



National Poverty Center Working Paper Series

#06-46

December, 2006

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David J. Harding, University of Michigan

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in Disadvantaged Neighborhoods***

David J. Harding

University of Michigan

December 15, 2006

*The author can be contacted at Population Studies Center, University of Michigan, 426 Thompson St., Ann Arbor, MI 48106-1248, dharding@umich.edu, 734-763-2378 (phone), or 734-763-1428 (fax). Funding for this research was provided by the National Science Foundation (SES-0326727), The William T. Grant Foundation, the American Educational Research Association/Institute of Education Sciences, the MacArthur Foundation Network on Inequality and Economic Performance, and by the Harvard Multidisciplinary Program on Inequality and Social Policy, which is funded by an NSF Integrative Graduate Education and Research Traineeship grant. An NICHD Post-Doctoral Fellowship at the Population Studies Center at the University of Michigan provided additional support. Katherine Newman, Christopher Winship, Michele Lamont, Robert Sampson, Christopher Jencks, Jal Mehta, Arland Thornton, and four *ASR* reviewers provided helpful comments on previous versions of this paper. This research uses data from Add Health, a program project designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris, and funded by a grant P01-HD31921 from the National Institute of Child Health and Human Development, with cooperative funding from 17 other agencies. Special acknowledgment is due Ronald R. Rindfuss and Barbara Entwisle for assistance in the original design. Persons interested in obtaining data files from Add Health should contact Add Health, Carolina Population Center, 123 W. Franklin Street, Chapel Hill, NC 27516-2524 (addhealth@unc.edu).

Cultural Context, Sexual Behavior, and Romantic Relationships in Disadvantaged Neighborhoods*

Abstract

When culture is invoked to understand the consequences of growing up in disadvantaged neighborhoods, the isolation of ghetto residents from mainstream institutions and mainstream culture is often emphasized. This paper attempts to reorient current theorizing about the cultural context of disadvantaged neighborhoods, particularly when it comes to adolescent decision-making and behavior. It argues that rather than being characterized by the dominance of “oppositional” or “ghetto-specific” cultures, disadvantaged neighborhoods are characterized by cultural heterogeneity: a wide array of competing and conflicting cultural models. These ideas are applied to sexual behavior and romantic relationships among adolescents using survey data from Addhealth. Analyses show that disadvantaged neighborhoods exhibit greater heterogeneity in cultural frames and scripts and that, in more heterogeneous neighborhoods, adolescents’ frames and scripts are poorly predictive of their actual behavior.

While sociologists have been concerned with urban residents and their neighborhoods since the birth of the discipline (e.g. DuBois 1899, Park and Burgess 1925, Shaw 1929), the publication of Wilson's *The Truly Disadvantaged* (1987) and Massey and Denton's *American Apartheid* (1993) sparked a renewed interest among scholars of urban inequality in the role of neighborhood context in the intergenerational transmission of poverty. These works directly linked urban sociology to stratification, mobility, and race. In theoretical terms, neighborhoods became an important context for the social processes driving stratification and racial inequality, and neighborhood context was viewed as a causal force in the lives of youth and adults. These works set off a sustained effort to understand the effects of neighborhood context on individual outcomes, particularly for youth. Although there is mounting evidence that neighborhood effects are real causal effects (see Harding 2003 for review and evidence on this issue), social scientists have only begun to uncover the mechanisms by which such effects operate.

Culture has been largely ignored in the empirical effort to identify and understand the social processes underlying neighborhood effects. Scholars studying race and poverty have shied away from discussing culture since the early 1970's, after critics of scholars such as Frazier (1966), Moynihan (1965), and Lewis (1966, 1969) argued that cultural explanations of poverty ignore structural barriers and blame the victim (e.g. Valentine 1968; see Wilson 1987 for a review). In the interim, however, cultural sociology has moved away from the notion of culture as an internally coherent set of values and toward a view of culture as fragmented and composed of "disparate bits of information and ... schematic structures that organize that information" (DiMaggio 1997: 293). These ideas have only slowly found their way into the sociology of disadvantaged neighborhoods. As I discuss further below, new concepts in cultural sociology

such as frames, scripts, and repertoires have the potential to illuminate the social processes at work in neighborhood effects.

When culture *is* invoked to help us to understand the consequences of growing up in disadvantaged communities, emphasis is often placed on the isolation of ghetto residents from mainstream social networks and mainstream culture. Wilson (1987, 1996) argues that the out-migration of the black middle class and the decline of manufacturing led to neighborhoods in which life is no longer organized around work. Social interaction in isolated neighborhoods leads to the development of cultural repertoires that are “oppositional” or “ghetto specific,” adaptations to blocked opportunities in the labor market and society generally. Anderson (1990, 1991, 1999) invokes an alternative status system among adolescents from underclass neighborhoods to understand high rates of teenage pregnancy and single parenthood. Massey and Denton (1993) argue that racial segregation and the concentration of poverty lead to an “oppositional culture” in inner cities in which conventional norms and values are upended in response to blocked opportunities. “As intense racial isolation and acutely concentrated poverty have continued, ghetto values, attitudes, and ideals have become progressively less connected to those prevailing elsewhere in the United States. More and more, the culture of the ghetto has become an entity unto itself, remote from the rest of American society and its institutions, and drifting ever further afield” (Massey and Denton 1993: 172).

This paper is an attempt to reorient current thinking about culture in disadvantaged neighborhoods and how it relates to adolescent decision-making and behavior. It re-introduces an idea that was once a staple of theorizing about urban neighborhoods – disadvantaged neighborhoods are characterized by cultural heterogeneity (Shaw and McKay 1969/1942, see

also Kornhauser 1978).¹ This paper applies these ideas, coupled with recent theoretical advances in cultural sociology, to the analysis of adolescent sexual behavior and romantic relationships. Using survey data from the National Longitudinal Study of Adolescent Health (Addhealth) on frames regarding teenage pregnancy and scripts for romantic relationships, it shows that disadvantaged neighborhoods exhibit greater heterogeneity in scripts and frames. This is the case net of the greater ethnic and racial diversity and greater residential turnover that prevail in many of these neighborhoods. This paper also investigates the consequences of cultural heterogeneity for two adolescent behaviors, pre-marital sexual activity and the sequencing of events in romantic relationships. Analyses show that in more heterogeneous neighborhoods it is more difficult for adolescents to act in concert with the frames and scripts that they articulate.

I begin with a brief discussion of the role of cultural concepts in the dominant theories of neighborhood effects. I then situate the concept of cultural heterogeneity in the urban sociology and urban poverty literatures. Next, I describe the theoretical motivation for the cultural concepts I use here and develop hypotheses about the causes of cultural heterogeneity in disadvantaged neighborhoods and the consequences of this heterogeneity for adolescents. I then describe the Addhealth data and the methods used to examine these hypotheses and show the results of these analyses. The paper concludes by considering the implications for theories of neighborhood effects.

Culture, Inequality, and Neighborhood Effects

Much recent work at the nexus of inequality and cultural sociology has focused on the analysis of class. Symbolic boundaries have been used to understand how groups create and

¹ Shaw and McKay did not use the term cultural heterogeneity but instead referred to “different systems of values” and “different forms of organization.” As the term “different systems of values” suggests, they also employed a more values oriented conception of culture than that used here.

maintain their separateness from and dominance over other groups (e.g. Lamont 1992, 2000; Kefalas 2003; for a review see Lamont and Molnar 2002). Cultural capital theory has been used to understand how the upper class employs cultural signals, credentials, and knowledge to exclude others and to pass on advantages to children (Bourdieu and Passeron 1977, Bourdieu 1984, Lamont and Lareau 1988, DiMaggio 1982, Erickson 1996, Bryson 1996). Lareau (2000, 2003) has shown class differences in parenting practices and their role in educational outcomes. Increasingly, poverty scholars have also employed cultural analysis, particularly in documenting the cultural world of the urban poor, describing how they understand their options and make decisions with regard to work, welfare, schooling, parenthood, and marriage (Newman 1999, Anderson 1990, 1999, Waller 2002, Hays 2003, Young 2004, Carter 2005, Edin and Kefalas 2005). Yet culture has been less explicitly incorporated into the recent literature on the role of neighborhood context in the intergenerational transmission of poverty.

Two mutually compatible theories have been offered to understand neighborhood effects on individuals, and cultural concepts have been incorporated into them to different degrees. Social organization theory argues that neighborhood disadvantage leads to difficulties establishing and maintaining order. Lack of resources, racial and ethnic heterogeneity, and population turnover result in fewer social ties and therefore diminished social control, the ability of a community to regulate the behavior of its members (Park and Burgess 1925, Shaw 1929, Shaw and McKay 1942). Communities with denser social networks are better able to articulate and enforce common norms and values. In addition, local formal and informal institutions affect the ability of neighbors to maintain social control by influencing norms and expectations and by providing contexts within which social ties are created and strengthened. External institutions, such as police, city government, and markets, affect the resources that are available for both

formal and informal methods of social control (Bursik and Grasmick 1993). Collective efficacy, defined as the “social cohesion among neighbors combined with their willingness to intervene on behalf of the common good,” mediates the relationship between concentrated structural disadvantages (residential instability, ethnic or racial heterogeneity, and poverty) and crime rates (Sampson et al. 1997). Social organization models of neighborhood effects have thus far almost exclusively been used to explain neighborhood differences in crime, violence, and delinquency outcomes (exceptions include Browning, Leventhal, and Brooks-Gunn 2004, 2005, on neighborhood collective efficacy and early sexual initiation).

Though social organization models are not usually thought of as cultural models, they do incorporate cultural elements. In the classical formulation, social organization matters because socially organized neighborhoods are better able to enforce common values. In addition, collective efficacy can be thought of as a cultural concept, insofar as collective efficacy itself is measured as residents’ commonly held expectations or beliefs about how others around them will behave when faced with non-normative behavior. Finally, Small (2002, 2004) shows how cultural frames regarding the neighborhood and its origins can impact residents’ willingness to engage in the collective activity and institution building that lead to collective efficacy and social organization.

While social organization theory focuses primarily on processes internal to the neighborhood, social isolation theory emphasizes social and cultural disconnections between neighborhood residents and the outside world. Social isolation theory argues that residents of concentrated poverty neighborhoods are more likely to be isolated from middle class or mainstream social groups, organizations, and institutions (Wilson 1987). The joblessness endemic to high poverty areas means many residents are not connected to the mainstream labor

market, an important tie to the culture of middle class life (Wilson 1996). Lack of resources in high poverty neighborhoods make sustaining neighborhood institutions more difficult, further isolating neighborhood residents from associated mainstream institutions. The result is that social interaction in isolated neighborhoods leads to the development of cultural repertoires that differ from the mainstream. Youth are socialized into a cultural environment that promotes behaviors, such as early sexual behavior and high school dropout, that are viewed as detrimental in the outside world.

Most research on social isolation theory investigates the social connections of neighborhood residents by examining whether neighborhood poverty is related to organizational participation or to network ties to employed or college-educated individuals, net of individual characteristics. Tigges, Browne and Green (1998) report that adults in higher poverty neighborhoods in Atlanta have smaller “discussion networks” (people they talk to about important matters) and discussion networks with fewer employed or college educated individuals. Rankin and Quane (2000) find that neighborhood poverty predicts lower organizational participation and fewer ties to employed individuals and to the college educated and more ties to welfare recipients among adults surveyed in Chicago in 1991. Fernandez and Harris (1992) report similar findings from Chicago adults surveyed in 1986 and 1987.

Meanwhile, the cultural predictions of social isolation theory have been left largely uninvestigated. Social isolation theorists have relied heavily on the notion of “oppositional culture” from ethnographic research on racial differences in educational performance by Fordham and Ogbu (1986), extending the concept to apply in domains other than education (e.g. Massey and Denton 1993). Fordham and Ogbu (see also Ogbu 2004) argue that poor black students develop an oppositional culture in which behaviors that promote academic achievement,

such as speaking standard English, doing homework, and engaging in class discussion, become defined as “acting white,” as a response to inferior schools, discrimination, and blocked opportunities.² (See Willis 1977 and MacLeod 1995 on more class-based conceptions of oppositional culture). However, survey research has rejected the claim that black students are disproportionately sanctioned by their peers for academic effort (Cook and Ludwig 1998, Ainsworth-Darnell and Downey 1998). These findings are reinforced in qualitative interviews and survey research by Carter (2005), who shows that behaviors unconnected to school achievement are at the heart of notions of “acting white” among poor black and Latino youth (see also Jackson 2001). Moreover, cultural isolation and the development of a “ghetto-specific” or “oppositional culture” in poor neighborhoods is further challenged by both survey-based and ethnographic research on attitudes among the poor that finds very strong support for conventional or traditional views about education, work, welfare, and marriage (Young 2004, Newman 1999, 2003, 2006, Edin and Kefalas 2005, Solarzano 1992, Goldenberg et al. 2001; Dohan 2003; Hayes 2003, Carter 2005, Waller 2002, Duneier 1992, Sayer, Wright, and Edin 2005). In short, there is little evidence that cultural isolation is an accurate description of the cultural context of poor neighborhoods. This paper proposes a new conception of the cultural context of disadvantaged neighborhoods, one which emphasizes the cultural heterogeneity of such neighborhoods and the consequences of that heterogeneity for adolescent decision-making and outcomes.³

² Fordham and Ogbu (1986) are often interpreted as arguing that academic success itself comes to be defined as acting white within an oppositional culture, but in a recent paper, Ogbu (2004) clarifies that their argument was that behaviors that lead to academic achievement are what are defined as acting white by poor black adolescents.

³ There are undoubtedly cultural dimensions on which middle class neighborhoods have comparable or greater heterogeneity than poor neighborhoods, such as political views, fashion preferences, or religious beliefs. The focus of this paper is on cultural dimensions related to individual outcomes typically studied by poverty and inequality researchers, such as sexual behavior.

Cultural Homogeneity and Heterogeneity in Urban Neighborhoods

The concept of neighborhood cultural heterogeneity has roots in previous work in urban sociology and is consistent with much ethnographic research on urban poverty. However, cultural heterogeneity has been the subject of only limited explicit theorizing, perhaps because much foundational work on urban neighborhoods rested largely on a view of neighborhoods as culturally homogeneous. For example, Park and Burgess (1925) viewed urban neighborhoods as immigrant receiving areas. Between neighborhood differences were the consequences of cultural differences between immigrants' home countries, and the culture that immigrant groups brought with them was the basis of local neighborhood cultures (see also Gans 1962). These analyses, like those of many of their contemporaries, view culture as a unified system.

Yet not all urban sociologists viewed neighborhoods as composed of homogenous subcultures. Shaw and McKay (1969/1942) argued that socially disorganized slum neighborhoods present youth with a wide array of "competing and conflicting moral values" both conventional and unconventional, creating a breakdown of social control, which leads to higher rates of delinquency in such neighborhoods. "In the areas of low rates of delinquents there is more or less uniformity, consistency, and universality of conventional values and attitudes with respect to child care, conformity to law, and related matters; whereas in the high-rate areas, systems of competing and conflicting moral values have developed. Even though in the latter situation conventional traditions and institutions are dominant, delinquency has developed as a powerful competing way of life." (Shaw and McKay 1969: 170).

Work in the tradition of urban ethnography has also complicated the stark divisions of "ghetto culture" and "mainstream culture," tending to see culture in disadvantaged neighborhoods as derived from mainstream culture but modified or reinterpreted to serve local

needs and in response to blocked opportunities (e.g. Liebow 1967, Anderson 1978, Duneier 1992, Sullivan 1989, Bourgois 1995). Nevertheless, because these works focus on particular groups within urban neighborhoods, there is little emphasis on cultural heterogeneity beyond subjects' attempts to distinguish themselves from culturally defined others lower in local status hierarchies. Suttles (1968) emphasizes cultural differences within disadvantaged neighborhoods, but he focuses on those between ethnic groups that use different communication devices and have different cultural practices.

Hannerz (1969) was one of the first to recognize cultural heterogeneity not just across groups residing together in a single neighborhood but also in the use of culture by individuals. Though he draws on classic cultural concepts such as norms and symbolic meanings, he also introduces the concept of cultural repertoire. For Hannerz, there are multiple forms of culture: norms and values, meanings, and modes of action, and each individual has a repertoire of these. Local cultures can add to or substitute for items in the mainstream cultural repertoire and thereby provide adaptations and reactions to a given structural situation. Like Liebow (1967) and Anderson (1978), Hannerz sees local culture as helping individuals to come to terms with contradictions between the wider society's culture and the individual's position in the social structure. Yet, Hannerz makes clear that "ghetto culture" is not a monolithic entity but rather a heterogeneous mix of fluid ideal-type lifestyle groups ("mainstreamers," "swingers," "street families," and "street corner men"). In ghetto neighborhoods, members of these groups live in close physical proximity, which often leads them to construct exaggerated social hierarchies and distinctions (see also Newman 1992). Countering the divisive moral judgments between lifestyle groups, however, are the family ties and spatial proximity that pull individuals with divergent lifestyles into regular contact and confrontation.

Recent research has also demonstrated that within disadvantaged neighborhoods, there are multiple cultural models available.⁴ For example, Newman (1999) shows that even in neighborhoods with high levels of joblessness, the majority of people are pursuing activities consistent with mainstream ideologies, such as working or going to school. Anderson (1990, 1999) documents the presence of both “street” and “decent” orientations among those living in disadvantaged neighborhoods. Though they are in the numerical minority, those with a “street” orientation dominate public space and public life in inner city neighborhoods.

The concept of cultural heterogeneity is also broadly consistent with classic research traditions within the study of social stratification focusing on class inequality. Parkin (1971), in his analysis of the normative order of the working class, describes this order as composed of a number of competing meaning systems – the dominant, subordinate, and radical – each “promoting a different interpretation of class inequality.” The result is a state of “normative ambivalence,” in which the working class draws from a “reservoir of meaning” that is fed by these three different “streams.” Rodman (1963) develops the concept of the “lower-class value stretch” to explain how the lower-classes can have a somewhat distinctive value system that is still derived from the dominant value system.

In sum, prior research suggests that the cultural context of disadvantaged communities can be thought of as derived from mainstream culture but modified or reinterpreted to serve local needs and in response to blocked opportunities. Most analysts recognize the presence of multiple competing lifestyle groups (to use Hannerz’s terminology) or orientations (to use Anderson’s) within urban neighborhoods. Culture within neighborhoods is not a single entity but rather a

⁴ I follow Quinn and Holland (1987) in my use of the term “cultural models,” which they define as “Presupposed, taken-for-granted models of the world that are widely shared (although not necessarily to the exclusion of other, alternative models) by the members of a society and that play an enormous role in their understanding of that world and their behavior in it” (Quinn and Holland 1987: 4). I consider frames and scripts to be two types of cultural models.

heterogeneous mix of lifestyles or orientations that individuals move between or draw upon as necessary. Such a conception is not consistent with the cultural isolation of poor inner-city neighborhoods from middle class culture and institutions.

However, analyses of the role of culture in explaining behavior in poor neighborhoods still largely rest on social isolation models. These analyses tend to identify subcultures that promote or justify particular behaviors as explanations for those behaviors. For example, Anderson (1990, 1991, 1999) explains adolescent sexuality, gender relations, and teenage pregnancy in disadvantaged neighborhoods with the development of a subculture in which early sexual activity and early parenthood are normative. The coexistence of these two incompatible models (one that describes poor neighborhoods as containing a mix of non-discrete cultural groups and another that relies on cultural subgroup explanations of behavior), creates an analytical conundrum: If individuals draw from multiple cultural lifestyle models, how can subcultures hold such sway over behavior, action, or decision-making? I propose that recent efforts to incorporate new cultural concepts such as frames, scripts, or repertoires into theorizing about culture in urban neighborhoods are an important start toward better understanding the relationship between culture and behavior among adolescents in disadvantaged neighborhoods.

Conceptualizing Cultural Heterogeneity

In the last two decades cultural sociology has moved away from a view of culture as an internally coherent set of values and toward a view of culture as fragmented and composed of “disparate bits of information and ... schematic structures that organize that information” (DiMaggio 1997: 293). In any social context, from the perspective of any individual, there are multiple cultural models available from which to choose (Swidler 1986, Quinn and Holland

1987, Holloway et al. 1997, Fuller et al. 1996). These models may be overlapping or contradictory, and reflect ideas about how the world works, what appropriate goals are, and how to go about accomplishing things.⁵ To further unpack these issues, I rely on three conceptualizations, culture as repertoire or toolkit (Hannerz 1969, Swidler 1986, 2001), culture as frame (Goffman 1974, Benford and Snow 2000, Small 2002, 2004), and culture as script.

Swidler (1986, 2001) draws upon the concept of cultural repertoire to develop a general conception of culture that allows culture to play a causal role in influencing action.⁶ Swidler sees culture as a “tool kit” of symbols, stories, and worldviews which people use to solve different problems. Under this model, culture is not a unified system but a repertoire from which to draw. Culture provides the components used to construct “strategies of action,” or “persistent ways of ordering action through time” and can thereby have a causal role. The elements that make up one’s toolkit come not just from direct experience or social interaction but also from the wider culture through institutions such as the media, schooling, and religion. The ability of culture to predict behavior in the tool kit model comes from variation in repertoires across cultural groups or across individuals.⁷

In the analysis below, I measure two types of cultural objects that may be present in an individual or group’s cultural repertoire: frames and scripts. Frames are ways of understanding the world and how it works. They encode expectations about consequences of behavior, and how various parts of the social world relate or do not relate to one another. A frame impacts how we

⁵ A conception of culture as heterogeneous and contradictory appears elsewhere as well. For example, Sewell notes that, “social actors are capable of applying a wide range of different and even incompatible schemes” (Sewell 1992:17). He also describes cultures as contradictory, loosely integrated, contested, subject to constant change, and weakly bounded (Sewell 1999).

⁶ Tilly (1978) is also credited with the development of the concept of repertoire in his work on “repertoires of collective action.”

⁷ Swidler’s toolkit metaphor has been criticized for failing to specify how individuals choose which elements of their toolkit to employ in different situations (Lamont 1992, Lamont and Thevenot 2000). Lamont (1992) suggests that both proximate and remote structural conditions influence such selections. For an example of comparison of repertoires across cultural groups, see Lamont and Thevenot (2000).

interpret events and therefore how we react to them. Benford and Snow (2000), writing from a social movements perspective, emphasize that frames are collectively constructed, often unintentionally but sometimes intentionally. They identify problems and assign blame, provide solutions or strategies, and provide a rationale for engaging in action. Like repertoires, frames allow for cultural heterogeneity. Individuals can have multiple contradictory or competing frames which they deploy in different situations, and frames may have various levels of specificity. Small (2002, 2004) shows that individuals in the same neighborhood can employ different frames. He develops a variant of collective action frames that he calls “neighborhood frames” to explain the decline across cohorts in participation in community activities in a Puerto Rican housing project. Such frames are the product of historical conditions experienced by different cohorts. Small also shows that frames are not fixed, as young people’s neighborhood frames change through interaction with the neighborhood activists of the earlier generation.

Scripts provide cultural templates for the sequencing of behaviors or actions over time. They are akin to Swidler’s “strategies of action” in that they show how to solve problems or achieve goals. There need not be consistency across various scripts or frames as individuals are often able to live with many contradictions and inconsistencies. Therefore, one should not think of frames and scripts as necessarily hierarchically nested, and individuals or groups may possess or employ multiple contradictory frames and scripts. What people of a common culture share, then, is not a coherent, monolithic culture but a set of available frames and scripts, objective structural conditions, and knowledge of what others do and think. Sewell (1999) characterizes this level of coherence as “thin coherence.”

Though I have conceptualized cultural heterogeneity using what might be described as macro or meso-level cultural concepts, it is also consistent with micro or interactionist

perspectives on culture. Implicit in Goffman's (1974) analysis of frames is the notion that multiple frames can apply in any interaction, and that participants must work to maintain the dominance of a particular frame and often come into conflict over which frame should govern a particular situation (see also Goffman [1959]). His discussion of "out of frame activity" acknowledges that multiple frames can be present simultaneously, even if they are not mutually compatible. The cultural heterogeneity approach also shares with interactionist approaches the criticism that subcultural analyses tend to assume homogeneity and stasis and tend to define culture in terms of values (Fine and Kleinman 1979). Furthermore, interactionist perspectives emphasize the role of local or group cultures in mediating the relationship between the wider social environment and individual action (e.g. Fine 1979). As will be discussed below, the consequences of neighborhood cultural heterogeneity occur in part through micro-level interactions with neighbors with varying cultural orientations or lifestyles and through local interpretations of cultural information diffused through the media.

Neighborhood Disadvantage and Cultural Heterogeneity

Why are adolescents in disadvantaged neighborhoods presented with a more heterogeneous array of cultural models from which to fashion their beliefs and actions than those in more advantaged neighborhoods? Among disadvantaged neighborhoods, all but the most extremely poor neighborhoods contain a mix of people who are working and people on public assistance or involved in crime, individuals who are high school dropouts and individuals who have attended college, and families that have middle class incomes and families that are struggling below the poverty line. As Patillo-McCoy (1999) notes, though many middle class

blacks left inner city neighborhoods in the 1970's, many also remained there. This mix means that adolescents will come into contact with people with a wide array of lifestyles.⁸

In addition, cultural models do not just come from immediate ecological factors or interpersonal interactions. Institutions that are decoupled from everyday interactions such as the media, religion, and politics also contribute to cultural repertoires and are another mechanism by which youth in disadvantaged neighborhoods are exposed to mainstream or middle class culture. For example, youth draw role models from television and radio (Carter 2005: Ch. 5); the American dream provides a cultural template for many of the poor (Hochschild 1995); feminism shapes how young mothers think about economic independence and marriage (Edin and Kefalas 2005); and religion provides a repertoire for constructing strategies of action in black communities (Patillo-McCoy 1998).

Residents of disadvantaged neighborhoods are also often less able to control public behavior or regulate those who deviate from mainstream lifestyle choices. There is weaker consensus on which behaviors are appropriate and inappropriate. A lack of strong social ties in such neighborhoods means social control is diminished as local institutions are weak and collective behavior is more difficult (Shaw and McKay 1969). Sampson et al. (1997), for example, show that low collective efficacy in poor Chicago neighborhoods accounts for much of the increased violence that these neighborhoods experience. Residents of poor neighborhoods lack confidence that their neighbors will intervene to stop public disorder and so hesitate to do so themselves. Such breakdowns of public order can be self-perpetuating, as residents lose touch with neighbors as they retreat from the streets, leading to further weakening of neighborhood

⁸ There are of course many factors which determine the capacity of culture to influence behavior. Schudson (1989) outlines five "dimensions of cultural power:" retrievability, rhetorical force, resonance, institutional retention, and resolution. Here I emphasize retrievability, the availability or accessibility of a cultural model or cultural object. Schudson suggest that retrievability is highest when a cultural model or object is physically present, institutionalized in common practice or public memory, or more salient because it is more recent or more dramatic.

social ties (Venkatesh 2000). Similarly, Wilson (1996) argues that the lack of social organization in these neighborhoods makes “ghetto-related behaviors” more acceptable, while the lack of opportunities makes them necessary for survival. As the number of individuals pursuing “ghetto-related” behaviors such as early parenthood, reliance on public assistance, or street hustling increases, the stigma attached to these behaviors declines.

Of course the mere presence of a mix of mainstream and alternative lifestyles in disadvantaged communities does not necessarily mean that adolescents will interact with individuals who engage in these various lifestyles. In disadvantaged neighborhoods, lifestyles outside the mainstream may have more salience than sheer numbers would lead us to expect. In contrast to those with mainstream lifestyles who leave the neighborhood for work or school, those with “street orientations” have a daily presence in the neighborhood. Anderson (1999) documents the power of drug dealers and others who use violence to control public space and flaunt material goods such as cars, jewelry, and clothing. While ethnographers such as Suttles (1968) and Hannerz (1969) have described the strong divisions along ethnic and lifestyle lines that occur when groups in physical proximity define themselves as fundamentally different or better than one another, today’s young people may be more forgiving of racial and ethnic differences than those of the 1960’s (see, for example, Carter 2005). In addition, Hannerz’s neighborhood hierarchies are created and maintained largely by adults, not adolescents. Indeed, he describes how “mainstream” parents go to great pains to keep their children away from “street families” (see also Furstenberg et al. 1999).

These factors related to neighborhood disadvantage suggest the first hypothesis that this paper will examine:

Hypothesis 1: *Adolescents in more disadvantaged neighborhoods will exhibit greater heterogeneity of cultural frames and scripts.*

The Consequences of Culturally Heterogeneous Neighborhoods

Adolescents may be particularly influenced by cultural heterogeneity because their developmental life stage is associated with a strong focus on social identities and peer influences as a well as with greater experimentation and risk taking. What are the consequences for adolescents who face a wider array of cultural models in their social environment? If an individual's repertoire is constructed from what he observes among the people with whom he interacts and from the broader cultural ideas to which he is exposed through media and institutions, then the average adolescent in a disadvantaged neighborhood will have a wider range of scripts and frames in his repertoire. From an interactionist perspective (e.g. Fine 1979), significant cultural fluidity is created when cultural models diffuse across small groups through local (neighborhood) and extended interaction networks.

Consider the multiple frames around teenage pregnancy that exist in disadvantaged neighborhoods and inform adolescents about the consequences of becoming a father or mother at a young age. One frame defines early parenthood as a hindrance to schooling and future success. Another frame highlights the status that comes from parenthood and the attention and admiration that a new baby brings (Anderson 1990, 1999). A third frame implies that having a child too late in life will mean one will be too old to have the energy to enjoy the child and to be a good parent. A fourth highlights the power of a child to boost a young man's masculinity or a young woman's femininity or the power to instantly grant adult status to a new parent (Anderson 1990, 1999).

Consider also the multiple scripts for romantic relationships that are available to an adolescent in a disadvantaged neighborhood. One such script may follow a conventional path starting with casual dating, the exchange of gifts, exclusive dating, statements of love, sexual activity, marriage, living together, and pregnancy. Another script may involve little dating and a fast transition to sexual activity and cohabitation, followed by pregnancy, and far in the future, possibly marriage (Edin and Kefalas 2005). A third may involve early statements of love to multiple partners, non-exclusive dating, and sexual activity with multiple partners and the potential for unplanned or at least unavowed pregnancy (Anderson 1990, 1991, 1999).

When it comes, then, to choosing a course of action from among available relationship scripts or to considering the various frames that define the risks and benefits of a particular behavior such as teenage sexual activity, adolescents in disadvantaged neighborhoods have much more to consider than those in more affluent areas. Not only do disadvantaged neighborhoods provide a wider array of models, but – unlike more middle class communities – there is also social support for both mainstream and alternative models. One can observe neighbors engaging in behaviors that conform to various cultural models. In addition, when there are multiple models, the advantages and disadvantages of various options are more poorly defined. The social environment provides a much weaker signal about what option is best because there is social support from others for many different options. We can imagine two consequences of this problem.

First, because there is less consensus or agreement where there is greater heterogeneity, it will be harder for the adolescent to choose between competing options. The result may be weaker commitment to the chosen option and a lower likelihood of follow-through. With a weaker commitment, when a particular option does not seem to be working out, it is easier to

shift course because another option is available – with local approval. Obstacles or setbacks may be more likely to push the adolescent off track. For example, when a romantic partner is not serious about contraception, one can downplay the “pregnancy as roadblock” frame and adopt the “parenthood as status” frame to understand one’s options and behaviors. There are always others one can look to who appear to be surviving or even thriving while engaging in behavior consistent with various cultural models.

The second consequence arises at the aggregate level. In a social environment in which many options are present and visible, there will be fewer who have enacted a particular option. Because fewer others have followed a particular script, there will be fewer examples of how to do so. In other words, the details of the available scripts will be less clearly defined, which may make it more difficult to successfully enact the script. On the one hand, this can be thought of as an information problem. For example, when fewer neighbors have successful long-term romantic relationships, how to go about developing such a relationship will be less clearly defined. On the other hand, it can also be thought of as a social support problem, in that in a culturally heterogeneous environment there will be considerably less than unanimous social and cultural support for particular frames or scripts. For instance, one’s frame about the advantages and disadvantages of early parenthood may face frequent challenge from others with different frames.

These arguments suggest that in the context of neighborhood cultural heterogeneity, adolescents will be less likely to act in ways consistent with frames and scripts that they articulate.⁹ This leads to the second hypothesis that the analysis below will examine:

⁹ These arguments are also consistent with the social psychological literature on the link between attitudes and behavior (though note that frames and scripts are conceptually different from attitudes, which social psychologists define as summary evaluations of the degree of overall favorability toward a psychological object [Ajzen 2001]). According to the Fishbein/Ajzen attitude behavior model, discrepancies between attitudes and behavior can be

Hypothesis 2: *In culturally heterogeneous neighborhoods, there will be a weaker relationship between the script or frame that an adolescent has adopted and his or her corresponding future behavior.*

Methods

Data

I use data from the National Longitudinal Survey of Adolescent Health (Addhealth; Harris et al. 2003). The Addhealth survey initially sampled about 150 middle schools, high schools, and junior high schools. The first wave of data was gathered in 1994-1995, the second wave in 1996, and the third wave in 2001-2002. Students were in grades 7 to 12 in wave one. The first wave of data includes a short questionnaire completed by school administrators about school characteristics and policies, an in-school questionnaire completed by almost every eligible student in the sample schools, and longer in-home student and parent interviews with a subsample of about 20,000 students. Wave two followed the in-home students and includes another in-home interview with the student (but not the parent) and another school administrator questionnaire. Structural neighborhood characteristics from the 1990 census are available for in-home respondents. The strengths of the Addhealth data for this analysis are the nesting of respondents within neighborhoods, the availability of neighborhood structural characteristics, and the availability of survey measures of frames and scripts.

produced by (among other things) moderating third variables, for example, group norms (Fishbein and Ajzen 1975; for review and critique, see Ajzen 2001, Liska 1984). In another example, Barber (2001) finds that the relationship between attitudes toward children and marital childbearing behavior is affected by attitudes toward competing behaviors such as careers and material consumption. Attitude-behavior discrepancy can also be a product of attitude specificity. For instance, concrete attitudes, those derived from personal and family experiences, predict black adolescents educational behavior, whereas abstract attitudes do not (Mickelson 1990). Here, neighborhood cultural context serves as a moderator of the relationship between cultural models, such as frames or scripts, and behavior.

Models

To examine Hypothesis 1, that disadvantaged neighborhoods exhibit greater cultural heterogeneity, I constructed neighborhood level measures of cultural heterogeneity for two cultural concepts, pregnancy frames and romantic relationship scripts (described below). I then regress each measure of neighborhood heterogeneity on neighborhood disadvantage, controlling for other neighborhood characteristics that might also produce cultural heterogeneity, such as racial and ethnic diversity or residential instability. More disadvantaged neighborhoods are expected to have greater heterogeneity.

To examine Hypothesis 2, that adolescents in more heterogeneous neighborhoods are less likely to act in accordance with their articulated frames and scripts, I estimate a series of multi-level regression models, one set for pregnancy frames and one set for relationship scripts. The pregnancy frame model examines the relationship between pregnancy frames (F) and engaging in sexual activity (Y) using an interaction between individual pregnancy frame and neighborhood heterogeneity in pregnancy frame. If we index individuals with i , neighborhoods with j , and schools with k , we can write a three-level model (Raudenbush and Bryk 2002).¹⁰ The individual level model is:

$$\log\left(\frac{\Pr(Y_{ijk} = 1)}{1 - \Pr(Y_{ijk} = 1)}\right) = \pi_{0jk} + \pi_{1jk}F_{ijk} + \pi_{2jk}X_{ijk} + e_{ijk}$$

Because Y is binary, I use a logit link. F is a measure of the individual's pregnancy frame (described below), and X is a set of control variables measuring individual and family characteristics (and π_2 is a vector of coefficients). There are two neighborhood level equations:

¹⁰ Though schools are not of analytical interest here, school is included as a level in the model because of the structure of the data and to allow school characteristics to be used as control variables.

$$\begin{aligned}\pi_{0jk} &= \beta_{00k} + \beta_{01k} \tilde{F}_{jk} + \beta_{02k} W_{jk} + r_{jk} \\ \pi_{1jk} &= \beta_{10k} + \beta_{11k} \tilde{F}_{jk} + \beta_{12k} V_{jk}\end{aligned}$$

The first equation models the intercept from the individual level model as a function of neighborhood heterogeneity in the pregnancy frame (\tilde{F}) and a set of neighborhood control variables (W), including the neighborhood mean pregnancy frame. The second equation can be thought of as adding cross-level interaction terms. It models the coefficient capturing the relationship between the individual frame (F) and sexual activity (Y) from the individual level model as a function of neighborhood heterogeneity in the pregnancy frame (\tilde{F}) and a set of neighborhood control variables (V), again including the neighborhood mean pregnancy frame. It is the coefficient on \tilde{F} , β_{11k} , in the second neighborhood level equation that tests Hypothesis 2 in this model. Finally, there is a school level equation that serves to control for a set of school characteristics, Z :

$$\beta_{00k} = \gamma_{000} + \gamma_{001} Z_k + u_k$$

The analysis proceeds by estimating a set of increasingly more complicated models that build up to the model just described. Earlier models set various control variable coefficients to zero (effectively leaving out the control variables).

The romantic relationship scripts model is somewhat simpler. In this model I measure directly the difference between one's ideal romantic relationship and one's subsequent actual romantic relationship (described in more detail below), denoted Y . This is the dependent variable. The primary predictor of interest is neighborhood heterogeneity in ideal romantic relationship scripts (also described in more detail below), denoted \tilde{R} . Again we can write a three level model. The individual level equation is:

$$Y_{ijk} = \pi_{0jk} + \pi_{1jk} X_{ijk} + e_{ijk}$$

The difference between one's ideal and actual romantic relationship script is modeled with an intercept and a series of control variables for individual and family characteristics (X). The neighborhood level equation is:

$$\pi_{0jk} = \beta_{00k} + \beta_{01k} \tilde{R}_{jk} + \beta_{02k} W_{jk} + r_{jk}$$

This equation models the individual level intercept as a function of neighborhood heterogeneity in ideal romantic relationship scripts (\tilde{R}) and neighborhood control variables (W). The coefficient on \tilde{R} , β_{01k} , is the test of Hypothesis 2 for relationship scripts. It indicates the degree to which neighborhood heterogeneity in relationship scripts predicts the difference between an individual's ideal relationship script and his or her subsequently realized relationship. The school level equation serves to control for a set of school characteristics, Z:

$$\beta_{00k} = \gamma_{000} + \gamma_{001} Z_k + u_k$$

Again, the analysis proceeds by building up to a model with the full set of neighborhood and school control variables.

Variables

Structural Neighborhood Disadvantage: Neighborhoods are measured as census tracts. As is the convention in neighborhood effects research (e.g. Sampson et al. 1997), neighborhood disadvantage is measured by a scale constructed from series of neighborhood structural characteristics. Here the neighborhood disadvantage scale is the mean of the following standardized items: the census tract's family poverty rate, percent single mother households, percent youth, male unemployment rate, percent black, percent of those over 25 who are college graduates, percent of workers in managerial or professional occupations, and percent affluent

families (those with incomes above \$75,000 per year), with the last three reversed in polarity. These data come from the 1990 census. An individual's census tract is that of his or her residence at the wave one in-home interview, which was conducted in spring or summer of 1995. The average inter-item correlation for this scale is 0.52 and Cronbach's alpha is 0.90.

The Structural Neighborhood Disadvantage Scale (hereafter, Neighborhood Disadvantage) measures the economic and social characteristics of the families that make up the neighborhood and which are thought to lead to negative outcomes for youth.¹¹ Five of these variables (poverty, single mother households, percent youth, male unemployment, and percent black) indicate the presence of disadvantaged families.¹² The remaining three (college graduates, managerial and professional workers, affluent families) indicate the absence of middle class families since their polarity is reversed. While some researchers (e.g. Brooks-Gunn et al 1993) have argued that the absence of middle class families is more important than the presence of disadvantaged families, there are high inter-item correlations across all eight variables in these data. This suggests that these two sets of measures capture the same underlying neighborhood SES concept but simply focus on the presence of families at opposite ends of the SES distribution as indicators of a neighborhood's position in that distribution.¹³

Pre-marital Sex: Pre-marital sex between wave one (when almost all respondents are age 13 to 18) and wave two (about a year later on average) measures whether the adolescent reports

¹¹ Neighborhood disadvantage is not meant to directly proxy for neighborhood cultural context as is sometimes done when direct measures of cultural context are not available. One of the goal's of this paper is to investigate the relationship between structural, and therefore cultural characteristics of neighborhoods and cultural characteristics are measured directly, as described below.

¹² Percent youth roughly captures the number of adults per child to supervise or monitor young people, both within families and in the neighborhood in general.

¹³ A correlation matrix of these variables is available from the author upon request.

having had sexual intercourse outside of marriage between the first and second waves of the survey.¹⁴

Romantic Relationship Scripts: The Addhealth in-home data contain a series of questions about adolescents' ideal and actual romantic relationships. Ideal relationships are measured at wave one by asking the adolescent to choose the events that would be part of his or her ideal romantic relationship and then to arrange the events in his or her preferred chronological order. For the ideal relationship scripts, respondents choose from and then order the following list of 17 events:

- We would go out together in a group
- I would meet my partner's parents
- I would tell other people that we were a couple
- I would see less of my other friends so I could spend more time with my partner
- We would go out together alone
- We would hold hands
- I would give my partner a present
- My partner would give me a present
- I would tell my partner that I loved him or her
- My partner would tell me that he or she loved me
- We would think of ourselves as a couple
- We would talk about contraception or sexually transmitted diseases
- We would kiss
- We would touch each other under our clothing
- We would have sex
- My partner or I would get pregnant
- We would get married

In wave two, each respondent is asked to describe up to three past romantic relationships using the same procedure. However, in wave two the menu of possible events is slightly different. The

¹⁴ Researchers studying adolescent sexual behavior from a more demographic perspective often focus on the transition to first sex rather than sexual activity during a given time period. In this case, because of the emphasis on the effect of neighborhood context, conditioning on prior sexual behavior would be conditioning on an endogenous variable, one that is also affected by neighborhood context. In addition, in this case limiting the sample to those who never had sex prior to wave one would result in a large reduction in statistical power, which is an issue in this analysis because of the importance of interaction terms. Models estimated on this more limited sample show substantively similar results but with larger standard errors (models not shown).

two events involving telling each other that you love one another are collapsed into one event in wave two. The two events involving giving and receiving gifts are also collapsed into one event in wave two. Getting married is not included in the menu of events in wave 2, and an additional event, “You touched each others genitals (private parts),” is added in wave two. I consider the ideal relationship from wave one to be a measure of the relationship script for the respondent’s ideal romantic relationship. I then use the first relationship listed at wave two that started after the wave one interview as the actual relationship script.

The analysis requires constructing two measures, one that captures heterogeneity in ideal relationship scripts within a neighborhood and another that captures the degree to which an individual respondent’s actual relationship script differs from his or her ideal relationship script. Hypothesis 2 predicts that adolescents in neighborhoods with more heterogeneity in ideal relationship scripts will have actual relationships that are more different from their ideal relationship scripts.

The string of events in the relationship scripts can be thought of as sequence data, and sequence analysis methods can be used to measure the resemblance or difference between two scripts.¹⁵ Optimal matching provides a method for comparing two sequences based on the insertions, deletions, and substitutions required to transform one sequence into the other (Abbott 1990, 1995, Abbott and Hrycak 1990, Sankoff and Kruskal 1983; see also Stovel, Savage, and Bearman 1996). Each insertion, deletion, or substitution carries a cost, and the optimal matching algorithm finds the minimum total cost to transform one sequence into the other. This cost is a

¹⁵ I thank Hannah Brueckner and Peter Bearman for suggesting the use of sequence analysis methods and for advice on their implementation.

measure of the difference between two sequences. This analysis uses the implementation of optimal matching in the software Transition Data Analysis (Rohwer and Poetter 2005).¹⁶

To measure neighborhood heterogeneity in ideal relationship scripts, I take the mean of the differences between ideal romantic relationship scripts for all possible pairs of individuals in each neighborhood (defined as a census tract).¹⁷ The reliability of this measure depends heavily on the number of Addhealth respondents in the neighborhood, so all models are weighted by this reliability.¹⁸ Further information on the measurement of differences in romantic relationship scripts using sequence analysis is provided in Appendix C.

Pregnancy Frames: The degree to which a respondent agrees or disagrees with the statement, “It wouldn’t be all that bad if you got pregnant [or got someone pregnant] at this time in your life,” (see Table 1 below) measures his or her frame regarding teenage pregnancy. Above I conceptualized frames as ways of thinking about the world and about the consequences of one’s actions. While ideally one would use a measure that distinguished between multiple frames regarding pregnancy (such as early parenthood as status, early parenthood as hindrance, or early parenthood as leading to a closer relationship between parent and child), no such measures are available in these or any other survey data. However, this survey question is a reasonable measure of the respondent’s frame regarding teenage pregnancy because it captures both the

¹⁶ Previous sociological applications using sequence analysis have investigated sequences of jobs within careers (e.g. Abbott and Hrycak 1990, Stoval et al. 1996). These applications involve sequences that explicitly take into account time. In the Addhealth relationship scripts there is no information about the elapsed time between events in the sequence, but there is nothing inherent to the optimal matching algorithm that requires information on elapsed time. The measures constructed here thus focus particularly on the ordering of events in a romantic relationship. This analysis also differs in the purpose of the sequence analysis. Previous applications typically calculate the difference between all possible pairs of sequences and then use cluster analysis to determine a set of typical sequences. Here I am using optimal matching only to measure particular characteristics of individuals and neighborhoods.

¹⁷ Thus neighborhood heterogeneity in relationship scripts is undefined for neighborhoods with only one Addhealth respondent (or only one Addhealth respondent with complete ideal relationship script data).

¹⁸ If n_j is the number of respondent pairs in neighborhood j , σ_u^2 is the within neighborhood variance, and σ_e^2 is the between neighborhood variance, the reliability of the neighborhood mean is $\sigma_u^2 / (\sigma_u^2 + \sigma_e^2 / n_j)$. Supplemental analyses (not shown) indicate that models in Table 4 are not sensitive to the exclusion of tracts with low measurement reliability.

valence and strength of an adolescent's thinking about the consequences of teenage pregnancy. By including the phrase, "at this time in your life," it cues respondents to think of consequences, and in particular of the consequences for themselves rather than teenagers in general. Because of this practical orientation, this measure can be distinguished from more general attitudinal measures that tap values regarding the moral status of teenage sexual behavior or early parenthood.^{19 20}

To measure an individual's adherence to this "pregnancy would have negative consequences for me" frame, I assign responses the numbers one through five such that higher values indicate a stronger feeling that pregnancy would have negative consequences. Calculating neighborhood heterogeneity in pregnancy frames is complicated by the ordinal nature of this measure, which makes the usual measure of variation for interval measures, the variance, inappropriate. I use a measure of ordinal variation developed by Blair and Lacy (2000) that measures concentration:

$$I^2 = \frac{\sum_{i=1}^{k-1} (F_i - .5)^2}{(k-1)/4}$$

k is the number of categories (in this case $k = 5$), and F_i is the cumulative proportion for category i (i.e., $F_i = \sum_{j=1}^i p_j$ where p_j is the sample proportion for the j th of k categories). The numerator measures the difference between the observed distribution and a distribution with maximum

¹⁹ For example, contrast this survey question with survey questions in the General Social Survey measuring attitudes toward pre-marital sex or sexual activity by teenagers: "There's been a lot of discussion about the way morals and attitudes about sex are changing in this country. If a man and woman have sex relations before marriage, do you think it is always wrong, almost always wrong, wrong only sometimes, or not wrong at all?" and, "What if they are in their early teens, say 14 to 16 years old? In that case, do you think sex relations before marriage are always wrong, almost always wrong, wrong only sometimes, or not wrong at all?"

²⁰ This interpretation is also based on qualitative interviews with 60 adolescent boys in three neighborhoods in Boston in which this survey question was administered to each boy and then both his understanding of the question and his response were discussed (these data are discussed in more detail in [author cite removed]). When discussing how they thought about answering this question, the boys focused on how their lives would be different were they to become a parent in the near future and how that would affect their future plans and life chances.

dispersion, which occurs when responses are evenly divided between the two opposite extremes (the minimum dispersion occurs when all responses are in a single category; see Blair and Lacy 2000). The denominator normalizes by dividing by the maximum possible value of the numerator, so that l^2 varies from 0 to 1. Because some neighborhoods have small numbers of adolescents, Blair and Lacy's small sample bias-adjusted l^2 is required:

$$l_u^2 = l^2 - \frac{1-l^2}{N-1}$$

Finally, I take $1-l_u^2$ as my measure of neighborhood heterogeneity because l_u^2 is a measure of concentration.²¹ Finally, the regression models also require controls for central tendency of the distribution of frames in neighborhoods, for which I use the mean.²²

One complication in constructing the neighborhood heterogeneity measure by aggregation of individual respondents to the neighborhood level in the Addhealth data is the small number of respondents in some neighborhoods. For about half of the tracts in which at least one Wave I Addhealth respondent lives there are no other Addhealth respondents, and therefore it is impossible to measure heterogeneity for such tracts. These tracts are dropped from the analysis. However, since most Addhealth respondents live in tracts with many other respondents, this results in the loss of only about six percent of respondents from the multi-level models predicting individual outcomes. For another 25 percent of tracts, there are less than five respondents per tract, leading to low reliability of neighborhood level measures created by

²¹ Ideally, one would construct gender specific measures of neighborhood cultural heterogeneity of both pregnancy frames and relationship scripts. Unfortunately, doing so with these data would cut in half the number of individuals per neighborhood who contribute to the neighborhood-level measures, significantly reducing the reliability of such measures.

²² Strictly speaking, the mean is not an appropriate measure of central tendency for an ordinal variable because it assumes that the distances between categories carry information, whereas with an ordinal variable, only information about the order of the categories is present. However, other potential measures of central tendency such as the mode or median result in little variation across neighborhoods, and so would not serve as effective controls for central tendency when measuring the impact of neighborhood heterogeneity.

aggregation. I weight models by the reliability of the mean to account for the low reliability of neighborhood measures when they are constructed from small numbers of respondents.²³

Neighborhood Controls: In models that examine the relationship between neighborhood disadvantage and neighborhood cultural heterogeneity, it is necessary to control for other potential sources of neighborhood heterogeneity. Social organization theory points to three other potential sources of heterogeneity: immigration, residential instability, and ethnic and racial diversity. To control for immigration, I use the percent of neighborhood residents who are foreign born. To control for residential instability, I control for percent of housing units that are owner occupied and percent of housing units that have housed the same household for the last five years.²⁴ To control for ethnic diversity, I control for percent Hispanic and percent Hispanic squared. Finally, to control for racial diversity, I use Simpson's Interaction Index (White 1986, cited in Reardon and Firebaugh 2002). This index is constructed from the percent of neighborhood residents in four racial groups: White (*W*), Black (*B*), Asian (*A*), and Other (*O*):

$$\text{Racial Diversity Index} = 100 \left(\frac{W}{1-W} + \frac{B}{1-B} + \frac{A}{1-A} + \frac{O}{1-O} \right)$$

This index varies from zero (entire neighborhood population from one group) to 75 (neighborhood population evenly divided between the four groups).²⁵

Individual/Family Controls: To minimize selection bias due to differences between individuals across neighborhoods, individual and family control variables are required. Measured at wave one, these controls include race and ethnicity indicators, age, gender, adolescent

²³ Supplemental analyses (not shown) indicate that results in Table 3 are not sensitive to the exclusion of tracts with low measurement reliability.

²⁴ These two variables are obviously somewhat collinear, but their role in the model is to control for potential confounding due to residential instability. I am not interested in the magnitude or statistical significance of their coefficients.

²⁵ I also experimented with Thiel's Entropy Index (Thiel 1972, cited in Reardon and Firebaugh 2002). This index sums $p(\ln(1/p))$ for each of the four groups. The Simpson index was a better predictor of neighborhood heterogeneity.

immigrant status, language spoken at home, log family income, single parent household, step-parent or other household, mother's age at birth, low birth weight, and for the primary parent (mother or female caregiver if available, father or male caregiver if not) immigration status, education, professional/managerial occupation, disability, and welfare receipt. These variables are described in more detail in Appendix A.

School Controls: Since previous research has found that school characteristics are important predictors of sexual and romantic behavior (e.g. Teitler and Weiss 2000), I include school controls in the multi-level models. School controls include indicators for private school, Catholic school, and rural/suburban/urban, and measures of school size, percent of students in a college prep program, and cumulative dropout rate. These variables are also described in more detail in Appendix A.

Several individual, family, and school control variables have missing values. Rather than dropping cases with missing values on control variables, I impute missing values using multiple imputation, currently believed to be among the best methods for dealing with missing data (see Acock 2005 for a non-technical discussion and references therein for more technical material, such as Little and Rubin 2002, Allison 2002). Multiple imputation involves creating multiple full datasets via MICE (multiple imputation by chained equations), estimating a model using each full dataset, and then combining results across datasets in a way that takes into account the variance in imputed values across datasets.²⁶ Here I use ten imputed datasets. Finally, continuous variables are grand mean centered in multi-level models.

²⁶ I use Royston's (2004) "ice" command in Stata to generate the imputed datasets and HLM6's multiple imputation capabilities to estimate the multiple models and combine results across models.

Results

Table 1 shows descriptive results on the degree to which Addhealth adolescents in different types of neighborhoods agree that getting pregnant or getting someone pregnant would “not be all that bad” at this time in their lives. As we would expect, adolescents in more advantaged neighborhoods are more likely to strongly disagree that getting pregnant would not be all that bad. However, what is more surprising from the perspective of social isolation theory is that even in the most disadvantaged neighborhoods, over 70 percent of adolescents disagree or strongly disagree that a pregnancy would not be all that bad. It would be very difficult to conclude from Table 1 that the majority of adolescents in disadvantaged neighborhoods express cultural models radically at odds with mainstream views on teenage pregnancy. Yet Table 1 also reveals the greater heterogeneity of responses in disadvantaged neighborhoods. Descriptively, what distinguishes disadvantaged from advantaged neighborhoods is the heterogeneity of responses in disadvantaged neighborhoods. Whereas more advantaged neighborhoods have considerable consensus on teenage pregnancy, in more disadvantaged neighborhoods there is a sizable minority of adolescents who do not subscribe to the dominant view. Most research on neighborhood context measures neighborhood characteristics using measures of central tendency (such as the mean), but Table 1 reveals that internal variation (or what I am calling cultural heterogeneity) also differs across neighborhoods, and that neighborhood mean and neighborhood heterogeneity are empirically related.

Neighborhood Disadvantage and Cultural Heterogeneity

Table 2 examines the relationship between neighborhood disadvantage and cultural heterogeneity controlling for other neighborhood characteristics that may be sources of

spuriousness. It examines Hypothesis 1, that disadvantaged neighborhoods will exhibit greater cultural heterogeneity. Table 2 shows one OLS regression model each for neighborhood heterogeneity in pregnancy frames and for neighborhood heterogeneity in relationship scripts. The unit of analysis is the neighborhood (census tract). The key predictor is neighborhood disadvantage.²⁷ Controls are included for percent Hispanic, racial diversity, percent foreign born, and residential stability, though their coefficients are not of substantive interest for testing Hypothesis 1.²⁸ As these control variables are highly correlated with one another, their individual coefficients should not be interpreted as indicating their ability to predict cultural heterogeneity.²⁹ Each model is weighted by the reliability of the neighborhood heterogeneity measure. Descriptive statistics for the variables in these models are provided in Appendix B Table B1.

Both models show a strong and statistically significant association between neighborhood disadvantage and cultural heterogeneity, net of controls, and these associations are of the same order of magnitude across domains. In the pregnancy frame model, a one standard deviation increase in the neighborhood disadvantage scale is also associated with an increase of about one fifth of a standard deviation in pregnancy frame heterogeneity.³⁰ In the relationship script model, a one standard deviation increase in the neighborhood disadvantage scale is associated with an

²⁷ Entering the neighborhood structural characteristics that make up the Neighborhood Disadvantage Scale in the model individually produces similar results (not shown).

²⁸ Percent Hispanic is given a quadratic functional form in these models because one would expect the association between percent Hispanic and cultural heterogeneity to increase as the proportion of Hispanics increases from zero but to peak and then decrease as the proportion Hispanic approaches one.

²⁹ Multiple control variables are entered into the models individually so that they account for the maximum potential omitted variable bias in the relationship between structural disadvantage and cultural heterogeneity. Drawing conclusions about racial diversity, immigrant density, and residential stability as causes of cultural heterogeneity would require a different model specification.

³⁰ Recall that the neighborhood disadvantage variable is standardized because it is a scale with no inherent metric. The standard deviation of the pregnancy frame heterogeneity variable is 0.3285 – see Appendix B Table B1.

increase of a little less than one sixth of a standard deviation in heterogeneity. These results show that disadvantaged neighborhoods exhibit greater cultural heterogeneity.³¹

Cultural Heterogeneity and Adolescent Outcomes

Hypothesis 2 is that adolescents in more culturally heterogeneous neighborhoods will be less likely than those in more homogenous neighborhoods to act in accordance with their own frames and scripts. This hypothesis predicts that the relationships between individual frames or scripts and individual outcomes will be weaker in more heterogeneous neighborhoods. Table 3 shows various versions of the multi-level logit models predicting pre-marital sexual activity described above.³² (Descriptive statistics for the variables used in this model are provided in Appendix B Table B2. Individual, family, and school characteristic control variable coefficients are provided in Appendix B Table B3.) In model 1, the individual pregnancy frame is the primary predictor.³³ This variable is interacted with dummy variables for quartiles of the distribution of neighborhood heterogeneity in pregnancy frames. These quartile dummies are also entered into the model directly. Converting the frame heterogeneity measure to quartiles allows its effects to be nonlinear. The individual frame variable captures the relationship between one's pregnancy frame and pre-marital sexual behavior within low heterogeneity neighborhoods. Not surprisingly, there is a strong relationship between an adolescent's individual pregnancy frame and his or her sexual behavior among adolescents in these neighborhoods. The interaction

³¹ One might question the relatively low R^2 values produced by the models in Table 2. These are likely the result of measurement error in the cultural heterogeneity measures due to the low reliability of measurement in neighborhoods with few respondents. In OLS, measurement error in the dependent variable does not bias coefficients but does increase error variance.

³² Cases were selected for the analysis in Table 3 if they had non-missing data on individual pregnancy frame and neighborhood heterogeneity in pregnancy frames. Respondents under the age of 15 were not asked the survey question measuring the pregnancy frame.

³³ I experimented with entering this variable into the model as a series of dummy variables, but the relationship with the outcome was fairly linear, so to reduce model complexity, I enter it as a linear term.

terms capture the difference in this relationship across neighborhoods with different levels of frame heterogeneity. These coefficients show that as neighborhood frame heterogeneity increases, the association between an adolescent's own pregnancy frame and sexual behavior declines dramatically.

Neighborhoods with greater heterogeneity in pregnancy frames also exhibit an average frame that views teenage pregnancy less negatively (see Table 1). In other words, there is an association between central tendency and variation at the neighborhood level for pregnancy frames. Thus, one potential source of spuriousness in Model 1 of Table 3 is a neighborhood's mean pregnancy frame. Model 2 adds the control for the neighborhood mean pregnancy frame. Its coefficient is in the expected direction, but it is not statistically significant. Its inclusion changes only slightly the primary coefficients of interest, the interaction terms. This model also adds a term for the interaction between the individual pregnancy frame and the neighborhood mean pregnancy frame. Its coefficient is small and statistically insignificant. These results suggest that the smaller relationship between an adolescent's own pregnancy frame and his or her sexual behavior in more heterogeneous neighborhoods is not merely a product of greater average permissiveness towards teenage pregnancy in such neighborhoods.

Moreover, the comparatively small magnitudes and lack of statistical significance of the neighborhood mean pregnancy frame coefficients in predicting sexual activity suggest that once cultural heterogeneity is taken into account, a neighborhood oppositional cultural environment is not an important cause of differences in sexual behavior across neighborhoods. This is further evidence against the social isolation view of the cultural context of disadvantaged neighborhoods. Were social and/or cultural isolation affecting individual adolescent behavior,

one would expect neighborhood mean pregnancy frames to be strong predictors of individual sexual activity.

It is also possible that the importance of neighborhood heterogeneity is a spurious result of the strong association between neighborhood heterogeneity and neighborhood disadvantage. Without controlling for neighborhood disadvantage, we cannot eliminate the possibility that the effects of neighborhood heterogeneity are simply capturing the effects of neighborhood disadvantage. Model 3 adds controls for neighborhood disadvantage that parallel the variables measuring neighborhood heterogeneity. These include dummy variables for quartiles of the distribution of neighborhood disadvantage and interactions between these quartiles and the individual pregnancy frame. As we would expect, inclusion of the neighborhood disadvantage variables reduces the magnitudes of the frame heterogeneity interaction coefficients, but they remain large and statistically significant.

The coefficients in Model 3 show that in the lowest heterogeneity neighborhoods, the relationship between individual frame and behavior is strong, but that the importance of the respondent's individual frame declines as neighborhood heterogeneity increases. In the lowest heterogeneity neighborhoods, a one category increase in the individual pregnancy frame multiplies the odds of sexual behavior by about 0.61 ($e^{-0.4975} = 0.6080$), while in the highest heterogeneity neighborhoods, a similar move in the individual pregnancy frame multiplies the odds of sexual behavior by a more modest 0.91 ($e^{-0.4975+0.4059} = 0.9124$). (Recall that since exponentiated coefficients from logit models are odds ratios, values closer to 1 represent smaller associations). Adolescents in higher heterogeneity neighborhoods are much less likely to act in accordance with their own articulated frames regarding teenage pregnancy than their counterparts in more culturally homogenous neighborhoods.

One can also illustrate the interactions in these models graphically. Figure 1a shows the relationship between predicted probabilities of sexual activity and individuals' pregnancy frames based on estimates from Model 3 in Table 3. Separate lines are plotted by quartiles of neighborhood frame heterogeneity. Other variables are fixed at either zero (indicator variables) or their means (continuous variables). Among adolescents living in neighborhoods with the least cultural heterogeneity (those in the 1st and 2nd quartiles of heterogeneity), individual pregnancy frames are strongly predictive of sexual activity. Among those in neighborhoods in the 3rd quartile, there is still a negative sloping line, but the slope is considerably more modest. Among those in neighborhoods with the highest pregnancy frame heterogeneity (those in the 4th quartile), the relationship between one's own pregnancy frame and one's sexual behavior is almost flat. Figure 1b rearranges the same data points to show the relationship between neighborhood pregnancy frame heterogeneity and sexual activity, with separate lines plotted by the adolescents' own individual pregnancy frames. Here the importance of neighborhood cultural heterogeneity is also evident. As neighborhood heterogeneity increases, the predicted probabilities of sexual activity converge for all adolescents, no matter what their stated frame regarding teenage pregnancy.

I now turn to the analysis of the romantic relationship scripts. Recall that the models are slightly simpler here, as the failure to realize one's ideal relationship script is measured directly. Table 4 examines the relationship between neighborhood heterogeneity in ideal relationship scripts and the difference between the ideal and actual relationship scripts of an individual.³⁴ (Descriptive statistics for the variables used in this model are provided in Appendix B Table B4. Control variable coefficients are provided in Appendix B Table B5.) Model 1 shows that, net of

³⁴ Cases were selected for analysis in Table 4 if they had non-missing data on the ideal relationship script and neighborhood relationship script heterogeneity variables and had at least one romantic relationship that started after the wave 1 in home interview (during which data on the ideal relationship script were collected).

individual, family, and school characteristics, neighborhood heterogeneity is a significant predictor of the difference between one's ideal and actual romantic relationships. Models 2 adds controls for neighborhood disadvantage. This control reduces the heterogeneity coefficient, but it remains statistically significant. These models provide further evidence in support of Hypothesis 2, suggesting that greater neighborhood cultural heterogeneity leads to a lower likelihood of realizing one's ideal relationship. To the extent that romantic relationship partners are selected from among one's neighbors, part of this relationship is likely related to the process of partner selection. In more heterogeneous neighborhoods, it is more difficult to find a romantic partner whose ideal relationship script is similar to one's own. When two relationship scripts are incompatible, at least one partner must fail to realize his or her ideal relationship if the relationship continues.³⁵

Conclusion

This paper has attempted to reorient current thinking about the cultural context of disadvantaged neighborhoods, particularly as it relates to adolescent outcomes. The canonical account of neighborhood culture in the urban poverty literature (Wilson 1987) is one in which the departure of middle class blacks from inner city neighborhoods has left behind a socially isolated underclass with values that both depart significantly from middle class or mainstream culture and are relatively uniform and coherent. Massey and Denton (1993) take this a step further, writing that "ghetto culture has become an entity unto itself." Theoretical notions such as "oppositional culture" based on this premise now dominate much scholarship on inner city,

³⁵ It is likely that there are important gender differences in adolescents' ideal romantic relationship scripts. Unfortunately, creating gender-specific measures of relationship script heterogeneity requires double the subject density per neighborhood to maintain measurement reliability. It is not possible to create such gender-specific measures in these data.

disadvantaged communities. Accordingly, in considering the impact of neighborhood culture on adolescents, most previous work examining adolescent outcomes has employed a subculture model, in which negative outcomes are the product of participation in a particular subculture whose values promote negative behavior. Paradoxically, this work also emphasizes the multiple and overlapping lifestyle groups or orientations in disadvantaged neighborhoods.

I have proposed an alternate view of the cultural context of disadvantaged neighborhoods, a view that emphasizes their cultural diversity. The urban poverty literature has lost track of the insights developed by Shaw and McKay (1969/1942) that poor communities are characterized by conflicting cultural systems. Though Shaw and McKay were concerned with crime and delinquency, these ideas have potential to further our understanding of the cultural context of disadvantaged neighborhoods as it relates to other domains as well. I have argued that an important way in which disadvantaged neighborhoods differ from more advantaged neighborhoods is cultural heterogeneity, the presence of a wide array of competing and contradictory cultural models.

The empirical analyses presented above show that cultural heterogeneity helps to predict adolescent outcomes regarding sexual activity and romantic relationships when combined with current theoretical concepts from cultural sociology, such as scripts, frames, and repertoires. This paper has examined neighborhood cultural heterogeneity with regard to frames about teenage pregnancy and scripts for romantic relationships. Using data from Addhealth, it has shown that more disadvantaged neighborhoods exhibit greater cultural diversity in pregnancy frames and relationship scripts. This paper also shows that adolescents in more culturally heterogeneous neighborhoods are less likely to act in accordance with their own articulated scripts and frames. In neighborhoods where there is greater diversity of frames regarding the consequences of

teenage pregnancy, adolescents are less likely to act in accordance with their own frames. In neighborhoods where there is greater variation in scripts for romantic relationships, adolescents are less likely to realize their own ideal relationships in the actual relationships that they pursue.

From a theoretical perspective, this research has implications for both social isolation and social organization theories of neighborhood effects. The importance of cultural heterogeneity calls into question one of the fundamental ideas of social isolation theory, that disadvantaged neighborhoods are isolated from mainstream or middle class culture. Instead, these results suggest that disadvantaged neighborhoods contain a mix of cultural models and that this heterogeneity impacts neighborhood adolescents. In contrast, the findings in this study are generally supportive of neighborhood effects models based on social organization theory and move us toward understanding the mechanisms underlying these models. Social disorganization theory highlights the limited capacity of residents in disadvantaged communities to regulate the behaviors of their neighbors. Heterogeneity in cultural lifestyles or orientations can be understood as the failure of more middle class or mainstream residents of disadvantaged neighborhoods to regulate behavior in their communities. The result of this failure is that neither “oppositional” nor “mainstream” behavior is dominant in disadvantaged communities.

More broadly, this paper’s findings challenge the underclass concept as a fruitful framework for the analysis of life in poor urban neighborhoods. This study suggests that rather than being disconnected from mainstream society, poor urban residents live in cultural environments that include both local elements and elements from the wider society and that these disparate elements are often contradictory and competing. This means that, as has been described in the ethnographic literature (Anderson 1990, 1999, Newman 1999), cultural conflict and cultural disagreement are widespread. I have argued here that such conflict may have further

consequences for wellbeing and decision-making. In addition, a theoretical framework based on cultural heterogeneity allows both for variation in individual outcomes among those who experience the same structural conditions and for greater agency, as individuals choose between and evaluate the cultural models that exist in their cultural environments and in their repertoires.

The cultural heterogeneity view is both more optimistic and in some ways more pessimistic than the underclass view. On the one hand, since according to the cultural heterogeneity view there is widespread support for conventional cultural models, the seeds of positive change are likely present in the vast majority of disadvantaged neighborhoods. On the other hand, neighborhood cultural heterogeneity can be created when even a relatively small minority of individuals or families display alternative or oppositional behaviors or lifestyles and thereby disrupt, confuse, or weaken the dominance of conventional cultural models. Cultural heterogeneity, and its consequences, will likely persist until the most disadvantaged residents of poor neighborhoods are empowered with more positive ways to adapt to and rise above poverty.

Though this study has not set out to explicitly test competing hypotheses regarding cultural theories, it does suggest some implications for cultural sociology. First, this paper's findings regarding the consequences of neighborhood cultural heterogeneity show how local or group cultural contexts can matter for behavior, even when those local cultures are not starkly distinct or separate from other local cultures or the wider culture. In other words, different behavioral outcomes do not require distinct subcultures. Second, this paper provides another example of the utility of cognitive cultural concepts such as frames, scripts, and repertoires. In doing so, it also suggests a further specification of how repertoires operate. The activation of elements from one's repertoire depends not just on one's structural position (Lamont 1992) but also on the relationships between various elements in the repertoire and on local social support

for those elements. Third, the importance of cultural heterogeneity suggests that not only are the meanings attached to cultural models important, but how those meanings are organized and related to one another also has implications for behavior. The degree of harmony or conflict among available cultural models is another dimension along which cultural contexts or cultural repertoires can be evaluated.

While the results in this study are strongly suggestive of the importance of cultural heterogeneity for understanding the cultural context of disadvantaged neighborhoods, further research is required. Better measures of frames and scripts would provide stronger tests of the hypotheses examined here. For example, the measure of heterogeneity of pregnancy frames does not capture the presence of multiple frames but rather variation in allegiance to a particular frame.³⁶ Further empirical predictions can be generated to test the utility of cultural heterogeneity concept. For example, the hypothesized weaker commitment to frames or scripts that comes from exposure to greater cultural heterogeneity would suggest that adolescents in more heterogeneous neighborhoods should exhibit greater temporal variation in their articulated frames and scripts. Finally, further research is needed to examine the degree of cultural heterogeneity in other domains such as education or health, the ability of cultural heterogeneity to predict other outcomes, the importance of cultural heterogeneity in other contexts such as schools, and whether there are gender contingent effects of cultural heterogeneity.

³⁶ In addition, it could be argued that the survey question used here to measure pregnancy frames also taps the moral status of teenage pregnancy because it contains the phrase “all that bad,” or it could be argued that the question wording is confusing to adolescents because it contains a double negative. Nevertheless, this measure is strongly predictive of behavior among adolescents in culturally homogenous neighborhoods, so in order to call into question the larger argument, measurement problems would have to disproportionately affect adolescents in culturally heterogeneous neighborhoods. Still, whether or not a moral element is also captured must be determined by future research. More generally, social scientists have spent decades and millions of dollars developing and fine-tuning survey measures of structural position, but we have only begun to develop valid and reliable survey measures of cultural concepts.

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Table 1: Pregnancy Frame by Neighborhood Disadvantage

<i>"It wouldn't be all that bad if you got pregnant [or got someone pregnant] at this time in your life."</i>						
Neighborhood Disadvantage Scale Quintiles	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Row Obs
1 st	1.1%	4.0%	5.2%	31.7%	58.1%	1,899
2 nd	1.6%	5.3%	7.9%	32.1%	53.1%	3,508
3 rd	1.2%	6.8%	9.3%	31.7%	50.9%	3,880
4 th	2.9%	9.7%	10.1%	32.6%	44.8%	2,689
5 th	4.0%	12.4%	11.1%	35.2%	37.4%	1,640
All	2.0%	7.4%	8.7%	32.4%	49.5%	13,616

Note: Estimates account for Addhealth sample design and Addhealth In-Home Wave 1 weight

Table 2: OLS Models of Neighborhood Cultural Heterogeneity

	<i>Model 1</i>	<i>Model 2</i>
	<i>Pregnancy Frame</i>	<i>Relationship Script</i>
Nhood Disadvantage Scale	0.06786* (0.00872)	0.15083* (0.02704)
% Hispanic	-0.00014 (0.00125)	-0.00069 (0.00398)
% Hispanic Squared	0.00001 (0.00014)	-0.00002 (0.00004)
Racial Diversity Index	0.00102* (0.00043)	0.00102 (0.00138)
% Foreign Born	0.00074 (0.00080)	0.00429 (0.00264)
% Owner Occupied	0.00026 (0.00041)	-0.00283* (0.00133)
% Units Occupied 5 Years	0.00031 (0.00055)	-0.00087 (0.00178)
Constant	0.56636* (0.04751)	0.14836 (0.15386)
N neighborhoods	1322	1367
R ²	0.086	0.057

NOTES:

Each model weighted by reliability of neighborhood heterogeneity measure
Descriptive statistics available in Appendix B Table B1

Table 3: Three-level Logit Models Predicting Sex Between Waves I and II

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
Individual Pregnancy Frame	-0.4384* (0.0873)	-0.4185* (0.0988)	-0.4975* (0.1030)
Nhood Mean Pregnancy Frame		-0.1504 (0.1128)	-0.0930 (0.1123)
Individual Frame X Nhood Mean Pregnancy Frame		-0.0196 (0.0830)	0.0477 (0.0868)
Pregnancy Frame Nhood Heterogeneity Quartiles:			
2nd Quartile vs. 1st Quartile	0.0595 (0.1006)	0.0200 (0.1104)	0.0351 (0.1115)
3rd Quartile vs. 1st Quartile	0.0517 (0.1019)	-0.0360 (0.1285)	-0.0368 (0.1289)
Top Quartile vs. 1st Quartile	0.1503 (0.1648)	0.0144 (0.1986)	0.0159 (0.1947)
Individual Frame X Nhood Frame Heterogeneity Quartiles:			
2nd Quartile vs. 1st Quartile	0.2100* (0.1001)	0.1949 (0.1055)	0.1727 (0.1040)
3rd Quartile vs. 1st Quartile	0.3745* (0.0902)	0.3514* (0.1161)	0.3144* (0.1189)
Top Quartile vs. 1st Quartile	0.4335* (0.1381)	0.4163* (0.1560)	0.4059* (0.1654)
Nhood Disadvantage Scale Quartiles:			
2nd Quartile vs. 1st Quartile			0.0965 (0.0767)
3rd Quartile vs. 1st Quartile			0.1408 (0.0881)
Top Quartile vs. 1st Quartile			0.2160* (0.1057)
Individual Frame X Nhood Disadvantage Scale Quartiles:			
2nd Quartile vs. 1st Quartile			0.1361 (0.0729)
3rd Quartile vs. 1st Quartile			0.0783 (0.0765)
Top Quartile vs. 1st Quartile			0.2419* (0.0809)
Constant	-0.5372* (0.1521)	-0.4742* (0.1714)	-0.5926* (0.1824)
N individuals	9,281	9,281	9,281
N neighborhoods	1,357	1,357	1,357
N schools	142	142	142

NOTES:

Models weighted by reliability of neighborhood frame means

Robust standard errors in parentheses

Descriptive statistics available in Appendix B Table B2

Individual, family, and school control variable coefficients available in Appendix B Table B3

Missing values on control variables imputed using multiple imputation with 10 replications

Table 4: Three-Level Models Predicting Difference Between Ideal Relationship and Actual Relationship Scripts

	<i>Model 1</i>	<i>Model 2</i>
Nhood Heterogeneity Ideal Relationship Script	0.0539* (0.0154)	0.0473* (0.0156)
Nhood Disadvantage Scale		0.0237 (0.0128)
Constant	2.0518* (0.0310)	2.0509* (0.0310)
N individuals	5,916	5,916
N neighborhoods	1,299	1,299
N schools	143	143

NOTES:

Models weighted by reliability of neighborhood script heterogeneity means

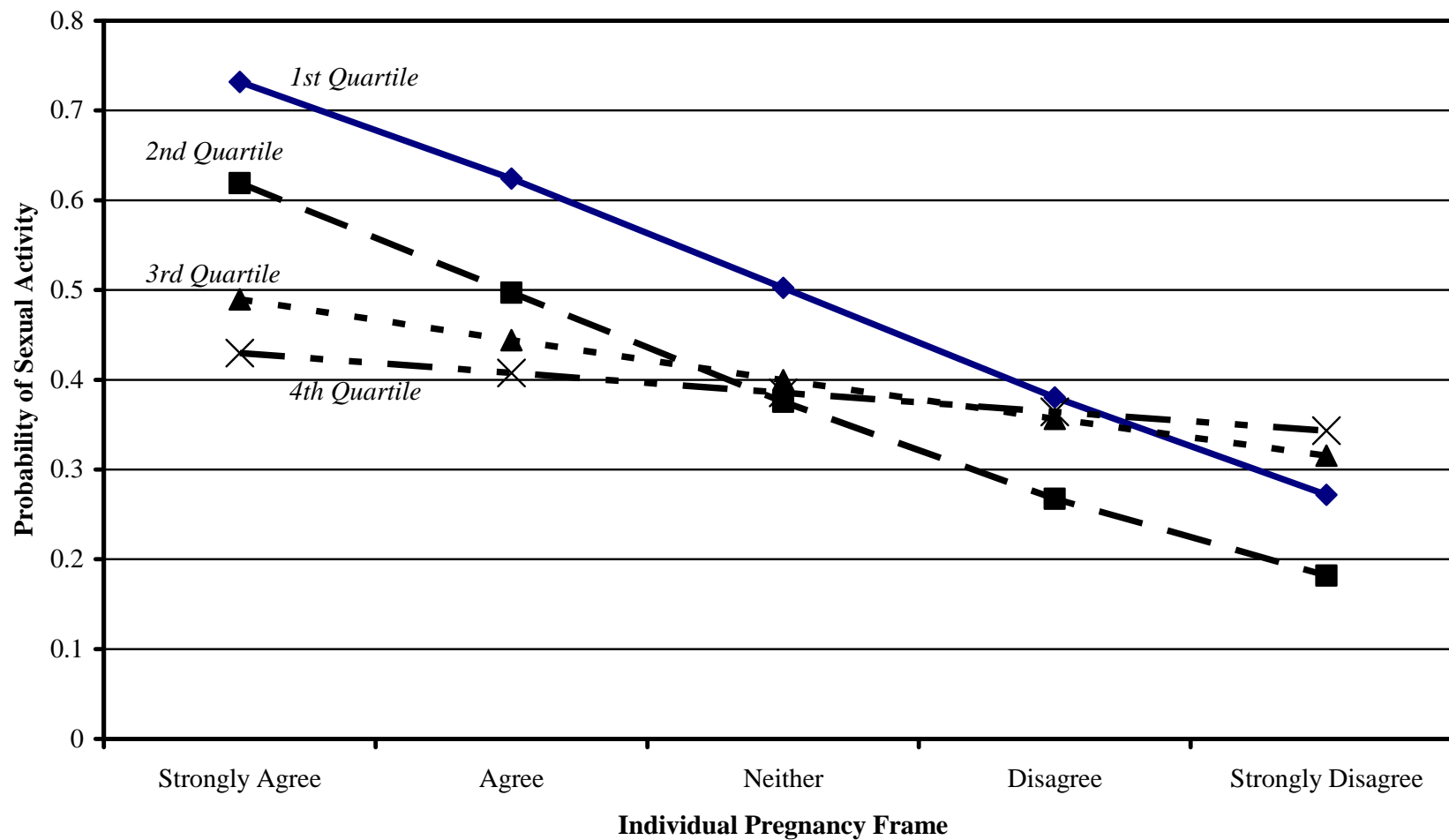
Robust standard errors in parentheses

Descriptive statistics available in Appendix B Table B4

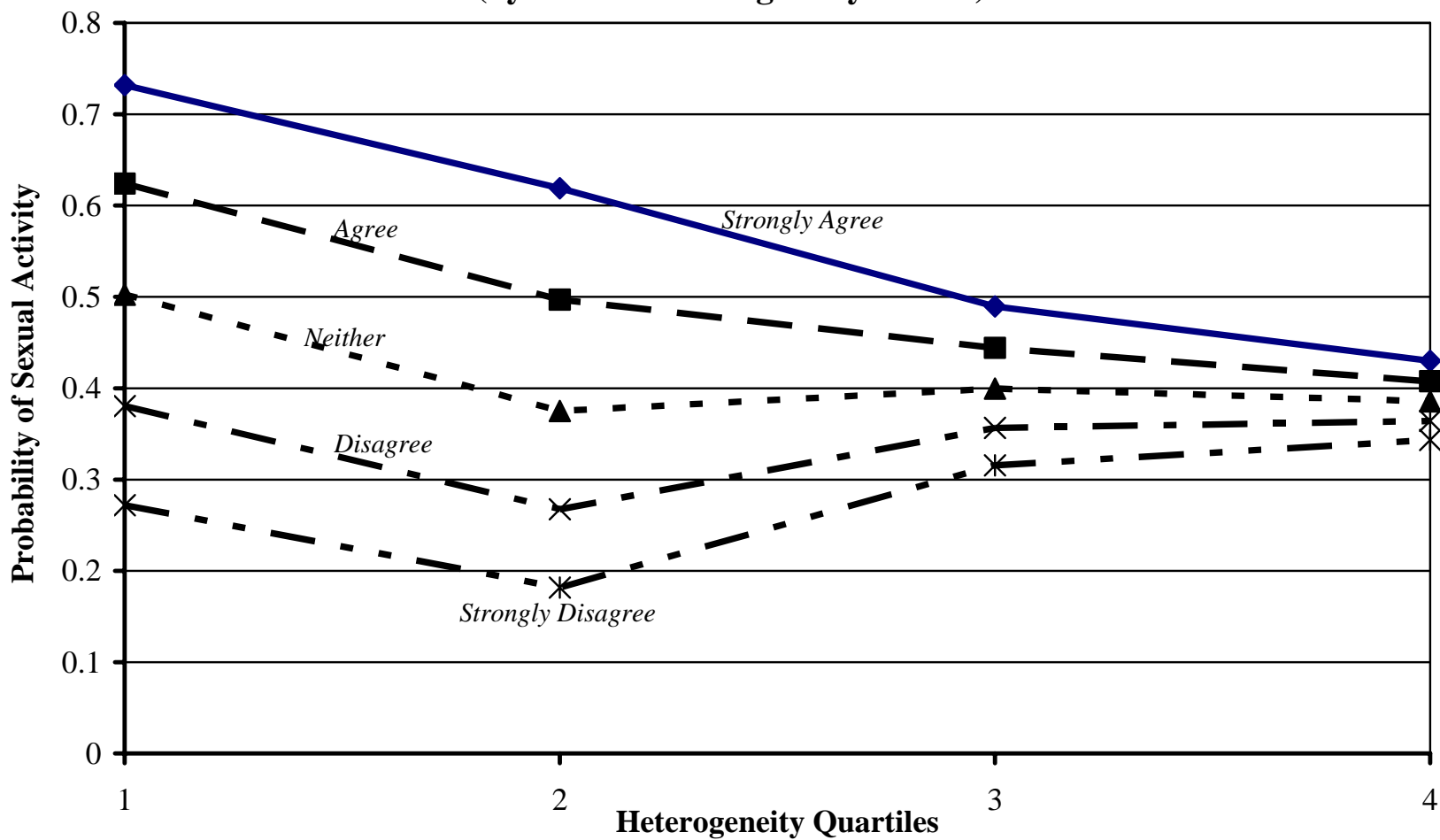
Individual, family, and school control variable coefficients available in Appendix B Table B5

Missing values on control variables imputed using multiple imputation with 10 replications

**Figure 1a: Relationship Between Individual Pregnancy Frame
and Sexual Activity
(by Neighborhood Pregnancy Frame Heterogeneity Quartiles)**



**Figure 1b: Relationship Between Neighborhood Pregnancy Frame
Heterogeneity and Sexual Activity
(by Individual Pregnancy Frame)**



Appendix A: Descriptions of Individual, Family, and School Control Variables

(All measured at Wave 1)

Individual Characteristics:

Race/Ethnicity: A set of indicator (0/1) variables for the adolescent's race and ethnicity. In Addhealth, the adolescent can self identify as belonging to one or more categories, including White, Black, Native American, Asian, or other Race. White is the omitted category in models. I also include an indicator variable for those adolescents who choose more than one category. The adolescent can also choose to identify as Hispanic/Latino or not.

Immigrant: An indicator for those born outside the United States.

Low Birth Weight: An indicator for weighing less than 88 ounces (5.5 lbs.) at birth.

Mother's Age at Birth: The age in years of the mother when the adolescent was born.

Family Characteristics:

Home Language not English: An indicator variable for those adolescents whose family does not speak English at home.

Household Size: The number of persons living in the adolescent's household.

Household Type: A set of indicator variables for the family type: Married, Single Parent, and Other (which includes step parent families). Married is the omitted category.

Parent variables are based on the primary residential parent who completed the parent questionnaire, usually the biological mother but sometimes the father or other caretaker.

Parent Immigrant: Primary parent not born in the US.

Parent Education: A set of indicator variables for the primary parent's completed level of education: less than High School, High School Graduate, Some College or Trade School, and College Graduate. Less than high school is the omitted category.

Parent Professional Occupation: Primary parent currently works in a managerial or professional occupation.

Parent Disabled: Primary parent is mentally or physically handicapped.

Parent Welfare Receipt: Primary parent currently receives welfare, either for self or for the adolescent.

Log Family Income: The natural logarithm of the household's total income in thousands of dollars, as reported in the parent questionnaire.

School Characteristics:

Urbanicity: A set of indicator variables for the location of the school: Urban, Suburban, or Rural. Suburban is the omitted category.

School Size: A set of indicator variables for the number of students at the school, Small (< 400), Medium (400-1000), and Large (> 1000). Medium is the omitted category.

Cumulative Dropout Rate: The proportion of students who begin the school in its lowest grade who complete its highest grade.

Percent College Prep Program: The proportion of 12th graders who are enrolled in an academic or college prep program.

Catholic School: An indicator for Catholic schools.

Private School: An indicator for all other non-public schools.

Appendix B: Supplementary Tables

Table B1: Descriptive Statistics for Variables in Table 2

<i>Pregnancy Frame Model (n=1322)</i>	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Pregnancy Frame Heterogeneity	0.5338	0.3285	0	1
Nhood Disadvantage Scale	0	1	-3.0494	5.4209
% Hispanic	13.6931	22.0561	0	96.2677
% Hispanic Squared	673.6044	1750.7110	0	9267.4630
Racial Diversity Index	26.8420	20.8092	0	74.3581
% Foreign Born	11.3441	16.3284	0	86.9001
% Owner Occupied	59.6721	22.7260	0	97.8407
% Units Occupied 5 Years	48.2259	13.8744	9.7990	97.5802
Reliability (weight)	0.2523	0.2153	0.0559	0.9345

<i>Relationship Script Model (n=1367)</i>	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Relationship Script Heterogeneity	0	1	-2.8475	6.3506
Nhood Disadvantage Scale	0	1	-2.9985	5.4274
% Hispanic	13.4554	21.9078	0	96.2677
% Hispanic Squared	660.6486	1735.4820	0	9267.4630
Racial Diversity Index	26.6161	20.7642	0	74.3581
% Foreign Born	11.1963	16.1379	0	86.9001
% Owner Occupied	60.1739	22.5801	0	97.8407
% Units Occupied 5 Years	48.2388	13.9728	9.7990	100.0000
Reliability (weight)	0.5076	0.3476	0.1090	0.9998

Table B2: Descriptive Statistics for Variables in Table 3

	Mean	SD	Min	Max
<u>Individual/Family Level Variables (n=9,281)</u>				
Sexual Activity Between Waves 1 and 2	0.43	0.49	0	1
Pregnancy Frame	4.21	1.00	1	5
Female	0.50	0.50	0	1
Age	16.25	1.04	15	21
Hispanic	0.18	0.39	0	1
Black	0.21	0.41	0	1
Native American	0.04	0.18	0	1
Asian	0.08	0.28	0	1
Other Race	0.10	0.30	0	1
Multi Race	0.05	0.21	0	1
Home Language Not English	0.13	0.34	0	1
Immigrant	0.10	0.30	0	1
Household Size	4.72	1.68	1	21
Single Parent Household	0.24	0.43	0	1
Other Household Type	0.23	0.42	0	1
Parent Immigrant	0.22	0.41	0	1
Parent Education – HS Grad	0.29	0.45	0	1
Parent Education – Some College	0.27	0.44	0	1
Parent Education -- College	0.23	0.42	0	1
Parent Professional/Managerial Occ	0.32	0.47	0	1
Parent Disabled	0.05	0.22	0	1
Family Welfare Receipt	0.11	0.31	0	1
Log Family Income	3.50	0.87	0	6.91
Low Birth Weight	0.11	0.32	0	1
Mother's Age at Birth	25.5	5.40	5	53
<u>Neighborhood Level Variables (n=1,357)</u>				
Neighborhood Disadvantage Scale	0	0.70	-2.22	3.91
Pregnancy Frame Nhood Heterogeneity	0.49	0.30	0	1
Pregnancy Frame Nhood Mean	4.19	0.61	1	5
Nhood Reliability (weight)	0.30	0.23	0.06	0.93
<u>School Level Variables (n=142)</u>				
Urban	0.30	0.46	0	1
Rural	0.13	0.34	0	1
Small	0.21	0.41	0	1
Large	0.31	0.46	0	1
Cumulative Dropout Rate	7.80	11.2	0	68.52
Percent in College Prep Program	40.44	34.15	0	100
Catholic School	0.04	0.20	0	1
Private School	0.02	0.14	0	1

Table B3: Control Variable Coefficients for Models in Table 3

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
<u>Individual/Family Level Variables</u>			
Female	0.1697* (0.0554)	0.1702* (0.0556)	0.1682* (0.0561)
Age	0.3007* (0.0230)	0.3001* (0.0231)	0.3004* (0.0232)
Hispanic	0.1040 (0.0995)	0.0962 (0.0993)	0.0947 (0.0990)
Black	0.1617* (0.0816)	0.1498 (0.0825)	0.1392 (0.0823)
Native American	-0.0662 (0.1144)	-0.0735 (0.1138)	-0.0836 (0.1141)
Asian	-0.3709* (0.1102)	-0.3787* (0.1118)	-0.3768* (0.1102)
Other Race	0.0636 (0.0762)	0.0576 (0.0776)	0.0553 (0.0766)
Multi Race	0.2394* (0.1169)	0.2479* (0.1173)	0.2539* (0.1170)
Home Language Not English	-0.3728* (0.1130)	-0.3794* (0.1144)	-0.3922* (0.1137)
Immigrant	-0.4069* (0.0625)	-0.4113* (0.0621)	-0.4065* (0.0622)
Household Size	-0.0351 (0.0151)	-0.0365 (0.0152)	-0.0373 (0.0152)
Single Parent Household	0.3649* (0.0903)	0.3535* (0.0921)	0.3568* (0.0918)
Other Household Type	0.3977* (0.0743)	0.3923* (0.0761)	0.3921* (0.0776)
Parent Immigrant	-0.0241 (0.0822)	-0.0193 (0.0825)	-0.0166 (0.0824)
Parent Education – HS Grad	0.1368 (0.0943)	0.1346 (0.0935)	0.1323 (0.0931)
Parent Education – Some College	0.1233 (0.0901)	0.1258 (0.0902)	0.1221 (0.0900)
Parent Education -- College	0.0550 (0.1073)	0.0651 (0.1077)	0.0680 (0.1079)
Parent Professional/Managerial Occ	-0.0482 (0.0636)	-0.0499 (0.0627)	-0.0444 (0.0628)
Parent Disabled	-0.1206 (0.1017)	-0.1298 (0.0960)	-0.1337 (0.0951)
Family Welfare Receipt	0.0531 (0.0735)	0.0507 (0.0740)	0.0471 (0.0733)
Log Family Income	-0.0168 (0.0437)	-0.0299 (0.0394)	-0.0252 (0.0395)
Low Birth Weight	-0.1944* (0.0848)	-0.1788* (0.0819)	-0.1805* (0.0817)
Mother's Age at Birth	-0.0173* (0.0063)	-0.0185* (0.0067)	-0.0182* (0.0066)
<u>School Level Variables</u>			
Urban	-0.0968 (0.0865)	-0.0992 (0.0870)	-0.1134 (0.0878)
Rural	-0.0389 (0.1014)	-0.0455 (0.1006)	-0.0616 (0.0988)
Small	-0.0801 (0.1781)	-0.0773 (0.1787)	-0.1047 (0.1721)

Large	-0.0253 (0.0790)	-0.0234 (0.0783)	0.0005 (0.0779)
Cumulative Dropout Rate	0.0008 (0.0034)	0.0005 (0.0034)	-0.0001 (0.0033)
Percent in College Prep Program	0.0003 (0.0015)	0.0006 (0.0015)	0.0008 (0.0015)
Catholic School	-0.0153 (0.1701)	-0.0211 (0.1706)	0.0237 (0.1761)
Private School	-0.2520 (0.3248)	-0.2342 (0.3347)	-0.1444 (0.3384)

Table B4: Descriptive Statistics for Variables in Table 4

	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
<u>Individual/Family Level Variables (n=5,916)</u>				
Ideal and Actual Relationship Script Difference	1.97	0.60	0	5.9
Female	0.51	0.50	0	1
Age	15.41	1.56	11	20
Hispanic	0.15	0.36	0	1
Black	0.21	0.41	0	1
Native American	0.04	0.19	0	1
Asian	0.06	0.23	0	1
Other Race	0.09	0.28	0	1
Multi Race	0.05	0.22	0	1
Home Language Not English	0.09	0.28	0	1
Immigrant	0.07	0.25	0	1
Household Size	4.64	1.62	1	18
Single Parent Household	0.25	0.43	0	1
Other Household Type	0.23	0.42	0	1
Parent Immigrant	0.16	0.37	0	1
Parent Education – HS Grad	0.30	0.46	0	1
Parent Education – Some College	0.30	0.46	0	1
Parent Education -- College	0.24	0.43	0	1
Parent Professional/Managerial Occ	0.34	0.47	0	1
Parent Disabled	0.05	0.21	0	1
Family Welfare Receipt	0.10	0.30	0	1
Log Family Income	3.54	0.85	0	6.91
Low Birth Weight	0.11	0.31	0	1
Mother's Age at Birth	25.48	5.34	12	53
<u>Neighborhood Level Variables (n=1299)</u>				
Neighborhood Disadvantage Scale	0	1	-3.14	3.29
Nhood Heterogeneity Ideal Relationship Script	0	1	-3.22	8.10
Nhood Reliability (weight)	0.66	0.33	0.11	1
<u>School Level Variables (n=143)</u>				
Urban	0.31	0.47	0	1
Rural	0.13	0.34	0	1
Small	0.21	0.41	0	1
Large	0.31	0.46	0	1
Cumulative Dropout Rate	7.74	11.18	0	68.52
Percent in College Prep Program	41.44	33.43	0	100
Catholic School	0.03	0.18	0	1
Private School	0.02	0.14	0	1

Table B5: Control Variable Coefficients for Models in Table 4

	<i>Model 1</i>	<i>Model 2</i>
<u>Individual/Family Level Variables</u>		
Female	-0.0618* (0.0142)	-0.0614* (0.0142)
Age	0.0221* (0.0061)	0.0216* (0.0061)
Hispanic	0.0713* (0.0316)	0.0712* (0.0314)
Black	0.1147* (0.0231)	0.1031* (0.0252)
Native American	-0.0001 (0.0552)	-0.0045 (0.0554)
Asian	0.0123 (0.0666)	0.0107 (0.0651)
Other Race	-0.0068 (0.0371)	-0.0099 (0.0371)
Multi Race	-0.0252 (0.0630)	-0.0188 (0.0638)
Home Language Not English	-0.0903 (0.0498)	-0.0904 (0.0500)
Immigrant	0.0302 (0.0350)	0.0331 (0.0354)
Household Size	0.0008 (0.0048)	0.0007 (0.0048)
Single Parent Household	0.0189 (0.0293)	0.0200 (0.0294)
Other Household Type	0.0321 (0.0226)	0.0331 (0.0226)
Parent Immigrant	-0.0052 (0.0335)	-0.0040 (0.0334)
Parent Education – HS Grad	-0.0738* (0.0250)	-0.0720* (0.0252)
Parent Education – Some College	-0.0860* (0.0258)	-0.0822* (0.0259)
Parent Education -- College	-0.0882* (0.0347)	-0.0836* (0.0349)
Parent Professional/Managerial Occ	-0.0059 (0.0178)	-0.0040 (0.0178)
Parent Disabled	0.0096 (0.0381)	0.0093 (0.0382)
Family Welfare Receipt	0.0214 (0.0305)	0.0208 (0.0305)
Log Family Income	-0.0100 (0.0146)	-0.0065 (0.0147)
Low Birth Weight	-0.0045 (0.0300)	-0.0047 (0.0299)
Mother's Age at Birth	-0.0010 (0.0020)	-0.0008 (0.0020)
<u>School Level Variables</u>		
Urban	0.0001 (0.0194)	-0.00405 (0.0194)
Rural	-0.0290 (0.0204)	-0.03262 (0.0202)
Small	-0.0245 (0.0255)	-0.02956 (0.0245)

Large	-0.0298 (0.0201)	-0.02323 (0.0211)
Cumulative Dropout Rate	0.0009 (0.0007)	0.000608 (0.0008)
Percent in College Prep Program	-0.0003 (0.0004)	-0.00024 (0.0004)
Catholic School	0.0253 (0.0453)	0.029547 (0.0443)
Private School	-0.0555 (0.0418)	-0.03681 (0.0396)

Appendix C:

Using Sequence Analysis to Measure Differences in Romantic Relationship Scripts

If we think of the ordered elements that constitute a relationship script as a sequence of events, then an optimal matching algorithm can be applied to measure the difference between any two relationship scripts. An optimal matching algorithm measures the difference between two sequences by determining the minimum combination of insertions, deletions, and substitutions that are required to change one sequence into another. More extensive discussions of optimal matching and sequence analysis can be found in elsewhere (Abbott 1990, 1995, Abbott and Hrycak 1990, Sankoff and Kruskal 1983). This discussion is based on those sources and the summary in Stoval et al (1996).

An example helps to illustrate the idea. The menu of elements that respondents can select and order in the ideal relationship scripts is:

- A: We would go out together in a group
- B: I would meet my partner's parents
- C: I would tell other people that we were a couple
- D: I would see less of my other friends so I could spend more time with my partner
- E: We would go out together alone
- F: We would hold hands
- G: I would give my partner a present
- H: My partner would give me a present
- I: I would tell my partner that I loved him or her
- J: My partner would tell me that he or she loved me
- K: We would think of ourselves as a couple
- L: We would talk about contraception or sexually transmitted diseases
- M: We would kiss
- N: We would touch each other under our clothing
- O: We would have sex
- P: My partner or I would get pregnant
- Q: We would get married

An example relationship script is "EAFMGBHKCLNOIJQP." Another example is, "ABEDGMCJILMNOHKPQ." To change the second script into the first, we can begin by

inserting E at the beginning of script two, then substitute F for B, and then substitute M for D. This will align the first four elements of the scripts so they both start with EAFM. Alternatively, we could substitute E for A and then A for F, and then insert an F and then an M. Which of these two sets of operations is optimal (or whether some other is optimal) as well as the cost of the optimal set of operations depends on the relative costs of insertions, deletions, and substitutions. The optimal matching algorithm computes the minimum cost of all possible sets of operations that change one sequence into another given defined costs of insertions, deletions, and substitutions. This provides a quantitative measure of the difference between two relationship scripts. I do not discuss the mechanics of the algorithm here. Sankoff and Kruskal (1983) provide an extensive discussion of such algorithms.

Following Stovel et al. (1996), substitution costs are defined using observed transition probabilities in the data, such that events frequently following one another in the set of observed sequences are assigned lower transition costs than those rarely observed following one another. For example, the event “going out together alone” more frequently follows “going out together in a group” than it follows “having sex,” so substituting “going out together alone” for “going out together in a group” has a lower substitution cost than substituting “having sex” for “going out together in a group.” Here I derive the transition cost matrix from all observed ideal relationship scripts in the wave one Addhealth data. Substitution costs are defined as the inverse of the transition probability. To reduce extreme values, substitution costs are then logged using the natural logarithm. The resulting substitution costs range from 0.70 to 6.97 in the ideal relationship transition data. The substitution cost matrix is displayed in Table C1. Following Stovel et al. (1996), insertion and deletion costs are defined as the maximum substitution cost (6.97). Following Abbott and Hrycak (1990), the difference between two scripts is normalized

by dividing by the length of the longer script, so the final difference measure is the average cost per event in the longer script.

To measure the difference between a particular respondent's ideal and actual relationship the optimal matching algorithm is also used. For construction of this measure, substitution costs are also calculated based on the set of all observed ideal relationship scripts in the wave one Addhealth data. One difficulty arises in this comparison because, as described in the main text, the wave one ideal relationships and wave two actual relationships have different sets of events from which the respondent can choose. The only practical solution is to remove events from the scripts that are not common to both scripts prior to comparison. A second issue is how to deal with an actual relationship that has fewer events than a respondent's ideal relationship. An actual relationship may end due to decisions made by one's partner, or the relationship may still be ongoing at the time of the wave 2 interview. Here I shorten the ideal relationship to the number of events contained within the actual relationship by removing events at the end of the ideal relationship script.

Table C1: Substitution Cost Matrix for Ideal Relationship Scripts

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
A	0.00	1.71	2.32	3.18	1.47	1.85	3.11	3.47	3.79	3.86	2.42	3.69	3.30	4.47	5.70	6.68	5.14
B	2.17	0.00	1.83	3.11	1.87	2.44	2.59	2.86	3.21	3.19	2.33	3.01	3.27	3.93	5.15	6.87	4.29
C	2.47	2.01	0.00	2.38	2.06	1.94	2.70	3.01	3.22	3.21	2.19	3.52	2.90	4.13	5.68	6.92	5.28
D	3.00	2.60	2.68	0.00	1.66	2.57	2.36	2.80	2.85	3.07	2.73	2.58	3.08	2.95	4.40	4.82	3.80
E	2.80	2.73	2.86	3.24	0.00	1.17	2.52	3.05	3.25	3.45	2.37	3.45	2.15	4.03	5.64	6.75	5.26
F	3.08	2.80	2.72	3.97	2.26	0.00	2.12	3.11	3.03	3.49	2.24	4.06	1.13	4.80	6.25	6.97	6.01
G	3.94	3.30	3.99	3.90	3.53	3.36	0.00	0.61	2.93	2.37	3.47	3.15	3.27	3.76	5.24	6.18	5.04
H	3.74	3.13	3.82	3.63	3.41	3.47	1.08	0.00	1.79	2.52	2.82	2.73	2.94	3.38	4.84	5.99	4.58
I	4.34	3.36	3.99	4.06	3.71	3.62	3.06	2.92	0.00	0.69	3.12	2.45	2.92	3.08	4.20	6.02	4.22
J	4.12	3.37	3.80	3.94	3.68	3.48	2.90	3.36	0.94	0.00	2.03	2.37	2.56	3.08	4.50	6.13	4.43
K	3.17	2.78	0.97	3.82	2.99	2.50	3.19	3.49	3.24	3.18	0.00	2.54	2.25	4.27	5.67	6.52	5.18
L	3.80	3.37	3.81	3.55	3.44	3.65	3.47	3.43	3.25	2.85	3.22	0.00	1.98	1.21	1.96	4.79	3.06
M	3.04	2.34	2.74	3.44	2.70	2.85	2.64	2.83	2.73	2.73	2.08	2.44	0.00	2.15	3.89	6.14	3.84
N	4.36	3.85	4.53	4.07	4.81	5.06	3.76	3.98	3.50	3.42	4.31	1.94	3.90	0.00	0.57	3.56	3.08
O	3.53	3.11	3.82	3.04	4.30	4.67	3.16	3.26	3.32	3.07	3.68	3.51	4.41	2.61	0.00	1.29	1.37
P	3.34	3.55	4.10	2.86	4.30	4.70	3.72	3.72	3.93	4.19	4.14	3.16	4.30	2.92	2.01	0.00	0.70
Q	3.73	4.05	4.10	3.00	4.19	4.22	3.82	3.89	3.78	4.19	4.08	2.35	3.44	1.79	1.37	1.53	0.00