers who are in high school are more likely to receive greater *Number of Home visits* than those who have finished high school. Other variables of *Neighborhood Constructs*, *Perception of Neighborhood*, and *Program Utilization* did not predict educational outcome of teenage mothers.

The Story of Neighborhood Constructs

After controlling age and participants' self-reported race, the results of the relationship between neighborhood structure and educational outcome were not as we expected, and it showed that neither neighborhood income nor percentage of minorities in the neighborhood directly predict educational

outcome of teenage mothers significantly. These findings were not consistent with previous research that provides evidence for links between neighborhood Socioeconomic status (SES) and race/ethnicity composition of neighborhood with achievement (Leventhal & Brooks-Gunn, 2000).

On the other hand, although existing research showed that having high SES neighbors had positive effects on adolescent achievement outcomes (Leventhal, Dupere & Brooks-Gunn, 2009), this study showed that neighborhood median income (as indicator of SES) did not significantly predict teen mothers' educational outcome. But the results showed that the percentage of minorities in the neighborhood (per block group) was mostly related to educational outcome for White participants. After controlling for the demographic characteristics (race and age), in neighborhoods with high percentage of minorities, White students are more likely to be in school than Non-White students. The results also showed that in neighborhoods with low percentage of minorities, Non-White students are more likely to be in school than White students.

In contrast to some research that focuses on race as an individual characteristic, in this study race is examined as race-in-context (local context), and the results represent the importance of minority status in neighborhood context. One of the possible explanations to interpret this relationship would be the social and human capital between neighbors. The research represented racial and ethnic composition as characteristics of neighborhoods that is critical for social and human capital (e.g., proximity of neighbors and social cohesion) (see Leventhal & Brooks-Gunn, 2000). It has been shown that in racially and ethnically concentrated neighborhoods, there is strong social

capital among the individuals in the neighborhood with the similar race or ethnic background which can be beneficial for them. However, White participants who live in these neighborhoods may not have strong social capital with the neighbors who come from different race and ethnic backgrounds, and this could impact the achievement of the White participants.

Previous research has shown persistent patterns of poorer school outcomes for minorities, especially African Americans and Latinos because of either historical and ongoing discrimination, or differential access to economic resources and related environmental risk factors (Grogan-Kaylor & Woolley, 2010, Kozol, 2005; Orfield, Losen, Wald, & Swanson, 2004). But based on our finding, it is plausible to consider racial composition as characteristics of neighborhoods that are critical for social and human capital (e.g., proximity of neighbors and social cohesion, and accessibility to community resources).

The Story of Participants' Perceptions of Neighborhood

Although the results indicate that perception of neighborhood did not moderate the impact of neighborhood structural features, the direct impact of Awareness of Neighborhood Resources is clear in the findings of the multinomial logistic analyses: higher level of Awareness of Neighborhood Resources predict better educational outcome. This finding supports the previous findings on the impact of social and institutional resources on adolescents' achievement. The availability of social support in school and local institution may be a particularly important protective factor for adolescent mothers, who are exposed to high levels of stress and anxiety, but may find refuge and relief in positive social connections (Dixon, Browne, &

Hamilton-Giachritsis, 2009). The comprehensive review of research on the effect of neighborhood on child and adolescents conducted by Leventhal et.al (2002) indicated how the presence of different institutional and social resources might affect child and adolescent well-being. They categorized these resources as 1) community of learning activities (e.g. Library, family resource center), 2) organized social and recreational activities (e.g., community center), child care, 3) high quality schools, and 4) special opportunities for employment in the community as potential community resources for adolescents. Therefore our results support the importance of social and institutional resources, which have essential roles in how teenage mothers understand their chances for success. As adolescent mothers are already in a stressful situation, availability and awareness of other institutional resources that can provide social and informational support are helpful for adolescent mothers to figure out how they can play both parent and student roles at the same time.

The Story of HFM Program Utilization

This study also assessed the impact of the Massachusetts Healthy Families program on the educational outcome of teenage mothers. Data was based on MHFE-2 preliminary data and the result documented no differences on educational outcome between experimental and control group mothers. However, after more investigation, an important finding of this study shows that adolescent mothers who are Still in High School or GED were more likely to receive higher number of home visits compared to those have not completed high school or GED. This is an important finding because educational

attainment is one of the goals of HFM program and based on the literature, educational achievement can have an impact on family income and reduction of poverty which is strongly related to poor child outcomes (Aber & Nieto, 2000; Lindsey, 2004). Although maternal outcome is one of the goals of HFM and some other home visiting programs, a primary goal of most home-visiting evaluation programs is child well-being and the reduction of child abuse and neglect. Therefore, there are only a limited numbers of research studies that have examined the impact of home visiting programs on maternal educational outcome. However the presented results of these evaluations are mixed and there is still room to investigate how home visiting programs may influence adolescents mothers' educational outcome.

Finally, when program utilization variables are used as a moderator of neighborhood structure, the interaction of the percentage of minorities in the neighborhood and the number of home visits has been examined. The result indicates that the number of home visits can moderate the impact of the racially and ethnically-concentrated neighborhoods for White participants; the results shows that there are significant differences between participants who have dropped out of high school compared to the ones who have completed high school or GED for the interaction of the Percentage of Minorities in the Neighborhood and Number of Home Visits. In the other words, White participants who live in more concentrated minority neighborhoods and receive a high number of home visits are less likely to drop out than those who receive low or average number of home visits.

Considering these results and the results of analysis of the first research question- which has shown that White participants who live in the

neighborhoods with high percentage of minorities are more likely to drop out, one of the possible explanations to clarify these patterns would be the role of social capital in the neighborhood. Based on previous research, in the racially and ethnically concentrated neighborhoods, there is strong social capital among the individuals in the neighborhood which can be beneficial for them. But, these also result in the lack of possibility to bridge social capital with other people outside of the neighborhood. Scholars have shown that weak ties are more efficient than strong ties with higher-status individuals since they can serve as bridges between individuals and subgroups, connecting the substantial social distance, and aiding economic and social mobility by providing the channels for flow of information and ideas (Portes, 1998; Granovetter, 1973 & 1985). Therefore, our findings have shown that even though participants who live in high racially and ethnically concentrated neighborhood may have limited access to social and institutional resources, they can benefit from different kinds of informational and emotional supports that they may be receiving through the home visits.

Implication: The findings from this study are applicable for HFM and/or other home visiting programs. One of the possible implications of this study for HFM could be considering more completed investigation in this context. For example, although the results have shown no differences on educational outcome between HVS and RIO, further investigation presented that it does not mean that there is no relationship between HFM program utilization and educational outcome and more investigation is needed to clarify the impact of this program. Therefore the program needs to consider a more nuanced understanding of the findings, and maybe focus on certain groups of

participants for finding the implication of the program on teenage mothers' educational outcomes.

Limitations of the Present Study

Conventionally, the discussion of significant findings in the present investigation must be reconciled by the limitations of the research. A primary concern of the study is that the neighborhood structure data used for analyses was not representative of the T2 neighborhood structural characteristics and instead, it was from T1 and was based on Census 2000 data. In addition, the perception of neighborhood data was only collected at T1, and there was not updated neighborhood perception data for T2.

Moreover, since the data of residential instability were not ready for analysis for this study, we excluded residential instability from our study, which is one of the important dimensions of neighborhood structure. The inclusion of residential instability might be yet another factor affecting the predictive relationships found at present.

Another limitation of the study was that missing data were not imputed. In the case of the dependent variable for *educational outcome*, there was a fairly large amount of missing data which might have contributed to the results of our analysis. Finally, in choosing to operationalize neighborhood structure and selected set of variables, the present study did not include other important variables such as stress, which may be significant predictors of the relationship of neighborhood and educational outcome.

Conclusions and Future Prospects

The present study has several important limitations that bear consideration in future research. The current analysis is focused on educational outcome and the

educational trajectory cannot be interpreted. For example "still in high school" compared to the "completed high school" was not considered as a negative outcome, since there is circumstances that it could be seen as positive outcome. For example being in school for teenage mother who resume their education after being out of school for period of time is a positive outcome. Therefore there is room for more investigation and considering different possibilities. In addition further analyses are needed to measure the impact of neighborhood (both social and structural processes) on adolescent mothers' educational trajectory, which can be done using longitudinal data from MHFE-2 Study. In other words, there is a room to answer different questions regarding the impact of neighborhood on educational outcome. For example, whether living in disadvantaged neighborhoods can have an influence on teenage mothers' educational trajectory or how access to more social and institutional resources can influence on educational trajectories of teenage mothers.

In addition, the focus of this study was on the direct impact of neighborhood structure on educational outcome. Based on the literature and on our findings, it is plausible that future research can examine the indirect impact of neighborhood on educational outcome.

In closing, the present investigation was able to document significant predictive value of awareness of resources and number of home visits on educational outcome; and this was drawn from the data focused on the circumstances and experiences of teenage mothers. Whereas the present study can illustrate that the proportion of ethnic minorities in neighborhoods is a significant predictor of educational outcome, there remains much to be learned about how it may function in the lives of adolescent mothers. Most of the research studies on teen pregnancy focus on individual circumstances and there are limited in terms

of how community and neighborhood structural and social features may influence teen mother's well-being. Therefore there is room for future investigation about these relationships. The implication of these kinds of studies can be of significant interest for policy makers on this topic.

Tables

Table 1

Sample Population Descriptive Statistics (N= 474).

| <i>Variable</i> | <i>N</i> | <i>%</i> | <i>M (SD)</i> | <i>Min / Max</i> |
|-----------------------|----------|----------|---------------|------------------|
| Age | 474 | -- | 19.64(1.32) | 17-22.67 |
| Race | | | | |
| White (Non- Hispanic) | 170 | 35.9 | | |
| Black (Non-Hispanic) | 100 | 21.1 | | |
| Hispanic | 167 | 35.2 | | |
| Other (Non-Hispanic) | 36 | 7.6 | | |
| HVS/RIO | | | | |
| HVS | 274 | 57.8 | | |
| RIO | 200 | 42.2 | | |

Table 2

Summary of Model Variable Descriptions (N=474).

| <i>Variables</i> | <i>N</i> | <i>%</i> | <i>Mean</i> | <i>SD</i> | <i>Min/Max</i> |
|--|----------|----------|-------------|-----------|----------------|
| Neighborhood Structure | | | | | |
| Minority | 463 | -- | 41.00 | 32.37 | 0-100 |
| Median Income | 463 | -- | 38.02 | 18.08 | 7.47-133.3 |
| Neighborhood Perception | | | | | |
| Neighborhood Safety | 441 | -- | 4.85 | 2.66 | 0-12 |
| Neighborhood Connection | 431 | -- | 5.90 | 2.54 | 0-12 |
| Schools Quality | 399 | -- | 5.73 | 2.87 | 0-12 |
| Awareness of Neighborhood Resources | 462 | -- | 75.92 | 21.58 | 12-96 |
| Program Utilization | | | | | |
| Number of visits completed | 214 | -- | 18.94 | 14.9 | 0-55 |
| Number of groups attended | 214 | -- | 1.71 | 3.2 | 0-19 |
| Number of secondary activities | 204 | -- | 18.87 | 19.08 | 0-122 |
| Program intensity | 204 | -- | 1.69 | 1.04 | 0-4.25 |
| Educational Outcome | | | | | |
| Complete High School or GED | 257 | 54.2 | -- | -- | -- |
| Still In High School or GED | 110 | 23.2 | -- | -- | -- |
| Has not complete High school or GED or not in school by time 2 | 62 | 13.1 | -- | -- | -- |
| Missing | 45 | 9.5 | -- | -- | -- |

Table 3
Means and Standard Deviations of Continuous Predictor Variables by Educational Outcomes
 (N=474).

| Educational Outcome | Completed HS/GED | Still in HS/GED | Has not completed HS/GED, not in school | Total |
|--|-------------------------|------------------------|--|--------------|
| Mother age | 20.12(1.15) | 18.59(1.10) | 19.76(1.24) | 19.65(1.32) |
| # of Home Visits | 18.27(14.09) | 22.94(16.29) | 17.73(13.68) | 19.49(14.76) |
| # of Groups attended | 1.86(2.99) | 2.14(4.39) | 0.7(13.68) | 1.75(3.28) |
| # of Secondary Activities | 17.93(17.46) | 17.44(16.94) | 24.58(26.27) | 18.87(19.08) |
| Program Intensity | 1.63(1.00) | 1.90(1.16) | 1.53(0.95) | 1.69(1.04) |
| Neighborhood Connection | 5.97(2.60) | 5.63(2.21) | 6.07(2.60) | 5.90(2.51) |
| High School Quality | 5.66(2.80) | 5.54(2.67) | 6.22(3.00) | 5.71(2.79) |
| Neighborhood Safety | 4.77(2.60) | 4.72(2.62) | 5.18(2.74) | 4.82(2.62) |
| Awareness of Resources | 78.83(18.58) | 70.98(24.51) | 79.93(19.18) | 77.01(20.58) |
| % of Minority in the Neighborhood (block group) | 36.09(31.85) | 47.89(31.92) | 43.39(33.35) | 40.18(32.42) |
| Median Income in thousands | 40.51(19.93) | 35.27(15.36) | 36.62(14.93) | 38.60(18.30) |

Table 4

Bivariate Correlations Between Model Dependent Variables Representing Educational Outcome and the Predictor Variables (HVS/RIO), and Control Variable (Race) (N=474).

| <i>Variable</i> | Educational outcome | HVS or RIO | t1_hispanic, white, black or other |
|------------------------------------|---------------------|------------|------------------------------------|
| Educational outcome | 1 | -.016 | .155** |
| HVS or RIO | | 1 | -.087 |
| t1_hispanic, white, black or other | | | 1 |

Note: ~ $p < .10$, * $p < .05$, ** $p < .01$; *** $p \leq .001$

Table 5

Bivariate Correlations Between Model Independent Variables Representing Neighborhood Structure and Neighborhood Perception, and the Original Demographic Control Variable, Age (N=474).

| | Mother age | Neighborhood Connection | High School Quality | Neighborhood Safety | Awareness of Resources | % of Minorities in the Neighborhood | Median Income |
|-------------------------------------|------------|-------------------------|---------------------|---------------------|------------------------|-------------------------------------|---------------|
| Mother age | 1 | .046 | .066 | -.005 | .081 | -.031 | .034 |
| Neighborhood Connection | | 1 | -.192** | -.337** | .144** | -.224** | .181** |
| High School Quality | | | 1 | .469** | .003 | .073 | -.101* |
| Neighborhood Safety | | | | 1 | .075 | .269** | -.221** |
| Awareness of Resources | | | | | 1 | -.125** | .004 |
| % of minorities in the Neighborhood | | | | | | 1 | -.517** |
| Median Income | | | | | | | 1 |

Note: ~ $p < .10$, * $p < .05$, ** $p < .01$; *** $p \leq .001$

Table 6

*Bivariate Correlations Between Program Utilization Variables and Predictor Variables**(N=474).*

| | # of Home Visits up to her T2 | # of Groups attended up to T2 | # of Secondary Activities between MOB and HF up to T2 | Program Intensity up to T2 |
|---|--|--|--|----------------------------------|
| # of Home Visits up to her T2 | 1 | | | |
| # of Groups attended up to T2 | .385** | 1 | | |
| # of Secondary Activities between MOB and HF up to T2 | .426** | .261** | 1 | |
| Program Intensity up to T2 | .891** | .368** | .368** | 1 |
| Median Income(in thousands) | .025 | -.041 | -.045 | .072 |
| % of Minorities in the Neighborhood (block group) | .081 | .102 | .200** | .092 |
| Neighborhood Connection | -.161* | -.169* | -.099 | -.130 |
| High School Quality | .046 | .042 | .002 | .049 |
| Neighborhood Safety | .063 | .003 | .001 | .039 |
| Awareness of Resources | -.093 | -.046 | .044 | -.031 |

Note: ~ $p < .10$, * $p < .05$, ** $p < .01$; *** $p \leq .001$

Table 7

Multinomial Regression Models: Background Characteristics and Neighborhood Structure on Educational Outcome (Odds Ratios, 95% Confidence Intervals).

| Variables | M1 | M2 | M3 |
|--|-----------------|-----------------|-----------------|
| Participants age | | | |
| Still In HS/GED | .33***[.25-.43] | .33***[.25-.43] | .32***[.25-.42] |
| neither completed, nor in HS/GED | .41[.30-.56] | .79[.62-1.01] | .79[.62-1.01] |
| Race White | | | |
| Still In HS/GED | .27* [.10-.76] | .311* [.11-.87] | 0.71 [.21-2.40] |
| neither completed, nor in HS/GED | .76 [.20-2.85] | .66 [.17-2.58] | 1.34 [.30-5.98] |
| Race Black | | | |
| Still In HS/GED | 1.27 [.45-3.62] | 1.39 [.48-4.00] | 0.65 [.22-1.89] |
| neither completed, nor in HS/GED | .93 [.22-3.85] | 1.3 [.24-4.29] | 0.98 [.24-4.27] |
| Race Hispanic | | | |
| Still In HS/GED | .89 [.33-2.34] | .9 [.34-2.36] | 1.01 [.38-2.70] |
| neither completed, nor in HS/GED | .49 [.13-1.88] | .5 [.13-1.91] | 2.01 [.52-7.6] |
| median income | | | |
| Still In HS/GED | .98 [.97-1.00] | .99 [.97-1.01] | .98 [.96-1.00] |
| neither completed, nor in HS/GED | .99 [.97-1.00] | .99 [.97-1.01] | .99 [.97-1.01] |
| % of minorities in the neighborhood (block group) | | | |
| Still In HS/GED | | 1.00 [.99-1.01] | 1.00 [.99-1.02] |
| neither completed, nor in HS/GED | | 1.00 [.99-1.01] | 1.00 [.99-1.01] |
| % of minorities in the neighborhood xWhite | | | |
| Still In HS/GED | | | .95* [.91-.99] |
| neither completed, nor in HS/GED | | | 1.00 [.98-1.02] |
| Mean-2LL | 618.11*** | 616.54*** | 608.84*** |
| Df | 10 | 12 | 14 |
| Mean-2LL | | 1.57 | 7.7* |
| Delta- df | | 2 | 2 |

Note: ~ $p \leq .10$, * $p \leq .05$, ** $p \leq .01$; *** $p \leq .001$

Table 8

Multinomial Regression Models: Background Characteristics and Neighborhood Perception on Educational Outcome (Odds Ratios, 95% Confidence Intervals).

| <i>Variables</i> | <i>M1</i> | <i>M2</i> | <i>M3</i> | <i>M4</i> | <i>M5</i> |
|---|-----------------|----------------|-----------------|----------------|-----------------|
| Participants age | | | | | |
| Still In HS/GED | .32***[.24-.42] | .33**[.25-.43] | .34***[.26-.45] | .35***[.2-.4] | .35***[.26-.48] |
| neither completed, nor in HS/GED | .79[.62-1.01] | .75* [.58-.97] | .76*[0.59-.98] | .78[0.5-1.0] | .75[.57-1.01] |
| Race White | | | | | |
| Still In HS/GED | 3.14*[1.10-8.9] | 3.04[1.0 -9.2] | 2.71[.87-8.41] | 2.90[.89-9.38] | 2.54[.75-.8.59] |
| neither completed, nor in HS/GED | 1.04[.31-3.4] | 1.25[.36-4.3] | 1.25[.36-4.32] | 1.02[.25-1.09] | .93[.22-3.97] |
| Race Black | | | | | |
| Still In HS/GED | .98[.33-2.90] | .97[.30-1.08] | 1.00[.30-3.30] | 1.13[.32-3.93] | 1.33[.37-4.71] |
| neither completed, nor in HS/GED | 1.18[.3-4.42] | 1.39[.36-5.4] | 1.47[.37-5.7] | 1.31[.28-6.01] | 1.90[.39-9.18] |
| Race Hispanic | | | | | |
| Still In HS/GED | .64[.24-1.70] | .63[.22-1.83] | .58[.20-1.71] | .74[.24-2.27] | .83[.26-2.6] |
| neither completed, nor in HS/GED | .62[.18-2.09] | .70[.20-2.43] | .69[.19-2.40] | .68[.16-2.75] | .85[.20-3.62] |
| Awareness of Resources | | | | | |
| Still In HS/GED | .98**[.96-.99] | .97**[.96-.99] | .97**[.96-.99] | .97**[.96-.99] | .97[.91-1.03] |
| neither completed, nor in HS/GED | 1.00[.98-1.01] | 1.00[.98-1.01] | .99[.98-1.01] | .99[.98-1.01] | .92* [.86-.99] |
| Neighborhood Connection | | | | | |
| Still In HS/GED | | 1.04[.92-1.1] | 1.05[.92-1.19] | 1.05[.92-1.21] | 1.06[.92-1.22] |
| neither completed, nor in HS/GED | | 1.05[.93-1.1] | 1.08[.94-1.21] | 1.08[.93-1.24] | 1.12[.96-1.30] |
| Neighborhood Safety | | | | | |
| Still In HS/GED | | | 1.04[.92-1.17] | 1.003[.86-1.1] | 1.00[.86-1.16] |
| neither completed, nor in HS/GED | | | 1.07[.95-1.21] | 1.04[.90-1.21] | 1.04[.89-1.22] |
| High School Quality | | | | | |
| Still In HS/GED | | | | 1.03[.91-1.18] | 1.02[.89-1.17] |
| neither completed, nor in HS/GED | | | | 1.05[.92-1.19] | 1.04[.90-1.19] |
| Median Income Awareness of Resources | | | | | |
| Still In HS/GED | | | | | 1.00[.99-1.00] |
| neither completed, nor in HS/GED | | | | | 1.00[1.0-1.00] |
| % of minorities in the neighborhood Awareness of Resources | | | | | |
| Still In HS/GED | | | | | 1.0[.99-1.001] |
| neither completed, nor in HS/GED | | | | | 1.0[1.00-1.00] |
| Income | | | | | |
| Still In HS/GED | | | | | .97[.88-1.08] |
| neither completed, nor in HS/GED | | | | | .84* [.73-.97] |

Minority

| | | | | | |
|----------------------------------|-----------|-----------|-----------|-----------|----------------|
| Still In HS/GED | | | | | 1.00[.95-1.05] |
| neither completed, nor in HS/GED | | | | | .98[.92-1.03] |
| Mean-2LL | 554.59*** | 566.86*** | 559.78*** | 503.94*** | 484.84*** |
| Df | 10 | 12 | 14 | 16 | 24 |
| Mean-2LL | | 12.27 | 7.08* | 55.84*** | 19.1* |
| Delta- df | | 2 | 2 | 2 | 8 |

Note: $\sim p \leq .10$, $*p \leq .05$, $**p \leq .01$; $***p \leq .001$

Table 9

Multinomial Regression Models: Background Characteristics and HFM Program Utilization on Educational Outcome (Odds Ratios, 95% Confidence Intervals).

| Variables | M1 | M2 | M3 | M4 | M5 |
|---|------------------|------------------|-----------------|-----------------|--------------------|
| Participants age | | | | | |
| Still In HS/GED | .781[.5-1.2] | .75[.48-1.17] | .76[.47-1.21] | .77[0.48-1.25] | .72[.44-1.1] |
| neither completed, nor in HS/GED | 1.64*[1.04-2.57] | 1.51[.95-2.39] | 1.43[0.89-2.29] | 1.46[0.90-2.37] | 1.3[.8-2.1] |
| Race White | | | | | |
| Still In HS/GED | 1.95[0.39-9.52] | 1.82[0.36-9.04] | 1.92[.38-9.57] | 1.74[0.33-9.00] | 2.17[.37-12.6] |
| neither completed, nor in HS/GED | .85[0.11-6.39] | .74[.09-5.64] | .816[.10-6.14] | .71[0.09-5.62] | 1.06[.11-9.80] |
| Race Black | | | | | |
| Still In HS/GED | 0.98[0.18-5.14] | .86[0.15-4.69] | .85[0.15-4.73] | .82[0.14-4.58] | 1.05[.17-6.34] |
| neither completed, nor in HS/GED | .96[0.11-7.8] | .70[.83-5.98] | .72[0.08-6.18] | .68[0.07-5.86] | .87[.09-7.8] |
| Race Hispanic | | | | | |
| Still In HS/GED | 36[0.79-1.67]0. | .34[0.73-1.58] | .30[0.06-1.47] | .27[0.05-1.39] | .23[.04-1.32] |
| neither completed, nor in HS/GED | .20[0.03-1.41] | .17[.025-1.22] | .179[.02-1.28] | .15[0.02-1.18] | .14[.01-1.19] |
| # of Participants Home Visits | | | | | |
| Still In HS/GED | [0.99-1.06]1.031 | 1.03*[0.99-1.07] | 1.04*[1.0-1.09] | 1.02[0.93-1.11] | .96[.87-1.07] |
| neither completed, nor in HS/GED | 1.01[.99-1.05] | 1.03[.98-1.07] | 1.01[.97-1.04] | .98[0.89-1.08] | .92[.82-1.04] |
| # of Participant Groups attended | | | | | |
| Still In HS/GED | | .98[0.94-1.01] | .95[0.84-1.08] | .95[0.84-1.08] | .91[.79-1.05] |
| neither completed, nor in HS/GED | | .78[.58-1.06] | .77[.55-1.06] | .76[.55-1.06] | .73[.53-1.01] |
| # of Secondary Activities | | | | | |
| Still In HS/GED | | | .98[0.94-1.01] | .98[0.94-1.01] | .97[.94-1.01] |
| neither completed, nor in HS/GED | | | 1.01[.97-1.04] | 1.01[.97-1.01] | 1.00[.97-1.04] |
| Program Intensity | | | | | |
| Still In HS/GED | | | | 1.42[.43-4.74] | 1.46[.38-5.65] |
| neither completed, nor in HS/GED | | | | 1.58[.42-5.93] | 1.62[.38-6.9] |
| Minorityx #of Home Visits | | | | | |
| Still In HS/GED | | | | | 1.00*[1.001-1.002] |
| neither completed, nor in HS/GED | | | | | 1.00*[1.00-1.00] |
| Minority | | | | | |
| Still In HS/GED | | | | | .97[.94-1.00] |
| neither completed, nor in HS/GED | | | | | .97[.94-1.00] |
| Mean-2LL | 223.747*** | 219.81*** | 209.985*** | 209.46** | 202.49** |
| df | 10 | 12 | 14 | 16 | 20 |
| Mean-2LL | | 3.93 | **9.83 | 0.52 | 6.97 |
| Delta- df | | 2 | 2 | 2 | 4 |

Note: ~ $p \leq .10$, * $p \leq .05$, ** $p \leq .01$; *** $p \leq .001$

Figures

Figure 1

Conceptual Model of Research Study

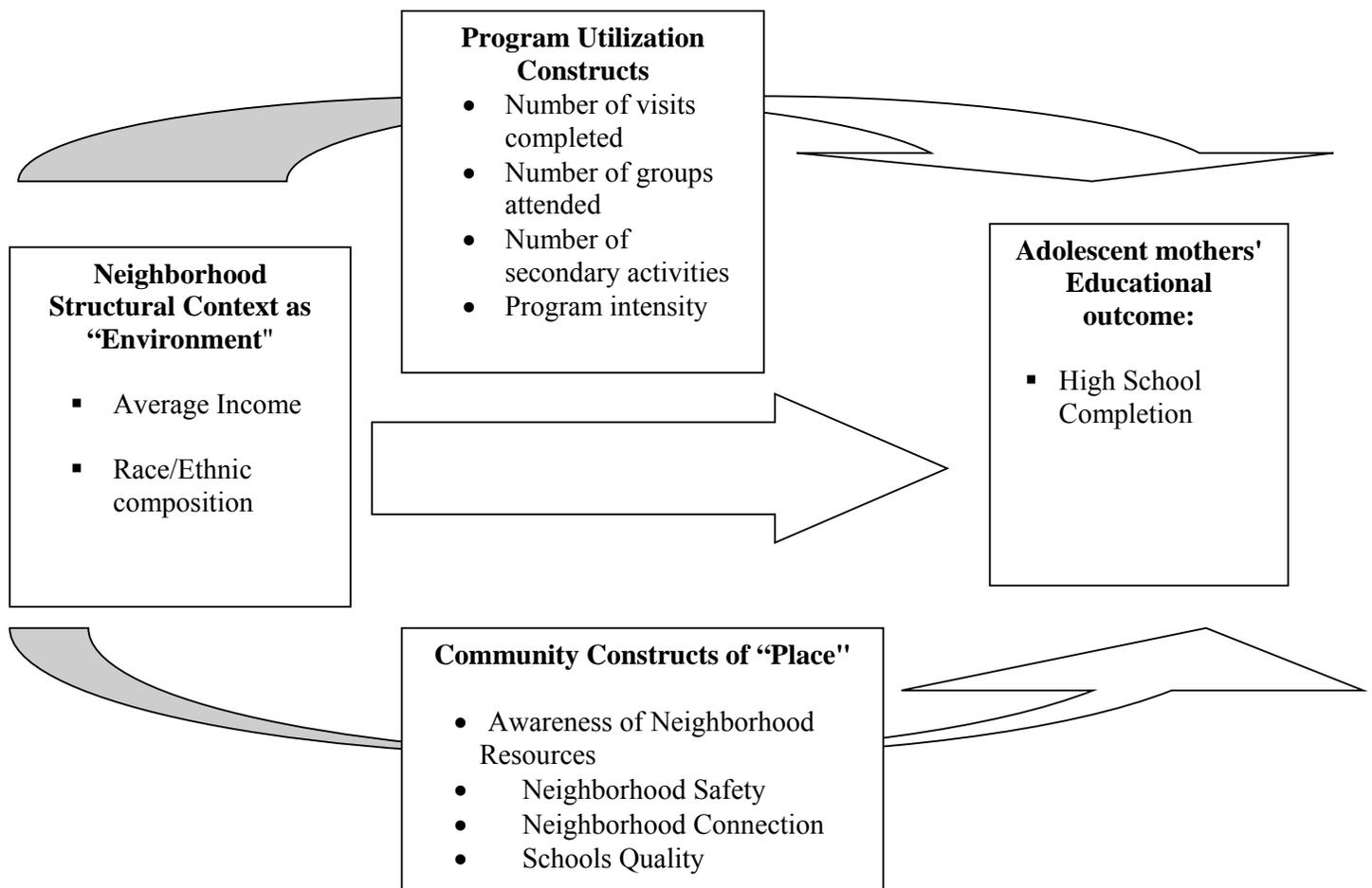


Figure 2

Probability of Being in School for White and Non-White Teen Mothers Based on the Percentage of Minorities in Their Neighborhood.

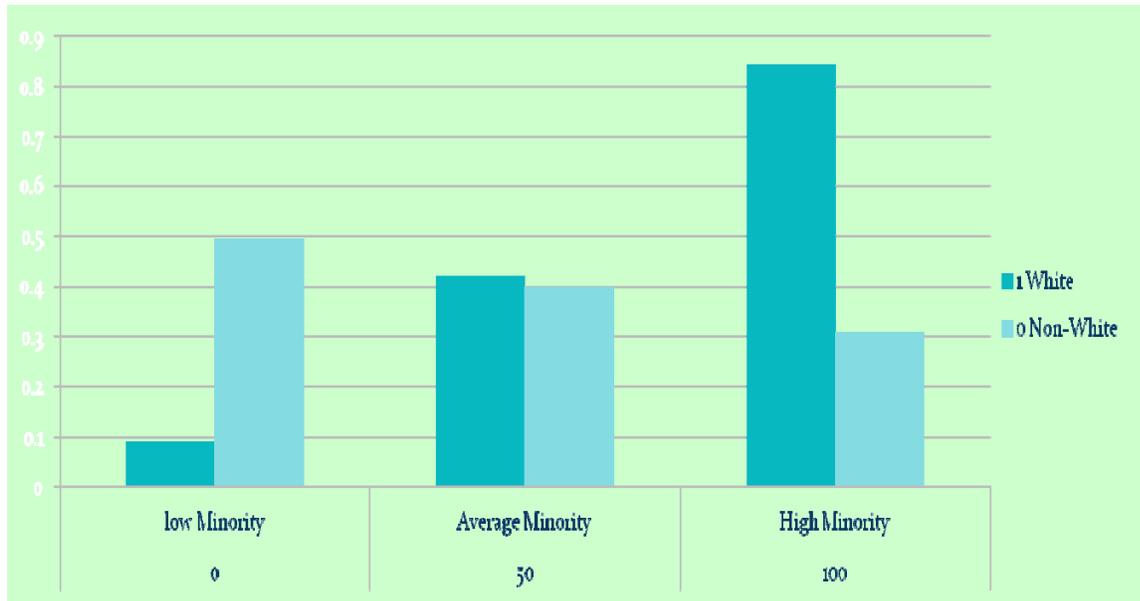
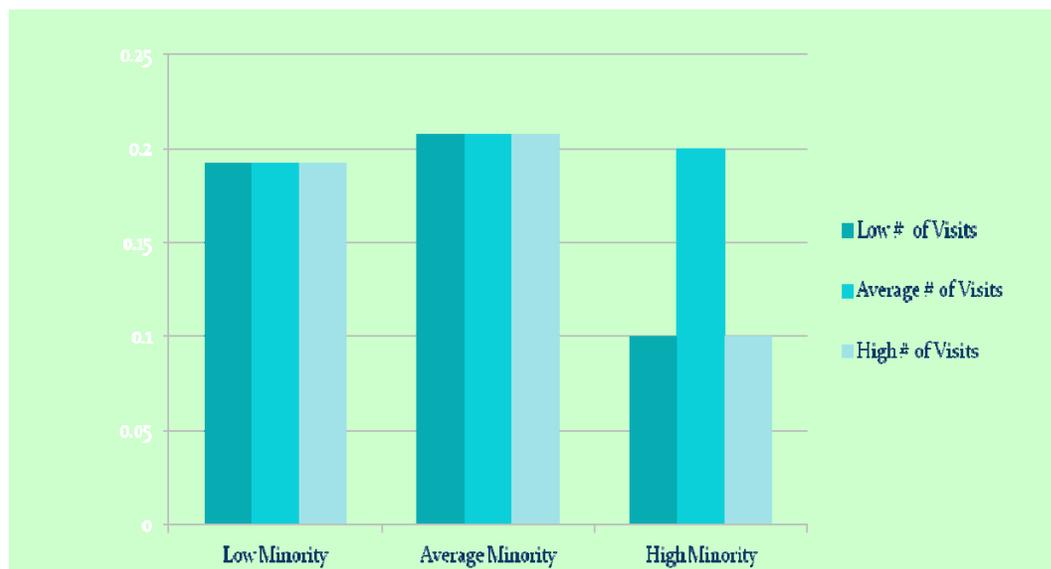


Figure 3

Probability of Dropped Out for White Teen Mothers Based on the Percentage of Minorities on Their Neighborhood and the Number of Home Visits They Received.



Appendix A

My Neighborhood and My Neighbors

The answers you give to this survey will be kept private. Only our research staff will know what you write. Please try your best to answer every question. If you are uncomfortable answering a question, you may skip it and go on to the next question.

1. When you think about the area you live in, what area do you think of (e.g., your street, from A Street to D Street, downtown Lowell, Southbridge)?

2. Does the area you live in have a name (e.g., Jefferson Heights, Cedarwood Village, Elm Street, Union Square)? _____
-

3. How long have you been living in this area?
 _____ (please indicate whether the number you wrote down is in months or years)

Please circle the best answer:

4. Think about the safety of your area. Compared to other areas, how safe is your area?
- a. safer than most
 - b. about the same
 - c. less safe than most
5. Think about neighbors who help each other. Compared to other areas, how many people help each other?
- a. more people help each other than in most areas
 - b. about the same as in most areas
 - c. fewer people who help each other than in most areas
6. In your area, what are a teenager's chances of graduating from high school?
- a. No chance
 - b. Small chance
 - c. Pretty good chance
 - d. Very good chance
7. In your area, what are a teenager's chances of completing college?
- a. No chance
 - b. Small chance
 - c. Pretty good chance
 - d. Very good chance

Check “yes” if you have the following either in or close to the area you live. Check “no” if you do not. Check “DK” if you don’t know whether or not they exist in your area.

- | | | | |
|---|------------------------------|-----------------------------|-----------------------------|
| 8. After-school recreation programs for children | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> DK |
| 9. An active youth club or organization (e.g., Boy Scouts, Girl Scouts) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> DK |
| 10. Organized summer recreation programs for children | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> DK |
| 11. Community athletics/sports teams | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> DK |
| 12. Organized centers like the YMCA | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> DK |
| 13. A day care center | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> DK |
| 14. Community family health service or counseling center | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> DK |
| 15. A community watch program | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> DK |
| 16. An active community organization (e.g., gardening group, Rotary Club, Kiwanis, Elks) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> DK |
| 17. A literacy, GED, or tutorial program | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> DK |
| 18. A church / religious organization | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> DK |
| 19. A bank | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> DK |
| 20. A library | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> DK |
| 21. A police station | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> DK |
| 22. A supermarket / convenient store / bodega | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> DK |

The following statements are about the area you live in and your neighbors. Please indicate how much you agree or disagree with each statement by circling one of the responses.

| | Strongly Disagree | Disagree | Agree | Strongly Agree |
|---|----------------------|----------|-------|-------------------|
| 22. You and your neighbors have similar views about how to raise your children. | 1 | 2 | 3 | 4 |
| 23. You have a close knit area. | 1 | 2 | 3 | 4 |
| 24. Neighbors often ask too much of you. | 1 | 2 | 3 | 4 |

| | | | | |
|---|---|---|---|---|
| 25. People in the area gossip too much about each other. | 1 | 2 | 3 | 4 |
| 26. There are a lot of adults that your children can look up to in your area. | 1 | 2 | 3 | 4 |
| 27. It is difficult for most people to find decent health/social services for their children here. | 1 | 2 | 3 | 4 |
| 28. I borrow things and exchange favors with my neighbors | 1 | 2 | 3 | 4 |
| 29. I believe my neighbors would help me in an emergency. | 1 | 2 | 3 | 4 |
| 30. It is difficult for most people to get services in this area (e.g. police, fire safety, health, public transportation). | 1 | 2 | 3 | 4 |

How likely is it that the following would happen in your area?

| | Not likely | Possibly | Somewhat Likely | Very likely |
|---|------------|----------|-----------------|-------------|
| 31. Would people in your area work together to keep children safe? | 1 | 2 | 3 | 4 |
| 32. Would anyone do something if someone were trying to sell drugs to children? | 1 | 2 | 3 | 4 |

How much of a problem are each of the following in your area?

| | A big problem | Somewhat of a problem | Not much of problem | Not a problem at all |
|--|---------------|-----------------------|---------------------|----------------------|
| 33. High unemployment | 1 | 2 | 3 | 4 |
| 34. Different racial/cultural groups not getting along | 1 | 2 | 3 | 4 |
| 35. Vandalism, buildings and personal belongings broken or torn up | 1 | 2 | 3 | 4 |
| 36. Little respect for the rules, laws, and authorities | 1 | 2 | 3 | 4 |
| 37. Abandoned homes | 1 | 2 | 3 | 4 |

| | | | | |
|-----------------------------------|---|---|---|---|
| 38. Open drug use and dealing | 1 | 2 | 3 | 4 |
| 39. Unsupervised children | 1 | 2 | 3 | 4 |
| 40. Medical services too far away | 1 | 2 | 3 | 4 |
| 41. Poor schools | 1 | 2 | 3 | 4 |
| 42. Assaults or muggings | 1 | 2 | 3 | 4 |
| 43. Prostitution | 1 | 2 | 3 | 4 |
| 44. Shootings | 1 | 2 | 3 | 4 |

What is the name of the high school in your area? Did / Do you go to this school?

Why or why not? _____

In your view, how much of a problem are the following at the high school in your area?

| | A big problem | Somewhat of a problem | Not much of a problem | Not a problem at all |
|---|---------------|-----------------------|-----------------------|----------------------|
| 45. How much of a problem is fighting among the students? | 1 | 2 | 3 | 4 |
| 46. How much of a problem is poor discipline in the classroom? | 1 | 2 | 3 | 4 |
| 47. How much of a problem is lack of interest/competence of teachers? | 1 | 2 | 3 | 4 |
| 48. How much of a problem is safety at the school? | 1 | 2 | 3 | 4 |
| 49. How much of a problem is the use of alcohol? | 1 | 2 | 3 | 4 |
| 50. How much of a problem is the use of drugs? | 1 | 2 | 3 | 4 |

References

- Aber, M. S., & Nieto, M. (2000). Suggestions for the investigation of psychological wellness in the neighborhood context: Toward a pluralistic neighborhood theory. In D. Cicchetti, J. Rappaport, I. Sandler, & R. P. Weissberg (Eds.), *The promotion of wellness in children and adolescents* (pp. 185–220). Washington DC: Child Welfare League of America.
- Ahn, N. (1994). Teenage childbearing and high school completion: Accounting for individual heterogeneity. *Family Planning Perspectives, 26*(1), 17-21.
- Astone, N.M., & Upchurch, D. M. (1994). Forming a family, leaving school early, and earning a GED: A racial and cohort comparison. *Journal of Marriage and the Family, 56*, 759-771.
- Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology, 94*, S95-S120.
- Davis-Kean, P.E. (2005). The influence of parent education and family income on child achievement: The indirect role of parental expectations and the home environment. *Journal of Family Psychology, 19*(2), 294-304.
- Dixon, L., Browne, K., & Hamilton-Giachritsis, C. (2009). Pattern of risk and protective factors in the intergenerational cycle of maltreatment. *Journal of Family violence, 24*:111-122.
- Duggan, A.K., McFarlane, E.C., Windham, A.M., Rohde, C.A., Salkever, D.S., Fuddy, L., Rosenberg, L.A., Buchbinder, S.B., Sia, C.C.J. (1999), Evaluation of Hawaii's Healthy Start Program, *The Future of Children, 9*(1), 66-90.
- Fletcher, J.M., & Wolfe, B.L. (2008). Education and labor market consequences of teenage childbearing: Evidence using the timing of pregnancy outcome and community fixed effect. *National Bureau of Economic Research, 13847*, J13-J24.
- Goldberg, J., Jacobs, F., Mistry, J., Easterbrooks, A., Davis, C., & Vashchenko, M. (2009). *Massachusetts Healthy Families Evaluation-2: A randomized controlled trial of a statewide home visiting program for young parents. Annual data report to the Massachusetts Children's Trust Fund*. Medford, MA: Tufts University. Retrieved from Massachusetts Healthy Families Evaluation.
- Granovetter, M. (1973). The strength of weak ties. *American Journal of Sociology, 78*, 1360-1380.
- Granovetter, M. (1985). Economic action and social structure: The problem of embeddedness. *American Journal of Sociology, 91*, 481-510.
- Grogan-Kaylor, A., Woolley, M.E. (2010). The Social Ecology of Race and Ethnicity School Achievement Gaps: Economic Neighborhood, School, and Family Factors, *Journal of Human Behavior in the Social Environment, 20*, 875-896.

- Hofferth, S.L., Reid, L., & Mott, F.L. (2001). The effects of early childbearing on schooling over time. *Family Planning Perspectives*, 33(6), 259-267.
- Hotz, V. J., Williams McElroy, S., & Sanders, S. G. (2005). Teenage childbearing and its life cycle consequences: Exploiting a natural experiment. *Journal of Human Resources*, 40, 683-715.
- Hofferth, S.D. (2008). Updated estimates of the consequences of teen childbearing for mothers. In S.D. Hoffman R.A. & Maynard (Eds.), *Kids having kids: Economic costs and social consequences of teen pregnancy* (pp.74-92). Washington, D.C: The Urban Institution Press.
- Howard, K. S., & Brooks-Gunn, J. (2009). The role of home-visiting programs in preventing child abuse and neglect. *Future of Children*, 19(2), 119–146.
- Jones, A.S., Astone, N.M, Keyl, P.M., Kim, Y.J., & Alexander, C.S. (1999). Teen childbearing and educational attainment: A comparison of methods. *Journal of Family and Economic Issues*, 20(4), 387-418.
- Kahn, J., & Moore, K. A. (2010). What works for home visiting programs: Lessons from experimental evaluations of programs and interventions. (No. #2010–17). Washington, DC: Child Trends.
- Kozol, J. (2005). *Shame of the nation: The restoration of apartheid schooling in America*. New York: Crown.
- LeCroy, C. W., & Krysik, J. (2011). Randomized trial of healthy families Arizona home visiting program. *Child and Youth Services Review*, 33(10), 1761–1766.
- Lesko, N. (1995). The leaky needs' of school-aged mothers: An examination of US programs and policies, *Curriculum Inquiry*, 25 (2).
- Leventhal , T. , & Brooks - Gunn , J. (2000). The neighborhoods they live in: The effects of neighborhood residence on child and adolescent outcomes. *Psychological Bulletin*, 126, 309 – 337.
- Leventhal, T., Dupéré, V., & Brooks-Gunn, J. (2009). Neighborhood influences on adolescent development. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (3rd ed., pp. 411-443). New York: John Wiley and Sons.
- Lindsey, D. (2004). *The welfare of children*. New York: Oxford University Press.
- Olds, D. L., Henderson, C. R., Kitzman, H., & Cole, R. (1995). Effects of prenatal and infancy nurse home visitation on surveillance of child maltreatment. *Pediatrics*, 95, 365–372.
- Luthar, S. S. (2003). The culture of affluence: Psychological costs of material well-being. *Child Development*, 74, 1581-1593.
- Mahler, K. (1999). Dropping Out of School Increases Chance of Birth For Whites and Hispanics. *Family Planning Perspectives*, 31(3), 153.

Manlove, J. (1998). The influence of high school dropout and school disengagement on the risk of school-age pregnancy. *Journal of Research on Adolescence*, 8(2), 187-220.

McElroy, S.W. (1996). Early childbearing, high school completion, and college enrollment: Evidence from 1980 high school sophomores. *Economics of Education Review*, 15(3), 303-324.

Moore, K. A., Manlove, J., Gleib, D.A., Morrison, D. R. (1998). Nonmarital school-age motherhood: Family, individual, and school characteristics. *Journal of Adolescent Research*, 13(4), 433-457.

Moore, K.A., & Waite L.C. (1977). Early childbearing and educational attainment. *Family Planning Perspectives* 9: 220-225.

Neuman, S. B., & Celano, D. (2001). Access to print in low – income and middle - income communities: An ecological study of four neighborhoods. *Reading Research Quarterly*, 36, 8 – 26.

Nievar, M.A. & Van Egengeren, L. (2010). A meta - análisis of home visiting programs: Moderators of improvements in maternal behavior. *Infant Mental Health Journal*, 31(5), 499- 520.

Nicotera, N. (2007) Measuring Neighborhood: A conundrum for human services researchers and practitioners, *American Journal of Community Psychology*, 40, 26-51.

Orfield, G., Losen, D., Wald, J., & Swanson, C. B. (2004). *Losing our future: How minority youth are being left behind by the graduation rate crisis*. Cambridge, MA: The Civil Rights Project, Harvard University.

Perper, K., Peterson, K. & Manlove, J. (2010). *Diploma attainment among teen mothers*. Washington, DC: Child Trends Fact Sheet. Retrieved from Child Trends website: http://www.childtrends.org/Files/Child_Trends-2010_01_22_FS_DiplomaAttainment.pdf.

Portes, A. (1998). Social capital: Its origins and applications in modern sociology. *Annual Review of Sociology*, 24, 1-24.

Ream, R.K., & Stanton-Salazar, R.D. (2007). The mobility/social capital dynamic: Understanding Mexican-American families and students. In S.J. Paik & H. Walberg (Eds.), *Narrowing the Achievement Gap: Strategies for Educating Latino, Black, and Asian Students* (pp. 67-89). New York, NY: Springer Publishing Company.

Reynolds, A. J., Mathieson, L.C., & Topitzes, J. W. (2009). Do early childhood interventions prevent child maltreatment. *Child Maltreatment*, 14(2), 182-206.

Rumberger, R. (2003). The causes and consequences of student mobility. *Journal of Negro Education*, 72, 6–21.

Sampson, R. J., Raudenbush, S. W., & Earls, F. (1997). Neighborhoods and violent crime: A multilevel study of collective efficacy. *Science*, 277, 918-924.

Sampson, R. J., Morenoff, J. D., & Gannon-Rowley, T. (2002). Assessing "neighborhood effects": Social processes and new directions in research. *Annual Review of Sociology*, 28, 442-478.

Small, M. L. (2006). Neighborhood institutions as resource brokers: Childcare centers, interorganizational ties, and resource access among the poor. *Social Problems*, 53 (2), 274-292.

Upchurch, D.M. (1993). Early schooling and childbearing experiences: Implications for postsecondary school attendance. *Journal of Research on Adolescence*, 3(4), 423-443.

Upchurch, D.M., & McCarthy, J. (1990). The timing of a first birth and high school completion. *American Sociological Review*, 55, 224-234.

Wilson, W. J. (1987). *The truly disadvantaged: The inner city, the underclass, and public*. Chicago: University of Chicago Press.