

INTERSECTING INEQUALITIES: FOUR ESSAYS ON RACE, IMMIGRATION, AND  
GENDER IN THE CONTEMPORARY UNITED STATES

by

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To Mom and Dad, who have unfailingly supported my education from the earliest days.

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## CHAPTER 1

### INTRODUCTION

This dissertation consists of four essays that explore the nuances of race and social stratification in the United States. While the dissertation contains two distinct sets of essays, one on the adaptation of immigrant adolescents and another on the interaction between race and gender in earnings determination, they are bound together by the common theme of intersections between group identities and their implications for social inequality.

Two of these essays address the well-being of contemporary Asian and Latin American immigrants to the U.S., who have often been considered to face additional challenges as immigrants due to their status as racial minorities. It has been proposed in the sociological literature that these immigrants may face barriers to entry into the American mainstream due to their race, fundamentally altering the process of assimilation: While for earlier European immigrant groups assimilation was considered part of the process of upward mobility, some scholars have suggested that for contemporary nonwhite immigrants it could also lead to becoming part of a new “rainbow” minority underclass. This perspective offers a fundamental challenge to classical assimilation theory, bringing into question its continuing relevance for today’s immigrants. This perspective has also led to considerable debate about the implications of assimilation for the well-being of contemporary immigrants, particularly immigrant youth. I engage this debate in the first two chapters of my dissertation, which focus on the determinants and consequences of assimilation among immigrant adolescents.

My second chapter reevaluates the applicability of classical assimilation theory by conducting a comprehensive empirical assessment of the relationship between assimilation and

the well-being of Hispanic and Asian immigrant adolescents. Using data from the National Longitudinal Study of Adolescent Health (Add Health), I examine the effects of assimilation on educational outcomes, psychological well-being, and at-risk behaviors. I find that the effects of assimilation vary greatly depending on the specific ethnic group and outcome under consideration, but that it is generally related to both greater academic achievement and more at-risk behavior. I conclude that classical assimilation theory is still relevant, but suggest an interpretation that emphasizes a process of decreasing differences between groups rather than either detrimental or beneficial effects of assimilation.

My third chapter engages segmented assimilation theory, one of the main proposed alternatives to classical assimilation theory. This theory makes two main contentions: That the effects of assimilation depend on the local context, and that immigrants can choose whether or not to fully assimilate. However, the theory does not explicitly link these two contentions. I extend segmented assimilation theory by arguing that if immigrant families indeed experience divergent outcomes of assimilation depending on local context, they may anticipate these consequences and adjust their assimilation behavior accordingly. Using Add Health data, I investigate the hypothesis that neighborhood socioeconomic status affects how immigrant parents guide their children's assimilation processes, and that therefore immigrant children's degree of assimilation varies systematically according to neighborhood socioeconomic status. I operationalize assimilation as the degree of similarity between immigrant and non-immigrant youth with respect to peer-influenced at-risk behaviors. I find that immigrant adolescents living in poorer neighborhoods are less behaviorally assimilated, relative to same-neighborhood peers, than those living in more affluent neighborhoods. This suggests that immigrant families may make efforts to prevent their children's assimilation into poor neighborhood contexts, potentially circumventing negative consequences of assimilation.

My fourth and fifth chapters explore the intersection of race and gender in determining earnings in the United States. Many researchers agree that being a member of a racial minority

group and being female both represent significant disadvantages in the U.S. labor market. Much previous research has assumed that the effects of gender and race on earnings are additive, and that minority women suffer the full disadvantage of each status. Yet empirically, research has demonstrated that for a few minority groups, the earnings of women are higher than would be predicted based on their race and sex alone. These findings imply that race and gender have an interactive effect on earnings – that is, the effect of gender depends on race, and the effect of race differs by gender. However, both the magnitude of the race/gender interaction and the number of minority groups whose gender earnings gap differs from that of whites remain unknown. The causes of interdependency between race and gender are also unknown. My fourth and fifth chapters address these gaps.

My fourth chapter uses data from the U.S. Census to document the extent of the race/gender interaction among all major U.S. racial groups. My work is the first to study gender earnings gaps among the smaller minority groups. I find that non-Hispanic whites have the largest gender earnings gap among the 19 racial/ethnic groups examined, and that there is far more racial variation in the gender earnings gap among married workers than among single workers. This suggests that family-level factors contribute to the racial differences I uncover. Zeroing in on this large interaction among married workers, I explore the hypothesis that non-Hispanic whites have more gender-role specialization within families than other ethnic groups and that this accounts for their higher gender earnings gap.

My fifth chapter explores this hypothesis more thoroughly by focusing on just two racial groups, Asian Americans and non-Hispanic whites. I first examine differences between the two groups in gender role specialization by contrasting changes in Asian American and white women's labor market behavior following the transition to parenthood. I then test the extent to which such differences in gender role specialization are responsible for Asian American women's unusually high earnings (and thus Asian Americans' lower gender earnings gap). I find that Asian

American women's high earnings result in part from their lower likelihood of cutting back on labor supply in response to parenthood.

## CHAPTER 2

### IS ASSIMILATION THEORY DEAD? THE EFFECT OF ASSIMILATION ON ADOLESCENT WELL-BEING

Recent sociological literature has devoted considerable attention to the well-being of immigrant children (e.g., Hernandez 1999; Perlmann and Waldinger 1997; Portes and Rumbaut 1996, 2001; Zhou and Bankston 1998). Much of this scholarship is concerned with how the assimilation experiences of “new” immigrant children of Asian and Latin American descent differ from those of earlier waves of European immigrants. Such work often questions whether classical theories of immigrant adaptation, which assumed assimilation to be an integral part of the process of upward mobility for immigrants, are still applicable (Alba and Nee 1997, 2003; Rumbaut 1997) – prompting Nathan Glazer (1993) to ask, “Is Assimilation Dead?” Specifically, some scholars have suggested that today’s immigrant children may be better off avoiding or at least limiting full-scale assimilation (Gans 1992; Portes and Zhou 1993). While these scholars have questioned the continuing relevance of classical assimilation theory, empirical research examining the consequences of assimilation for today’s immigrants is still inadequate and unconvincing. This study provides a broad and systematic empirical assessment of the relationship between assimilation and the well-being of immigrant adolescents.

## **Background**

Immigration to the United States was virtually halted from the mid 1920s until around 1965. Following the passage of the landmark 1965 Immigration Act, the country is once again experiencing a period of mass immigration. While pre-1920 immigrants had come primarily from Europe, since 1965 immigrants have come predominantly from Latin America and Asia. The economic, social, and cultural impact of these “new” immigrants on American society has been widely debated. However, one thing is clear: The long-run implications of this wave of immigration will be primarily determined not by what happens to the immigrants themselves, but by the outcomes of their children. While only 11% of the total population is foreign-born (Malone et al. 2003), a full 20% of children under age 18 are part of immigrant families (Hernandez 1999) – either as immigrants themselves, or as the U.S.-born children of immigrants. (Regardless of birthplace, we refer to all children in immigrant families as “immigrant children.”) During the next few decades, these children will grow up to comprise an increasing share of working-age adults. Hence, the welfare of this expanding group of American children has become a central focus among both policymakers and academic researchers.

Research on the well-being of immigrant children thus far has suggested reasons for both concern and hope. On the one hand, researchers have noted that immigrant children’s greater likelihood of experiencing poverty and the tendency for immigrant families to be clustered in poor, inner-city neighborhoods may put immigrant children at risk for numerous deleterious outcomes (Hernandez 2003; Portes, Fernandez-Kelly, and Haller 2005; Rumbaut 2005). For example, they may be at risk for participating in gangs (Portes and Rumbaut 2001; Zhou and Bankston 1998), engaging in the drug trade or other illegal activities (Gans 1992; Martinez et al. 2004; Portes et al. 2005; Rumbaut 2005), dropping out of school (Hirschman 2001; Landale et al. 1998). On the other hand, researchers have suggested that the high motivation levels and achievement-related cultural values of many immigrant groups may spur immigrant children to

greater educational accomplishments than their native counterparts. Indeed, empirical research has repeatedly shown that many immigrant children have significantly better educational outcomes than would be predicted on the basis of their family's socioeconomic status (Rumbaut 1997). While some of the variation in outcomes among immigrant children is attributable to systematic differences by national origin, there is still considerable heterogeneity within ethnic groups. Understanding why some of these children do so well while others fall behind is of obvious importance.

The question of how assimilation affects the lives of contemporary immigrant children has recently been the subject of much debate in the sociological literature. Classical assimilation theory portrayed assimilation as an integral part of the movement of immigrant groups into the American middle class (Warner and Srole 1945). Some scholars have argued that classical assimilation theory is no longer applicable for current Asian and Latin American immigrants, suggesting that their experiences are not adequately represented by theories of assimilation derived from the experiences of earlier waves of European immigrants. Gans (1992) and others have suggested that assimilation today may be associated with worsening outcomes for some immigrant children. Indeed, several studies have found negative effects of assimilation (particularly acculturation) on certain outcomes for immigrant adolescents. For example, assimilation is reported to be related to early or risky sexual behavior (Harris 1999; Landale and Hauan 1996; Upchurch et al. 2001) and higher risks of delinquency and substance abuse (Harris 1999; Nagasawa et al. 2001; Zhou and Bankston 1998). Rumbaut (1997) also cites prior research showing detrimental effects of assimilation on adolescents' educational outcomes. However, the effects of assimilation are not always found to be negative – for example, Rhee et al. (2003) found acculturation to be related to higher self-esteem for Asian American adolescents.

In sum, the existing literature suggests a variety of possible relationships between assimilation and adolescent well-being. Findings vary depending on both the outcomes examined and the specific samples and/or ethnic groups under consideration. To better understand the



relationship between assimilation and adolescent well-being, we should study the effects of assimilation on a wide range of outcomes for the same sample of immigrant children. Otherwise, variability in the effect of assimilation across outcomes may be confounded by potential variability across samples. That is, it is risky to draw general conclusions about the effects of assimilation from studies that are based on different, and often small and highly localized, samples. Thus, both the consistency across and the generalizability from these studies could be questioned. To overcome this limitation, we propose to examine multiple outcomes at once using a single, nationally representative data source.<sup>1</sup>

In addition, the current literature has suffered from very limited operationalizations of assimilation. While the theoretical literature has conceptualized assimilation as a multi-dimensional process that encompasses acculturation, structural assimilation, spatial assimilation, and generational assimilation (discussed below), the majority of studies of the relationship of assimilation to immigrants' outcomes have examined only one or two of these aspects. Almost all existing studies rely on either non-English language use, duration of U.S. residence (for first-generation immigrants), foreign vs. U.S. birth, or some combination of these to measure assimilation (Harris 1999; Landale and Hauan 1996; Landale et al. 1998; Portes and Hao 2002; Rhee et al. 2003). While language, generation, and length of stay clearly have face validity as measures of assimilation, they tap into only certain aspects of it. This paper adopts a broader and more theoretically guided approach to measuring assimilation, resulting in a more complete picture of the relationship between assimilation and immigrants' well-being.

Hence, while previous studies have considered the effects of acculturation and/or assimilation on particular outcomes, there has been no comprehensive assessment of the effects of

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<sup>1</sup> Harris (1999) also examines a range of outcomes using the same data source we use in the present study. Her paper, however, is very limited in its conceptualization and measurement of the assimilation process.

assimilation in the present-day context. This paper provides such an assessment by employing both a variety of measures of assimilation and a broad array of outcomes. With this comprehensive approach, we hope to answer the following questions: Is assimilation positively associated with immigrant children's well-being, as would be predicted by common interpretations of classical assimilation theory? Or, in keeping with recent critiques of assimilation theory, might assimilation have mixed or even negative consequences for today's immigrant youth?

We start by briefly reviewing assimilation theory and discussing why there is a need to reassess it. We then discuss how to operationalize assimilation. Next, we analyze data from the National Longitudinal Survey of Adolescent Health (Add Health) to evaluate the effects of assimilation on several key adolescent outcomes: Educational outcomes, including high-school graduation, secondary school grades, and college enrollment; psychological well-being, including depression and self-esteem; and risky behaviors, including delinquency, violence, and controlled substance use. Finally, we reflect upon the continuing usefulness of the concept of assimilation in light of our empirical results.

## **Theoretical Perspectives on Assimilation**

### "Stylized" Assimilation Theory

Whether explicitly or implicitly, much work following the classical assimilation tradition assumed that assimilation was a necessary part of the process of upward socioeconomic mobility for immigrant groups (e.g., Warner and Srole 1945). Despite this assumed association, most classical formulations of assimilation theory (e.g., Gordon 1964) treated assimilation as a social process to be explained rather than as a causal factor affecting outcomes. Nonetheless, the idea that assimilation is beneficial is the aspect of the theory most emphasized by contemporary scholars. Many current immigration scholars have framed their work as a critique of classical

assimilation theory, using it as something to “push” against in formulating new ideas about assimilation. In so doing, they are reacting to what may be characterized as a “stylized” version of classical assimilation theory – the simple assumption that assimilation is good. We refer to this characterization of the theory as “stylized” because the canonical literature itself does not emphasize this aspect of the theory to nearly such an extent as current scholars do. In the next section, we outline the primary arguments as to why classical assimilation theory may no longer be applicable.

### Contemporary Revisions and Critiques

Contemporary scholarship generally recognizes noteworthy differences between the post-1965 wave of immigration and early twentieth-century immigration in both the composition of immigrant groups and the context of reception in the United States. In terms of group composition, some scholars emphasize that the new immigrants are primarily from Asia and Latin America and therefore nonwhite, and their minority status may hinder their full integration into the white middle class (e.g., Gans 1992; Portes and Rumbaut 1996, 2001; Portes and Zhou 1993). In addition, many scholars (e.g., Alba and Nee 2003; Bean and Stevens 2003; Zhou 1997b) have noted that contemporary immigrants come from a much wider variety of socioeconomic backgrounds than those in the previous wave, suggesting that different groups will start out on different “rungs” of the American class system. This makes any single, uniform model of immigrant incorporation into the United States inherently less appropriate than it may have been for earlier, relatively more homogeneous groups.

In terms of context, the new immigrants are entering the United States during a period when demand for semi-skilled and skilled labor has been substantially reduced by changes in the economy. Several scholars have argued that the assimilation and upward mobility of the 1890-1920 wave of immigrants were facilitated by the manufacturing-based economic expansion of that period, but that the current service-based postindustrial economy is less favorable for the

incorporation of new workers (Fernandez-Kelly and Schauflier 1994; Gans 1992; Massey 1995; Portes and Zhou 1993; Suarez-Orozco and Suarez-Orozco 2001; Zhou 1997a).

Gans (1992) outlines several distinct trajectories that the new immigrants may follow, including downward as well as upward mobility among the possible outcomes. Further developing these ideas, Portes and Zhou (1993) propose the theory of “segmented assimilation.” This theory asserts that the United States is a stratified and unequal society, and that therefore different “segments” of society are available for immigrants to assimilate into. They delineate three possible paths of assimilation. The first is essentially that predicted by classical assimilation theory – increasing acculturation and integration into the American middle class. The second is acculturation and assimilation into the urban underclass, leading to poverty and downward mobility. The third is the deliberate preservation of the immigrant community’s culture and values, accompanied by economic integration (Portes and Zhou 1993; Zhou 1997a). Segmented assimilation theory emphasizes that there is more than one way of “becoming American,” and that Americanization is not necessarily beneficial (Zhou 1997a): at least under some circumstances, immigrant children may be better off limiting or avoiding assimilation and instead remaining enmeshed within the ethnic community.

However, is classical assimilation theory, in its original form, really obsolete? According to some scholars, the answer is no. First of all, it is not clear that differences between current and past immigrants are significant enough to render classical assimilation theory inapplicable. It has been contended that the experience of today’s immigrants and their offspring is not truly all that different from that of the 1890-1920 wave of European immigrants. For example, Alba and Nee (1997, 2003) argue that the offspring of earlier European immigrant groups often did not fully assimilate until the third or fourth generation. Thus, observations of limited assimilation among today’s second-generation youth should not be surprising. Waldinger and Feliciano (2004) argue that Mexican immigrants, who are often considered the group most vulnerable to “downward assimilation,” transition into the American working class in a similar manner as earlier large

immigrant groups. They show that their labor force outcomes appear to be converging across generations with native whites rather than with native minority groups. Alba and Nee (1997, 2003) and Perlmann and Waldinger (1997) are also skeptical of the idea that the racial distinctiveness of contemporary immigrants will be a long-term disadvantage. Because racial boundaries in the United States proved to be fluid for past “white” immigrants (such as Irish, Italians, and Jews), they propose that contemporary Asian and Latin American immigrants may not be considered racially distinct in the long term. In sum, whether or not we really need new theories of assimilation to understand the experiences of today’s immigrants remains an open question.

#### Theoretical Motivations for Current Investigation

Critiques of assimilation theory argue that the effects of assimilation in today’s context are variable rather than uniformly beneficial. While they point to diversity among immigrants and across social contexts as the reasons for this variability, another source of variability could be the outcome examined: namely, the effect of assimilation may be beneficial for one outcome but detrimental for another. Diversity in the effects of assimilation across different outcomes is to be expected, given that improvement in one outcome may come at the cost of deterioration in another. For instance, immigrants’ worsening health outcomes over time in the U.S. (also known as the epidemiological paradox) may result from affluence -- that is, from the more sedentary lifestyles and greater reliance on convenience foods typical in modern high-income societies. Thus, immigrants’ socioeconomic improvement may go hand-in-hand with experiencing the same affluence-related health conditions as the rest of the population. Apparent contradictions in the effects of assimilation may thus be simply the result of expanding the number of outcomes under investigation.

Are such apparent contradictions necessarily evidence against classical assimilation theory? While many scholars have treated classical assimilation theory as if it implied that all

outcomes should be positively affected by assimilation, this interpretation is actually an extrapolation. Classical assimilation theory focused primarily on socioeconomic outcomes, such as occupational attainment and social class mobility, and thus was noncommittal as to predictions about the effects of assimilation on non-socioeconomic outcomes. Therefore, the above example of deteriorating health linked to greater assimilation should not necessarily be interpreted as evidence against classical assimilation theory – it may just fall outside the realm to which the theory was meant to apply.

An expansion of outcomes is necessary because we are studying the well-being of immigrant adolescents. To fully capture their well-being, we must examine outcomes across a wide range of domains. Given classical assimilation theory's concern with adults, it is understandable that its primary focus was on socioeconomic outcomes. For adolescents, socioeconomic outcomes are not necessarily the most important, nor the most interesting, outcomes to consider. With the exception of educational achievement, adolescents are too young for us to observe traditional "status attainment" outcomes, and even educational achievement cannot be completely observed until a later age. Meanwhile, other outcomes that occur during adolescence, such as becoming involved in crime, having a teenage birth, or becoming dependent on drugs or alcohol, have a strong influence on future life chances.

Therefore, we expand the number of outcomes under consideration to cover as many domains relevant to adolescents as possible. This expansion may lead to a greater degree of variability in the effects of assimilation—with some effects being positive but others negative. Our interpretation of assimilation theory therefore explicitly allows the effect of assimilation to vary across outcomes. For convenience, we call this reinterpretation the "expanded" version.

To sum up, classical assimilation theory can be interpreted in two ways: In the "stylized" version of the theory often invoked by contemporary scholars, assimilation should be associated with better outcomes across the board. In the "expanded" version, which we find more compelling, assimilation can have variable effects depending on the outcomes examined. To

understand this interpretation, we recall Alba and Nee's (1997) definition of assimilation as "the decline, and at its endpoint the disappearance, of an ethnic/racial distinction and the cultural and social differences that express it" (p. 863). It follows from this definition that a key factor in determining the effect of assimilation should be the starting position of immigrants, relative to natives, when they first enter the United States.<sup>2</sup> Due to the great diversity in the socioeconomic characteristics of different immigrant groups, we can expect a great deal of variation across both immigrant groups and outcomes in how well immigrants do relative to natives. For outcomes on which an immigrant group starts out doing better than natives, assimilation should imply deterioration over time. For outcomes on which immigrants start out at a disadvantage, assimilation should mean gradual improvement over time – that is, change in the direction predicted by "stylized" assimilation theory.

## **Data and Research Methods**

### Data

For our study, we analyze data from the National Longitudinal Survey of Adolescent Health (Add Health), a school-based survey of adolescents in grades 7-12 in 1994-1995. All students in sampled schools were asked to complete the school-based portion of the survey. Each student was asked to name up to 10 close friends in the same school in this portion of the survey, making it possible to completely map friendship networks within a school. A subset of students also completed a longer in-home interview. Three waves of the in-home surveys have now been conducted. In this paper, we use information from Wave 1 (conducted in 1995) and Wave 3 (conducted in 2001-2002). The survey design has been described in more detail elsewhere (see

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<sup>2</sup> By "natives," we refer in this paper to U.S.-born persons with parents who were also born in the United States.

Harris 1999). In all statistical analyses of the data, we use appropriate weights to account for stratified sampling, non-proportionate non-response, and non-proportionate attrition.<sup>3</sup>

A few unique features of Add Health make it an ideal data source for our study. First, not only is its sample large and nationally representative, it also contains over-samples of Chinese, Cubans, and Puerto Ricans. Therefore, we have adequate sample sizes of both Asian and Hispanic first- and second-generation adolescents. Unfortunately, we do not have adequate sample sizes of other groups, such as Caribbean or African-origin adolescents, so, we limit our analysis to Asians and Hispanics. In addition to aggregate analyses for each of these two “umbrella” groups, we have sufficient sample sizes to conduct separate analyses for five different ethnic groups: Mexicans (N=732), Cubans (N=453), Puerto Ricans (N=249)<sup>4</sup>, Chinese (N=266), and Filipinos (N=408). Second, at Wave 1, the study collected residential location of each respondent included in the in-home interview and provided to researchers the attributes of neighborhood and community contexts. Third, Add Health collected friendship network data at the school level in Wave 1. As we describe below, our operationalizations of assimilation make use of both friendship and contextual data. Fourth, Add Health collected a wealth of information covering a variety of topics, such as academic performance, psychological well-being, and at-risk

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<sup>3</sup> We also appropriately correct for standard errors in regression analyses due to clustering, stratification, and using weights.

<sup>4</sup> Although the status of Puerto Rico as a commonwealth of the United States means that Puerto Ricans are not immigrants in the strict sense of the word, we treat them as such due to the immigrant-like process of linguistic and cultural adjustment they face upon migrating to the mainland U.S. (Landale and Hauan 1996). The concept of assimilation is thus still applicable to Puerto Ricans and has been treated as such in the immigration literature. We define first-generation immigrants as those born in Puerto Rico, while second-generation immigrants are those born in the mainland U.S.



behavior. As discussed earlier, the ability to look at so many outcomes at once allows us to gauge the overall relationship between assimilation and adolescent well-being.

### Measurement of Assimilation

We use a variety of measures of assimilation to test the relationship between assimilation and adolescent well-being, for two reasons: First, assimilation theory identifies many specific facets of assimilation. We wish to tap into as many of these as possible. Second, different measures of assimilation vary in the degree to which they are endogenous – that is, the degree to which they are a product of individual behavior or choice. Measures that are a function of behavior may be a product, rather than a cause, of the outcomes we wish to study. Using a variety of measures that differ in their degree of endogeneity allows us to mitigate this problem, at least to some extent. Below, we discuss our measures of assimilation in terms of the theory from which they are derived. We then discuss their relative strengths and drawbacks in terms of endogeneity.

### *Acculturation*

At its most general level, classical assimilation theory sought to describe the social processes through which immigrants become incorporated into mainstream American society, the way in which they “become Americans.” The most complete and refined theoretical account of the assimilation process is found in Milton Gordon’s (1964) *Assimilation in American Life*. Gordon identified seven steps in the assimilation process, which he believed to take place in a fairly regular sequence. The first of these steps, *acculturation*, involved the immigrant group’s gradual adoption of the cultural habits of the “core subsociety” – which Gordon defined as white middle-class Protestants. An important part of acculturation was the adoption of the English language, usually followed by a strong preference for English in later generations.

Add Health unfortunately does not contain many direct measures of acculturation; however, it does include the use of non-English languages, which has been one of the most

common indicators of acculturation used in the assimilation literature. Because immigrant children attend American schools, lack of English proficiency is rare among all but very recently arrived immigrant children (Alba and Nee 2003; Portes and Schauffler 1996; Mouw and Xie 1999; Portes and Rumbaut 2001). Therefore, the crucial information regarding their language use is whether they retain their native language in addition to learning English. Add Health includes a question about language spoken at home. Although this question may capture the acculturation of a child's parents as well as that of the child, use of non-English language at home is evidence that an immigrant child has a closer link to the culture of origin than a child that speaks only English, including the ability to converse with grandparents and others in the ethnic community. Therefore, we consider an immigrant child to be more acculturated if he/she lives in an English-speaking household than otherwise. Our first measure of acculturation is a dichotomous variable indicating English language usage at home at Wave 1 (yes=1).

Length of stay in the United States is commonly treated as another measure of acculturation in the literature. It is thought to be a valid proxy for acculturation, since at least among children, exposure to the host society almost always leads to at least some absorption of its cultural patterns. Greater exposure, in the form of greater length of stay, should therefore lead to greater acculturation. Although we acknowledge that it is indirect, our second measure of acculturation is the number of years since arrival in the United States for first-generation immigrants. We also employ a dichotomous version of this variable denoting whether or not the respondent has been in the United States for more than 5 years (1=yes).

### *Structural Assimilation*

According to Gordon's framework, acculturation laid the groundwork for the next step of the assimilation process, which he termed *structural assimilation*. Structural assimilation was defined as "large-scale entry into the cliques, clubs, and institutions of host society, on the primary group level" (Gordon 1964:71). Gordon argued that the increasing contact between groups brought

about by structural assimilation would lead naturally to other forms of assimilation, particularly intermarriage. Widespread intermarriage, in turn, would gradually erase the social boundaries which had previously separated the immigrant group from the host society. In a way, then, structural assimilation was the lynchpin of the assimilation process.

We operationalize structural assimilation as the ethnic composition of the immigrant child's friendship network. We treat inter-ethnic friendship as an indicator of structural assimilation because it means that a child's "primary group," by which we mean those with whom he/she is intimate on a day-to-day basis (Cooley 1909), has expanded to include native-born Americans who do not share the child's cultural background. Several previous studies have used the composition of a child's friendship network as an indicator of assimilation, though most have been hampered by lack of good-quality data on friendship (i.e., Bankston and Zhou 1997; Fernandez-Kelly and Schauffler 1994; Portes and Rumbaut 2001; Zhou and Bankston 1994). We measure structural assimilation as the proportion of an immigrant child's friends that are native-born<sup>5</sup>.

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<sup>5</sup> Studying friendship composition is challenging to due to the fact that the opportunity structure for intergroup interactions is determined by relative group sizes (identifying reference). That is, the fewer coethnics available, the lower the likelihood of having coethnic friends. In other work (identifying references), we have constructed measures of friendship that are purged of group-size influences. Per a reviewer's suggestion, for this study we adopt an absolute measure of inter-ethnic friendship. With this absolute measure, we are not concerned with *why* an immigrant child has more native friends (e.g., because the child prefers native friends versus because there are no coethnics available) but with *whether* the child has such friends (and therefore is more structurally assimilated).

### *Generational or “Straight-Line” Assimilation*

Later expansions and revisions of assimilation theory have fleshed out the assimilation process. Gans (1973), drawing on ideas originally formulated by Warner and Srole (1945), re-emphasized the role of generational change in driving the assimilation process. This variant of assimilation theory became known as *straight-line assimilation* (Alba and Nee 1997:832-833). While a certain degree of acculturation occurs over time among first-generation immigrants, straight-line theory portrayed the group-level process of assimilation as primarily a function of generational replacement. Each subsequent generation was considered to be one step further removed from the culture of origin and one step closer to becoming completely “American.”

We use immigrant generation to get at the concept of straight-line assimilation. Generation has been used extensively in the literature as a measure of assimilation, though not always with reference to straight-line assimilation. It has also been treated as an indicator of acculturation similar to length of stay, due to the fact that second-generation members have necessarily been exposed to the host society longer than their first-generation peers. In our analysis, we treat generation as an acceptable indicator of either acculturation or straight-line assimilation. We treat immigrant generation as a binary variable, denoting whether or not a respondent is a second-generation (as opposed to a first-generation) immigrant (yes=1).

### *Spatial Assimilation*

Other scholars have emphasized the role of space in the assimilation process. The theory of *spatial assimilation* (Massey and Denton 1985) states that as immigrant groups experience upward socioeconomic mobility, they tend to move out of urban ethnic enclaves and into more economically advantaged suburban communities. For immigrants who arrived in the United States early in the 20<sup>th</sup> century, this generally meant moving to communities comprised predominantly of the white ethnic majority group. More recent refinements of spatial assimilation theory (Alba et al. 1999) have shown that suburban residence may no longer be synonymous with

spatial assimilation; while in the past immigrants tended to form ethnic enclaves in central cities, today they may do so directly in suburbs. Spatial proximity to the white ethnic majority is thus not guaranteed by suburban residence, nor is it necessary to move to white neighborhoods in order to access the residential amenities of affluent suburbs.

Therefore, to operationalize spatial assimilation it is preferable to avoid measures based merely on central city versus suburban residence – although these have been common in the literature. Instead, we examine the composition of the immigrant family’s neighborhood. We wish to know both the extent to which an immigrant child lives in a highly concentrated ethnic neighborhood and the extent to which he or she is exposed to native-born Americans. For the sake of consistency we code all our assimilation measures so that a higher value indicates more assimilation. Therefore, rather than the percentage of coethnics in the neighborhood, we measure the percentage of neighbors who are *not* coethnics. This yields two neighborhood-level measures of spatial assimilation: (1) percentage of non-coethnics, and (2) percentage native-born. Both were computed at the census-tract level from the 1990 U.S. Census. In addition to these percentages as continuous measures, we also use categorical versions of them to home in on respondents who are *not* living in highly concentrated immigrant/coethnic neighborhoods (1= not living in such neighborhood). For the percentage of immigrants, we set the cut-point of concentration at 30%. For the percentage of non-coethnics, we set the cut-points at approximately the group-specific means for Hispanics and Asians, 60% for Hispanics and 75% for Asians.

#### *Strengths and Drawbacks of Measures*

Altogether, we have proposed six measures of assimilation: language use, length of stay, friendship composition, generation, percentage of native-born persons in the respondent’s neighborhood, and percentage of non-coethnics in the respondent’s neighborhood. (See Appendix Table 2.A for the descriptive statistics of these variables by immigrants’ race.) These six

measures tap into different dimensions of assimilation. They also differ greatly in the degree to which they are exogenous to an immigrant child's behavior.

Length of stay and generation, as demographic characteristics, are the most exogenous measures. They have the advantage of not being contaminated by the behavior of the individual or family, nor is it possible for any of our outcome variables to have caused them. In this sense, they are truly exogenous. However, this virtue is accompanied by a significant drawback: Demographic measures of assimilation impose an implausible homogeneity assumption that individuals of the same demographic characteristics (i.e., generation and/or length of stay) have exactly the same level of assimilation. To be sure, more time spent in the United States gives an individual more exposure to American society, and thus more potential for assimilation. However, using these factors as measures ignores differences in how this potential translates into actual assimilation. In fact, there is a great deal of spatial heterogeneity in exposure to the American mainstream given the same generation and length of stay: Some immigrants have lived exclusively in immigrant communities and are thus less assimilated, while others have lived outside immigrant enclaves and are thus more assimilated. Immigrant families also differ in the degree to which they take deliberate steps to preserve their culture of origin and transmit it to their children. Generation and length of stay are thus rather crude indicators of assimilation. Nonetheless, because these demographic measures are truly exogenous, results using these measures will not be subject to the criticism that assimilation is an effect, rather than a cause, of an outcome variable.

Like demographic measures, spatial measures can also be thought of as an exposure-based approach. In contrast to the demographic approach, however, the spatial approach does not assume that all individuals of the same demographic characteristics have the same level of assimilation. Instead, the spatial approach differentiates the intensity with which immigrant children are exposed to American culture. For example, immigrant children living in neighborhoods with a heavy concentration of other immigrants have less exposure to American

culture than immigrant children living in neighborhoods populated mostly by native-born Americans. The spatial approach capitalizes on contextual variation in exposure to American culture and thus potential for assimilation.

We emphasize that the spatial variation in exposure is across families, as all members of a family share the same local environment. Where to live is a decision made at the family level. We recognize that the decision of where to live is endogenous in the sense that it reflects the level of assimilation and other attributes at the family level. For example, an immigrant family that is not very assimilated is likely to live in a neighborhood that has other coethnic immigrant families. Note that the decision of where to live is made not by immigrant children but by their parents. It is possible that a family's residential decision is affected by children's previous or anticipated outcomes. However, for most families, residential decisions precede and determine children's outcomes rather than the other way around. In this sense, the spatial approach yields measures that are relatively exogenous (but less exogenous than demographic measures). As a tradeoff, spatial measures also provide far more detailed information about assimilation at the family level than purely demographic measures.

Our two remaining measures, language use and friendship composition, are the least exogenous of the six. These indicators rely on individual behaviors as measures of assimilation. Because they are measured at the same level as outcomes – the individual – there is a risk that these behavioral measures suffer from endogeneity, which can take two forms. The first is unobserved heterogeneity: Both a behavioral manifestation of assimilation and an outcome can be due to other unobserved factors not captured by measures available in the data. The second is classic-form endogeneity: The choice to assimilate (or not to assimilate) is affected by the anticipated impact of assimilation. In other words, individuals may adjust their assimilation behaviors in order to maximize their expected social or economic well-being (Alba and Nee 2003; Esser 2005).

Despite greater vulnerability to problems of endogeneity, language use and friendship composition are valuable measures because they allow finer distinctions between different levels of assimilation. Demographic measures of assimilation contrast groups with different amounts of temporal exposure to American culture, whereas spatial measures compare families with different amounts of intensity of exposure to American culture. However, the assumption that there is no individual-level variation given exposure is unrealistic. That is, given the same generation and the same length of stay in the United States, persons of the same ethnicity living in the same neighborhood can and do have different levels of assimilation. Such differences are reflected in their behaviors. Our behavioral measures allow us to distinguish these individual-level differences in assimilation.

Thus, our six measures differ in the degree to which they are subject to endogeneity. Statistical methods for dealing with endogeneity are available (such as instrumental variable estimation, fixed-effects models, or Heckman-type endogenous sample-selection models), but they all demand extra information – in the form of additional data and/or unverifiable assumptions. In this research, our primary approach in addressing the problem of endogeneity is to use multiple measures of assimilation. One major advantage of using multiple measures is that they permit a triangulation of results. If multiple measures of assimilation all affect a particular outcome in a consistent way, we can be more confident that our conclusions are not driven by endogeneity problems.

## Outcomes

### *Educational outcomes*

We examine three educational outcomes. The first is graduation from high school. By Wave 3 of Add Health, even the youngest respondents should have graduated from high school. (In fact, they should have been two years past graduation following the normal progression schedule.) We constructed a variable indicating high school graduation from the Wave 3 survey (yes=1).



Our second educational outcome is college enrollment. We constructed a variable indicating whether or not a respondent had ever attended a postsecondary institution within 2 years of the date they either graduated from or should have graduated from high school (yes=1). We use “ever attendance” because it is a meaningful measure for all Add Health respondents, including those who are still college-age. Third, we constructed a measure of academic performance based on self-reported grades in Wave 1. Respondents reported their grades “at the most recent grading period” in four subjects: English/Language Arts, Mathematics, History/Social Studies, and Science. One shortcoming of grades as an outcome measure is that they are not comparable across schools; an A student in a school with students who all perform poorly may not have learned as much as a B student in a better school. Therefore, we normalized grades across schools by using Wave 1 scores on the Peabody Picture Vocabulary Test to parse out the between-school portion of variation in student achievement. This yielded a normalized grade, comparable across schools, with a standard deviation of one. We averaged the standardized grade across the four subjects to obtain an overall measure of academic achievement.<sup>6</sup>

### *Psychological well-being*

The emphasis on psychological well-being in the literature on immigrant children (e.g., Bankston and Zhou 2002; Harker 2001; Kao 1999) is justified because immigrant children are specifically characterized by what Thomas and Znaniecki (1974) termed “marginality,” the experience of living in two worlds and not fully belonging to either. Marginality refers to a painful split, with accompanying feelings of insecurity, alienation, and ambivalence toward both the ethnic subculture and the dominant society. In this research, we examine how the psychological well-being of immigrant adolescents is influenced by the process of assimilation.

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<sup>6</sup> A small number of students did not have grades in all four subjects. For them, the average was computed from grades in all available subjects.

We measured depression, the most common mental health problem among adolescents, with a 19-item Center for Epidemiological Studies Depression (CES-D) scale in Wave 1. We borrowed the same set of self-esteem indicators used by Bankston and Zhou (2002), six items that were implemented in Wave 1. For both depression and self-esteem, we combined the items, after reverse-coding certain items, to form composite scales. A higher value means greater depression or higher self-esteem. Variable definitions and sample statistics for all the outcome variables are given by race in the third panel of Appendix Table 2.B.

### *At-risk behaviors*

In keeping with the epidemiological literature on adolescent health, we define at-risk behaviors as behaviors that put an adolescent at greater risk of experiencing a negative outcome (either immediately or later in life), although many adolescents may engage in such behaviors without experiencing harm. Segmented assimilation theory calls for a focus on at-risk behaviors. If immigrant children assimilate into “oppositional youth culture,” there should be observable behavioral manifestations. Thus, we are interested in how assimilation affects the likelihood that an immigrant child will be engaged in risky behaviors. For this paper, we use four measures of at-risk behaviors: (1) delinquency; (2) violence; (3) use of tobacco, alcohol, and marijuana; and (4) age at first sexual intercourse. Delinquency and violence are of concern due to both their socially undesirable nature in the short-term and their long-term potential to harm adolescent perpetrators who become involved with the criminal justice system.

We consider heavy use of controlled substances a risky behavior because it puts adolescents at greater risk for developing health problems and addictions, and we deem early sexual intercourse risky behavior because adolescents who have sex at young ages are at greater risk of pregnancy and sexually transmitted diseases than those who delay the onset of sexual intercourse (Kaestle et al. 2005). Our delinquency and violence measures are based on a series of questions that measure the frequency of different delinquent or violent behaviors. We used 10

survey items measuring delinquent behaviors to construct a composite measure of delinquency and 9 items measuring violent behavior to construct a composite measure of violence. We created the composite scales by summing the self-reported occurrences in the past 12 months on all relevant items. For example, the delinquency scale potentially ranges from 0 (for a respondent who reported no delinquent behaviors) to 10 (for a respondent who engaged in every behavior at least once).

We derived our measure of controlled substance use from the self-reported use of tobacco, alcohol, and marijuana. As expected, use of controlled substances varies highly with age and by substance. Therefore, we age-standardized the three survey items on smoking, drinking, and marijuana by finding the age-specific distribution of use of each substance and then finding the respondent's age-specific percentile score along each of the distributions. We then combined the information from the three items into a single scale by taking the average percentile score across all three.

Finally, we model age at first sexual intercourse. Sexual intercourse is not an easy outcome to examine, for two reasons. First, the crucial information is about the timing of initiation of sex. Second, this outcome variable may be censored for some respondents who had not experienced sex by the time they were last interviewed. Consequently, it is necessary to construct event-history records concerning the timing of sex initiation. In each survey wave, respondents are asked if they have had sexual intercourse, and if so, when they did so for the first time. We constructed event history records using information from all three waves. We then estimated the hazard rate of sex initiation (given that one has not initiated sex) using Cox proportional hazards models.

### Statistical Analysis

We initially perform separate analyses for Asians and Hispanics while pooling ethnicities within these broad groups. This allows us to include respondents from ethnic groups whose sample size

is too small to allow group-specific analyses. In these pooled analyses, we allow for additive differences by ethnicity. We then perform group-specific analyses for the ethnic groups with a sufficient number of cases (Cubans, Mexicans, and Puerto Ricans among Hispanics; Chinese and Filipinos among Asians). We regress each of our nine outcomes on each of our assimilation variables in turn, yielding a series of nine models for each outcome. All models control for age, gender, family income, neighborhood poverty rate, parental education, and family structure, and whether or not a parent was interviewed. Means and descriptions of these variables are found in Appendix Table 2.B. Because generation and length of stay are correlated with other assimilation variables, we also control for these in models that assess the effects of spatial assimilation, language use, and friendship<sup>7</sup>.

This analysis strategy yields a great number of models: 9 (assimilation indicators)×9 (outcome variables) = 81 for Hispanics, another 81 models for Asians, plus still more for specific ethnic groups. We are primarily interested in three things: 1) *The broad overall pattern of statistically significant results*. With so many models, we should expect to have significant coefficients due to chance; therefore we must be cautious about placing much credence in any single significant coefficient. 2) *Consistency across different measures of assimilation*. Do the different assimilation variables affect particular outcomes in a consistent way? If so, we can be more confident that assimilation is indeed associated with those outcomes. 3) *Consistency across different outcome measures within the same domain*. If we find consistent effects for all the educational outcomes, for example, we would be supported in making a broader claim about the effect of assimilation in that general domain.

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<sup>7</sup> We also considered the possibility that the effects of other assimilation variables may differ for first- and second-generation youth. We examined this possibility empirically for a subset of our models, but found no evidence of generational differences in assimilation effects.

For continuous outcomes, which comprise the majority, we estimate OLS linear regression models. For our two binary outcomes, high school graduation and college enrollment, we estimate logit models. Therefore, the coefficients in these columns represent differences in log odds associated with one-unit changes in predictors. Finally, for sexual intercourse we estimate Cox proportional hazard models, where the hazard is experiencing first sexual intercourse. We begin the hazard of sex initiation at age 11. We then treat the hazard of first sex as our dependent variable, allowing for censoring at the time of the last observation. In the tables, we present the hazards ratio associated with each assimilation variable. A ratio greater than 1 means that assimilation increases the hazard of experiencing sex – or equivalently, lowers the average age at first sex.

High school graduation, college enrollment, academic achievement, and self-esteem are positive outcomes because a higher value indicates greater educational success or self-esteem. We consider depression and at-risk behaviors to be negative outcomes because a higher value indicates more depression or higher-risk behavior. The implications of a positive assimilation coefficient for well-being therefore vary by outcome, making it ambiguous to use the terms “positive effect” or “negative effect.” We have therefore adopted the terms “beneficial effect” and “detrimental effect” in order to clarify the meaning of assimilation coefficients for different outcomes. For positive outcomes, a positive coefficient indicates a beneficial effect, while a negative coefficient represents a detrimental effect; for negative outcomes, the opposite is true.<sup>8</sup> Because of the complexity of interpreting results across different columns, we format the tables so that it is easy for the reader to see at a glance which effects are beneficial and which are detrimental. We highlight all statistically significant beneficial effects and underline all statistically significant detrimental effects.

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<sup>8</sup> For sexual intercourse, we convert coefficients into hazard ratios before presenting them. We interpret a hazard ratio greater than 1 as being a detrimental effect.

## Results

### Descriptive Results

We start by examining the mean of each outcome variable for each ethnic group, by generation.<sup>9</sup> We include third-plus generation (“native”) members of each ethnic group for comparison (where sample size permits), although our main analyses are confined to first- and second-generation immigrant youth. While we discuss all nine outcomes, we choose two outcomes, high school graduation and violence, for graphical presentation (Figures 1 and 2). In the figures, the left hand axis gives the mean of the outcome variable. For comparison, the right hand axis shows the ratio of each group’s mean to that of third-plus generation (“native”) whites. Thus, if a bar falls at 1 on the right hand axis, this means there is no difference compared to native whites. The figures allow us to observe two quantities of interest at once: the unadjusted relationship between generational assimilation and each outcome variable and the comparison of immigrant groups to native whites for each outcome.<sup>10</sup> The latter quantity will play an especially important role in our later

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<sup>9</sup> Due to the small sample size of first-generation Puerto Ricans in Wave 3, for high school graduation and college enrollment we are unable to present separate results for first- and second-generation Puerto Ricans. The bars shown are actually averages for all first- and second-generation Puerto Rican youth. Also, sample sizes for Cuban youth are too small to include the third generation for this group. Finally, results for third-generation Chinese and Filipino youth should be interpreted cautiously due to small sample sizes (66 for Chinese, 65 for Filipinos).

<sup>10</sup> We recognize that the choice of a comparison group can have important consequences in studies of assimilation. Here, we choose native whites as the comparison group because they approximate the “core subsociety” identified by Gordon (1964) as the group that immigrants assimilate to. Contemporary scholars have questioned this choice by pointing out that immigrants may assimilate to any of several native groups, making the choice of an appropriate comparison

discussion of the multivariate results. These descriptive results are for illustration only; we leave it until the multivariate results to compute statistical significance and control for potential confounders.

We observe two discernable patterns in the charts. Using native whites as the comparison group, these patterns can be characterized as either convergence with whites or unidirectional change between generations. Straight-line assimilation theory predicts that immigrants' outcomes should become more similar to those of natives with higher generation – that is, a pattern of convergence. We do indeed see this pattern for several outcomes. Figure 1 shows the convergence pattern for high school graduation. The groups that start out disadvantaged relative to native whites in the first generation, Mexicans and Puerto Ricans, have improved outcomes in the second and third generations. The groups that do better than whites in the first generation, Cubans, Chinese, and Filipinos, tend to have poorer outcomes in the second and/or third generations. Thus, second- and third-generation youth are more similar to native whites than first-generation youth for each ethnic group, regardless of whether first-generation youth had higher or lower graduation rates than those of whites. The results for college enrollment are very similar. Two more outcomes also show this pattern of convergence, and in these cases there is no ethnic variation in the starting position of new immigrants relative to whites. First, all immigrant groups have higher average levels of depression than native whites in the first generation, and all except Puerto Ricans experience improvement in the second generation. Second, the first generation of each immigrant group has lower average substance use levels than native whites, and all experience an increase in substance use by the second and/or third generation.

The second pattern we observe in the charts is unidirectional change, in which there is either deterioration or improvement in the outcome for almost every group regardless of its initial

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group an important empirical question in its own right. As comparing immigrants and natives is not the primary focus of our study, we leave this question to be addressed in future research.

starting position relative to whites. We see this pattern for violence, which is presented in Figure 2. Cuban, Filipino, and Chinese first-generation youth all have lower levels of violent behavior than native whites, while Mexican and Puerto Rican youth have equivalent or higher levels. Yet violence levels rise for every ethnic group between the first and second generations. We observe a similar pattern for delinquency, in which levels rise for all groups in the second and/or third generations regardless of the level in the first generation. This pattern is more consistent with revisionist versions of assimilation theory, which posit that assimilation may lead to poorer outcomes for immigrant youth, than with classical assimilation theory. It is also possible that whites are not the most appropriate comparison group for some or all of these immigrant groups, making us unable to see a pattern of convergence that may be taking place with respect to a different native group.

Finally, three outcomes – academic achievement, age at first sex, and self-esteem – fit neither of these two characterizations. All immigrant groups other than Chinese have lower academic achievement than native whites in the first generation, but there is no consistent relationship between achievement and generation. Similarly, age at first sex is higher for each ethnic group than whites, but there is no clear change between the first and second generations. There appear to be few differences in self-esteem by either ethnicity or generation.



## Multivariate Results

Our multivariate analysis consists of two steps. In step 1, we estimate a series of regression models for the pooled Asian subsample and pooled Hispanic subsample, including additive ethnicity controls. In step 2, we re-estimate the same models by specific ethnicity. Results from the pooled models are presented in Table 2.1.

### *Step 1: Pooled Analyses*

#### *1) Educational Outcomes*

The first three columns of Table 2.1 present results for the relationship between assimilation and educational outcomes. The majority of the coefficients are not statistically significant at the .05 level. The 13 coefficients that are significant (6 for Asians and 7 for Hispanics) are largely positive. However, results differ between Asians and Hispanics. For example, living in non-immigrant and non-coethnic neighborhoods is associated with higher academic achievement for Hispanics, but not for Asians. Only two significant coefficients deviate from this pattern of positive effects: For Hispanics, neighborhood % U.S.-born is negatively associated with college enrollment, and length of stay is negatively associated with academic achievement. The results for educational outcomes are thus mixed for Hispanics. Also, the fact that particular measures of assimilation (e.g., length of stay and % U.S.-born) do not always have consistent effects across different outcomes limits our ability to draw firm conclusions about the general relationship between assimilation and educational outcomes for Hispanics. For Asians, by contrast, the results consistently show a positive relationship between assimilation and educational outcomes.

#### *2) Psychological Well-being*

The next two columns present results for self-esteem and depression. Again, the overall pattern is one of beneficial effects of assimilation. This pattern is much stronger among Asians than Hispanics. Living in non-immigrant and non-Asian communities is associated with higher self-esteem and lower depression for Asian adolescents. For example, those living in neighborhoods

with populations at least 70% U.S.-born score 2.9 points lower on the depression scale than those living in neighborhoods with a higher concentration of immigrants. For Hispanics, most of the coefficients are statistically insignificant; the two that do reach significance, the effects of percent U.S.-born on self-esteem and of English use on depression, both suggest beneficial effects.

### *3) At-risk Behaviors*

The final four columns of Table 2.1 present results for the at-risk behaviors of delinquency, violence, controlled substance use, and sexual initiation. There is a clear pattern in these columns: the coefficients that are statistically significant consistently indicate detrimental effects of assimilation. They reveal that assimilation is associated with more delinquent and violent behavior, higher substance use, and an earlier age of sexual initiation. It is also important, however, to note that most of the coefficients do not reach statistical significance, especially for delinquency and violence. For sexual intercourse, by contrast, fully half of the assimilation measures are significant and all of them are associated with a younger age at first sexual intercourse.

In summary, assimilation is positively associated with educational outcomes and psychological well-being for Asian adolescents, but also positively associated with substance use and earlier sexual initiation. Our findings are similar for Hispanics, with the exception that the results are somewhat mixed for educational outcomes. The mixture of beneficial and detrimental effects of assimilation shown here clearly goes against “stylized” assimilation theory’s prediction of uniformly positive effects of assimilation. Instead, these results are more consistent with our “expanded” version of assimilation theory, which predicts that the effect of assimilation will vary by outcome.

While the results in Table 2.1 give an overview of the relationship between assimilation and well-being among immigrant adolescents, they suffer from an important limitation: They do not tell us whether or how the effects of assimilation differ for subgroups within the broad

categories of “Asian” and “Hispanic.” Given the great diversity among Asian and Hispanic immigrants from different sending countries, we should not assume that the relationship between assimilation and well-being is the same for all Asian or all Hispanic immigrants. We tested statistically whether the effects of assimilation vary across ethnic groups by running a series of nested-model tests, in which models containing interaction terms between assimilation and the ethnicity dummy variables were compared to the models from Table 2.1 (which do not contain such interactions). Appendix Table 2.C gives more methodological details and presents the results of each test. The tests indicate that the effects of assimilation do indeed vary by ethnic group for most of the outcomes and assimilation measures we studied, for both Asians and Hispanics. Therefore, we proceeded to conduct analyses for specific ethnic subgroups.

*Step 2: Ethnic-specific Analyses*

Mexicans: Results for Mexican immigrant youth are reported in Table 2.2. For educational outcomes, all but one of the assimilation variables with significant coefficients have beneficial effects. For example, English language use at home is associated with an increase of .82 in the log-odds of enrolling in college. Living in a non-immigrant or a non-Hispanic neighborhood is associated with an increase in academic achievement of about .05-.06 points on our standardized scale. Length of stay is the exception to this pattern of positive assimilation effects: It is negatively associated with both high school graduation and academic achievement.

As for Hispanics in general, assimilation has few significant effects on psychological outcomes, delinquency or violence. The two significant coefficients in these columns indicate that speaking English is related to lower levels of depression and neighborhood % U.S.-born is associated with more violent behaviors. Controlled substance use and sexual intercourse are more strongly associated with assimilation: Three of our assimilation measures (length of stay, generation, and English use) are associated with higher use of controlled substances, while another three (length of stay, non-immigrant neighborhood, and non-Hispanic neighborhood) are

associated with earlier sexual initiation. Thus, the results for Mexicans resemble those for pooled Asians and pooled Hispanics – mixed but largely positive associations with educational outcomes and psychological well-being, but also positive associations with at-risk behaviors. These mixed beneficial and detrimental effects are once again contrary to “stylized” assimilation theory but consistent with our expanded interpretation of classical assimilation theory.

Puerto Ricans: Results for Puerto Rican immigrant adolescents are reported in Table 2.3. Based on the pattern of results we have observed in the earlier tables, let us divide Table 2.3 into two pieces: the first five columns (High School Graduation through Depression) and the last four columns (Delinquency through Sexual Intercourse). In the tables we have examined above, there were largely beneficial effects in the first five columns (indicated by shading) and largely detrimental effects in the last four columns (indicated by underlining). The results for Puerto Ricans<sup>11</sup>, presented in Table 2.3, look quite different. Of the 63 coefficients presented, 9 are statistically significant, and all of these indicate beneficial effects. The results in the first five columns are similar to those for Mexicans, with the exception that there is no ambiguity about the effect of assimilation on educational outcomes (it is possible that this is because we could not estimate the effect of length of stay) and no significant effect on depression. The results in the last four columns, however, are very different: Whereas for Mexicans assimilation is associated with more at-risk behavior, for Puerto Ricans it is associated with lower levels of violence, less controlled substance use, and a later age at first sexual intercourse.

On closer examination, these effects are found largely for one of our assimilation measures – inter-ethnic friendship. It has positive effects on high school graduation and college enrollment, and negative effects on violence, controlled substance use, and the hazard of initiating sexual intercourse. Our earlier discussions of assimilation theory and endogeneity suggest two

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<sup>11</sup> Due to the small sample size of first-generation Puerto Rican immigrants (N=49), we do not estimate the effect of length of stay for this group.

possible interpretations of this finding. First, inter-ethnic friendship could be a result, rather than a cause, of the positive outcomes associated with it. On the other hand, inter-ethnic friendship is an indicator of structural assimilation, which Milton Gordon defined as the final step of the assimilation process. These results, which show an across-the-board beneficial effect of structural assimilation, are thus consistent with “stylized” classical assimilation theory rather than our “expanded” version of assimilation theory. Regardless of the specific interpretation, revisionist theories that predict negative effects of assimilation are clearly not supported for Puerto Ricans.

Cubans: Results for the 453 Cuban youth in our data are reported in Table 2.4. The main result in this table is the paucity of statistically significant coefficients. No effects of assimilation on either educational or psychological outcomes reach the .05 significance level. For at-risk behaviors there are two significant coefficients: Each additional year in the United States is associated with .07 more delinquent acts and raises the hazard of sexual intercourse by a factor of 1.06. The at-risk behavior results are thus consistent with those for other groups in indicating a detrimental effect of assimilation, but there are far fewer significant results for Cubans than for any other group. If there is a strong relationship between assimilation and the well-being of Cuban youth, we are unable to uncover it with these data. We therefore cannot draw any conclusions about the applicability of the various versions of assimilation theory to Cuban youth.

Chinese: Results for Chinese immigrant adolescents are reported in Table 2.5.<sup>12</sup> Again, let us divide the table into two parts, the first five columns and the last four columns. We begin discussion with the last four columns. For Chinese adolescents, the results in these columns look quite similar to the pooled results for Asians and the results for Mexicans: Where there are

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<sup>12</sup> Due to the small sample size of first-generation Chinese immigrants in Wave 3 data, we are unable to estimate results for the effect of length of stay on high school graduation. We are also unable to model college enrollment due to the very small number of Chinese adolescents who do not enroll in college.

significant effects, they show that assimilation is related to increased at-risk behavior. All of the significant results in these columns come from just two of our assimilation measures, inter-ethnic friendship and English language use. Chinese youth who speak English at home report about .4 more delinquent acts per year, score about 7.6 percentile points higher on substance use, and have 1.85 times the hazard of initiating sexual intercourse compared with Chinese youth who do not speak English at home. Having a greater proportion of non-Chinese friends is positively related to violence and controlled substance use. Thus, there appears to be a similar relationship between assimilation and at-risk behavior for Chinese adolescents as for the other groups we have discussed so far. Because English use and friendship are our two behavioral measures of assimilation, however, these results are particularly open to the possibility that assimilation is endogenous with the outcome variables.

The results in the first five columns, by contrast, do not always follow the same pattern of beneficial effects of assimilation that we observed for other groups. Results for psychological measures are similar to those for other groups – there are few significant coefficients, but those that are significant indicate a beneficial effect of assimilation. The story is different for education. We did not have a sufficient sample size of Chinese to estimate the models for college enrollment, so we are forced to limit our discussion of educational outcomes to high school graduation and academic achievement. The effects of assimilation on these outcomes are mixed: Being second-generation is negatively associated with high school graduation, but having more non-Chinese friends has a positive effect. For academic achievement, living in a non-Asian neighborhood has a positive effect, but both English use and inter-ethnic friendship have negative effects. Such inconsistency both within columns and across columns for the same assimilation measure alerts us to the need to exercise caution in interpreting the results, rendering us unable to draw any firm conclusions about the relationship between assimilation and educational outcomes for Chinese youth.

Filipinos: Results for Filipino youth are reported in Table 2.6. Again, let us split the table into two parts: the first five columns and the last four columns. It is clear that for Filipinos, there is more inconsistency in the effects of assimilation within columns than for the other groups. We observe the same basic pattern of primarily beneficial effects in the first part of the table and primarily detrimental effects in the second part, but these patterns do not hold true for all the assimilation measures. For example, both high school graduation and college enrollment are associated positively with length of stay but negatively with inter-ethnic friendship. This friendship effect is surprising given that inter-ethnic friendship is positively related to academic achievement for Filipinos. Thus, there is little consistency in the effects of assimilation on educational outcomes for Filipino youth. There are no significant effects on self-esteem, but all of the spatial assimilation measures are associated with lower depression. The results for psychological outcomes are thus similar to those for other groups.

If we temporarily ignore one of our assimilation measures, the results in the final four columns show a detrimental relationship between assimilation and at-risk behaviors for Filipinos, consistent with results for other ethnic groups. Length of stay and English language use are both related to higher levels of delinquency, violence, and substance use. Living in a non-immigrant neighborhood is associated with a higher hazard of experiencing first sexual intercourse. Not all effects of assimilation are detrimental for at-risk behaviors, however: Living in a non-Asian neighborhood is associated with less delinquency, less violence, and lower use of controlled substances. This beneficial effect of living in a non-ethnic neighborhood on at-risk behaviors is the only such effect we observe for any ethnic group. It is difficult to derive any general sense of the relationship between assimilation and outcomes for Filipinos in light of these results.

Summary: For most ethnic groups, the effects of assimilation on education are either beneficial or mixed, the effects on psychological outcomes are beneficial (but sparse), and the effects on at-risk behavior are largely detrimental. The major exception is Puerto Ricans, who have beneficial effects of assimilation regardless of the outcome. Finally, there are very few

significant effects of assimilation for Cubans, but the few we find are consistent with those for other groups in indicating detrimental effects of assimilation on at-risk behaviors.

## **Discussion**

Is assimilation theory still relevant? The answer is both yes and no, depending on one's interpretation of the theory. If assimilation theory is taken to mean that assimilation necessarily produces beneficial effects on social outcomes, our empirical results clearly reject it. If assimilation theory is interpreted as a mere description of the general process by which immigrants and natives become more similar, there is evidence in our study that supports it. Given the assumed and observed variability in the effects of assimilation, the question posed by the title of this paper, "Is assimilation theory dead?" is only rhetorical; the answer depends on the interpretation of the theory. Furthermore, if assimilation theory is taken to mean a description of a gradual process, our question cannot have a definite answer because the theory is not falsifiable. However, empirical research can inform us how closely the stylized assimilation trajectory describes the experiences of certain groups in certain outcomes.

We have reached the above conclusion through a comprehensive study that operationalizes assimilation in many different ways and examines a broad array of social outcomes using a nationally-representative sample of adolescents. Our research design is based on the premise that there is no simple relationship between assimilation and well-being. Our results confirm this premise, showing that the effects of assimilation are indeed highly variable, depending on the ethnic group, assimilation measure, and outcome under consideration.

For example, for the majority of the ethnic groups we examined, we found that assimilation has detrimental effects on substance use and age at first sexual intercourse. If we had looked at just these two outcomes (or just one of the two), we might have been tempted to



conclude that immigrant children are better off if they avoid assimilation. Because we examined a wide variety of outcomes, we know that such a conclusion would be too simplistic.

Although assimilation predicts more substance use and earlier sex, we also found it to be related to some positive outcomes. For instance, there is a clear positive relationship between assimilation and educational outcomes for Mexicans and Puerto Ricans, as well as evidence of beneficial psychological effects for these two groups and for Chinese and Filipino youth. Given this variability by outcomes and ethnic groups, it is impossible to speak of an overall beneficial or detrimental effect of assimilation. The debate about the value of delayed or limited assimilation for immigrant children, then, may not be resolvable on purely empirical grounds: It is likely that there are tradeoffs involved, with limited assimilation being better for some groups of children with respect to some outcomes, but also having costs in terms of other outcomes. Ultimately, judgments about whether assimilation is beneficial or detrimental, on balance, necessarily entail evaluating the relative importance of different outcomes.

How do we explain the high level of variability in our results? Can we make theoretically informative observations based on *which* outcomes are positively or negatively affected by assimilation for *which* ethnic groups? To aid our interpretation of the results we recall the definition of assimilation, given by Alba and Nee (1997: 863), as the decline of differences between immigrants and natives. Thus, a key factor in determining the direction of the effect of assimilation on a particular outcome should be the position of new immigrants relative to natives on that particular outcome. If unassimilated members of an immigrant group do better on a particular outcome than natives, we would expect assimilation to be related to immigrants' deterioration in that outcome. Likewise, if the immigrant group starts off at a disadvantage, we would expect assimilation to lead to improvement. In other words, we would expect to see a pattern of convergence.

We recall the generational comparisons in outcomes discussed earlier, illustrated in Figures 1 and 2. If our convergence hypothesis is correct, we would expect the following: if new

immigrants start out at a disadvantage relative to natives, the effect of assimilation is beneficial; if new immigrants start out at an advantage, the effect of assimilation is detrimental. While evaluating this hypothesis in light of the descriptive results showing changes across immigrant generations, we found it to be true for most, but not all, outcomes. We can now add an examination of our other assimilation measures to the discussion.

Our multivariate results are consistent with a pattern of convergence for most ethnic groups on most outcomes. This pattern is most clear for Chinese youth. First-generation Chinese youth have better outcomes than native whites with respect to high school graduation, academic achievement, delinquency, violence, substance use, and age at first sex, but have worse psychological outcomes. Therefore we would predict that greater assimilation would be related to more risky behavior, poorer educational outcomes, and better psychological outcomes. In fact, assimilation has mixed but primarily detrimental effects on the two educational outcomes, consistently detrimental effects on the at-risk behaviors, and beneficial effects on psychological outcomes. More assimilated Chinese youth, then, may lose some of the advantages of their unassimilated peers relative to native whites, but there is also evidence that they have greater psychological well-being.

There is a similar pattern of convergence for Mexican youth, with assimilation being primarily positively related to academic outcomes (on which first-generation Mexican youth are disadvantaged) but also tending to increase substance use and the hazard of initiating sexual intercourse (outcomes for which the first generation is advantaged). For Mexicans, however, delinquency and violence do not fit the pattern of convergence: Assimilation is positively related to violence, despite the fact that first-generation Mexican youth already have higher levels of these behaviors than native whites.

Puerto Rican youth also demonstrate a pattern of convergence towards native-born whites. While this group is distinct in having only beneficial effects of assimilation, it also stands out (along with Mexicans) as being one of the most disadvantaged groups in the first generation,

having poorer outcomes than native whites with respect to all academic outcomes, violence, and depression. Thus, the significant beneficial effects of assimilation on violence and the three academic outcomes can be interpreted as convergence. However, we also find results for Puerto Rican youth that do not conform to this pattern of convergence: Assimilation is associated with a reduction in substance use and a later age at first sex, but first-generation Puerto Rican youth do better than native whites on these outcomes.

The convergence hypothesis is more difficult to evaluate for Cuban and Filipino youth. For Cuban youth, we found very few significant effects of assimilation. The two significant coefficients, however, do support an interpretation of convergence: Assimilation is related to higher levels of delinquency and an earlier age at first sex, and first-generation Cuban youth are advantaged relative to native whites with respect to these outcomes. Finally, we are unable to clearly interpret the results for Filipinos due to the inconsistency in the effects of assimilation. For the one outcome domain that is not affected differently by different assimilation measures, psychological well-being, the results do support convergence: First-generation Filipino youth have higher depression levels than native whites, and assimilation has a beneficial effect on this outcome.

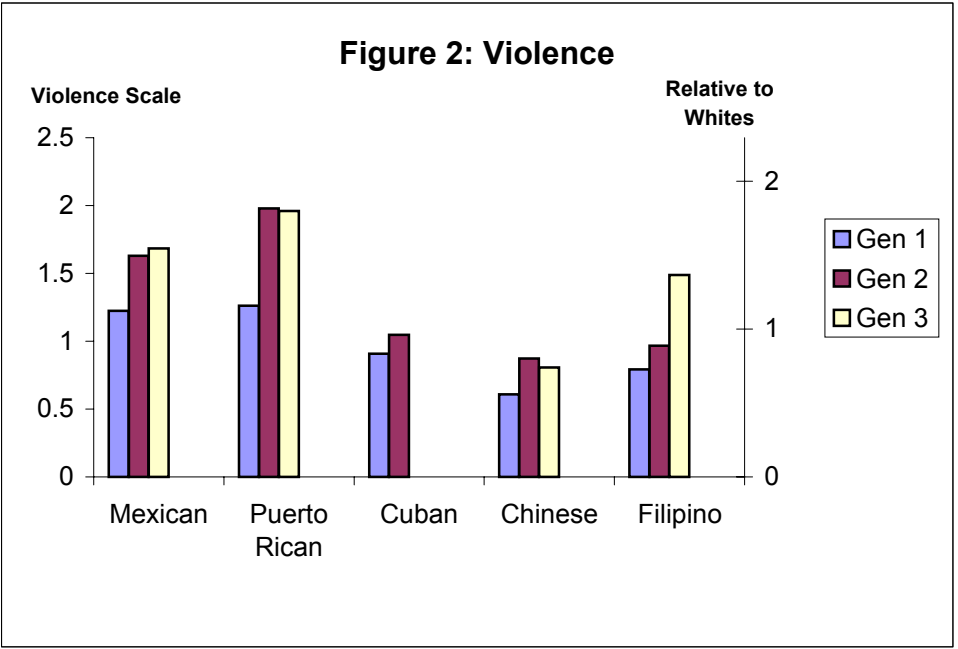
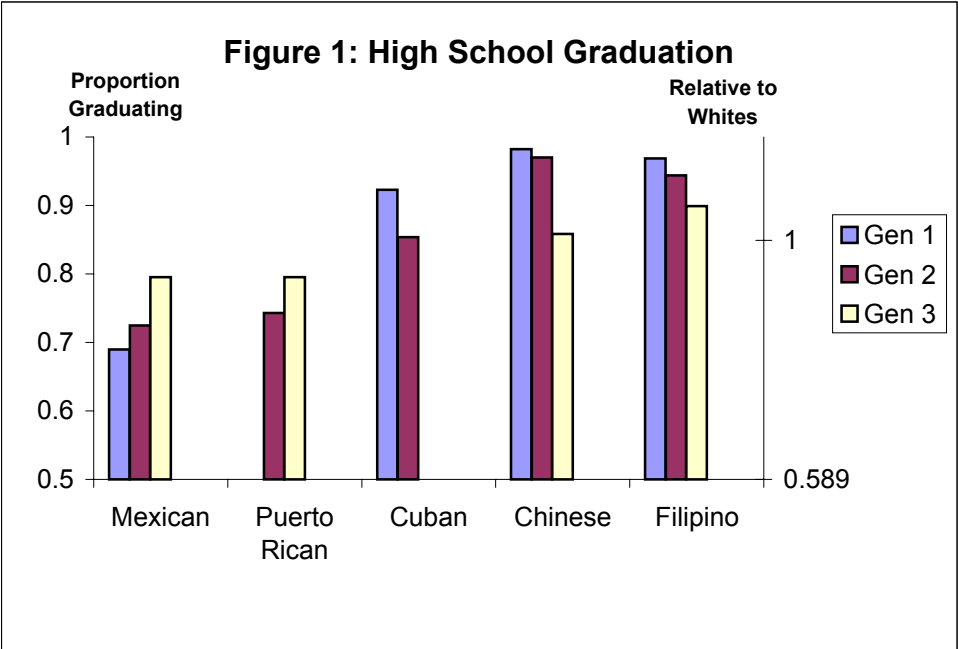
In sum, there seems to be a relationship between the effect of assimilation and the outcome-specific starting position of immigrants relative to natives, but this relationship is not uniform. Our analytical strategy does not specifically test this hypothesis of convergence. Therefore, we suggest it as a potentially useful framework in which to evaluate and understand variability in the effect of assimilation across different outcomes and different ethnic groups, rather than an explanation for such variability. We hope that future research can clarify the relationship between the effect of assimilation and the relative positions of new immigrants and natives with respect to a particular outcome. Such research will also have to grapple with the important question of to whom immigrant youth of varying ethnicities, socio-economic backgrounds, and geographic locations assimilate—in other words, to identifying the appropriate

native comparison group. While native whites may be an appropriate comparison group for the more highly educated and socioeconomically advantaged immigrant groups, native minority groups may actually be a more appropriate comparison group for low-skilled labor immigrants, who are more likely to settle in largely nonwhite urban areas.

## **Conclusion**

Like other recent work on immigrant adjustment, this paper suggests that there is a complex relationship between assimilation and immigrant well-being. While other studies have focused on diversity among immigrants or diversity among contexts as the driving factor for this complexity, we focus on differential effects across the domain of outcome. There are four main, broad findings from our study. First, assimilation is associated with higher levels of at-risk behaviors among immigrant adolescents, for both Hispanics and Asians of various ethnicities. Second, assimilation is associated with higher levels of academic achievement for both Asians and Hispanics on average, but there is considerable ethnic heterogeneity in its effect. Third, assimilation is associated positively with psychological well-being, although the evidence is relatively weak for most ethnic groups. Fourth, whether assimilation has a detrimental or beneficial effect on a particular outcome for a particular group appears to be related to how new immigrants fare on that particular outcome relative to natives.

These results suggest that it would be naive to expect that assimilation should affect immigrants either positively or negatively. However, we do not see this statement as a rejection of the concept of assimilation. Instead, we suggest an interpretation that allows assimilation to have different effects for different outcomes. This reinterpretation is consistent with a conceptualization of assimilation, rooted in the classic form of the theory, which emphasizes a process through which differences between groups gradually decline, rather than a simple trajectory of improving outcomes for immigrants.



**Table 2.1: Effects of Assimilation - Pooled Ethnic Groups**

	High School Graduation <sup>a</sup>	College Enrollment <sup>a</sup>	Academic Achievement <sup>b</sup>	Self- Esteem <sup>b</sup>	Depression <sup>b</sup>	Delinquency <sup>b</sup>	Violence <sup>b</sup>	Controlled Substance Use <sup>b</sup>	Sexual Intercourse <sup>b,d</sup>
<b>Hispanics:</b>									
<u>Assimilation Measure</u>									
Length of Stay	-0.063	0.078	<u>-0.032</u> ***	0.002	-0.036	<u>0.051</u> **	<u>0.046</u> **	<u>0.533</u> ***	1.038 *
Length of Stay > 5 years	0.226	<u>1.014</u> **	-0.063	0.045	0.738	0.145	0.000	1.992	1.310
U.S.- Born	-0.251	-0.278	-0.037	0.020	-0.062	<u>0.578</u> ***	<u>0.392</u> ***	<u>4.978</u> ***	<u>1.328</u> ***
% U.S.-Born in Neighborhood	-0.125 *	<u>-0.122</u> **	<u>0.068</u> ***	<u>0.034</u> ***	-0.285 *	-0.018	0.035	-0.004	<u>1.053</u> **
% U.S.-Born > 70%	-0.284	-0.352	<u>0.187</u> ***	0.087 *	-0.997	0.167	0.167	0.528	<u>1.241</u> **
% Non-Co-Ethnics in Neighborhood	-0.063	-0.065	<u>0.057</u> ***	0.010	-0.120	-0.001	0.031	0.183	<u>1.053</u> ***
% Non-Co-Ethnics > 60%	-0.348	-0.348	<u>0.197</u> **	0.026	-0.215	-0.087	0.173	1.476	<u>1.262</u> **
English language use in home	0.292	0.434 *	0.097	0.067	<u>-1.674</u> **	0.089	-0.218	<u>3.402</u> ***	1.131
Proportion of non-coethnic friends	0.125	0.640 *	0.159 *	0.000	-1.292	0.410	0.257	0.766	1.129
<b>Asians:</b>									
<u>Assimilation Measure</u>									
Length of Stay	<u>0.320</u> **	-0.004	0.008	0.007	-0.226 *	0.052 *	-0.001	<u>0.827</u> ***	<u>1.055</u> ***
Length of Stay > 5 years	<u>2.555</u> ***	<u>1.506</u> ***	0.216 *	0.044	-1.775	0.300	0.117	<u>3.610</u> **	1.122
U.S.- Born	-0.041	-0.046	-0.015	0.066	-1.718 *	0.151	-0.014	2.912 *	1.269
% U.S.-Born in Neighborhood	0.263	0.237	0.053 *	<u>0.068</u> ***	<u>-0.771</u> ***	-0.073	-0.092	0.455	<u>1.142</u> ***
% U.S.-Born > 70%	1.113 *	<u>1.029</u> **	0.113	<u>0.194</u> ***	<u>-2.916</u> ***	-0.388 *	-0.360 *	0.975	<u>1.734</u> ***
% Non-Co-Ethnics in Neighborhood	0.016	0.008	0.002	<u>0.051</u> ***	<u>-0.528</u> **	-0.075	-0.058	-0.363	1.034
% Non-Co-Ethnics > 75%	-1.125 *	-0.279	-0.107	<u>0.169</u> **	<u>-2.334</u> ***	-0.383 *	-0.346 *	-2.237	<u>1.432</u> **
English language use in home	0.307	-0.115	-0.177 *	0.044	-0.432	<u>0.501</u> ***	-0.001	<u>6.376</u> ***	<u>1.754</u> ***
Proportion of non-coethnic friends	0.761	0.584	<u>0.366</u> ***	0.093	-1.573	-0.332	-0.326	-0.150	0.808

Statistical Significance:

- Notes: a) Wave 3 data. N = 713 for Asians; N = 1,204 for Hispanics  
 b) Wave 1 data. N = 993 for Asians; N = 1,661 for Hispanics  
 c) Models control for specific ethnicity, age, sex, family income, parental education, neighborhood poverty rate, and family structure.  
 Models using assimilation measures other than length of stay and generation also control for length of stay and generation.  
 d) Hazard ratio of initiating sexual intercourse.

\* p<.10  
 \*\* p<.05  
 \*\*\* p<.01

Highlighting indicates a beneficial effect of assimilation that is statistically significant at the .05 level  
 Underlining indicates a detrimental effect of assimilation that is statistically significant at the .05 level

**Table 2.2: Effects of Assimilation for Mexicans**

Assimilation Measure	High School Graduation <sup>a</sup>	College Enrollment <sup>a</sup>	Academic Achievement <sup>b</sup>	Self-Esteem <sup>b</sup>	Depression <sup>b</sup>	Delinquency <sup>b</sup>	Violence <sup>b</sup>	Controlled Substance Use <sup>b</sup>	Sexual Intercourse <sup>b,d</sup>
Length of Stay	<u>-0.225</u> ***	0.125	<u>-0.044</u> **	0.029 *	-0.101	0.082 *	0.059 *	<u>0.901</u> **	<u>1.066</u> **
Length of Stay > 5 years	-0.903	0.885	-0.036	0.148	1.361	0.074	0.406	2.622	<u>1.969</u> ***
U.S.- Born	-0.269	-0.040	-0.012	0.041	-0.256	0.415 *	0.349 *	<u>4.486</u> **	1.129
% U.S.-Born in Neighborhood	-0.181	-0.067	<u>0.058</u> **	0.024	-0.184	0.027	<u>0.149</u> **	0.475	1.100 *
% U.S.-Born > 70%	-0.014	-0.086	0.153 *	0.018	-0.858	0.249	0.360 *	0.631	<u>1.317</u> **
% Non-Co-Ethnics in Neighborhood	-0.060	-0.031	<u>0.054</u> ***	-0.017	-0.025	0.001	0.046	0.271	<u>1.082</u> ***
% Non-Co-Ethnics > 60%	-0.509	-0.533	0.125	-0.079	0.340	-0.262	0.144	1.171	1.283 *
English language use in home	0.672	<u>0.822</u> **	0.024	0.099	<u>-3.210</u> ***	0.268	-0.079	<u>6.064</u> ***	1.260 *
Proportion of non-coethnic friends	0.543	0.814	0.142	0.083	-1.862	0.911 *	0.670 *	2.438	1.086

Statistical Significance:

Notes: a) Wave 3 data. N = 548

b) Wave 1 data. N = 732

c) Models control for specific ethnicity, age, sex, family income, parental education, neighborhood poverty rate, and family structure. Models using assimilation measures other than length of stay and generation also control for length of stay and generation.

d) Hazard ratio of initiating sexual intercourse.

\* p<.10

\*\* p< .05

\*\*\* p<.01

Highlighting indicates a beneficial effect of assimilation that is statistically significant at the .05 level

Underlining indicates a detrimental effect of assimilation that is statistically significant at the .05 level

**Table 2.3: Effects of Assimilation for Puerto Ricans**

	High School Graduation <sup>a</sup>	College Enrollment <sup>a</sup>	Academic Achievement <sup>b</sup>	Self- Esteem <sup>b</sup>	Depression <sup>b</sup>	Delinquency <sup>b</sup>	Violence <sup>b</sup>	Controlled Substance Use <sup>b</sup>	Sexual Intercourse <sup>b,d</sup>
<u>Assimilation Measure</u>									
Length of Stay	--	--	--	--	--	--	--	--	--
Length of Stay > 5 years	--	--	--	--	--	--	--	--	--
U.S.- Born	0.067	-0.165	0.288 *	-0.095	0.405	0.437	0.661	0.209	1.259
% U.S.-Born in Neighborhood	0.062	-0.005	0.110 ***	0.030	0.161	-0.050	-0.063	-0.836	1.034
% U.S.-Born > 70%	0.629	0.043	0.425 ***	0.176	1.031	-0.047	-0.230	-2.145	1.073
% Non-Co-Ethnics in Neighborhood	0.110	-0.027	-0.010	0.034	-0.148	0.003	-0.006	-0.131	1.025
% Non-Co-Ethnics > 60%	0.605	0.398	-0.128	0.113	-0.582	0.142	0.202	1.483	1.245
English language use in home	1.234 **	0.971	0.089	0.069	0.525	0.188	-0.307	2.319	0.668 **
Proportion of non-coethnic friends	2.724 **	2.709 ***	0.348	-0.152	-2.465	-0.093	-2.128 ***	-13.53 **	0.329 ***

Statistical Significance:

Notes: a) Wave 3 data. N = 157

b) Wave 1 data. N = 249

c) Models control for specific ethnicity, age, sex, family income, parental education, neighborhood poverty rate, and family structure.

Models using assimilation measures other than length of stay and generation also control for length of stay and generation.

d) Hazard ratio of initiating sexual intercourse.

Highlighting indicates a beneficial effect of assimilation that is statistically significant at the .05 level

Underlining indicates a detrimental effect of assimilation th 48

\* p<.10

\*\* p< .05

\*\*\* p<.01



**Table 2.4: Effects of Assimilation for Cubans**

	<u>High School Graduation<sup>a</sup></u>	<u>College Enrollment<sup>a</sup></u>	<u>Academic Achievement<sup>b</sup></u>	<u>Self- Esteem<sup>b</sup></u>	<u>Depression<sup>b</sup></u>	<u>Delinquency<sup>b</sup></u>	<u>Violence<sup>b</sup></u>	<u>Controlled Substance Use<sup>b</sup></u>	<u>Sexual Intercourse<sup>b,d</sup></u>
<b>Assimilation Measure</b>									
Length of Stay	0.036	0.041	0.013	-0.008	0.010	<u>0.071</u> **	0.022	0.040	<u>1.060</u> ***
Length of Stay > 5 years	0.227	-0.060	0.069	0.019	-0.579	<u>0.722</u> *	0.149	4.889 *	1.290
U.S.- Born	-0.135	-0.745 *	-0.206	-0.118	-0.273	-0.057	0.116	1.922	0.996
% U.S.-Born in Neighborhood	-0.032	-0.098	0.052 *	-0.009	-0.189	0.056	0.064	-0.070	1.006
% U.S.-Born > 70%	-0.271	-0.984 *	0.379 *	-0.114	-1.154	0.331	0.187	-1.976	0.831
% Non-Co-Ethnics in Neighborhood	-0.033	-0.070	0.045 *	-0.016	-0.147	0.076	0.075	0.155	1.005
% Non-Co-Ethnics > 60%	-0.043	-0.425	0.360 *	-0.108	-1.044	0.685	0.627	1.008	0.968
English language use in home	-0.343	-0.114	0.241	-0.187	0.759	0.080	-0.068	2.529	1.458 *
Proportion of non-coethnic friends	0.262	-0.449	0.044	-0.218	-0.977	0.090	0.049	0.306	1.436

Statistical Significance:

Notes: a) Wave 3 data. N = 312

b) Wave 1 data. N = 453

c) Models control for specific ethnicity, age, sex, family income, parental education, neighborhood poverty rate, and family structure.

Models using assimilation measures other than length of stay and generation also control for length of stay and generation.

d) Hazard ratio of initiating sexual intercourse.

\* p<.10

\*\* p< .05

\*\*\* p<.01

Highlighting indicates a beneficial effect of assimilation that is statistically significant at the .05 level

Underlining indicates a detrimental effect of assimilation that is statistically significant at the .05 level

**Table 2.5: Effects of Assimilation for Chinese**

	High School Graduation <sup>a</sup>	College Enrollment <sup>a</sup>	Academic Achievement <sup>b</sup>	Self- Esteem <sup>b</sup>	Depression <sup>b</sup>	Delinquency <sup>b</sup>	Violence <sup>b</sup>	Controlled Substance Use <sup>b</sup>	Sexual Intercourse <sup>b,d</sup>
<u>Assimilation Measure</u>									
Length of Stay	--	--	0.004	0.055 ***	-0.204	0.033 *	0.039	0.122	0.995
Length of Stay > 5 years	--	--	0.293	0.320 *	-3.795 **	0.193	-0.438	-3.974	0.815
U.S.- Born	-1.920 **	--	0.156	0.060	-1.285	0.371	0.258	3.020	0.745
% U.S.-Born in Neighborhood	0.527 *	--	0.004	0.020	0.755 *	-0.069	-0.035	-0.283	1.175 *
% U.S.-Born > 70%	0.370	--	0.262	0.090	1.412	-0.138	-0.616	-4.261	1.464
% Non-Co-Ethnics in Neighborhood	-0.080	--	0.079 *	-0.013	0.628 *	-0.001	-0.039	0.047	1.054
% Non-Co-Ethnics > 75%	-1.388	--	0.421 **	-0.010	1.014	0.007	-0.422	-1.432	1.253
English language use in home	-0.875	--	-0.445 ***	-0.115	1.174	0.393 **	0.247	7.556 ***	1.855 **
Proportion of non-coethnic friends	4.553 ***	--	-0.927 ***	-0.112	2.640	0.456 *	0.706 **	9.129 ***	2.208 *

Statistical Significance:

Notes: a) Wave 3 data. N = 199

b) Wave 1 data. N = 266

c) Models control for specific ethnicity, age, sex, family income, parental education, neighborhood poverty rate, and family structure.

Models using assimilation measures other than length of stay and generation also control for length of stay and generation.

d) Hazard ratio of initiating sexual intercourse.

\* p<.10

\*\* p< .05

\*\*\* p<.01

Highlighting indicates a beneficial effect of assimilation that is statistically significant at the .05 level

Underlining indicates a detrimental effect of assimilation that is statistically significant at the .05 level

**Table 2.6: Effects of Assimilation for Filipinos**

	High School Graduation <sup>a</sup>	College Enrollment <sup>a</sup>	Academic Achievement <sup>b</sup>	Self- Esteem <sup>b</sup>	Depression <sup>b</sup>	Delinquency <sup>b</sup>	Violence <sup>b</sup>	Controlled Substance Use <sup>b</sup>	Sexual Intercourse <sup>b,d</sup>
<b>Assimilation Measure</b>									
Length of Stay	0.377 ***	0.347 **	-0.001	0.006	-0.024	0.122 ***	0.074 **	1.144 ***	1.012
Length of Stay > 5 years	1.635 ***	3.525 ***	-0.199	0.235 *	-1.804	0.623 *	0.569 **	5.366 *	0.994
U.S.- Born	0.066	-0.117	-0.039	-0.023	-1.590	0.107	-0.120	5.055 *	1.296
% U.S.-Born in Neighborhood	-0.187	-0.028	0.068	0.043	-2.003 ***	-0.199 *	-0.151 *	-0.620	1.125
% U.S.-Born > 70%	0.776	-0.346	-0.005	0.173	-4.728 ***	-0.454	-0.150	1.076	1.798 ***
% Non-Co-Ethnics in Neighborhood	0.183	0.131	0.006	0.031	-0.742 ***	-0.171 ***	-0.120 ***	-1.544 ***	1.010
% Non-Co-Ethnics > 75%	-0.364	0.256	-0.091	0.121	-3.681 ***	-0.496	-0.377 *	-4.860 *	1.227
English language use in home	-4.018 *	-0.177	-0.166	-0.085	1.323	0.630 **	0.395 **	7.485 ***	1.094
Proportion of non-coethnic friends	-2.633 **	-3.159 ***	0.331 **	0.004	-2.703	-0.743 *	-0.346	-1.652	1.082

Statistical Significance:

Notes: a) Wave 3 data. N = 317

b) Wave 1 data. N = 408

c) Models control for specific ethnicity, age, sex, family income, parental education, neighborhood poverty rate, and family structure.  
Models using assimilation measures other than length of stay and generation also control for length of stay and generation.

d) Hazard ratio of initiating sexual intercourse.

\* p<.10

\*\* p< .05

\*\*\* p<.01

Highlighting indicates a beneficial effect of assimilation that is statistically significant at the .05 level

Underlining indicates a detrimental effect of assimilation that is statistically significant at the .05 level

**Appendix Table 2.A: Patterns of Assimilation by Race and Generation**

Assimilation Measure	Mean for Asians			Mean for Hispanics		
	First Generation	Second Generation	Total	First Generation	Second Generation	Total
Length of Stay	8.38	N/A	8.38	8.46	N/A	8.46
Length of Stay > 5 years	0.75	N/A	0.75	0.74	N/A	0.74
U.S.- Born	0.00	1.00	0.41	0.00	1.00	0.62
% U.S.-Born in Neighborhood	76.3	81.0	78.2	68.0	77.2	73.7
% U.S.-Born > 70%	0.58	0.74	0.65	0.58	0.71	0.66
% Non-Co-Ethnics in Neighborhood	80.8	79.5	80.2	55.8	66.7	62.6
% Non-Co-Ethnics > 75% (Asians), >60% (Hispanics)	0.66	0.70	0.68	0.54	0.65	0.61
English language use in home	0.40	0.74	0.54	0.21	0.44	0.35
Proportion of non-coethnic friends	0.55	0.67	0.60	0.42	0.57	0.52

Notes: Wave 1 data. N = 993 for Asians; N = 1,661 for Hispanics

**Appendix Table 2.B: Variable Descriptions and Means**

Variable	Variable Description	Mean for Asians	Mean for Hispanics
<u>Assimilation Measure</u>			
Length of Stay	Years since arrival in U.S., for first-generation immigrants	8.38	8.46
Length of Stay > 5 years	Binary: 1= Length of stay > 5 years, 0= Length of stay <=5 years	0.75	0.74
U.S.- Born	Binary: 1=second generation, 0=first generation	0.41	0.62
% U.S.-Born in Neighborhood	% of U.S.-born persons in respondent's neighborhood (higher=fewer co-ethnics)	78.2	73.7
% U.S.-Born > 70%	Binary: 1=neighborhood population more than 70% U.S. born	0.65	0.66
% Non-Co-Ethnics in Neighborhood	% of non-Hispanics (non-Asians) in neighborhood, for Hispanic (Asian) respondents	80.2	62.6
% Non-Co-Ethnics > 75% (Asians), >60% (Hispanics)	Binary: 1=% Co-ethnics in neighborhood less than approximate race-specific median	0.68	0.61
English language use in home	Uses English language at home	0.54	0.35
Proportion of non-coethnic friends	Proportion of the respondent's friends who are not of the same ethnicity	0.60	0.52
<u>Context Measure</u>			
Poor Neighborhood	Neighborhood context: Poverty rate in neighborhood	0.11	0.19
<u>Outcome Measure</u>			
High School Graduation <sup>a</sup>	Binary: 1=respondent graduated from high school by Wave 3	0.91	0.73
College Enrollment <sup>a</sup>	Binary: 1=respondent enrolled in college by Wave 3	0.84	0.55
Academic Achievement	Average grades in Wave 1, standardized and adjusted for achievement differences across schools	0.29	-0.43
Self-Esteem	Score on self-esteem scale (higher=more self esteem)	2.98	3.02
Depression	Score on depression scale	12.21	12.61
Delinquency	Frequency of delinquent acts in last year	1.06	1.22
Violence	Frequency of violent acts in last year	0.96	1.37
Controlled Substance Use	Age-specific percentile score in combined use of alcohol, tobacco, and marijuana	43.11	45.97
Initiation of Sex	Age of first sexual intercourse		
<u>Control Variables</u>			
Age	Respondent's age at Wave 1 interview	16.13	16.05
Gender	Binary: 1=Female	0.47	0.51
Parent interview missing	No parent interview (hence no family income information)	0.32	0.17
Family Income	Log of family income, imputed for those with missing parent interview	10.40	9.75
Average parental education	Average of parental education in 2-parent family, parent's education in single-parent family	13.65	10.98
Single parent family	Binary: 1=single parent family, 0 otherwise	0.17	0.28
Stepparent family	Binary: 1=stepparent family, 0 otherwise	0.09	0.15

Notes: a) Wave 3 data. N = 713 for Asians; N = 1,204 for Hispanics

b) All other measures came from Wave 1 data. N = 993 for Asians; N = 1,661 for Hispanics

**Appendix Table 2.C: Ethnic Differences in the Effects of Assimilation**

	High School Graduation <sup>a</sup>	College Enrollment <sup>a</sup>	Academic Achievement <sup>b</sup>	Self- Esteem <sup>b</sup>	Depression <sup>b</sup>	Delinquency <sup>b</sup>	Violence <sup>b</sup>	Controlled Substance Use <sup>b</sup>
<b>Hispanics:</b>								
<u>Assimilation Measure</u>								
Length of Stay	***		***	***				***
Length of Stay > 5 years	***	**		***			**	
U.S.- Born			***			***		**
% U.S.-Born in Neighborhood	***	***		**		**	**	
% U.S.-Born > 70%	***	***	***	**		***		
% Non-Co-Ethnics in Neighborhood	***	***		***				
% Non-Co-Ethnics > 60%	***	**		***				
English language use in home	**	***	***	***	***	**		
Proportion of non-coethnic friends		**					**	
<b>Asians:</b>								
<u>Assimilation Measure</u>								
Length of Stay	***	***				***	***	***
Length of Stay > 5 years			**				**	**
U.S.- Born								**
% U.S.-Born in Neighborhood	***				***			
% U.S.-Born > 70%			***					
% Non-Co-Ethnics in Neighborhood								**
% Non-Co-Ethnics > 75%								
English language use in home	***	***	***				**	
Proportion of non-coethnic friends		***	***					

Statistical Significance:

Methodology: The cells contain statistical significance of F (for continuous outcomes) or chi-square (for binary outcomes) computed from nested model tests in which we compared the models in Table 1 to models that added interaction terms between the assimilation variable and the series of ethnic dummy variables. A significant value of F (or chi-square) indicates that there is statistically significant ethnic variation in the effect of assimilation on the outcome in question.

\*\* p< .05  
\*\*\* p<.01

Notes: a) Wave 3 data. N = 713 for Asians; N = 1,204 for Hispanics  
 b) Wave 1 data. N = 993 for Asians; N = 1,661 for Hispanics  
 c) Models control for age, sex, family income, parental education, neighborhood poverty rate, and family structure.  
 Models using assimilation measures other than length of stay and generation also control for length of stay and generation.  
 d) Hazard ratio of initiating sexual intercourse.

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## CHAPTER 3

### THE ASSIMILATION OF IMMIGRANT ADOLESCENTS: THE ROLE OF NEIGHBORHOOD CONTEXT

The recent renewed wave of mass immigration to the United States has sparked attempts to re-think theories of immigrant adaptation and assimilation. Many scholars have argued that the experiences of immigrants currently entering the United States differ in fundamental ways from the experiences of those who arrived in the early twentieth century. Immigrants' settlement patterns upon arrival constitute one such difference. While earlier cohorts of immigrants typically settled in central cities, often in ethnic enclaves (Alba and Nee 2003), and did not disperse into suburban and less ethnically segregated areas until later generations, today's immigrants often settle directly in the suburbs (Alba et al. 1999). Moreover, economic and social changes have brought about deterioration of many central cities, meaning that immigrants who do settle in these areas may find themselves in economically isolated, highly segregated neighborhoods (Suarez-Orozco and Suarez-Orozco 2001; Waldinger 2001). Thus, there is a great deal of variation and inequality in the types of communities that immigrants settle in. The implications of such diversity in residential context for immigrant adaptation are not yet fully understood, but many scholars have suggested that immigrant adolescents may be particularly influenced by the surrounding environment (Hirschman 2001; Portes and Rumbaut 2001; Portes and Zhou 1993; Zhou 1997). However, few empirical studies have explored whether residential context affects the adaptation of immigrant adolescents and their families. This paper explores the relationship between community context and immigrant families' decisions regarding whether and how much to assimilate.

One prominent theory that has emerged from the literature on the distinctiveness of contemporary immigration is segmented assimilation theory (Portes and Zhou 1993). Segmented assimilation theory argues that there are many possible pathways of assimilation for immigrants to follow. In contrast to classical assimilation theory, which had assumed that immigrant families would eventually settle among and assimilate into the native middle class (Gordon 1964), segmented assimilation theory identifies this “traditional” type of assimilation as only one possible assimilation trajectory for contemporary families – henceforth referred to as “Path 1.” Assimilation along Path 1 entails increasing access to educational and economic opportunities as immigrants become incorporated into the American mainstream. Alternatively, assimilation for immigrant families that settle in low-SES communities may not entail such benefits: An immigrant family assimilating in an impoverished inner-city area may instead become incorporated into the urban underclass (“Path 2”). Finally, an immigrant family may choose not to assimilate fully. This third possible assimilation trajectory – “Path 3” – involves deliberate preservation of the immigrant group’s culture and values, accompanied by forms of assimilation necessary in order to achieve economic integration (Portes and Zhou 1993; Rumbaut 1994; Zhou 1997). The segmented assimilation perspective suggests that this third path may be the most beneficial for immigrants who settle in disadvantaged contexts, as it may allow them to avoid assimilating into the urban underclass.

Segmented assimilation theory is thus explicitly concerned with both the *process* of assimilation – that is, the extent to which immigrants assimilate – and the *outcomes* of assimilation – that is, whether assimilation leads to upward or downward mobility. On the one hand, immigrant families can choose whether or not to fully assimilate – that is, whether to take Path 3 rather than Paths 1 or 2. This aspect of the theory focuses on the process of assimilation. On the other hand, immigrant families that do fully assimilate may find themselves experiencing either upward mobility along Path 1 or downward mobility along Path 2 as a result. The distinction between Paths 1 and 2 thus rests on the differential outcomes of assimilation.

A recent study by Xie and Greenman (2005) tested the implication of segmented assimilation theory that the outcomes of assimilation may differ by local context. They found no evidence that assimilation had different consequences in low-poverty neighborhoods than in high-poverty neighborhoods. However, this result should not necessarily be interpreted as a rejection of segmented assimilation theory. Such an interpretation would require a strong, unrealistic assumption that assimilation itself as a given condition, exogenous to both outcomes and the local context. In this paper, I go beyond the Xie and Greenman's model by relaxing this assumption and examining assimilation behaviors, local context, and assimilation outcomes jointly, based on the idea that immigrant families may adjust their assimilation behaviors according to the anticipated consequences of those behaviors.

Immigrant families that settle in economically disadvantaged communities are likely aware of the dangers those communities may pose for their children, but given the modest financial means of many immigrant families upon arrival in the United States, they may find it difficult to avoid settling in such areas. If in spite of such misgivings they are unable to move to better neighborhoods, they may instead take extra steps to protect their children from assimilating into the surrounding context. Framed in terms of our earlier discussion, this means that if an immigrant family realizes that full assimilation may entail downward mobility – that is, that it may take place along Path 2 – it may decide to limit its assimilation and follow Path 3.

These insights suggest an alternative interpretation of segmented assimilation theory. Rather than the consequences of full assimilation differing according to local context, the theory can be construed to imply that assimilation behavior differs by local context. Immigrant families in low-SES community contexts may have reason to avoid full assimilation. Immigrant families in higher-SES communities, by contrast, may not have the same concerns about the potentially deleterious effects of the surrounding environment on their children. It follows that an immigrant family's choices about whether and how much to assimilate may depend on the local context. This paper explores the relationship between neighborhood context and the assimilation of

immigrant adolescents. The goals of this research are threefold: First, in contrast to previous literature on assimilation, I develop a measurement of assimilation that is explicitly grounded in the local context by incorporating information about the local peer groups of immigrant adolescents. Second, using this measure, I investigate the hypothesis that immigrant adolescents' degree of assimilation varies systematically according to neighborhood socioeconomic status. Third, I explore the potential role of parental behavior in creating such variation. I test the hypothesis that parents guide their children's assimilation processes in poor neighborhoods in ways that diminish the potential negative effects of disadvantaged community contexts.

## **Past Research and Theory**

### Assimilation

Sociological studies of the adaptation and incorporation of immigrants into American society have generally been framed in terms of assimilation. Scholars of the last great wave of immigration, which ended in the 1920's, typically viewed assimilation as a process through which immigrants gradually shed the cultures and customs of their home countries and adopted the language, expressive habits, and eventually the spatial distribution and socioeconomic characteristics of "mainstream" Americans – usually defined as white middle-class Protestants (Gordon 1964). In this process of becoming "Americans," immigrants, often over the course of three or more generations, were thought to lose much of their ethnic distinction. Modern perspectives on assimilation, such as that expounded by Alba and Nee (1997, 2003), have refined the idea of assimilation to recognize that the direction of influence can also go from the immigrant group to mainstream society, rather than just the other way around. In a direction-neutral definition, Alba and Nee describe assimilation as "the decline, and at its endpoint the disappearance, of an ethnic/racial distinction and the cultural and social differences that express it" (1997, p. 863). The critical aspect of assimilation in this definition, however, is still the decline

of ethnic distinction – that is, a process by which two distinct groups become more similar to each other. This core idea is at the heart of the concept of assimilation.

Most recent empirical research on assimilation has focused on change in immigrants' language usage (Alba and Nee 2003; Portes and Rumbaut 2001), residential patterns (Alba et al. 1999; Alba, Logan and Stultz 2000; Alba and Nee 2003), or friendship or marriage preferences (Quillian and Campbell 2003), or on the consequences of such changes for educational, economic, or health outcomes (Greenman and Xie 2005; Harker 2001; Harris 1999; Mouw and Xie 1999; Portes and Hao 2002; Rumbaut 1997; Xie and Greenman 2005; many others). While these investigations are certainly important to our understanding of immigrant adaptation, as studies of assimilation they leave a crucial gap: If assimilation is the decline of differences between groups, how can we truly understand immigrants' assimilation without also looking at non-immigrants (henceforth "natives")? In order to know if differences between immigrants and natives are indeed declining, it is clearly necessary to compare the two groups. This, however, raises another problem: To which natives, precisely, shall we compare immigrants? Classical assimilation perspectives assumed that middle-class Protestant whites were the natural reference group against which to evaluate immigrants. One valuable contribution of segmented assimilation theory is the recognition that American society is very diverse and racially segmented, and that therefore there are multiple possible native groups with which immigrants may assimilate. Segmented assimilation theory points to the diversity of residential settlement patterns of new immigrant families as one source of variation in the assimilation pathways they experience. While some immigrant families settle in affluent suburbs, others settle in inner cities. There is considerable variation in both the ethnic and socioeconomic makeup of these neighborhoods, and therefore in the native Americans with whom immigrants will come into contact.

Drawing on both classical and segmented assimilation theories, for this research I conceptualize assimilation as the degree of difference between immigrants and natives *within the local context*. This conceptualization recognizes that inter-group contact is largely dependent on



spatial proximity, which provides opportunities for inter-group interaction. Presumably, inter-group interaction is necessary for assimilation to occur – that is, for differences between groups to decline. Thus, the appropriate group of natives with which to compare immigrants is that with which they have frequent contact, such as natives who co-reside in the same neighborhood<sup>1</sup>. For some immigrants, this native comparison group will overlap with that assumed to be most appropriate by classical assimilation theory – native middle-class whites. For others, the comparison group may be multi-racial or composed primarily of minority individuals or working- or lower-class whites. In any of these cases, I measure immigrants' degree of assimilation as the difference between immigrants and their native counterparts within the same neighborhood.

Under this definition, assimilation also must be defined with respect to a particular outcome that affords a comparison between immigrants and natives. While there are many possible choices, in this research I examine differences between immigrant adolescents and the native adolescents in their neighborhoods with respect to the at-risk behaviors of serious delinquency and controlled substance use. These outcomes are appropriate for several reasons. First, previous research has established that they are among the outcomes that concern immigrant parents as their children become “Americanized” (Portes and Rumbaut 2001; Zhou and Bankston 1998). Second, previous research has indicated that recent immigrant children do well relative to natives with respect to these outcomes, but that their advantage tends to fade with greater acculturation (Greenman and Xie 2005; Harris 1999; Rumbaut 1997; many others). This implies

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<sup>1</sup> While other forms of spatial proximity are provided by institutional settings such as schools and workplaces, here I focus on neighborhoods. This choice reflects the fact that I am investigating assimilation patterns of immigrant adolescents, who typically spend little (or no) time in workplace settings compared to what they spend in neighborhoods or schools. Investigation of school settings would be a possibility for future research.

that the behaviors of immigrant children may converge those of with natives as they experience assimilation, but this proposition has not been explicitly tested. Finally, these outcomes are social behaviors, in the sense that adolescents usually engage in them in the company of others (Haynie and Osgood 2005). Therefore, I can expect these outcomes to be particularly influenced by adolescents' peer group. Compared with less peer-influenced outcomes that are often examined in immigrant adolescents (for example, psychological well-being), such peer-influenced outcomes are especially likely to reveal assimilation in the form of declining differences between groups.

### Neighborhood Effects and Parenting

Segmented assimilation theory's acknowledgement of the importance of context in immigrant assimilation is based on the recognition that neighborhoods or communities can have an important influence in the lives of their residents. Impoverished neighborhoods are commonly understood to present a variety of dangers for children, especially adolescents. An extensive literature documents neighborhood disparities in youth outcomes, including educational outcomes, psychological well-being, and at-risk behaviors (see Leventhal and Brooks-Gunn (2000) for a comprehensive review). Many studies have assessed the relationship between neighborhood poverty or concentrated disadvantage (usually measured as some combination of poverty rates, unemployment, education levels, public assistance rates, and/or prevalence of single-parent families) and delinquency and violence among adolescents. In general, such research has found that poor neighborhoods are associated with higher levels of delinquency and/or violence (Bellair and McNulty 2005). There have been fewer studies of the relationship between neighborhood context and substance use, and the findings of these studies have been less consistent. While some studies have found that neighborhood disadvantage is related to higher substance use (Rankin and Quane 2002), other research has found either no relationship (e.g., Allison et al. 1999) or that youth in high-SES neighborhoods are actually somewhat *more* likely to use controlled substances (Reardon, Brennan, and Buka 2002; Ennet et al. 1997). The

neighborhood effects research does not always conclude that associations between neighborhood characteristics and youth outcomes are causal in nature. For example, Rankin and Quane (2002) find that neighborhood disadvantage is associated with higher delinquency and substance use rates, but that this association can be explained by family-level factors.

Although there have been mixed findings in the literature regarding the causal relationship between neighborhood characteristics and youth outcomes, the literature is fairly consistent in finding a correlation between neighborhood disadvantage and poorer outcomes for youth. This finding is key to the motivation for the present research, which is not primarily concerned with assessing the causal effect of neighborhood characteristics on youth outcomes. Instead, its primary purpose is to explore neighborhood variation in the process of assimilation. According to the assimilation perspective, immigrant youth will be influenced by the native youth with whom they come into contact. Thus, if risky behaviors are more prevalent among native youth in poor neighborhoods, the peer groups of immigrant children will include more problematic peers in such neighborhoods. Assimilation in such a context would imply a greater level of risky behavior, on average, than assimilation in a high-SES context. Thus, for my purposes it is only important that there be a difference between behaviors of native youth in low-SES and high-SES neighborhoods. Whether that difference is causal or entirely compositional (that is, due entirely to the differential sorting of families with disadvantageous characteristics into poor neighborhoods) is not important for this research.

Of course, the reason that peer composition is important has to do not only with assimilation, but also with the importance of peers in influencing adolescent behavior in general. Adolescence is commonly recognized to be a time when family relationships become less salient and peer relationships take on increasing importance.<sup>2</sup> Of the outcomes considered here, violence

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<sup>2</sup> The true influence of peers on adolescent behavior has been the subject of considerable debate, however – it is theoretically possible that the tendency toward homogamy in friendship choices is

and delinquency (which are often not separated in the literature) have been the most frequently studied with respect to the effect of peers. The extensive literature on this topic has found a consistent and strong correlation between individuals' delinquency and that of their friends (Haynie and Osgood 2005). Peer influences have also been studied as a potential mediating factor between neighborhood characteristics and youth outcomes. For example, Rankin and Quane (2002) find that some of the effect of concentrated neighborhood disadvantage on violence among African American youth is due to the lower-quality peer groups in poor neighborhoods.

A third factor that may be interrelated with both neighborhood and peer effects on adolescent behavior is parenting practices. It is likely that parents are aware of the dangers of poor neighborhoods and friendships with deviant peers, and they may take action to protect their children from such influences. For example, Furstenberg et al. (1999) show that parents living in poor neighborhoods are highly aware of the dangers that such neighborhoods pose for adolescents and often respond by trying to restrict their children's exposure to the neighborhood environment, in ways such as encouraging them to participate in activities that take place outside the neighborhood rather than those within the neighborhood. Jarrett's (1997) qualitative findings similarly suggest that some African American parents in poor neighborhoods use both close supervision and restriction of children's friendship choices in order to buffer their children from dangerous neighborhood influences. The extent to which parents adjust their behaviors in response to neighborhood context, however, remains unclear. While Rankin and Quane (2002) and Simons et al. (2005) both find that parents' monitoring of children does indeed reduce children's affiliations with deviant peers, Rankin and Quane (2002) find no relationship between such parenting behaviors and neighborhood disadvantage. Neither the effect of parenting practices nor the relationship between parenting and neighborhood context have yet been studied

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sufficient to explain the association between the behavior of the individual and that of his or her peer group.

among immigrant parents, however; filling this gap will be one of the contributions of the present research.

Whether parenting practices are related to neighborhood disadvantage or not, the literature on parenting effects is quite consistent in finding relationships between parenting and adolescent well-being. Studies of parenting effects generally examine either the warmth of the parent-child relationship, parental monitoring and supervision, or the combination of these (which is often termed “authoritative parenting” (Simons et al. 2005)). Of these behaviors, parental monitoring and supervision is the most relevant to this study, due to its greater likelihood of being a parental response to neighborhood threat. Several studies have found that parental supervision is related to lower levels of delinquency (Furstenberg et al. 1999; Haynie and Osgood 2005; Haynie and South 2005; Rankin and Quane 2002; Simons et al. 2005) and to lower rates of sexual intercourse (Browning, Leventhal, and Brooks-Gunn 2005; Roche et al. 2005).

This paper integrates the arguments of segmented assimilation theory with those of the neighborhood, parenting, and peer effects literatures. Segmented assimilation theory raises the possibility that immigrant adolescents may acculturate into “oppositional youth cultures” supposedly found in poor neighborhoods (Zhou 1997). The theory does not explicitly take into account the possibility that immigrant parents may have the same concern, and may take a more active role in guiding their children’s assimilation if they perceive the local context to be threatening. Immigrant parents, like native parents (Furstenberg 1999), are likely aware of neighborhood dangers, which segmented assimilation theory suggests may be especially pronounced for acculturating immigrant adolescents. Therefore, immigrant parents of adolescents living in disadvantaged neighborhoods may make greater efforts to discourage their friendships with local peers and reduce their exposure to the surrounding community and than parents in more advantaged neighborhoods. If so, the end result may be that immigrant adolescents living in poor neighborhoods will be less assimilated than those living in more advantaged neighborhoods. It follows that differences between immigrant adolescents’ outcomes and those of their native

peers, within the same neighborhood, will be smaller in high-SES neighborhoods than in low-SES neighborhoods.

In the following analyses, I explore a two-stage path through which this relationship may unfold. First, immigrant parents may respond to perceived threats from the local context by engaging in a higher level of monitoring of their children. Higher monitoring may reduce at-risk behavior both directly and through reducing children's affiliations with deviant peers. Second, as a result of parental influence, children may be less involved with local non-immigrant peers and less integrated into neighborhood social life in low-SES neighborhoods. Due to the resulting more limited peer influences in such neighborhoods, there will be less similarity between the at-risk behaviors of immigrant adolescents and those of their native counterparts in poor neighborhoods than in wealthier ones.

## **Data and Methods**

### Data

This study uses data from the National Longitudinal Survey of Adolescent Health (Add Health). Add Health is a good data source for this study because not only is its sample large and nationally representative, it also contains over-samples of Chinese, Cubans, and Puerto Ricans. As a result, I have adequate sample sizes of both Asian and Hispanic first- and second-generation adolescents (whom I collectively term "immigrant adolescents," since they are all adolescents in immigrant families). Unfortunately, I do not have adequate sample sizes of other groups, such as Caribbean or African-origin adolescents. Therefore, I limit my analysis to Asians and Hispanics.

Add Health is a school-based survey of adolescents who were in grades 7-12 in 1994-1995. The in-school portion of the survey was administered to all students in the sampled schools who were present on the day of the survey. The in-school questionnaire covered such topics as demographic characteristics, parental education and occupation, health status, academic grades, and friendships, and was completed by more than 90,000 adolescents. Each student was asked to

name up to 10 close friends in the same school in this portion of the survey, making it possible to completely map friendship networks within a school. I use this friendship data to measure adolescents' integration into their non-co-ethnic peer groups. To do this, I construct a measure of the propensity of an immigrant adolescent to make friends with others who are not of the same ethnicity. This measure, which I refer to as  $F$ , is essentially the difference between the proportion of co-ethnics found among the adolescent's friends and the proportion of co-ethnics in the adolescent's school. If there is no ethnic preference in friendship choice, we would expect these two proportions to be equal. By adjusting for the number of co-ethnics available to choose as friends within a school,  $F$  allows me to distinguish respondents' preferences from the effects of school composition<sup>3</sup>. In sum, a value of less than zero indicates a tendency to choose co-ethnics as friends, a value of zero indicates that the respondent has no ethnic preference in friendship, and a positive value indicates that the respondent tends to choose others outside his/her ethnic group as friends.

A smaller "core" sample of Add Health respondents was selected to complete more in-depth interviews at home. Additional topics covered by this portion of the survey include nationality of students and of their parents, language spoken in the home, and many detailed measures of health risk behaviors, family dynamics, and psycho-social adjustment. Three waves of the in-home surveys have now been conducted. In this paper, I use information primarily from Wave 1 (conducted in 1995), as this wave contained crucial information about residential context.

The in-home survey contains series of questions designed to measure parental supervision of and control over adolescents, which I use to operationalize parental monitoring. One series of questions asks whether a parent is home at certain times of the day, including before school, after school, at dinnertime, and at bedtime. Because the after school and early evening

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<sup>3</sup> This measure was originally developed by Xie and Greenman (2005), and is described there in much greater detail (see <http://www.psc.isr.umich.edu/pubs/pdf/rr05-581.pdf>).

hours are times when adolescents are most likely to have the opportunity to engage in risky behaviors, I construct a measure of very low parental supervision at these times of day. The measure is a binary variable coded 1 if a parent is “almost never” or “never” present after school *and* a parent is present during dinner less than three evenings a week.

I use another series of questions to measure parental efforts to control adolescent behavior. These questions, which are answered by the adolescent, consist of seven items measuring whether or not the parent allows the adolescent to make his/her “own decisions” about curfews, friendship choices, what to wear, how much television to watch, which programs to watch, bedtime, and what to eat. I construct three measures of parental control from these questions. Because the item about friendship choices is the most directly relevant to my research questions, I construct a binary indicator equaling 1 if the adolescent makes his/her own decisions about friends, 0 otherwise. I use the other questions to construct two more measures: A simple count of the number of “own decisions” an adolescent is allowed to make, and a binary indicator that the adolescent has few parental rules (which is coded as 1 if the adolescent has no rules or a curfew only, 0 otherwise). For brevity, I refer to these measures along with the measure of parental supervision as *parental control* measures.

The in-home questionnaire also contains a brief series of questions designed to measure the adolescent’s perceptions of his or her neighborhood. I use one of these questions as an indicator of the extent to which the adolescent is socially integrated into the neighborhood context. I construct a binary indicator equaling 1 if the adolescent agrees with the statement, “I know most of the people in my neighborhood.” While simple, this measure complements the propensity for inter-ethnic friendship as a measure of social assimilation. Its advantage is that unlike inter-ethnic friendship, which is measured at the school level due to data constraints, this measure is explicitly neighborhood-based. I refer to this measure and the inter-ethnic friendship measure collectively as *social assimilation* measures.



Add Health also provides detailed information on participation in at-risk behaviors, from which I construct my dependent variables. I consider two types of at-risk behavior: Delinquent behavior and use of controlled substances. My measure of delinquent behavior is based on a series of questions asking respondents to report whether or not they have participated in particular undesirable, illegal, or violent activities in the past year. The behaviors asked about range in seriousness from “acting rowdy in a public place” to shooting or stabbing someone. Because the less serious behaviors are not uncommon among adolescents, I focus here on more serious behaviors – that is, violent behaviors or felony-level nonviolent offenses. I construct a scale measuring the number of such behaviors the adolescent reports having engaged in during the past year. The specific behaviors included in the scale are: Used or threatened to use a weapon to get something from someone; pulled a knife or gun on someone; shot or stabbed someone; carried a weapon to school; sold illegal drugs; broke into a home or building to steal something; stole something worth more than \$50; got into a “serious” physical fight; hurt someone badly enough in a fight to need medical attention; got hurt in a fight badly enough to need medical attention; and took part in a fight of one group against another. The scale ranges from 0 (for respondents who reported no such behaviors) to 11 (for respondents who participated in every behavior).

I derived my measure of controlled substance use from the self-reported use of tobacco, alcohol, and marijuana. Smoking and marijuana use were asked about in terms of the number of days used in the past month. Drinking alcohol was asked about in terms of frequencies for the past 12 months. As expected, use of controlled substances varies highly with age and by substance. Therefore, I standardized the three items on smoking, drinking, and marijuana use by age. I accomplished this by finding the age-specific distribution of use of each substance and then finding the respondent’s age-specific percentile score along each of the distributions. I then combined the information from the three items into a single scale by taking the average percentile score across all three.

The study also collected residential location of each respondent included in the in-home interview and provided to researchers the attributes of neighborhood and community contexts, either linked from external sources such as the U.S. Census or created by aggregating respondent reports. I measure neighborhood socioeconomic status (SES) at the block-group level with several variables, including the poverty rate, male unemployment rate, the proportion of men who worked in the past year, the proportion of men who worked full-time, full-year in the past year, percentage of households headed by a single mother, percentage of adults with less than a high school education, and percentage of adults with a college degree. Because these variables are all highly correlated, I used factor analysis to ascertain whether they could be adequately represented with fewer parameters. In fact, all these variables loaded heavily on a single factor, which I refer to as neighborhood SES<sup>4</sup>. Because neighborhood poverty rates and other characteristics are so different for Hispanics and Asians, I use race-specific percentile cuts to distinguish low-SES (high poverty) neighborhoods from high-SES (low poverty) ones. I define respondents as living in low-SES neighborhoods if their neighborhood SES is below the 25<sup>th</sup> percentile for others of the same race. I define moderate-SES neighborhoods as those between the 25<sup>th</sup> and 75<sup>th</sup> percentile, while I define high-SES neighborhoods as above the 75<sup>th</sup> percentile. In practice, this means that the average SES for Hispanics in “low-SES” neighborhoods is considerably lower than that of Asians in “low-SES” neighborhoods. Characteristics of neighborhoods defined as “low,” “moderate,” and “high”-SES are described in Appendix Table 3.D for Hispanic and Asian immigrants, as well as for native youth.

Finally, the clustered sampling design of Add Health also makes it possible to calculate neighborhood-specific levels of at-risk behaviors, which allows me to compare levels of such

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<sup>4</sup> I also used an alternative specification of neighborhood SES based only on the census tract poverty rate. Results using both measures were similar, but there were slightly fewer statistically significant results using the poverty rate measure.

behavior among immigrants with that of their non-immigrant peers in the same neighborhood. In order to do so, I must restrict the sample to those immigrant adolescents who live in neighborhoods with a sufficient number of non-immigrant respondents over which to compute neighborhood-specific average behavior levels. Therefore I have restricted my sample to those immigrant adolescents who live in neighborhoods with at least 10 sampled natives. To increase the number of such neighborhoods, for this portion of the analysis I defined neighborhoods at the census tract level rather than at the block group level. With this restriction, I have a sample of 602 Hispanic immigrant youth in 96 neighborhoods and 596 Asian immigrant youth in 78 neighborhoods.

I run all analyses separately for Hispanics and Asians. While I do not have a sufficient sample size to examine specific ethnicities/national origin groups, I include national origin groups as additive controls in my analytical models. In all statistical analyses of the data, I use appropriate weights to account for stratified sampling, non-proportionate non-response, and non-proportionate attrition.<sup>5</sup>

### Methods

I use a modeling strategy in which  $i$  adolescents are clustered within  $j$  neighborhoods. In the following equations, variables are defined as follows:

Y – at-risk behavior (delinquency or substance use, modeled in turn)

A – controls for age and gender, where age is a series of single year of age dummy variables

X – vector of additional controls, including parental national origin, family SES and other characteristics, neighborhood ethnic composition, immigrant generation, and length of stay in the U.S.

N – vector of neighborhood dummy variables

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<sup>5</sup> In regression analyses, I also appropriately correct standard errors for clustering, stratification, and using weights.

P – neighborhood SES indicators (indicators for “low” and “moderate,” omitted category= “high”)

C – various measures of parental supervision and control

S – social assimilation – interethnic friendship (*F*) and social integration into the neighborhood (“knows most people”)

The subscript *i* refers to the individual, *j* refers to the neighborhood.

The superscript 0 refers to non-immigrants, while the superscript 1 refers to immigrants.

The primary dependent variable in my analysis is the difference in at-risk behavior between an immigrant adolescent and non-immigrant adolescents in the same neighborhood. Because I have small sample sizes in many neighborhoods and the behaviors in question (particularly delinquency) are strongly influenced by sex and age, it is preferable to calculate a neighborhood average of at-risk behavior net of the sex and age composition of the respondents that happened to be sampled in that neighborhood, which is largely a function of chance. Therefore, instead of simply taking the average level of behavior, I regress  $Y^0_{ij}$  on N and A for non-immigrant adolescents, yielding the following equation:

$$Y^0_{ij} = B^0_{0j} + B^0_1 A^0_{ij} + \varepsilon^0_{ij}$$

I then use the neighborhood-specific intercept term,  $B^0_{0j}$ , as my estimate of the neighborhood average behavior level among non-immigrants. This intercept term is technically the average level of behavior for the omitted category, in this case 13-year-old boys. However, under the assumption that neighborhood differences in at-risk behavior among native youth are additive – that is, that neighborhood differences do not depend on sex or age – I can treat this intercept term as an estimate of neighborhood differences in at-risk behavior. The advantage of using the intercept term as an estimate of neighborhood-specific at-risk behavior (in place of calculating a simple average level of behavior for each neighborhood) is that it yields an estimate of behavioral

differences between neighborhoods that is not influenced by the sex and age composition of the adolescents that happen to be included in our sample.

I then define my dependent variable as the difference between the neighborhood average level of at-risk behavior and an immigrant adolescent's behavior, or  $B_{0j}^0 - Y_{ij}^1$ . Because  $B_{0j}^0$  holds age and sex constant while  $Y_{ij}^1$  does not, the magnitude of this new variable will clearly be influenced by age and sex. Therefore, I include controls for age and sex in all analytical models.

My analytical models are run on sample consisting only of immigrant adolescents<sup>6</sup>, separately for Asian- and Latin American-origin youth. My first hypothesis is that the gap in behavior will be larger in low-SES than high-SES neighborhoods. Therefore, my first analytical model is:

$$B_{0j}^0 - Y_{ij}^1 = \alpha_0 + \alpha'_1 P_j + \alpha'_2 X_{ij} + \alpha'_3 A_{ij} + \varepsilon_{ij} \quad (1)$$

(Henceforth I omit the superscript 1 from the right-hand side of the equations, since all variables and coefficients on the right refer to immigrants). The quantities of interest here are the coefficients of low-and-moderate neighborhood SES, the vector  $\alpha'_1$ . Based on previous work (Greenman and Xie 2005), I expect that immigrant adolescents have lower average levels of at-risk behaviors than their non-immigrant peers, implying that  $E[B_{0j}^0 - Y_{ij}^1] > 0$ . If this is the case

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<sup>6</sup> The two-step estimation strategy, in which differences between immigrants and non-immigrants are incorporated into the first-step calculation of the dependent variable, allows me to later restrict my sample to immigrants without losing the ability to model differences between immigrants and non-immigrants. This is preferable because it allows me to maintain comparability across models that do and do not include assimilation measures, since any model with assimilation measures can only be run on a sample of immigrants. Thus, this two-step strategy allows me to use the same sample (of immigrants only) for all my analytical models.

(which will be verified empirically), positive values of  $\alpha'_1$  indicate that there is a greater gap in behavior in low- or moderate-SES neighborhoods than high-SES neighborhoods.

My next two models explore the mechanisms that might produce such systematic variation in the behavior gap according to neighborhood SES. They test the hypotheses that parental control will be higher in low-SES neighborhoods, and that immigrant adolescents will be less integrated into their non-immigrant peer group in such neighborhoods. My second-stage models are therefore as follows:

$$C_{ij} = \tau_0 + \tau'_1 P_j + \tau'_2 X_{ij} + \nu_{ij} \quad (2)$$

$$S_{ij} = \delta_0 + \delta'_1 P_j + \delta'_2 X_{ij} + \pi_{ij} \quad (3)$$

$C_{ij}$  represents a vector of parental control variables, modeled individually.  $S_{ij}$  represents a vector of the two neighborhood social assimilation variables, also modeled individually. Again, the quantities of interest are the coefficients on the neighborhood SES indicators.

Assuming that there are systematic differences in  $C_{ij}$  and/or  $S_{ij}$  according to neighborhood SES, I will then estimate a final model that combines information from the previous models. The goal of this model is to see if some or all of  $\alpha'_1$  (from Model 1) is explained by  $C_{ij}$  and/or  $S_{ij}$ :

$$B_{0j}^0 - Y_{ij}^1 = \alpha_0 + \alpha'_1 P_j + \alpha'_2 X_{ij} + \alpha'_3 C_{ij} + \alpha'_4 S_{ij} + \varepsilon_{ij} \quad (4)$$

The contribution of  $C_{ij}$  and  $S_{ij}$  to  $\alpha'_1$  can be tested by observing changes in  $\alpha'_1$  between models 1 and 4.

## **Results**

### Descriptive Results

Appendix Table 3.A gives descriptions and means by race/immigration status of all dependent, independent, and control variables used in the analysis. A quick glance through this table reveals no consistent differences in parental control between Asian immigrants, Hispanic immigrants, and natives. Past work has revealed that at-risk behaviors should be lower for immigrants than natives, and indeed both immigrant groups have somewhat lower substance use rates than natives. Although Hispanics have higher average delinquency rates than natives, this is most likely due to differences in socioeconomic status: Appendix Table 3.A also reveals that Hispanic immigrants live in higher-poverty neighborhoods and come from families with lower incomes and lower parental education than natives.

Appendix Table 3.B shows the means of parental control, social assimilation, and the unadjusted outcomes by race and immigration status and neighborhood SES. Because neighborhood differences in these variables are modeled later using regression analysis, I will defer discussion of the neighborhood differences shown in this table. Appendix Table 3.C presents results from regression analysis of the effects of neighborhood SES on at-risk behavior for native youth. Recall that for this research, I am interested only in whether there are average differences in behavior according to neighborhood SES, rather than whether such differences are causal. The first panel of Appendix Table 3.C, which gives differences by neighborhood SES without adjusting for any covariates, demonstrates that native youth living in moderate or low-SES neighborhoods have higher average levels of serious delinquency than youth in high-SES neighborhoods. There are no such differences, however, for substance use. Both of these findings are consistent with previous literature examining neighborhood differences in at-risk behavior. Such differences in native adolescent delinquency between neighborhoods provide an empirical justification for the theoretical arguments about peer and parenting effects I presented earlier.

Immigrant parents, who may observe more delinquency among neighboring youth in poor neighborhoods, may be more motivated to monitor their own children or to try to prevent them from becoming involved in local peer groups. The second panel of Appendix Table 3.C indicates that these neighborhood differences in delinquency for natives are largely explained by differences in individual and family characteristics.

Appendix Table 3.D describes low-SES, moderate-SES, and high-SES neighborhoods and the typical ethnic composition of friends of youth living in each type of neighborhood. In order to ensure that the sample of neighborhoods selected for inclusion in the analysis (those having at least 10 sampled non-immigrants) does not compromise the results, this table includes descriptions of the neighborhoods of natives included in our sample (in the columns headed “Non-Immigrants (our sample)”), and those of all natives in the Add Health data (in the columns headed “Non-Immigrants (all)”). Two broad patterns are apparent in this table. First, Hispanic immigrants’ neighborhoods are noticeably less advantaged than Asian immigrants’ neighborhoods, even within an SES category. This is not surprising, as I based the neighborhood SES categories on race-specific percentile cuts. Second, there are very few differences in neighborhood characteristics between natives included in our sample and natives generally. The differences that are apparent are very small. Thus, it is unlikely that the sample restriction on neighborhoods is substantially affecting the results.

### Multivariate Results

Due to the way the dependent variable was constructed, interpreting the regression results in Tables 1, 2, 4, and 5 is not straightforward. The coefficients of the neighborhood SES variables in these models represent a difference-in-difference – that is, the average difference between immigrant youth and non-immigrant youth in low- or moderate-SES neighborhoods compared with that between immigrants and non-immigrants in high-SES neighborhoods. Because substance use and delinquency are both negative outcomes (that is, a higher value means a less



favorable outcome), positive coefficients on the neighborhood SES variables indicate that immigrant youth in lower-SES neighborhoods compare more favorably with their neighborhood native peers than immigrant youth in high-SES neighborhoods.

However, the sign of the coefficient alone cannot inform us about the central research question of this paper – whether the behavior of immigrant and native youth is more or less *similar* in lower-SES neighborhoods. To make this interpretation, we need to know whether immigrant youth in the omitted category – high-SES neighborhoods – engage in more or less at-risk behavior than their native counterparts. If they engage in less at-risk behavior (as I expect from previous work), the constant term in the baseline model without covariates will be positive. Positive coefficients on the low/moderate neighborhood SES indicators can then be interpreted as a larger gap in behavior between immigrants and natives in low/moderate SES neighborhoods. Similarly, if both the constant term and the neighborhood SES indicators have negative signs, the neighborhood SES coefficients also imply a larger behavior gap in low/moderate-SES neighborhoods. It is only if the sign of the intercept differs from that of the coefficients of interest that we run into problems interpreting the meaning of the coefficients for behavior gaps (see Appendix E on interpretation of results for a detailed explanation). Therefore, before interpreting results, it is necessary to refer to the constant term in the baseline model which adjusts only for age and sex.

### *Results for Hispanics*

Let us now turn to Table 3.1, which presents the results for substance use among Hispanics. The intercept term from the baseline model, Model 1, technically gives the difference in behavior between 13-year-old native and immigrant boys in high-SES neighborhoods; however, with the assumption that neighborhood differences in the behavior gap do not vary by age or sex, this intercept can be interpreted as a general indicator of the difference between immigrant and native youth in high-SES neighborhoods. (Intercepts from later models including many more covariates

are not as interpretable, so they are not reported.) The intercept in Model 1 is positive (though insignificant), indicating that native youth in high-SES neighborhoods engage in somewhat more substance use than Hispanic immigrant youth in those neighborhoods. The coefficient for low-SES neighborhood is positive and significant. It indicates that Hispanic immigrant adolescents living in low-SES neighborhoods have a 5.25-percentile-point larger gap in substance use, relative to neighborhood peers, than Hispanic immigrants in high-SES neighborhoods.

Model 2 adds controls for relevant individual and family-level factors. Such controls account for the possibility that greater differences between immigrant and native adolescents in poorer neighborhoods result not from a smaller degree of assimilation, but from a larger gap between the family characteristics (such as parental education) of immigrant and native families in poorer neighborhoods. Model 2 indicates that such family differences do not contribute to a larger behavior gap: After adding the additional covariates, the low-SES neighborhood coefficient has grown to 10.72, and the coefficient for moderate-SES neighborhood has grown to 3.99 and become statistically significant at the .05 level.

Before discussing the additional models in Table 3.1, it is helpful to examine Table 3.3. Table 3.3 reports results from the models assessing the relationship between neighborhood SES and parenting and social assimilation. For Hispanic immigrant adolescents, there does not seem to be a strong correlation between neighborhood SES and any of these measures. While living in a low-SES neighborhood is related to a lower likelihood of lacking afternoon and evening parental supervision, this relationship is only significant at the .1 level. Two other marginally significant relationships between neighborhood SES and parental control, specifically lacking parental rules about friends and total number of “own” decisions – work in the opposite of the hypothesized direction, with lower neighborhood SES being related to less control. Neighborhood SES is not significantly related to either inter-ethnic friendship or knowing most people in the neighborhood. Thus, there is no evidence for greater parental control, or for a lower degree of social assimilation, for Hispanics in lower-SES neighborhoods.

Although the lack of correlation between neighborhood SES and parenting behavior and social assimilation means that these variables are unlikely to explain any of the effect of being in a lower-SES neighborhood, the parenting and peer effects literatures suggest that these measures may be related to the behavior gap between immigrants and their native peers. To test whether this is the case, I include these measures in additional models for the substance use gap in Table 3.1. Model 3 adds the parental control measures. Only one of them is statistically significant. Hispanic immigrant adolescents who usually do not have a parent present either after school or at dinnertime compare much less favorably to their native peers than those with greater afternoon/early evening supervision, losing more than 7 percentage points of their advantage on the substance use scale. Model 4 adds inter-ethnic friendship and neighborhood social integration. Inter-ethnic friendship is related to a slightly lower gap in substance use, but is significant at only the .1 level. However, with its inclusion the effect of living in a moderate-SES neighborhood becomes smaller and statistically insignificant. Model 5 includes both parental control and social assimilation, primarily to test whether the combined influence of these variables explains some of the effect of low-SES neighborhood. As expected, based on the results in Table 3.4, they do not: The coefficient for low-SES neighborhood remains statistically significant and of similar size.

Table 3.2 presents the results for serious delinquency for Hispanics. Model 1, the baseline model, again has a slightly positive intercept. This non-significant intercept indicates that there is not much difference in the delinquent behavior of immigrant and native youth in high-SES neighborhoods. The positive and significant coefficients on both the moderate and low-SES neighborhood variables indicate that there is a greater difference in delinquent behavior in lower-SES neighborhoods, with Hispanic immigrant youth engaging in less serious delinquency than their native peers. Model 2 demonstrates that this relationship is robust to the addition of control variables. The addition of the parental control variables in Model 3 has little influence on the effects of living in lower-SES neighborhoods. Both coefficients remain similar in size and

statistically significant. None of the parental control variables have a significant effect on the behavior gap. Model 4 shows that greater inter-ethnic friendship is indeed related to a smaller delinquency gap. Model 5, which includes all the potential mediating variables between neighborhood SES and the delinquency gap, shows that none of these factors explain the larger behavior gap in low-or-moderate SES neighborhoods: If anything, the coefficients are slightly larger than in previous models, and they remain significant.

### *Results for Asians*

Results for substance use among Asians are reported in Table 3.4. The intercept in Model 1 is positive, allowing us to interpret any positive neighborhood SES coefficients as larger gaps in behavior between immigrants and natives. The effect of being in a moderate-SES neighborhood is positive and significant in Model 1, indicating that immigrants' and natives' substance use is less similar in moderate-SES neighborhoods than in high-SES neighborhoods. The effect of being in a low-SES neighborhood, however, is not significant. These results are robust to the addition of control variables in Model 2.

Again, before examining the results in columns 3-5 it is helpful to look at Table 3.6, which presents results for the relationship between neighborhood SES, parental control, and social assimilation among Asian immigrant youth. The analyses in Table 3.6 reveal no significant relationships between neighborhood SES and parental control. The results for social assimilation are mixed: They show that Asian immigrant youth living in moderate- and low-SES neighborhoods are significantly less likely to choose inter-ethnic friends than youth in high-SES neighborhoods, which is consistent with my hypothesis that assimilation into local native peer networks would be lower in lower-SES neighborhoods. On the other hand, after the addition of control variables, Asian immigrants in moderate-SES neighborhoods are significantly more likely than those in high-SES neighborhoods to report knowing most people in their neighborhoods.

Returning to Table 3.4, we can now evaluate whether parental control or social assimilation explain any of the relationship between neighborhood SES and the gap in substance use. The addition of the parental control measures in Model 3 does not appreciably change the coefficient of moderate-SES neighborhood, although rarely having a parent present in the afternoon and early evening hours is related to a significantly lower gap in substance use for Asian immigrant youth. After the addition of the social assimilation variables in Model 4, the effect of moderate-SES neighborhood is only significant at the .1 level, and it loses significance entirely in Model 5. These models show that knowing most people in the neighborhood is indeed significantly related to a lower substance use gap for Asian immigrant adolescents. However, given that Table 3.6 showed that being in a moderate-SES neighborhood is actually related to a *higher* likelihood of “knowing most people,” it is highly unlikely that social assimilation truly explains the relationship between neighborhood SES and the behavior gap.

Table 3.5 presents results for serious delinquency among Asian immigrants. The positive and significant coefficient of moderate-SES neighborhood in Model 1, combined with a positive intercept, indicate that the gap in delinquency between Asian immigrants and natives in their neighborhoods is larger in moderate-SES than high-SES neighborhoods. The same is not true, however, for Asians in low-SES neighborhoods. The magnitude of the moderate-SES neighborhood coefficient is somewhat reduced in Model 2, with the addition of control variables, but remains statistically significant. This effect remains virtually unchanged with addition of parental control measures and social assimilation measures in Models 3 and 4, respectively. Only one of these potentially mediating factors – knowing most people in the neighborhood – is significantly related to the behavior gap. As for substance use, knowing most people in the neighborhood is related to a smaller behavior gap in delinquency. Although the significance of the moderate-SES neighborhood effect is diminished in Model 5 (from the .05 level to the .1 level), its size remains similar. Thus, once again there is little evidence that parental control or

social assimilation serve as mediating variables between neighborhood SES and behavioral assimilation.

## **Discussion**

This paper explored the hypothesis that community context shapes patterns of assimilation among immigrant youth. In contrast to most previous work on assimilation, it conceptualized assimilation as behavioral similarity between immigrants and natives within the local context. Based on theoretical knowledge and previous empirical work, I elaborated two specific hypotheses about the relationship between assimilation and community context: That immigrant youths' behavior would be less similar to that of native peers in low-SES neighborhoods, and that greater parental control and less integration into native social networks in such communities would at least partially explain this association.

The empirical results for both Asians and Hispanics consistently support the first hypothesis. Both Asian and Hispanic immigrant youth engage in less at-risk behavior than their native counterparts in the same neighborhood, but the gap in behavior is larger in low and/or moderate-SES neighborhoods than in high-SES neighborhoods. For Asians, the gap in both substance use and serious delinquency is larger in moderate-SES neighborhoods than in high-SES neighborhoods, but the same does not hold for low-SES neighborhoods. For Hispanics, the gap in controlled substance use and delinquency is larger in both moderate- and low-SES neighborhoods than in high-SES neighborhoods.

The second hypothesis, on the other hand, is generally not supported by the empirical results: The association between neighborhood SES and behavioral assimilation does not seem to be explained by either parenting behaviors or peer effects. Parenting behaviors failed as a mediator because there were very few significant associations between neighborhood SES and parental control. Although some previous qualitative studies have suggested that at least some parents adjust their parenting strategies in response to the local neighborhood context, the lack of

association found in the present research is consistent with other quantitative studies, which have failed to find such a relationship on a larger scale. Inter-ethnic friendship failed as a mediating factor due to a similar problem: Although it was found to be related to neighborhood SES for Asians (but not Hispanics), it was not significantly related to the gap in at-risk behavior, thus disqualifying it as a potential mediating factor. The other indicator of social assimilation, knowing most people in the neighborhood, was actually related to neighborhood SES in the opposite of the expected direction – by this measure, Asian immigrant youth in moderate SES neighborhoods were more socially assimilated than those in high-SES neighborhoods.

Thus, this analysis reveals a strong association between immigrant and native youths' behavioral similarity and neighborhood SES, but is unable to convincingly explain it. This inability may be due to an important limitation of this analysis – namely, that it treats residential location as an exogenous variable. While this analysis examines whether or not parents adjust their parenting practices in response to local environments, it does not take into account another possible way that parents may seek to protect their children from neighborhood threats: Moving to another neighborhood. It is possible that immigrant parents whose children are generally doing well and who are not becoming too drawn into problematic neighborhood peer groups are more content to stay in lower-SES neighborhoods. Parents who have reason to suspect more problematic behavior among their children may make a greater effort to move to a better neighborhood, even in the absence of having greater financial means to do so. If moving, rather than adjusting parenting strategies, is a common way of that parents deal with perceived threats from the neighborhood, we would be much less likely to find an association between neighborhood SES and parenting practices. However, I would argue that such an association should still not be completely absent: Residential location is certainly not completely a matter of choice for many immigrant families, particularly low-income ones. Nonetheless, the potential endogeneity of neighborhood SES is an interesting avenue for future exploration.

The association between neighborhood SES and the behavioral similarity of immigrant and native adolescents deserves further investigation. There are several possibilities for future research into this question. First, research that incorporates longitudinal information could be potentially helpful. If immigrant adolescents in lower-SES neighborhoods do indeed experience less assimilation with neighborhood peers, the behavior of immigrants and natives should converge more rapidly over time spent in the U.S. in high-SES neighborhoods than in low-SES neighborhoods. Exploration of the relationship between behavioral assimilation and more traditional markers of assimilation, such as language usage and ethnic identity, could also shed light on the processes that may generate greater behavioral similarity in high-SES neighborhoods. Finally, a more direct measurement of parents' perceptions of neighborhood risk might more accurately predict parents' efforts to protect their children from neighborhood influences. Socioeconomic status may not be the only neighborhood characteristic that influences parents' behaviors.



## Appendix: Interpretation of Coefficients

Due to the way the dependent variable was constructed, interpreting the regression results in Tables 1, 2, 5, and 6 is not straightforward. The coefficients on the neighborhood SES variables in these models represent a difference-in-difference – that is, the average difference between immigrant youth and non-immigrant youth in low- or moderate-SES neighborhoods compared with that between immigrants and non-immigrants in high-SES neighborhoods. Because substance use and delinquency are both negative outcomes (that is, a higher value means a less favorable outcome), positive coefficients on the neighborhood SES variables indicate that immigrant youth in lower-SES neighborhoods compare more favorably with their neighborhood native peers than immigrant youth in high-SES neighborhoods. For example, say the coefficient on low-SES neighborhood is 2. If immigrant youth in high-SES neighborhoods do better than natives on the outcome in question, their average value of  $B_{0j}^0 - Y_{ij}^1$  will be positive, indicating less risky behavior than native peers. If  $E[B_{0j}^0 - Y_{ij}^1] = 4$  in high-SES neighborhoods, then the coefficient of 2 on low-SES neighborhood would mean that  $E[B_{0j}^0 - Y_{ij}^1] = 6$  in low-SES neighborhoods. That is, the behavior gap is even larger in low-SES than high-SES neighborhoods, with immigrant youth doing better, on average, in both cases.

However, a positive coefficient could also mean that immigrant youth's behavior is *more* similar to that of native peers in low-SES neighborhoods. For example, this would occur if immigrants' level of at-risk behavior is higher than that of natives in high-SES neighborhoods ( $E[B_{0j}^0 - Y_{ij}^1] < 0$  in high-SES neighborhoods). Suppose that in high-SES neighborhoods,

$E[B_{0j}^0 - Y_{ij}^1] = -2$ . Then a coefficient of 2 on the low-SES neighborhood indicator would mean that the difference between immigrants and natives is 0 in low-SES neighborhoods, which clearly indicates that there is more behavioral similarity in low-SES neighborhoods. On the other hand, a larger positive coefficient such as 6 would mean that there might indeed be less behavioral similarity in low-SES neighborhoods – in this case,  $E[B_{0j}^0 - Y_{ij}^1]$  would equal 4 in low-SES neighborhoods, which does have a larger absolute value than -2 in high-SES neighborhoods. Therefore, the sign of the coefficient alone cannot inform us about behavioral similarity.

How can we determine behavioral similarity from these models? The answer is that we need the intercept to be able to do so. If the sign on the intercept is the same as the sign on the neighborhood SES coefficient, then we can interpret the coefficient as indicating less behavioral similarity in lower-SES neighborhoods than in high-SES neighborhoods. For example, if the constant term is positive, this indicates that immigrants have lower levels of at-risk behavior, relative to natives, in high-SES neighborhoods. If the coefficient on low-SES neighborhood is also positive, this means that there is an even greater advantage for immigrants relative to natives in low-SES neighborhoods – or in other words, that there is even less behavioral similarity. It is easy to show that a negative constant combined with a negative coefficient also indicate less similarity in low-SES neighborhoods. If the constant and the coefficient differ in sign, they will have to be interpreted on a case-by-case basis.

**Table 3.1: The Effect of Neighborhood SES on Immigrant Adolescents' Substance Use Relative to Native Peers - Hispanics**

	Model 1:		Model 2:		Model 3:		Model 4:		Model 5:	
	coef	(se)	coef	(se)	coef	(se)	coef	(se)	coef	(se)
<b>Moderate SES Neighborhood</b>	<b>2.12</b>	<b>(1.72)</b>	<b>3.99</b>	<b>(1.89) **</b>	<b>4.36</b>	<b>(1.90) **</b>	<b>3.20</b>	<b>(2.18)</b>	<b>4.15</b>	<b>(2.19) *</b>
<b>Low SES Neighborhood</b>	<b>5.25</b>	<b>(1.73) ***</b>	<b>10.72</b>	<b>(2.14) ***</b>	<b>10.33</b>	<b>(2.15) ***</b>	<b>10.20</b>	<b>(2.48) ***</b>	<b>10.48</b>	<b>(2.51) ***</b>
<b>Intercept</b>	<b>2.25</b>	<b>(2.58)</b>								
Age 14	-6.65	(2.88) **	-11.37	(2.99) ***	-10.21	(2.99) ***	-11.40	(3.43) ***	-10.20	(3.43) ***
Age 15	0.06	(2.82)	0.13	(2.97)	1.40	(2.97)	-0.25	(3.39)	0.42	(3.40)
Age 16	-1.41	(2.91)	-3.07	(3.00)	-2.11	(3.04)	-1.21	(3.49)	-0.15	(3.56)
Age 17	2.96	(2.93)	0.93	(2.99)	3.23	(3.05)	2.12	(3.49)	4.76	(3.57)
Age 18	6.43	(2.91) **	3.02	(3.05)	5.13	(3.09)	1.81	(3.59)	3.67	(3.64)
Age 19	6.01	(3.22) *	4.03	(3.37)	7.01	(3.44) **	6.07	(3.81)	8.54	(3.88) **
Female	-3.78	(1.39) ***	-3.12	(1.43) **	-3.69	1.46 **	-2.50	(1.65)	-3.00	(1.73) *
Single-parent family			-6.22	(2.19) ***	-5.50	(2.20) **	-5.25	(2.49) **	-5.12	(2.49) **
Step-parent family			-2.47	(2.07)	-2.02	(2.06)	-0.01	(2.35)	0.24	(2.36)
Family income			-0.22	(0.53)	0.05	(0.54)	-0.59	(0.66)	-0.26	(0.67)
Parent interview missing			-0.04	(1.82)	0.65	(1.82)	0.43	(2.17)	1.55	(2.19)
Average parental education			-0.08	(0.31)	0.08	(0.32)	-0.06	(0.36)	0.14	(0.37)
First generation, LOS>5 years			-3.73	(2.91)	-3.78	(2.91)	-4.14	(3.48)	-3.65	(3.50)
Second generation			-7.04	(2.75) **	-6.37	(2.75) **	-7.44	(3.27) **	-6.40	(3.27) *
Neighborhood % co-ethnics			-11.43	(5.52) **	-8.25	(5.62)	-14.17	(6.57) **	-11.62	(6.72) *
Neighborhood % black			-8.21	(4.82) *	-7.11	(4.84)	-4.90	(6.10)	-3.31	(6.11)
Cuban			7.40	(4.05) *	6.41	(4.03)	7.90	(5.45)	8.24	(5.46)
Puerto Rican			-1.54	(2.47)	-0.96	(2.46)	0.77	(2.87)	1.84	(2.89)
Central/South American			3.94	(2.14) *	4.30	(2.14) **	5.79	(2.66) **	5.94	(2.66) **
Other Hispanic			-2.22	(2.64)	-2.19	(2.63)	0.12	(3.13)	0.88	(3.14)
No parent present afternoon/evening					<b>-7.47</b>	<b>(2.87) **</b>			<b>-2.01</b>	<b>(3.32)</b>
No rules about friends					<b>-1.33</b>	<b>(2.08)</b>			<b>-2.99</b>	<b>(2.45)</b>
No parental rules or only curfew					<b>-0.35</b>	<b>(2.32)</b>			<b>-2.17</b>	<b>(2.73)</b>
Total number of own decisions					<b>-0.98</b>	<b>(0.71)</b>			<b>-0.53</b>	<b>(0.85)</b>
Inter-ethnic friendship							<b>-0.89</b>	<b>(0.54) *</b>	<b>-0.90</b>	<b>(0.54) *</b>
Knows most people in neighborhood							<b>1.48</b>	<b>(1.78)</b>	<b>1.25</b>	<b>(1.80)</b>

Statistical Significance:

\* p< .10

\*\* p< .05

\*\*\* p<.01

**Table 3.2: The Effect of Neighborhood SES on Immigrant Adolescents' Serious Delinquency Relative to Native Peers - Hispanics**

	Model 1:		Model 2:		Model 3:		Model 4:		Model 5:	
	coef	(se)	coef	(se)	coef	(se)	coef	(se)	coef	(se)
<b>Moderate SES Neighborhood</b>	<b>0.57</b>	<b>(0.19) ***</b>	<b>0.55</b>	<b>(0.20) ***</b>	<b>0.60</b>	<b>(0.20) ***</b>	<b>0.63</b>	<b>(0.21) ***</b>	<b>0.73</b>	<b>(0.21) ***</b>
<b>Low SES Neighborhood</b>	<b>0.41</b>	<b>(0.19) **</b>	<b>0.47</b>	<b>(0.22) **</b>	<b>0.49</b>	<b>(0.22) **</b>	<b>0.38</b>	<b>(0.24)</b>	<b>0.47</b>	<b>(0.24) **</b>
<b>Intercept</b>	<b>0.03</b>	<b>(0.28)</b>								
Age 14	-0.22	(0.31)	-0.92	(0.31) ***	-0.87	(0.31) ***	-0.84	(0.34) **	-0.75	(0.33) **
Age 15	-0.38	(0.31)	-0.72	(0.31) **	-0.75	(0.31) **	-0.52	(0.33)	-0.60	(0.33) *
Age 16	-0.60	(0.32) *	-1.11	(0.31) ***	-1.18	(0.32) ***	-1.08	(0.34) ***	-1.17	(0.34) ***
Age 17	0.06	(0.32)	-0.41	(0.31)	-0.31	(0.32)	-0.13	(0.34)	0.03	(0.34)
Age 18	0.13	(0.31)	-0.37	(0.32)	-0.29	(0.32)	-0.27	(0.35)	-0.20	(0.35)
Age 19	0.41	(0.35)	-0.11	(0.35)	-0.02	(0.36)	0.07	(0.38)	0.21	(0.37)
Female	0.25	(0.15) *	0.39	(0.15) **	0.39	0.15 **	0.41	(0.16) **	0.36	(0.17) **
Single-parent family			-0.31	(0.23)	-0.31	(0.23)	-0.23	(0.25)	-0.22	(0.24)
Step-parent family			-0.21	(0.22)	-0.16	(0.21)	-0.24	(0.23)	-0.22	(0.23)
Family income			0.07	(0.06)	0.07	(0.06)	0.07	(0.06)	0.05	(0.06)
Parent interview missing			0.47	(0.19) **	0.54	(0.19) ***	0.76	(0.21) ***	0.87	(0.21) ***
Average parental education			0.00	(0.03)	0.00	(0.03)	0.01	(0.04)	0.01	(0.04)
First generation, LOS>5 years			0.72	(0.30) **	0.74	(0.30) **	0.74	(0.34) **	0.76	(0.34) **
Second generation			0.22	(0.29)	0.24	(0.29)	0.24	(0.32)	0.26	(0.32)
Neighborhood % co-ethnics			0.78	(0.57)	0.55	(0.58)	0.78	(0.64)	0.50	(0.64)
Neighborhood % black			0.17	(0.50)	0.14	(0.50)	1.21	(0.60) **	1.18	(0.59) **
Cuban			0.14	(0.42)	0.14	(0.42)	-0.08	(0.54)	0.12	(0.53)
Puerto Rican			0.05	(0.26)	0.08	(0.26)	0.21	(0.28)	0.34	(0.28)
Central/South American			0.45	(0.22) **	0.40	(0.22) *	0.73	(0.26) ***	0.73	(0.25) ***
Other Hispanic			-0.05	(0.28)	0.01	(0.28)	0.13	(0.31)	0.25	(0.30)
No parent present afternoon/evening					<b>0.54</b>	<b>(0.30) *</b>			<b>0.80</b>	<b>(0.32) **</b>
No rules about friends					<b>0.31</b>	<b>(0.22)</b>			<b>0.43</b>	<b>(0.23) *</b>
No parental rules or only curfew					<b>-0.09</b>	<b>(0.24)</b>			<b>-0.04</b>	<b>(0.26)</b>
Total number of own decisions					<b>-0.11</b>	<b>(0.07)</b>			<b>-0.20</b>	<b>(0.08) **</b>
Inter-ethnic friendship							<b>-0.13</b>	<b>(0.05) **</b>	<b>-0.14</b>	<b>(0.05) ***</b>
Knows most people in neighborhood							<b>0.17</b>	<b>(0.17)</b>	<b>0.11</b>	<b>(0.17)</b>

Statistical Significance:

\* p< .10

\*\* p< .05

\*\*\* p<.01

**Table 3.3: The Effect of Neighborhood SES on Parental Control and Social Assimilation - Hispanics**

	No parent present after school OR dinnertime		No parental rules about friends		No parental rules or curfew only		Total number of own decisions		Propensity for inter-ethnic friendship		Knows most people in the neighborhood	
	coef	(se)	coef	(se)	coef	(se)	coef	(se)	coef	(se)	coef	(se)
<u>Model 1 - No Controls:</u>												
<b>Moderate SES Neighborhood</b>	<b>-0.43</b>	<b>(0.65)</b>	<b>0.51</b>	<b>(0.30) *</b>	<b>0.62</b>	<b>(0.40)</b>	<b>0.38</b>	<b>(0.23) *</b>	<b>0.10</b>	<b>(0.42)</b>	<b>-0.40</b>	<b>(0.31)</b>
<b>Low SES Neighborhood</b>	<b>-1.17</b>	<b>(0.61) *</b>	<b>-0.14</b>	<b>(0.39)</b>	<b>0.27</b>	<b>(0.31)</b>	<b>0.13</b>	<b>(0.29)</b>	<b>-0.43</b>	<b>(0.40)</b>	<b>0.07</b>	<b>(0.34)</b>
<u>Model 2 - With Controls:</u>												
<b>Moderate SES Neighborhood</b>	<b>-0.70</b>	<b>(0.76)</b>	<b>0.65</b>	<b>(0.37) *</b>	<b>0.57</b>	<b>(0.34) *</b>	<b>0.35</b>	<b>(0.21) *</b>	<b>0.73</b>	<b>(0.40) *</b>	<b>-0.42</b>	<b>(0.44)</b>
<b>Low SES Neighborhood</b>	<b>-1.70</b>	<b>(0.66) **</b>	<b>0.23</b>	<b>(0.40)</b>	<b>0.40</b>	<b>(0.47)</b>	<b>0.42</b>	<b>(0.27)</b>	<b>0.61</b>	<b>(0.38)</b>	<b>0.11</b>	<b>(0.43)</b>
Female	-0.09	(0.66)	-0.77	(0.31) **	-0.11	(0.30)	-0.56	(0.19) ***	0.11	(0.25)	0.17	(0.37)
Age	0.34	(0.22)	0.15	(0.11)	0.30	(0.12) **	0.23	(0.06) ***	-0.04	(0.07)	-0.11	(0.11)
Single-parent family	1.18	(0.62) *	-0.03	(0.49)	0.48	(0.37)	0.19	(0.29)	-0.36	(0.29)	-0.42	(0.40)
Step-parent family	0.07	(0.93)	0.31	(0.49)	0.41	(0.43)	0.07	(0.24)	-0.30	(0.32)	-0.45	(0.49)
Family income	0.77	(0.70)	0.24	(0.12) *	0.10	(0.09)	0.10	(0.09)	-0.09	(0.05) *	-0.12	(0.09)
Parent interview missing	0.73	(0.89)	0.17	(0.46)	0.60	(0.39)	0.32	(0.24)	0.61	(0.39)	-0.25	(0.51)
Average parental education	-0.03	(0.11)	0.32	(0.09) ***	0.09	(0.08)	0.06	(0.05)	0.10	(0.05) **	0.04	(0.06)
First generation, LOS>5 years	-1.30	(1.40)	0.68	(0.53)	-0.12	(0.48)	0.16	(0.38)	0.41	(0.55)	1.23	(0.48) **
Second generation	0.03	(1.37)	0.80	(0.54)	0.73	(0.39) *	0.45	(0.32)	0.16	(0.43)	0.91	(0.44) **
Neighborhood % co-ethnics	4.91	(1.07) ***	3.26	(1.19) ***	2.02	(1.13) *	0.59	(0.65)	-1.97	(0.61) ***	-0.03	(1.31)
Neighborhood % black	0.37	(2.23)	2.34	(0.95) **	-1.20	(0.96)	0.17	(0.44)	-0.46	(0.58)	-2.11	(0.94) **
Cuban	-1.15	(1.23)	-1.11	(0.84)	-0.66	(0.52)	-0.51	(0.65)	1.34	(0.32) ***	2.01	(0.83) **
Puerto Rican	-0.68	(0.85)	1.27	(0.67) *	0.72	(0.57)	0.44	(0.28)	1.13	(0.28) ***	0.16	(0.50)
Central/South American	1.63	(0.69) **	-0.30	(0.39)	-0.30	(0.44)	-0.21	(0.27)	1.43	(0.22) ***	-0.33	(0.38)
Other Hispanic	-1.39	(0.85)	0.26	(0.77)	0.13	(0.50)	0.22	(0.28)	0.43	(0.49)	0.93	(0.75)

Statistical Significance:

\* p< .10

\*\* p< .05

\*\*\* p<.01

**Table 3.4: The Effect of Neighborhood SES on Immigrant Adolescents' Substance Use Relative to Native Peers - Asians**

	Model 1:		Model 2:		Model 3:		Model 4:		Model 5:	
	coef	(se)	coef	(se)	coef	(se)	coef	(se)	coef	(se)
<b>Moderate SES Neighborhood</b>	<b>3.19</b>	<b>(1.42) **</b>	<b>3.73</b>	<b>(1.57) **</b>	<b>3.46</b>	<b>(1.58) **</b>	<b>3.28</b>	<b>(1.71) *</b>	<b>2.61</b>	<b>(1.71)</b>
<b>Low SES Neighborhood</b>	<b>-0.01</b>	<b>(1.61)</b>	<b>-0.68</b>	<b>(1.85)</b>	<b>-0.93</b>	<b>(1.86)</b>	<b>-0.61</b>	<b>(2.04)</b>	<b>-1.14</b>	<b>(2.04)</b>
<b>Intercept</b>	<b>3.81</b>	<b>(2.33)</b>								
Age 14	0.06	(2.76)	-3.30	(2.95)	-3.75	(2.95)	-3.38	(3.14)	-4.90	(3.15)
Age 15	3.76	(2.73)	3.38	(2.90)	2.82	(2.91)	5.43	(3.02) *	3.95	(3.02)
Age 16	2.98	(2.57)	1.82	(2.84)	1.38	(2.88)	4.25	(3.07)	2.35	(3.10)
Age 17	1.19	(2.53)	-1.66	(2.81)	-1.79	(2.82)	4.40	(3.00)	3.90	(2.98)
Age 18	0.51	(2.42)	-2.07	(2.64)	-2.37	(2.67)	-0.68	(2.86)	-2.31	(2.88)
Age 19	0.97	(3.36)	-2.35	(3.53)	-3.19	(3.56)	1.66	(3.89)	0.10	(3.91)
Female	2.25	(1.21) *	2.33	(1.27) *	2.16	1.28	2.18	(1.38)	2.30	(1.38) *
Single-parent family			-0.23	(1.98)	1.12	(2.05)	1.97	(2.21)	4.17	(2.28) *
Step-parent family			2.22	(2.32)	1.76	(2.36)	2.65	(2.66)	2.86	(2.68)
Family income			-3.46	(1.35) **	-3.23	(1.37) **	-3.63	(1.40) **	-3.36	(1.42) **
Parent interview missing			1.36	(1.47)	1.58	(1.48)	0.16	(1.58)	0.20	(1.58)
Average parental education			-0.05	(0.26)	-0.11	(0.26)	0.07	(0.29)	-0.09	(0.29)
First generation, LOS>5 years			-2.31	(1.95)	-2.44	(1.95)	1.51	(2.11)	1.61	(2.09)
Second generation			-3.82	(2.11) *	-4.16	(2.12) *	2.16	(2.33)	1.74	(2.32)
Neighborhood % co-ethnics			-5.47	(3.92)	-7.11	(3.97) *	-1.06	(4.33)	-3.34	(4.40)
Neighborhood % black			-8.25	(4.99)	-8.89	(5.03) *	-11.21	(5.88) *	-12.47	(5.87) **
Filipino			-0.50	(2.98)	0.31	(3.00)	-4.30	(3.17)	-3.59	(3.16)
Japanese			7.76	(3.68) **	8.32	(3.68) **	1.51	(3.87)	1.96	(3.85)
Indian			-0.10	(3.72)	-0.62	(3.73)	-4.35	(4.12)	-5.46	(4.11)
Korean			-0.31	(3.03)	0.38	(3.04)	-3.71	(3.26)	-3.65	(3.23)
Vietnamese			3.33	(3.48)	3.03	(3.52)	-0.53	(3.88)	-1.23	(3.90)
Other Asian			-2.57	(2.94)	-2.44	(2.95)	-4.39	(3.20)	-4.66	(3.19)
No parent present afternoon/evening					<b>-5.51</b>	<b>(2.17) **</b>			<b>-7.48</b>	<b>(2.45) ***</b>
No rules about friends					<b>1.20</b>	<b>(1.96)</b>			<b>1.32</b>	<b>(2.17)</b>
No parental rules or only curfew					<b>0.49</b>	<b>(1.82)</b>			<b>2.89</b>	<b>(1.92)</b>
Total number of own decisions					<b>-0.26</b>	<b>(0.61)</b>			<b>-0.17</b>	<b>(0.67)</b>
Inter-ethnic friendship							<b>-0.44</b>	<b>(0.39)</b>	<b>-0.52</b>	<b>(0.39)</b>
Knows most people in neighborhood							<b>-4.75</b>	<b>(1.48) ***</b>	<b>-4.12</b>	<b>(1.47) ***</b>

Statistical Significance:

\* p< .10

\*\* p< .05

\*\*\* p<.01

**Table 3.5: The Effect of Neighborhood SES on Immigrant Adolescents' Serious Delinquency Relative to Native Peers - Asians**

	Model 1:		Model 2:		Model 3:		Model 4:		Model 5:	
	coef	(se)	coef	(se)	coef	(se)	coef	(se)	coef	(se)
<b>Moderate SES Neighborhood</b>	<b>0.77</b>	<b>(0.17) ***</b>	<b>0.50</b>	<b>0.18 ***</b>	<b>0.45</b>	<b>(0.18) **</b>	<b>0.45</b>	<b>(0.21) **</b>	<b>0.38</b>	<b>(0.21) *</b>
<b>Low SES Neighborhood</b>	<b>-0.10</b>	<b>(0.19)</b>	<b>-0.16</b>	<b>(0.21)</b>	<b>-0.21</b>	<b>(0.21)</b>	<b>0.13</b>	<b>(0.25)</b>	<b>0.05</b>	<b>(0.25)</b>
<b>Intercept</b>	<b>0.06</b>	<b>(0.28)</b>								
Age 14	-0.52	(0.33)	-0.49	(0.34)	-0.52	(0.34)	-0.82	(0.39) **	-0.93	(0.40) **
Age 15	-0.18	(0.32)	-0.25	(0.32)	-0.31	(0.33)	-0.21	(0.36)	-0.34	(0.37)
Age 16	0.10	(0.31)	0.04	(0.32)	-0.01	(0.33)	0.02	(0.37)	-0.13	(0.38)
Age 17	-0.06	(0.30)	-0.20	(0.32)	-0.22	(0.32)	-0.27	(0.37)	-0.33	(0.37)
Age 18	-0.21	(0.29)	-0.31	(0.30)	-0.36	(0.30)	-0.47	(0.35)	-0.62	(0.36) *
Age 19	-0.21	(0.37)	-0.29	(0.38)	-0.32	(0.38)	0.02	(0.44)	-0.07	(0.45)
Female	0.80	(0.14) ***	0.76	(0.14) ***	0.74	0.14 ***	0.63	(0.17) ***	0.62	(0.17) ***
Single-parent family			-0.09	(0.23)	0.05	(0.23)	-0.19	(0.27)	0.00	(0.28)
Step-parent family			0.62	(0.26) **	0.65	(0.27) **	0.69	(0.32) **	0.76	(0.33) **
Family income			-0.26	(0.15) *	-0.26	(0.15) *	-0.33	(0.17) **	-0.32	(0.17) *
Parent interview missing			0.34	(0.16) **	0.34	(0.17) **	0.33	(0.19) *	0.33	(0.19) *
Average parental education			0.03	(0.03)	0.03	(0.03)	0.05	(0.04)	0.04	(0.04)
First generation, LOS>5 years			0.48	(0.22) **	0.51	(0.22) **	0.66	(0.25) **	0.68	(0.25) ***
Second generation			0.54	(0.23) **	0.55	(0.24) **	0.76	(0.28) ***	0.74	(0.28) ***
Neighborhood % co-ethnics			-0.65	(0.44)	-0.77	(0.45) *	-0.68	(0.53)	-0.85	(0.54)
Neighborhood % black			1.61	(0.56) ***	1.48	(0.56) **	2.09	(0.70) ***	1.97	(0.71) ***
Filipino			0.28	(0.34)	0.33	(0.34)	0.61	(0.39)	0.64	(0.39)
Japanese			-0.60	(0.42)	-0.56	(0.42)	-0.68	(0.47)	-0.65	(0.48)
Indian			-1.63	(0.42) ***	-1.67	(0.43) ***	-1.94	(0.51) ***	-2.00	(0.51) ***
Korean			-0.21	(0.35)	-0.15	(0.35)	0.07	(0.40)	0.07	(0.40)
Vietnamese			0.49	(0.39)	0.41	(0.40)	0.50	(0.47)	0.37	(0.48)
Other Asian			-0.62	(0.33) *	-0.64	(0.33) *	-0.64	(0.38) *	-0.69	(0.38) *
No parent present afternoon/evening					<b>-0.41</b>	<b>(0.25)</b>			<b>-0.62</b>	<b>(0.30) **</b>
No rules about friends					<b>0.00</b>	<b>(0.22)</b>			<b>0.00</b>	<b>(0.26)</b>
No parental rules or only curfew					<b>0.31</b>	<b>(0.21)</b>			<b>0.37</b>	<b>(0.24)</b>
Total number of own decisions					<b>-0.09</b>	<b>(0.07)</b>			<b>-0.06</b>	<b>(0.08)</b>
Inter-ethnic friendship							<b>0.04</b>	<b>(0.05)</b>	<b>0.03</b>	<b>(0.05)</b>
Knows most people in neighborhood							<b>-0.46</b>	<b>(0.18) **</b>	<b>-0.43</b>	<b>(0.18) **</b>

Statistical Significance:

\* p< .10

\*\* p< .05

\*\*\* p<.01

**Table 3.6: The Effect of Neighborhood SES on Parental Control and Social Assimilation - Asians**

	No parent present after school OR dinnertime		No parental rules about friends		No parental rules or curfew only		Total number of own decisions		Propensity for inter-ethnic friendship		Knows most people in the neighborhood	
	coef	(se)	coef	(se)	coef	(se)	coef	(se)	coef	(se)	coef	(se)
<u>Model 1 - No Controls:</u>												
Moderate SES Neighborhood	<b>-0.34</b>	<b>(0.54)</b>	<b>-0.21</b>	<b>(0.41)</b>	<b>0.20</b>	<b>(0.36)</b>	<b>-0.17</b>	<b>(0.24)</b>	<b>-1.35</b>	<b>(0.32)</b> ***	<b>0.17</b>	<b>(0.24)</b>
Low SES Neighborhood	<b>-1.39</b>	<b>(1.00)</b>	<b>-0.80</b>	<b>(0.42)</b> *	<b>-0.27</b>	<b>(0.45)</b>	<b>-0.58</b>	<b>(0.40)</b>	<b>-0.63</b>	<b>(0.44)</b>	<b>0.35</b>	<b>(0.31)</b>
<u>Model 2 - With Controls:</u>												
Moderate SES Neighborhood	<b>-0.67</b>	<b>0.56</b>	<b>0.15</b>	<b>0.40</b>	<b>0.44</b>	<b>(0.31)</b>	<b>-0.11</b>	<b>(0.22)</b>	<b>-0.94</b>	<b>(0.27)</b> ***	<b>0.61</b>	<b>(0.24)</b> **
Low SES Neighborhood	<b>-0.96</b>	<b>(0.98)</b>	<b>-0.07</b>	<b>(0.56)</b>	<b>0.16</b>	<b>(0.62)</b>	<b>-0.30</b>	<b>(0.46)</b>	<b>-0.98</b>	<b>(0.31)</b> ***	<b>0.64</b>	<b>(0.39)</b> ***
Female	0.05	(0.48)	0.30	(0.40)	0.06	(0.20)	-0.15	(0.20)	0.12	(0.24)	-0.67	<b>(0.22)</b> ***
Age	-0.09	(0.18)	0.01	(0.12)	0.12	(0.18)	0.09	(0.09)	-0.03	(0.10)	-0.10	<b>(0.06)</b> *
Single-parent family	2.03	(0.65) ***	0.58	(0.52)	0.11	(0.73)	0.61	(0.41)	0.29	(0.86)	-0.23	<b>(0.74)</b>
Step-parent family	-0.85	(0.47) *	1.15	(0.64) *	-0.26	(0.39)	0.36	(0.21) *	-0.33	(0.35)	-0.30	<b>(0.53)</b>
Family income	0.80	(0.37) **	0.31	(0.31)	0.19	(0.43)	-0.14	(0.29)	0.41	(0.29)	0.07	<b>(0.40)</b>
Parent interview missing	0.45	(0.51)	-0.24	(0.68)	0.41	(0.31)	0.12	(0.31)	0.00	(0.20)	-0.18	<b>(0.29)</b>
Average parental education	-0.12	(0.07) *	0.03	(0.06)	0.07	(0.07)	0.05	(0.04)	-0.07	(0.10)	0.03	<b>(0.06)</b>
First generation, LOS>5 years	-0.15	(0.70)	0.62	(0.76)	0.39	(0.27)	0.75	(0.39) *	0.69	(0.21) ***	0.06	<b>(0.31)</b>
Second generation	-0.60	(0.56)	0.32	(0.48)	0.38	(0.32)	0.60	(0.36)	1.26	(0.47) ***	1.06	<b>(0.35)</b> ***
Neighborhood % co-ethnics	-4.10	(1.54) ***	0.48	(1.24)	-0.10	(0.85)	-0.19	(0.54)	0.18	(1.36)	1.14	<b>(0.86)</b>
Neighborhood % black	-0.35	(1.03)	-0.50	(1.54)	1.81	(1.41)	0.38	(0.85)	0.16	(0.90)	1.84	<b>(1.91)</b>
Filipino	1.65	(0.52) ***	-1.60	(0.89) *	-0.50	(0.55)	-0.41	(0.35)	-0.61	(0.89)	-0.64	<b>(0.53)</b>
Japanese	0.96	(0.42) **	-0.41	(0.73)	-0.20	(0.69)	-0.04	(0.42)	0.23	(0.35)	-0.36	<b>(0.63)</b>
Indian	--	--	2.59	(0.85) ***	-0.43	(0.95)	-0.42	(0.84)	0.40	(0.36)	0.87	<b>(0.74)</b>
Korean	1.20	(0.57) **	-0.67	(0.53)	-0.54	(0.49)	-0.39	(0.39)	-2.31	(1.01) **	-0.09	<b>(0.60)</b>
Vietnamese	-3.83	(1.34) ***	-2.18	(0.82) ***	-0.85	(0.66)	-1.12	(0.48) **	0.09	(0.70)	-1.48	<b>(0.92)</b>
Other Asian	0.00	(0.66)	-0.88	(0.81)	-0.43	(0.57)	-0.63	(0.41)	0.25	(0.63)	0.75	<b>(0.53)</b>

Statistical Significance:

\* p< .10

\*\* p< .05

\*\*\* p<.01

**Appendix Table 3.A: Variable Descriptions and Means**

Variable	Variable Description	Mean for Asian Immigrants	Mean for Hispanic Immigrants	Mean for non- immigrants
<u>Independent Variables</u>				
Community poverty rate	Percentage of persons in Census tract below poverty line	0.09	0.17	0.13
No parent present afternoon/evening	Parent present after school "never" or "almost never," AND parent present during dinner < 3 times/week	0.09	0.06	0.06
No rules about friends	Binary - makes own decisions about friends	0.79	0.73	0.87
No parental rules or only curfew	Binary - Makes all own decisions or all except curfew	0.41	0.32	0.43
Total number of own decisions	Total number of own decisions allowed to make (of 7)	5.14	4.59	5.16
Inter-ethnic friendship	Propensity for choosing inter-ethnic friends, net of school ethnic composition	-1.71	-1.25	-0.42
Knows most people in neighborhood		0.54	0.69	0.77
<u>Outcomes (unadjusted)</u>				
Substance Use	Age-adjusted use of alcohol, tobacco, and marijuana	43.3	47.5	50.8
Serious Delinquency	Number of violent or felonious criminal behaviors (of 11)	0.89	1.21	1.00
<u>Control Variables</u>				
Age	Respondent's age at Wave 1 interview	16.37	16.01	15.80
Gender	Binary: 1=Female	0.51	0.50	0.51
Parent interview missing	No parent interview (hence no family income information)	0.33	0.23	0.11
Family Income	Log of family income, imputed for those with missing parent interview	10.50	9.83	10.42
Average parental education	Average of parental education in 2-parent family, parent's education in single-parent family	13.73	10.93	13.32
Single parent family	Binary: 1=single parent family, 0 otherwise	0.16	0.19	0.29
Stepparent family	Binary: 1=stepparent family, 0 otherwise	0.09	0.15	0.14
Length of stay for foreign-born	Binary: 1=Foreign-born, > 5 years in U.S.	0.41	0.25	N/A
Immigrant generation	Binary: 1=Born in U.S.	0.42	0.65	N/A
Neighborhood % co-ethnics	% Hispanics (Asians) in neighborhood, for Hispanic (Asian) respondents	0.23	0.23	0.84
Neighborhood % foreign-born	% Immigrants in neighborhood	0.24	0.17	0.03



**Appendix Table 3.B: Outcomes by Race and Neighborhood SES**

Variable	Hispanic Immigrants			Asian Immigrants			Non-Immigrants		
	High SES	Moderate SES	Low SES	High SES	Moderate SES	Low SES	High SES	Moderate SES	Low SES
<u>Supervision/social assimilation indicators</u>									
No parent present afternoon/evening	0.09	0.06	0.03	0.13	0.09	0.03	0.07	0.06	0.05
No rules about friends	0.70	0.80	0.67	0.84	0.81	0.71	0.92	0.88	0.81
No parental rules or only curfew	0.25	0.38	0.30	0.40	0.45	0.34	0.45	0.44	0.39
Total number of own decisions	4.40	4.78	4.53	5.37	5.20	4.79	5.26	5.21	4.91
Inter-ethnic friendship	-1.16	-1.05	-1.59	-0.96	-2.31	-1.60	-0.49	-0.39	-0.39
Knows most people in neighborhood	0.71	0.62	0.73	0.50	0.54	0.59	0.70	0.78	0.85
<u>Outcomes</u>									
<i>Unadjusted</i>									
Substance Use	49.42	46.20	46.30	45.74	41.03	43.66	50.98	51.06	50.10
Serious Delinquency	1.34	0.99	1.32	0.92	0.64	1.28	0.82	1.00	1.23
<i>Relative to non-immigrants</i>									
Substance Use	0.83	4.18	5.40	6.56	9.58	6.07	-0.35	0.41	-0.32
Serious Delinquency	0.01	0.63	0.41	0.38	1.07	0.16	0.33	0.35	0.35

**Appendix Table 3.C: Neighborhood SES Differences in At-Risk Behavior Among Non-Immigrant Youth**

	Substance Use		Serious Delinquency	
	coef	(se)	coef	(se)
<u>Without Controls:</u>				
<b>Moderate SES Neighborhood</b>	0.08	(0.92)	0.17	(0.06) ***
<b>Low SES Neighborhood</b>	-0.88	(1.46)	0.41	(0.10) ***
<u>With Controls:</u>				
<b>Moderate SES Neighborhood</b>	-0.28	(0.84)	0.05	(0.06)
<b>Low SES Neighborhood</b>	0.09	(1.18)	0.10	(0.09)
Age	0.20	(0.18)	-0.02	(0.01)
Female	-0.03	(0.60)	-0.74	(0.05) ***
Single-parent family	6.73	(0.79) ***	0.27	(0.07) ***
Step-parent family	3.57	(0.71) ***	0.20	(0.07) ***
Family income	0.35	(0.25)	-0.03	(0.03)
Parent interview missing	1.57	(1.01)	0.03	(0.08)
Average parental education	-0.19	(0.16)	-0.07	(0.01) ***
Hispanic	0.58	(2.04)	0.46	(0.19) **
Black	-8.70	(1.06) ***	0.23	(0.10) **
Native American	0.64	(2.92)	0.57	(0.39)
Asian	-3.70	(0.86) ***	-0.08	(0.06)
Other race	0.12	(5.73)	0.50	(0.75)

**Appendix Table 3.D: Neighborhood Characteristics by Race and Neighborhood SES**

Variable	Hispanic Immigrants (all neighborhoods)						Asian Immigrants (sample)			Asian Immigrants (all neighborhoods)		
	Hispanic Immigrants (sample)			Moderate			Moderate			Moderate		
	High SES	SES	Low SES	High SES	SES	Low SES	High SES	SES	Low SES	High SES	SES	Low SES
<b>Neighborhood Characteristics:</b>												
Proportion non-Hispanic White	0.75	0.54	0.43	0.71	0.44	0.20	0.68	0.45	0.42	0.68	0.50	0.50
Proportion non-Hispanic Black	0.06	0.06	0.14	0.06	0.11	0.12	0.05	0.10	0.08	0.06	0.09	0.15
Proportion Asian	0.08	0.15	0.06	0.09	0.07	0.03	0.19	0.26	0.25	0.19	0.24	0.13
Proportion Hispanic	0.10	0.25	0.31	0.13	0.39	0.62	0.09	0.20	0.25	0.08	0.18	0.21
Proportion Foreign-Born	0.13	0.22	0.17	0.15	0.27	0.39	0.17	0.28	0.26	0.18	0.26	0.20
Poverty rate	0.07	0.12	0.29	0.07	0.17	0.37	0.05	0.08	0.17	0.04	0.10	0.21
Median Household Income	39,017	33,814	18,668	41,335	26,812	15,653	41,150	39,698	29,677	45,958	37,014	24,174
Male Unemployment Rate	0.04	0.08	0.13	0.04	0.08	0.14	0.04	0.07	0.08	0.03	0.06	0.10
Female Unemployment Rate	0.05	0.07	0.11	0.05	0.10	0.14	0.05	0.07	0.07	0.04	0.07	0.09
Proportion Men in the Labor Force	0.81	0.79	0.64	0.82	0.75	0.68	0.81	0.77	0.73	0.82	0.77	0.72
Proportion Men working Full-Time, Full-Year	0.63	0.55	0.38	0.62	0.50	0.37	0.65	0.57	0.48	0.66	0.56	0.42
Proportion Professional/Managerial Occupation	0.29	0.19	0.11	0.30	0.17	0.10	0.32	0.20	0.13	0.36	0.21	0.14
Proportion Female-Headed Families	0.05	0.05	0.09	0.05	0.08	0.12	0.04	0.05	0.07	0.04	0.05	0.12
Proportion High-School Dropouts	0.17	0.31	0.50	0.17	0.39	0.61	0.20	0.27	0.42	0.16	0.26	0.43
Proportion College Graduates	0.32	0.22	0.09	0.34	0.17	0.09	0.35	0.26	0.15	0.40	0.27	0.12
<b>Friendship Composition:</b>												
Percent White	0.32	0.25	0.23				0.30	0.14	0.22			
Percent Black	0.07	0.03	0.04				0.02	0.04	0.05			
Percent Hispanic	0.55	0.62	0.70				0.09	0.06	0.15			
Percent Asian	0.04	0.09	0.04				0.49	0.75	0.56			

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## CHAPTER 4

### DOUBLE JEOPARDY? THE INTERACTION EFFECT OF GENDER AND RACE ON EARNINGS IN THE U.S.

A large body of literature in both sociology and economics has been devoted to documenting the earnings differentials by gender and by race/ethnicity in the U.S. In general, such work has found (1) that women earn less than men, (2) that most racial/ethnic minority groups earn less than whites, and (3) that such differentials cannot be fully attributed to human capital factors (Corcoran and Duncan 1979). Despite the significance of this topic and the enormous attention given to gender inequality and racial inequality in the past social science literature, our empirical knowledge of the differences in labor force outcomes by gender *and* race is surprisingly poor. This paper remedies this omission by providing a systematic, empirical investigation of earnings differentials by race *and* gender across the full spectrum of racial/ethnic groups in the United States.

#### **Double Jeopardy?**

A substantial body of literature argues for “intersectionality,” or the recognition that group identities such as race and gender cannot be understood in isolation from one another.

Intersectional perspectives argue that the meaning of gender differs across racial groups and the meaning of race differs for men and women. Intersectionality has made valuable contributions towards understanding the lives of minority women, who do not necessarily experience race in

the same way as minority men or gender in the same way as white women (Browne and Misra 2003; McCall 2005). Yet few empirical studies on earnings inequality by race and gender have adopted this perspective (Brewer, Conrad, and King 2002. For an overview of these studies, see Browne and Misra 2003). Most existing studies of earnings inequality focus on either racial inequality among men or gender inequality among whites, often overlooking minority women (Malveaux 1986). Work that does address the earnings of minority women often still fails to consider race and gender jointly. A common research design is to compare minority women either to minority men of the same group (e.g., Blau and Beller 1988) —the “gender-centered approach” —or to white female workers (e.g., Bound and Dresser 1999; Corcoran 1999) —the “race/ethnicity-centered approach.” While the two approaches avoid confounding race and gender, they preclude direct comparisons between any two groups that differ from one another in both race and gender. To overcome this limitation, two alternative practices have emerged in the literature. The first is to compare all gender-race combinations simultaneously to one reference group, usually white men (e.g., Corcoran and Duncan 1979; Farley 1984); the second is to understand gender effects by race and then, sequentially, to understand race effects by gender (e.g., Kilbourne, England, and Beron 1994).

These two alternative practices have an advantage over either the gender-centered approach or the race/ethnicity-centered approach in avoiding a strong assumption: additivity, which assumes that minority women incur two earnings disadvantages additively, one associated with being female and another associated with being nonwhite. Thus, there would be no intersection of race and gender, and the total disadvantage faced by minority women relative to white men would simply be the sum of the gender penalty and the race penalty. Deborah King (1988, p.47) aptly referred to the additivity assumption as “double jeopardy.” While few researchers explicitly put forth this assumption, it is invoked implicitly whenever researchers draw inferences about “the race gap” or “the gender gap” from studies that focus on only one or the other.



There is already a great deal of evidence that calls into question the “double jeopardy” characterization. The additivity assumption is problematic because it ignores the ways in which minority women’s experiences are unique, comparable neither to those of white women nor to those of men of the same race/ethnicity (King 1988). While minority women of most ethnicities are clearly disadvantaged, their earnings are often still higher than one might predict based on their race and gender alone. Among African Americans, many studies have shown that the earnings of black women are higher relative to those of white women than the earnings of black men relative to those of white men (Blau and Beller 1988, 1992; Cancio, Evans, and Maume 1996; Carlson and Swartz 1988; King 1988; Marini 1989). While few studies have considered other races and ethnicities (Browne and Misra 2003), several have uncovered a similar pattern among various Hispanic and/or Asian ethnic groups in relation to whites (Carlson and Swartz 1988; England, Christopher, and Reid 1999; Xie and Goyette 2004).

Despite the suggestiveness of these findings, most previous research on race and gender earnings gaps has not attempted to address the additivity assumption directly. Even when their empirical results show clear deviations from the double jeopardy characterization, researchers frequently pay little attention to the underlying reasons for, and sometimes even fail to comment on, the apparent interactions between race and gender (e.g., Blau and Beller 1992; Darity, Guilkey, and Winfrey 1996; Padavic and Reskin 2002). To be sure, there are studies that have explored the interaction effects on earnings between gender and race, focusing on such causal mechanisms as human capital and job characteristics (England, Christopher, and Reid 1999; Kilbourne, England and Beron 1993; McGuire and Reskin 1993), local economic structure (McCall 2001), and trends over time (Blau and Beller 1992; Cotter, Hermsen, and Vanneman 1999). For example, McGuire and Reskin (1993) consider differences by gender and race in the ability to translate job authority and human capital into earnings. They find that black women are the most disadvantaged in both respects, but that this disadvantage is less than the sum of the disadvantages faced by white women and black men (relative to white men). While contributing

valuable evidence about intersectionality in the earnings determination process, none of these earlier studies has made racial variation in the gender earnings gap its explicit focus.

Hence, the extent of racial variation in the gender earnings gap remains to be fully documented and understood. In numerous studies in sociology and economics, the interaction effects between race and gender have often been apparent, but they have been treated more as empirical nuances than as subjects to investigate. This study represents a systematic effort to study racial patterns in the gender earnings gap and draw meaningful theoretical implications from such patterns. To this end, we make racial variation in the gender earnings gap the explicit focus of our study.

### **Theoretical Issues**

We know that differences in productivity-related factors-- such as education and work experience -- account for some of the observed differences in earnings by race/ethnicity and gender. While disagreement lingers concerning the proper interpretation of the unexplained portion of the observed group differences, a common practice is to associate it with racial/ethnic or gender discrimination, in a long tradition of using residuals from regression analysis to measure discrimination (Cole 1979). Past research has shown that, net of human capital factors, gender differences in earnings are considerably larger than racial differences between whites and blacks (Durden and Gaynor 1998; Farley 1984). Does this mean that racial discrimination is smaller than gender discrimination? An answer of “yes” would contradict common wisdom about structural inequalities in the U.S., where racial barriers to some highly valued socioeconomic resources (such as access to quality education) appear much greater than those by gender.

To answer this question, we need to conceptualize race and gender differentials not as two indicators of a single underlying phenomenon, but rather as two separate dimensions of inequality, each with unique structural determinants. For example, although black-white relations have epitomized racial relations in the United States due to their historical prominence, there are

also many other racial/ethnic groups with varying historical experiences. In fact, the number of racial/ethnic groups is increasing and the boundaries between some are becoming blurred, due in part to the increasing prominence of multiracial groups. Gender, on the other hand, is fixed at two categories, and its distribution is relatively unchanging. Although there is necessarily little difference in the distribution of gender across different racial/ethnic categories, it is possible that the social *meaning* attached to gender may vary by race/ethnicity (e.g., Brod 1987).

There is something else unique to gender: Men and women, to a much greater extent than individuals of different races, are frequently part of the same families – through either marriage, cohabitation, having children together, or some combination of these. The family is fundamental to the structure of gender relations. As has long been recognized in both economics and sociology, an adequate explanation of gender inequality in the labor force therefore requires the researcher to go beyond discrimination and productivity-related attributes (i.e., human capital) and to consider the role of the family (Becker 1973, 1974, 1991; Mincer and Polachek 1974; Xie and Shauman 2003; many others). The family must be considered in studies of gender inequality for several reasons. First, because resources are typically pooled across family members, gender inequality in earnings is not necessarily reflected in inequality in economic well-being among married or cohabiting adults.<sup>1</sup> That is, an adult's economic and social position in society is affected not only by how well he or she does in the labor market, but also by whether and to whom he or she is married or partnered. Second, the traditional division of labor within married-couple families has usually placed responsibility for the domestic work and child care primarily on the wife (Brines 1994), generating significant barriers to success in the labor market for

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<sup>1</sup> Although cohabiting adults necessarily share some aspects of economic well-being – e.g., housing – there has been debate about the extent to which they pool other resources. The literature to date indicates that resource pooling does occur among cohabiting couples (Heimdal and Houseknecht 2003), but not to as great an extent as among married couples (Kenney 2004).

married women (Budig and England 2001; Goldin 1990; Noonan 2001; Waldfogel 1997). Gender roles within the family are thus intimately connected with gender inequality in the workplace.

This interplay between family factors and women's labor force outcomes is at the heart of neoclassical economic explanations for women's lower earnings. While there is a great deal of diversity in modern family structures, the neoclassical explanation primarily focuses on married-couple families with children (or on persons who anticipate one day being part of such a family). There are three key components to this explanation. First, it is assumed that economic resources are a family-level utility that is shared equally between the spouses (Becker 1973, 1974, 1991; Lundberg and Pollak 1993; Mincer and Polachek 1974). Second, it is assumed that there is an efficiency gain in having one spouse (typically the husband) specialize in market production, and the other spouse (typically the wife) specialize in domestic production. This efficiency gain is the result of the wage rate of the spouse who specializes in the market exceeding that of the other spouse. Third, due to anticipation of withdrawing from the labor force and/or working part time during childrearing, women tend to under-invest in their human capital and receive less return to their work experience (Mincer and Polachek 1974). Thus, neoclassical economics provides a theoretical framework that explicitly links gender inequality at work with gender inequality at home.<sup>2</sup> Let us refer to this explanation as "role specialization theory."

The theory is silent on issues of race. However, we know that the theory, even if it is true, can only be a crude and simplified approximation of a reality that is far more complicated. The problem is that not all families meet the ideal conditions that are assumed by role specialization theory. First, not all women or men intend to marry or have good prospects to marry. Similarly, not all married couples have or intend to have children, and in the absence of children the advantages to gender role specialization are substantially reduced. Second, in a growing number

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<sup>2</sup> The applicability of this theory to gender segregation of occupations has been challenged by England (1982, 1988).

of families wives earn more than husbands (Brines 1994; Raley et al. 2006), giving them a comparative advantage, rather than a disadvantage, in the labor market. Finally, past research has suggested that the assumption of pooled income and consumption may not be correct, even within married-couple families: at a fixed level of family income, direct expenditures on the well-being of the wife and children are larger if the wife herself has greater control over economic resources (Lundberg and Pollak 1996). Hence, the extent to which role specialization theory is applicable can vary substantially across families.

We conjecture that the applicability of role specialization theory may vary across racial/ethnic groups. We give three reasons for this conjecture. The first is that certain family-related attitudes and practices are cultural and as such are maintained more in some racial/ethnic groups than in others (Blee and Tickamyer 1995; Kane 2000; McLoyd et al. 2000; Ransford and Miller 1983). For example, researchers have found that African Americans and Mexican Americans both express greater support than whites for the idea that married women should contribute financially to the family (Blee and Tickamyer 1995; Taylor, Tucker, and Mitchell-Kernan 1999) – despite the fact that this and other research has repeatedly found that African Americans and some groups of Hispanics tend to express more traditional (that is, patriarchal) gender role attitudes than whites with respect to other issues, such as women’s role in politics or their responsibility for home and family (Blee and Tickamyer 1995; Bolzendahl and Myers 2004; McLoyd et al. 2000; Ransford and Miller 1983; Taylor, Tucker, and Mitchell-Kernan 1999). On the other hand, despite such attitudinal differences, research has also shown that black husbands do a greater share of housework than white husbands do (Kamo and Cohen 1998; John and Shelton 1997). Thus, the relationship between race and gender role attitudes and practices is probably quite complex. Such differences are likely to affect men’s and women’s choices about work and family, including the extent to which they specialize according to traditional gender norms.

The second reason, which is widely recognized in the literature, is the more difficult economic circumstances facing many minority groups. The higher unemployment rates and lower earnings among many groups of minority men undermine the applicability of role specialization theory. For example, lower rates of marriage in some minority communities, especially impoverished African American communities, are partially attributable to the lack of “marriageable” men with steady, relatively well-paying jobs (Lichter et al. 1992; Wilson 1996). Even among married couples in economically disadvantaged minority groups, role specialization may not be an option if the husband does not have sufficient earnings to be the primary, if not the sole, breadwinner for the family (Padavic and Reskin 2002). Furthermore, higher rates of marital instability in economically disadvantaged minority groups (Ruggles 1997) would make specialization in domestic production, and the degree of economic dependency it entails, a very risky strategy for a woman (Edin 2005; Smock, Manning, and Gupta 1999). There are thus several reasons to suspect that role specialization theory may apply better to middle-class whites than to economically disadvantaged minority groups.

Third, it has been well documented that most Asian American groups actually attain higher average economic status than whites (Xie and Goyette 2004). However, most Asian Americans are recent immigrants or children of immigrants, and as newcomers to the U.S. economic survival is necessarily a high priority. Thus, Asian Americans’ family-level strategies for economic adaptation may also render role specialization less applicable to Asian Americans than to whites.

We examine gender inequality in earnings across all major racial and ethnic minority groups in the United States, while previous studies have examined only one or two groups at a time. From the previous literature, we expect a positive interaction between race and gender for African American women (and a few indications of a similar effect for certain groups of Asian American and Hispanic women), but we do not know whether this pattern may hold for minority groups more generally. We develop a systematic metric to use in measuring the extent to which

the effects of race and gender deviate from the assumption of additivity, which allows us to make comparisons between different racial groups. We also explore whether racial variation in the applicability of role specialization theory may contribute to the race/gender interaction in earnings. We do this in two ways: First, we look at how the race/gender interaction varies across marital/parental status groups. Second, we devise a summary measure, to be discussed later, that crudely gauges the extent to which gender role specialization varies by race.

### **Methodology**

McCall (2005) presents a detailed discussion of the methodological issues confronting researchers who study intersectionality. Our methodology falls within the domain that she terms “intercategorical.” While much work on intersectionality criticizes or even rejects categories such as race and gender, arguing that inequality is inseparable from the process by which social categories are generated and maintained (McCall 2005), the “intercategorical” approach provisionally accepts such categories in order to study empirical patterns across groups. Hence, while fully realizing limitations of such categories as “race” and “gender,” we use these categories in this research to better understand patterns of between-group earnings inequality in the U.S.

Our first task is to determine empirically whether there is indeed evidence of intersectionality between race and gender in the labor market. If there is no interaction between race/ethnicity and gender, then the earnings ratio of minority women can be determined as an additive function of their race/ethnicity-based and gender-based disadvantages. In this case, the earnings ratio of minority women could be inferred from two pieces of information: The female-to-male earnings ratio among whites, and the minority-to-white earnings ratio among males of the same group. This can be illustrated with the following  $2 \times 2$  table:

Earnings Ratio Relative to White Men:

	Men	Women
White	1	.8

Minority	.9	X
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Here, in the absence of an interaction, minority women will have an earnings ratio of .72. That is, relative to minority men they suffer a penalty of 20%, the same as the penalty suffered by white women relative to white men. Relative to white women, minority women suffer a penalty of 10%, the same as the penalty of minority men relative to white men. This can be calculated as the product of the earnings ratios of white women and minority men,  $.8 \times .9$ .

To facilitate discussion, we will work with the natural logarithm transformation of earnings. This allows us to discuss the relationship between sex and race in log-additive, rather than multiplicative, terms. The relationship can be stated with reference to the following table.

Let  $k$  denote the  $k$ th group, with  $k = 1, \dots, K$ .

Log of earnings:

	Men	Women
White ( $k=1$ )	$Y_{11}$	$Y_{12}$
Black ( $k=2$ )	$Y_{21}$	$Y_{22}$
Mexican ( $k=3$ )	$Y_{31}$	$Y_{32}$
...		
$K$	$Y_{K1}$	$Y_{K2}$

In the absence of an interaction, the gender effect is defined to be the same across racial/ethnic groups:

$$(1) Y_{k2} - Y_{k1} = g, \text{ with } k = 1, \dots, K,$$

where  $g$  is a constant representing the gender effect. The female-to-male ratio in earnings is the same for all race/ethnicity groups:  $\exp(g)$ .

Equivalently, we also have a race/ethnicity effect that does not vary by gender:

$$(2) Y_{k1} - Y_{k'1} = Y_{k2} - Y_{k'2}, \text{ with } k \neq k',$$

where  $k$  and  $k'$  are two different race/ethnicity groups. Now let us define the following quantity (which is actually the difference-in-difference estimator), with whites as the reference group:

$$(3) d_k = (Y_{k2} - Y_{k1}) - (Y_{12} - Y_{11})$$



The condition of no interaction means that  $d_k = 0$ , for  $k=1 \dots K$ . This can be derived either from equation (1) or equation (2).

In this scenario, the earnings difference between whites and minority group  $k$  is the same for men and women, and the earnings difference between men and women is the same for whites and for minority group  $k$ . This indicates that there is an additive effect of being minority and being female – minority women suffer the full disadvantage of each status. This formulation represents the “double jeopardy” characterization assumed in much of the previous literature.

If the effects of being minority and being female are not additive, there are two possible alternatives. The first is as follows:

$$(4) Y_{11} - Y_{12} > Y_{k1} - Y_{k2}$$

$$(or\ equivalently\ Y_{11} - Y_{k1} > Y_{12} - Y_{k2})$$

Here, we have  $d_k > 0$ . If  $d_k > 0$ , there is a positive interaction between being minority and being female. This positive interaction can be interpreted to mean that there is a smaller penalty for being female among minorities, or a smaller penalty for being nonwhite among females.

Alternatively, there could be a negative interaction between being minority and being female. In this case, the following equations would hold:

$$(5) Y_{11} - Y_{12} < Y_{k1} - Y_{k2}$$

$$(or\ equivalently\ Y_{11} - Y_{k1} < Y_{12} - Y_{k2})$$

In this case,  $d_k < 0$ . This negative interaction can be interpreted as meaning either that being nonwhite carries a greater penalty for females than males, or being female is a greater disadvantage among minorities than among whites.

We examine the relationship between race/ethnicity and gender in earnings determination using the following methodology: For each racial or ethnic group  $k$ , we compute the quantity  $d_k$ , which represents the difference between the minority gender earnings gap and that of whites. Previous literature leads us to expect to find that  $d_k$  is positive for some racial groups, but it is not known how generally this is true. Although we have no theoretical reason to believe that  $d_k$  may

be negative for any group, such a relationship is possible and cannot be ruled out a priori. In addition to the unadjusted  $d_k$ , we will compute  $d_k$  after adjusting for earnings-relevant characteristics. These include education, experience, and region.

We next examine  $d_k$  across subpopulations. Role specialization theory is a theory of the family. If it is to explain racial variation in the gender earnings gap, we would expect to find a stronger interaction between race/ethnicity and gender among the married than among the unmarried. For this reason, we will disaggregate the sample by marital status and re-compute  $d_k$ . We will also test whether there are significant differences in  $d_k$  by parental status.

Finally, we examine whether families in different racial/ethnic groups are equally likely to practice gender role specialization along the lines predicted by role specialization theory. While a thorough examination of this topic would be a paper in itself, for this research we propose a simple test designed merely to indicate whether racial differences in the applicability of role specialization theory would be a reasonable avenue for further exploration in future work. Role specialization theory implies that, at least for some families, couples will prefer for the wife to specialize in caring for young children if this is economically feasible. Our contention that role specialization theory may not apply equally in minority families is based in part on the insight that non-economic factors, such as racial differences in gender role attitudes, divorce rates, and expectations about work, may lead to lower specialization in minority families *above and beyond* racial differences in economic circumstances. We therefore measure the applicability of role specialization theory by measuring the responsiveness of wives' employment to husbands' income in families with young children (operationalized as twelve or under). Across racial/ethnic groups, wives' lower response in employment to husbands' income indicates a lower preference for gender role specialization. In our statistical analysis, we model the log-odds of wives' employment in the past year as a function of alternative family income, which we define by

subtracting wives' earnings from total family income.<sup>3</sup> We then examine whether or not the effects of alternative family income are weaker (i.e., less negative) for racial/ethnic minority groups than for whites.

## **Data**

We use data from the Public Use Micro Sample (PUMS) of the 2000 Census. These data are good for our purpose because they are the only data with a large enough sample size to allow us to study the smaller racial and ethnic minority groups. In order to get desirable sample sizes for each of our racial groups, we construct a sample from the following sources: a 10% sample of mono-racial whites from the 1% PUMS, mono-racial blacks from the 1% PUMS, and all other groups, discussed below, from the 5% PUMS. When appropriate, we weight the data according to the inverse probability of being in the sample.

We create a system of 19 mutually exclusive racial categories. In addition to non-Hispanic whites, blacks, and Native Americans, the larger Asian and Hispanic ethnic groups are treated as distinct categories. The 2000 U.S. Census data identify bi-racial or multi-racial individuals. We treat the most common combinations of two races (Asian-white, black-white, Native American-white, and black-Asian) as distinct categories. Finally, individuals who report more than two races or who do not fit into any other racial category are coded as "other." Because Hispanics are treated as an ethnic rather than a racial category in the Census, Hispanics can be of any race. Therefore, to achieve exclusivity, individuals reporting Hispanic ethnicity are coded into the appropriate Hispanic category, regardless of race. Thus, all individuals in race categories

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<sup>3</sup> For most families, the vast majority of such income is the husband's earnings; however, all sources of alternative income are likely to have an effect on a mother's likelihood of employment, so we use alternative family income rather than husband's earnings in our models. Results are very similar if husband's earnings are used.

other than “Mexican,” “Cuban,” “Puerto Rican,” or “Other Hispanic” are non-Hispanic.

Appendix Table 4.A gives sample sizes of each of our racial/ethnic groups.

Because earnings determination is more complex for immigrants than for the native-born (Zeng and Xie 2004), we examine only U.S.-born workers. This restriction limits the generalizability of our findings for many of the groups we study. Because of the preponderance of immigrants in many Asian and Hispanic ethnic groups, we emphasize that our results apply only to the subsets of these populations that were born in the United States. To assure comparability of workers in our analysis, we restrict our sample to full-time, full-year workers between the ages of 25 and 55. To assess the sensitivity of our results to this selection of workers, we later report a secondary analysis that includes all workers, including part-time or part-year workers.

### **Statistical Models**

We use OLS regression in order to estimate  $d_k$ . The log of annual earnings is our dependent variable. We first estimate a simple model that includes only race and sex as regressors, with no controls. Race is included as a series of 18 dummy variables, with whites as the omitted category. Sex is included as a dummy variable equaling 1 if female. Finally, the sex and race dummy variables are interacted. This leaves white males as the excluded category to which all other groups are compared. The coefficients on the  $K-1$  race dummy variables give the log of the earnings ratio of men of group  $k$  to white men, while the coefficient on the sex dummy variable gives the log of the female-to-male earnings ratio for whites. The coefficients of primary interest, however, are those of the race-sex interaction terms. These coefficients are equal to the log of the ratio of observed to expected earnings for minority women, or  $d_k$ . In other words, these coefficients represent the extent to which being a member of group  $k$  has a different effect for women than for men, or alternatively, the extent to which being female has a different effect for members of group  $k$  than for whites. In columns 6 and 7 of Table 4.1 and in Table 4.2, we present  $\exp(d_k)$ , which gives the ratio of observed to expected earnings for women in each group.

After computing this baseline model, we estimate a multivariate model with controls for several standard earnings-relevant characteristics. The coefficients on the sex-race interaction terms can be interpreted as estimates of  $d_k$  net of the additional control variables. We refer to this as the “adjusted”  $d_k$ . We apply weights that adjust for the differential probability of different racial groups for being included in our sample. Thus, the estimated parameters of the statistical controls are population average effects for native-born, full-time workers age 25-55.

We compute our measure of the applicability of role specialization theory using logit regression. For all married women with children under twelve, we first run a series of separate logit models for each of the 19 racial groups to estimate the group-specific effect of alternative family income on the wife’s odds of employment. Wife’s employment status (1=yes) is the dependent variable, and the natural logarithm of alternative family income is the independent variable. To test the differences between whites and each minority group in this measure, we pool the data across race and estimate another logit model (again with wife’s employment status as the dependent variable). This time, the independent variables are a series of 18 race dummy variables (with whites as the omitted category), alternative family income, and interactions between the race dummy variables and alternative family income. Finally, we add to this logit model the same set of controls that we included in the earnings analysis.

## **Results**

The main findings of our analysis are presented in Table 4.1. We list the racial categories in order of highest to lowest earnings among men, with the exception of whites as the reference category in the first row. Columns 1 and 2 present the geometric mean earnings of each racial group for men and women, respectively. For both sexes, the highest-earning groups are Chinese, Japanese, Koreans, and Indians, while the lowest-earning group is Native Americans. We note that while only 4 out of 18 minority groups have higher average earnings than whites among men, the corresponding figure is 9 out of 18 for women. Column 3 gives the female-to-male earnings ratio

within each racial group. While white women make about .7 times the earnings of white men, women's relative earnings are uniformly higher in each of the other racial groups. Columns 4 and 5 give the earnings ratio relative to whites of the same sex for minority men and women, respectively. Comparing the two columns, it is clear that minority women's relative earnings are higher than those of minority men. Column 6 gives the antilog of the quantity  $d_k$ , defined above. A positive value of  $d_k$  corresponds to  $\exp(d_k)$  being greater than 1, while a negative value corresponds to  $\exp(d_k)$  being less than 1.  $\exp(d_k)$  represents the ratio of minority women's observed to predicted earnings, where predicted earnings are based on the assumption of additivity between race and gender effects. Column 6, then, quantifies the patterns that we can identify by "eyeballing" columns 3, 4, and 5.

The results in Column 6 are striking. In every case,  $\exp(d_k)$  is greater than 1. The values of  $\exp(d_k)$  indicate that the average earnings of nonwhite women range from about 4% to 21% higher than predicted under the additivity assumption, with Native American-white bi-racial workers having the lowest value and Korean workers the highest. For 16 out of our 18 minority groups (all groups other than Black-Asians and Vietnamese),  $d_k$  is also statistically significant. This is strong evidence that the effects of race and sex on earnings are not additive. Instead, there is a positive interaction between being female and being a member of a minority group. This interaction is widespread across different ethnicities, with groups as diverse as Mexicans, Filipinos, Koreans, black-white biracials, and Native Americans all showing evidence of such an effect.

We next test whether this interaction is robust in a multivariate setting. We regress the log of annual earnings on a series of race\*sex interaction dummies, with controls for education, potential work experience (calculated as the individual's age-years of schooling-6), potential work experience squared, hours worked per week above the 35 hour full-time cutoff, urban residence, self employment, and region of residence. The antilogs of the coefficients on the sex\*race interaction terms give adjusted estimates of  $d_k$ . The results of the multivariate analysis

are reported in column 7. The adjustments make little difference for most Asian ethnic groups, with the exception of Filipinos, whose adjusted  $\exp(d_k)$  is 3 percentage points lower than the unadjusted  $\exp(d_k)$ . For the non-Asian racial groups, adjusting for earnings-relevant characteristics lowers  $\exp(d_k)$  by between 2 and 5 percentage points. However, the inclusion of these controls does not change the general pattern we discerned in column (6): minority women's earnings are consistently higher than would be predicted under additivity.

We are surprised by the consistently positive pattern of  $d_k$  across all 18 minority groups. Columns (1) and (2) of Table 4.1 show large differences in average earnings across the racial/ethnic groups. While blacks, most Hispanic groups, and Native Americans all have considerably lower earnings than whites, several Asian groups have considerably higher earnings. Nonetheless, both “disadvantaged” and “advantaged” minority groups have positive values of  $d_k$ . For disadvantaged groups that have lower earnings than whites, this pattern means an attenuation of the race effect among women compared to that among men. However, for women in minority groups with higher earnings than whites, this means a more pronounced *advantage* among women than among men. We note that women of every group have lower average earnings than men. Therefore, the interpretation of the interaction effect is more straightforward when stated in terms of the variation in the gender effect across racial groups than when stated in terms of the variation in the race effect across gender: The effect of gender is always weaker among minorities than among whites. We also prefer this second interpretation because it is directly linked to our attempt to explain the observed empirical pattern in terms of differences in the applicability of role specialization theory across racial/ethnic groups.

#### *Results by Marital Status*

Table 4.2 presents results analogous to those in columns 4 and 5 of Table 4.1, now disaggregated by marital status. For this portion of the analysis we originally divided the sample into four groups by both marital and parental status (married with children, married no children, etc.). To

our surprise, we found that children make little additional difference above and beyond marital status. Therefore, for parsimony we frame our discussion around differences by marital status only. Results by both marital and parental status are presented in Appendix Table 4.B. We discuss the baseline model without covariates first. The results among married women are slightly more pronounced than those for all women.  $\text{Exp}(d_k)$  is greater than 1 for every group, and is statistically significant for 15 out of 18 minority groups. The values of  $\text{exp}(d_k)$  indicate that married women's earnings range between 2% and 32% higher than we would predict under additivity. The results for unmarried women, however, are very different. In general, the values of  $\text{exp}(d_k)$  are quite close to 1, and fail to reach statistical significance for the majority of groups. Only five groups (Japanese, Cubans, Asian-whites, Puerto Ricans, and Blacks) have values of  $\text{exp}(d_k)$  significantly greater than 1. We also test to see if these differences in  $\text{exp}(d_k)$  between married and unmarried women are statistically significant. The difference is indeed significant for 10 out of the 18 groups. Thus, the pattern of higher-than-expected earnings we have found for minority women applies primarily to the married.

We also computed adjusted  $\text{exp}(d_k)$  for each marital status group, controlling for the same factors that we did for column 7 of Table 4.1. The addition of the control variables changes the individual values of  $\text{exp}(d_k)$  somewhat, but it does not change the overall pattern of positive interaction for married women. For most groups the value of  $\text{exp}(d_k)$  is lower after the addition of the controls, indicating that some part of the observed interaction may be due to the variation across racial groups in the sex differences in earnings-relevant characteristics. For unmarried persons,  $\text{exp}(d_k)$  tends to be slightly larger after the addition of the controls, resulting in a greater number of groups with statistically significant values. Nonetheless, it is still much closer to 1 in general for unmarried women than for married women. Statistical tests of the difference between  $\text{exp}(d_k)$  for married and unmarried women indicate that the difference is indeed statistically significant for 10 groups, the same as before the addition of the controls.



### *Results on Role Specialization*

We now present results on the variability in role specialization across racial/ethnic groups. We begin with descriptive statistics on employment status for married women with children under twelve in Table 4.3. We present, separately by race, the overall employment rate in column 1 and the rate of full-time, full-year employment in column 3. The second and the fourth columns show the differences in these rates between minority groups and whites. For overall employment, differences between whites and most other groups are relatively small, and they are not consistent. However, if we look at the rate of full-time, full-year employment, notable racial/ethnic differences emerge. Among married mothers with children under twelve, virtually all minority groups are equally or more likely to be employed full-time, full-year than non-Hispanic whites. The largest difference is for African American mothers, who are about 15 percentage points more likely to be employed full time than their white counterparts. These results thus suggest greater gender role specialization among whites than among other racial/ethnic groups.

In Table 4.4, we present results using our crude measure of the applicability of role specialization theory. In the first column, we present the estimated effect of logged alternative family income on wife's log-odds of employment for each racial group. As expected, for most groups the likelihood of employment for mothers with children under twelve goes down as alternative family income rises. For 9 of the 19 groups – whites, Chinese, Japanese, Cubans, Asian-whites, Filipinos, black-whites, Native American-whites, and “other” Hispanics, the effect is negative and statistically significant. For both blacks and Puerto Ricans, on the other hand, alternative family income is actually positively related to the odds of wives' employment. Thus, for the majority of groups, but not all, there is evidence of gender role specialization.

Next, we measure whether there are racial differences in the extent of specialization. The third column presents the difference between the effect of alternative family income for whites and the effect for each minority group. A positive coefficient in this column indicates that the log-

odds of employment for the group in question are affected less negatively by alternative family income than those of whites – or in other words, that minority wives’ employment is less responsive to alternative income than that of white wives. There is a statistically significant difference from whites in the effect of alternative family income for 10 of the 18 minority groups, and in all cases but one (the Japanese) the coefficient is positive. The third column repeats the interactive model in the second column, this time controlling for earnings-relevant characteristics. The results remain essentially the same. After the addition of the controls, the employment of Indian, black-Asian, other race, Native American-white, “other” Hispanic, Puerto Rican, Mexican, black and Native American women is less negatively affected by alternative family income than that of white women. Thus, employment of mothers with young children in these groups is less predicated on family economic status than among whites. Although these results are not definitive, we interpret them as an indication that role specialization theory may not be as applicable to these groups as to whites. It is particularly interesting to note that the difference from whites is statistically significant among all six of the lowest-earning minority groups. This may indicate that there is an especially strong norm of female employment among the most disadvantaged groups.<sup>4</sup>

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<sup>4</sup> Another potential explanation for these findings is that the effect of alternative family income is nonlinear. As a helpful reviewer put it, there may be a “threshold effect – everybody must work until there is sufficient income for survival.” If this were the case, lower-earning minority groups might show less evidence of role specialization simply because they are at a lower point along the income curve. We tested this explanation with several different model specifications allowing income to have a nonlinear effect. While each specification yielded slightly different results, all except one provided evidence of the same interaction effects we report in the main findings.

### *Sensitivity Analyses*

The main results of our study are robust, as they are not sensitive to several practical choices that we made for the data analysis. In Appendix Table 4.C, we present the primary results (the estimated  $\exp(d_k)$ s) among several slightly different groups of workers. First, we test whether our findings are affected by our decision to focus on full-time, full-year workers. The first column presents results including all workers, but using hourly wages instead of annual earnings as the dependent variable. In the few cases where the results under the new specification differ, they differ in the direction of *strengthening* our substantive conclusion. The estimates in the second column are computed over a sample of workers which excludes the self-employed (instead of including a control variable for being self-employed, as we did in our main models). The third column excludes workers with either very high (above \$160,000) or very low (below \$6,500) annual earnings. In all three columns, the results are very similar to the main results reported in Table 4.1. These additional analyses ensure that our findings are not driven by our analytical decisions about sample definition.

Finally, we briefly consider the possibility that our primary finding, that minority women's earnings are higher than would be predicted under additivity, could be driven by greater selectivity of minority women than of white women into employment. This could come about if the relationship between race and role specialization were the exact opposite of what we have suggested – that is, if minority women actually had a stronger preference than white women to specialize in the domestic sphere. In this case, they would need a larger wage incentive than white women to be drawn into employment. Earnings among employed minority women would then be biased upwards compared to those among employed white women because minority women without sufficiently high earnings capacity would stay out of the labor force. However, for this scenario to be plausible, it would be necessary for minority women to have lower overall employment rates than white women. We have seen in Table 4.3 that this is not generally the case for married women with children. In Appendix Table 4.C, we present similar results for all

married women. There is no consistent pattern to suggest that our results are driven by greater selectivity into the labor force among minority women.

### **Discussion and Conclusion**

We have confirmed in this study the ubiquitous intersectionality of race and gender in the determination of earnings. It is clear that among United States workers, there is no such thing as a pure “gender effect” or “race effect” when it comes to earnings. The two must be considered simultaneously. Furthermore, we have shown that the statistical interaction between being minority and being female is consistently positive: Among groups who are disadvantaged in earnings relative to whites, the race penalty is always smaller among women than among men, while for earnings-advantaged groups, the advantage is greater for women than men. Conversely, for all minority groups the gender penalty is smaller for minority women than for white women. Thus, the “double jeopardy” characterization proposed in the earlier literature poorly captures minority women’s earnings.

It is striking that across such a diverse array of racial groups, including Asians, Hispanics, and mixed-race individuals, the same basic pattern holds true. It would be hard to argue that this result could be due to any similarity across such an array of groups. Therefore, the explanation is more likely to be found in something unique about our comparison group – non-Hispanic whites. Up to this point, we have been framing our discussion of earnings in terms of the disadvantages associated with being female and (in most cases) with being nonwhite. But instead of concluding that minority women’s earnings are higher than expected under additivity, perhaps we should interpret the results to mean that white women’s earnings are *lower* than expected. Such would have been our conclusion if we had chosen African Americans, for example, instead of whites as our reference group. There is no way to distinguish between these interpretations empirically – they are equally consistent with our results. Reframing this discussion in terms of unexpectedly low earnings among white women suggests that the

explanation for the empirical pattern we have uncovered may involve something atypical about the system of gender relations among whites.

We proposed that the answer may lie in role specialization theory being more applicable to whites than to other groups. Although we cannot test definitively whether this is the case, our findings indicate this explanation warrants further investigation. Our results by marital status revealed that there were few racial differences in the gender earnings gap among the unmarried, while for the married, the gender earnings gap was significantly smaller for almost every minority group than for whites. These results strongly suggest that the explanation for the race/gender earnings interaction has to do with family factors. Furthermore, our results showed that women's labor force participation is generally less dependent on family income for minority groups than for whites, suggesting less of a tendency toward gender role specialization among minorities. While these results do not permit us to conclude that a greater degree of gender role specialization among whites is behind their larger gender earnings gap, they are consistent with such an explanation.

Why might there be greater gender role specialization among whites than among other groups? Earlier, we suggested that role specialization theory might not be as applicable to economically disadvantaged groups as to more affluent groups. Our results are partially consistent with this hypothesis: The six minority groups with the lowest annual earnings were among the nine groups that showed a lesser tendency toward gender role specialization than whites. Meanwhile, of the seven minority groups with the highest annual earnings, only one – Indians – showed such a tendency. Thus, there appears to be a correspondence between the average earnings of a group and how much it differs from whites in its tendency toward gender role specialization. Differences in gender role specialization by average group SES cannot, however, explain the main finding of this paper –that women in *all* the minority groups studied, regardless of average group SES, have a smaller gender earnings penalty relative to men of the

same race than white women do. Thus, no explanation relying solely on group differences in SES can be complete.

The primary contribution of this study lies in the documentation of the ubiquity of the gender-race interaction in earnings determination. We are unable to provide a definitive explanation for the greater gender earnings gap among whites than among other racial groups. However, our results suggest that gender dynamics within families may be a fruitful area for future research. While researchers have examined racial differences in gender role attitudes, marital relationships, gender division of housework, and other family processes (McLoyd et al. 2000), none has explicitly linked these differences to racial differences in labor force outcomes (Brewer et al. 2002). Given that another body of literature shows that family-linked processes such as parenthood (Budig and England 2001; Waldfogel 1997) and the gender division of housework affect earnings, it follows that there may be such a link. Hence, we suggest that the intersection of family and labor force outcomes may well hold the key to understanding the intersection of race and gender. We invite other scholars to examine this intersection closely in future research.

**Table 4.1: Earnings and Relative Earnings by Race and Sex**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Mean Annual Earnings - Men <sup>(1)</sup>	Mean Annual Earnings - Women <sup>(1)</sup>	Female-Male Earnings Ratio (within race)	Minority-white Earnings Ratio (for men)	Minority-White Earnings Ratio (for women)	Observed- Predicted Earnings Ratio (women) <sup>(2)</sup>	Observed- Predicted Earnings Ratio with Controls
White Only	40,600	28,700	0.71	1	1	<b>1.00</b>	<b>1.00</b>
Chinese	54,600	44,100	0.81	1.34	1.54	<b>1.15 ***</b>	<b>1.15 ***</b>
Asian Indian	47,700	38,300	0.80	1.17	1.34	<b>1.14 ***</b>	<b>1.14 ***</b>
Korean	46,300	39,700	0.86	1.14	1.38	<b>1.21 ***</b>	<b>1.20 ***</b>
Japanese	48,600	38,300	0.79	1.20	1.33	<b>1.11 ***</b>	<b>1.11 ***</b>
Cuban	39,400	32,200	0.82	0.97	1.12	<b>1.16 ***</b>	<b>1.12 ***</b>
Other, multi-eth Asian	39,500	33,400	0.85	0.97	1.17	<b>1.20 ***</b>	<b>1.20 ***</b>
Asian-white	39,800	32,600	0.82	0.98	1.13	<b>1.16 ***</b>	<b>1.15 ***</b>
Black-Asian	38,900	29,900	0.77	0.96	1.04	<b>1.09</b>	<b>1.10</b>
Filipino	37,900	32,000	0.84	0.93	1.12	<b>1.20 ***</b>	<b>1.17 ***</b>
Other	35,100	27,700	0.79	0.86	0.96	<b>1.11 ***</b>	<b>1.09 ***</b>
Vietnamese Only	35,300	27,300	0.77	0.87	0.95	<b>1.09</b>	<b>1.08</b>
Black-white	34,800	27,700	0.80	0.86	0.97	<b>1.13 ***</b>	<b>1.10 ***</b>
Native Am.-white	33,300	24,500	0.74	0.82	0.86	<b>1.04 ***</b>	<b>1.02 *</b>
Other Hispanic	31,900	24,900	0.78	0.79	0.87	<b>1.10 ***</b>	<b>1.08 ***</b>
Puerto Rican	32,000	26,500	0.83	0.79	0.92	<b>1.17 ***</b>	<b>1.12 ***</b>
Mexican	31,600	24,700	0.78	0.78	0.86	<b>1.11 ***</b>	<b>1.08 ***</b>
Black	30,000	25,200	0.84	0.74	0.88	<b>1.19 ***</b>	<b>1.14 ***</b>
Native American	29,400	23,300	0.79	0.72	0.81	<b>1.12 ***</b>	<b>1.08 ***</b>

Note: Sample includes full-time, full-year workers between the ages of 25-55 who were born in the U.S.

\*Race-sex interaction statistically significant at the .1 level.

\*\*Race-sex interaction statistically significant at the .05 level.

\*\*\*Race-sex interaction statistically significant at the .01 level.

(1) Geometric mean of annual earnings

(2) Given by  $\exp(d_k) = \exp[(Y_{11} - Y_{12}) - (Y_{k1} - Y_{k2})]$

Control variables are: Education, potential work experience, potential work experience squared, hours worked per week (above 35), self-employment, and region.

**Table 4.2: Observed-to-Predicted Earnings Ratios for Minority Women, by Marital Status**

	Without Controls			With Controls		
	Married	Unmarried	All	Married	Unmarried	All
White Only	1	1	1.00	1	1	1.00
Chinese	1.13 ***	1.05 ^	1.15 ***	1.15 ***	1.08 *** ^	1.15 ***
Asian Indian	1.10	1.01	1.14 ***	1.14 **	1.04	1.14 ***
Korean	1.20 **	1.02	1.21 ***	1.20 **	1.08	1.20 ***
Japanese	1.10 ***	1.06 **	1.11 ***	1.09 ***	1.07 ***	1.11 ***
Cuban	1.13 ***	1.10 ***	1.16 ***	1.10 ***	1.10 ***	1.12 ***
Other, multi-eth Asian	1.32 ***	1.03 ^^^	1.20 ***	1.25 ***	1.06 ^^	1.20 ***
Asian-white	1.14 ***	1.06 *	1.16 ***	1.13 ***	1.09 ***	1.15 ***
Black-Asian	1.20	0.98	1.09	1.13	0.99	1.10
Filipino	1.25 ***	1.01 ^^^	1.20 ***	1.20 ***	1.04 ^^^	1.17 ***
Other	1.12 ***	1.00 ^^^	1.11 ***	1.10 ***	1.02 ^^^	1.09 ***
Vietnamese Only	1.02	1.12	1.09	1.01	1.09	1.08
Black-white	1.17 ***	0.99 ^^^	1.13 ***	1.12 ***	1.00 ^^	1.10 ***
Native Am.-white	1.03 *	1.00	1.04 ***	1.01	1.01	1.02 *
Other Hispanic	1.13 ***	1.01 ^^^	1.10 ***	1.08 ***	1.03 ** ^^	1.08 ***
Puerto Rican	1.23 ***	1.04 ** ^^^	1.17 ***	1.14 ***	1.04 ** ^^^	1.12 ***
Mexican	1.14 ***	1.01 ^^^	1.11 ***	1.09 ***	1.02 ^^^	1.08 ***
Black	1.25 ***	1.05 *** ^^^	1.19 ***	1.17 ***	1.05 *** ^^^	1.14 ***
Native American	1.16 ***	1.00 ^^^	1.12 ***	1.09 ***	1.01 ^^^	1.08 ***

Note: Sample includes full-time, full-year workers between the ages of 25-55 who were born in the U.S.

Control variables are: Education, potential work experience, potential work experience squared, hours worked per week (above 35), self-employment, and region.

\*Race-sex interaction statistically significant at the .1 level.

\*\*Race-sex interaction statistically significant at the .05 level.

\*\*\*Race-sex interaction statistically significant at the .01 level.

^ Statistically different from married at the .1 level

^^ Statistically different from married at the .05 level

^^^ Statistically different from married at the .01 level



**Table 4.3: Racial Differences in Employment For Married Women**

	Mothers with Children Under Twelve				
	Proportion Employed		Proportion Working Full-Time, Full-Year		N
	Difference		Difference		
	Proportion	from Whites	Proportion	from Whites	
White Only	0.75	0.00	0.35	0.00	13,119
Chinese	0.75	0.01	0.39	0.04	1,070
Asian Indian	0.64	-0.10	0.32	-0.03	206
Korean	0.73	-0.02	0.36	0.01	163
Japanese	0.79	0.05	0.46	0.11	1,370
Cuban	0.76	0.02	0.42	0.07	1,031
Other, multi-eth Asian	0.78	0.03	0.45	0.10	294
Asian-white	0.76	0.01	0.38	0.03	1,058
Black-Asian	0.76	0.02	0.46	0.11	67
Filipino	0.79	0.04	0.49	0.14	909
Other	0.73	-0.02	0.37	0.02	4,181
Vietnamese Only	0.57	-0.18	0.30	-0.05	52
Black-white	0.77	0.03	0.37	0.02	469
Native Am.-white	0.71	-0.03	0.32	-0.03	3,308
Other Hispanic	0.73	-0.02	0.36	0.01	10,915
Puerto Rican	0.70	-0.05	0.36	0.01	8,872
Mexican	0.73	-0.02	0.37	0.02	26,845
Black	0.83	0.08	0.49	0.15	11,265
Native American	0.73	-0.02	0.35	0.00	7,006

**Table 4.4: The Effect of Alternative Family Income<sup>1</sup> on Wife's Odds of Working**

	No Controls				With Controls		N
	Effect of alternative family income on wife's log-odds of working		Difference from Whites		Difference from Whites		
	(coef)	(se)	(coef)	(se)	(coef)	(se)	
White Only	-0.361	0.03 ***					13,119
Chinese	-0.314	0.11 ***	0.046	0.12	0.073	0.12	1,070
Asian Indian	-0.051	0.17	0.310	0.17 *	0.352	0.17 **	206
Korean	0.098	0.23	0.458	0.23 **	0.448	0.27 *	163
Japanese	-0.688	0.11 ***	-0.328	0.11 ***	-0.269	0.12 **	1,370
Cuban	-0.567	0.12 ***	-0.206	0.12 *	-0.217	0.12 *	1,031
Other, multi-eth Asian	-0.156	0.21	0.204	0.21	0.201	0.24	294
Asian-white	-0.418	0.11 ***	-0.058	0.11	-0.019	0.12	1,058
Black-Asian	0.592	0.38	0.953	0.38 **	0.850	0.42 **	67
Filipino	-0.593	0.15 ***	-0.232	0.15	-0.145	0.16	909
Other	-0.077	0.05	0.284	0.06 ***	0.342	0.07 ***	4,181
Vietnamese Only	-0.031	0.30	0.329	0.30	0.513	0.34	52
Black-white	-0.313	0.14 **	0.047	0.15	0.065	0.15	469
Native Am.-white	-0.202	0.06 ***	0.159	0.07 **	0.164	0.07 **	3,308
Other Hispanic	-0.060	0.03 **	0.300	0.04 ***	0.302	0.05 ***	10,915
Puerto Rican	0.127	0.03 ***	0.487	0.04 ***	0.490	0.05 ***	8,872
Mexican	-0.028	0.02	0.333	0.04 ***	0.337	0.04 ***	26,845
Black	0.073	0.03 **	0.433	0.05 ***	0.485	0.05 ***	11,265
Native American	-0.035	0.04	0.326	0.05 ***	0.372	0.05 ***	7,006

(1) The natural logarithm of the dollar amount of alternative family income is used in all models.

Note: Sample includes only married women with children under the age of 12 at home.

Control variables are: Education, potential work experience, potential work experience squared, and region.

\* Significant at the .10 level

\*\* Significant at the .05 level

\*\*\* Significant at the .01 level

**Appendix Table 4.A: Sample Sizes by Race**

Race	Total	Men			Women		
		Married	Unmarried	Total	Married	Unmarried	Total
White Only	49,895	21,894	8,289	30,183	12,412	7,300	19,712
Chinese	4,674	1,578	1,132	2,710	1,071	893	1,964
Asian Indian	972	280	293	573	199	200	399
Korean	673	165	197	362	139	172	311
Japanese	6,133	2,041	1,392	3,433	1,593	1,107	2,700
Cuban	3,347	1,162	751	1,913	794	640	1,434
Other, multi-eth Asian	1,211	372	288	660	318	233	551
Asian-white	3,600	1,202	844	2,046	861	693	1,554
Black-Asian	352	102	87	189	62	101	163
Filipino	3,474	1,035	867	1,902	881	691	1,572
Other	16,411	5,381	3,912	9,293	3,577	3,541	7,118
Vietnamese Only	211	63	63	126	49	36	85
Black-white	1,874	490	452	942	347	585	932
Native Am.-white	12,652	4,878	2,538	7,416	2,952	2,284	5,236
Other Hispanic	33,117	11,718	6,579	18,297	7,922	6,898	14,820
Puerto Rican	29,506	10,502	6,229	16,731	6,476	6,299	12,775
Mexican	78,110	29,012	15,992	45,004	18,771	14,335	33,106
Black	57,827	15,627	12,101	27,728	11,911	18,188	30,099
Native American	22,026	7,494	4,471	11,965	5,340	4,721	10,061

Note: Sample includes full-time, full-year workers between the ages of 25-55 who were born in the U.S.

**Appendix Table 4.B: Observed-to-Predicted Earnings Ratios for Minority Women, by Marital and Family Status**

	Married			Unmarried			All
	With Children	Without children	Different from with children	With Children	Without children	Different from with children	
White Only	1	1		1	1		<b>1.00</b>
Chinese	1.15 ***	1.17 ***		1.33 **	1.02	***	<b>1.15 ***</b>
Asian Indian	1.04	1.11		---	0.97	***	<b>1.14 ***</b>
Korean	1.07	1.18		---	1.07		<b>1.21 ***</b>
Japanese	1.12 ***	1.03		1.16 *	1.03		<b>1.11 ***</b>
Cuban	1.16 ***	1.17 ***		1.27 ***	1.07 **		<b>1.16 ***</b>
Other, multi-eth Asian	1.26 ***	1.17 **		1.16	1.02		<b>1.20 ***</b>
Asian-white	1.14 ***	1.16 ***		---	1.07 **		<b>1.16 ***</b>
Black-Asian	1.16	---		---	0.95		<b>1.09</b>
Filipino	1.23 ***	1.26 ***		1.03	1.00		<b>1.20 ***</b>
Other	1.13 ***	1.11 ***		1.07 *	1.00		<b>1.11 ***</b>
Vietnamese Only	---	---		---	1.14		<b>1.09</b>
Black-white	1.18 ***	1.14 *		0.93	1.01		<b>1.13 ***</b>
Native Am.-white	1.08 ***	0.99	***	1.10 **	0.97	**	<b>1.04 ***</b>
Other Hispanic	1.14 ***	1.12 ***		1.06 *	1.02		<b>1.10 ***</b>
Puerto Rican	1.23 ***	1.22 ***		1.10 ***	1.05 ***		<b>1.17 ***</b>
Mexican	1.15 ***	1.14 ***		1.04	1.01		<b>1.11 ***</b>
Black	1.27 ***	1.20 ***	***	1.06 **	1.08 ***		<b>1.19 ***</b>
Native American	1.21 ***	1.08 ***	***	1.06 *	1.01		<b>1.12 ***</b>

**Appendix Table 4.C: Sensitivity Analyses**

				Original O-E Earnings Ratio, with Controls	Married Women				N
	Model 1:	Model 2:	Model 3:		Proportion Employed		Proportion Working Full-Time, Full-Year		
	Observed- Expected Ratio:	Observed- Expected Ratio:	Observed- Expected Ratio:		Difference from Whites	Proportion	Difference from Whites	Proportion	
White Only				<b>1.00</b>	0.79	0.00	0.44	0.00	28587
Chinese	1.16 ***	1.16 ***	1.16 ***	<b>1.15 ***</b>	0.80	0.02	0.49	0.05	2182
Asian Indian	1.22 ***	1.15 ***	1.22 ***	<b>1.14 ***</b>	0.74	-0.05	0.42	-0.02	464
Korean	1.29 ***	1.17 ***	1.25 ***	<b>1.20 ***</b>	0.76	-0.03	0.41	-0.03	338
Japanese	1.10 ***	1.11 ***	1.10 ***	<b>1.11 ***</b>	0.85	0.06	0.53	0.09	2993
Cuban	1.15 ***	1.12 ***	1.12 ***	<b>1.12 ***</b>	0.80	0.02	0.47	0.04	1677
Other, multi-eth Asian	1.19 ***	1.19 ***	1.17 ***	<b>1.20 ***</b>	0.81	0.03	0.52	0.08	624
Asian-white	1.15 ***	1.13 ***	1.12 ***	<b>1.15 ***</b>	0.80	0.02	0.46	0.03	1917
Black-Asian	1.20 ***	1.12 *	1.09	<b>1.10</b>	0.81	0.02	0.48	0.04	132
Filipino	1.19 ***	1.14 ***	1.13 ***	<b>1.17 ***</b>	0.82	0.03	0.53	0.09	1676
Other	1.10 ***	1.09 ***	1.08 ***	<b>1.09 ***</b>	0.76	-0.03	0.42	-0.01	8511
Vietnamese Only	1.16 *	1.03	1.06	<b>1.08</b>	0.68	-0.10	0.36	-0.08	125
Black-white	1.11 ***	1.10 ***	1.07 ***	<b>1.10 ***</b>	0.80	0.01	0.43	0.00	828
Native Am.-white	1.02 *	1.01	1.00	<b>1.02 *</b>	0.73	-0.06	0.38	-0.05	7984
Other Hispanic	1.08 ***	1.07 ***	1.05 ***	<b>1.08 ***</b>	0.74	-0.05	0.40	-0.04	20248
Puerto Rican	1.12 ***	1.11 ***	1.09 ***	<b>1.12 ***</b>	0.70	-0.08	0.39	-0.04	16427
Mexican	1.09 ***	1.07 ***	1.05 ***	<b>1.08 ***</b>	0.75	-0.04	0.41	-0.03	46957
Black	1.16 ***	1.13 ***	1.11 ***	<b>1.14 ***</b>	0.81	0.02	0.50	0.06	24197
Native American	1.07 ***	1.06 ***	1.05 ***	<b>1.08 ***</b>	0.73	-0.06	0.39	-0.05	14022

Model 2: Takes out the self-employed.

Model 1: Uses hourly wages as the dependent variable, includes part-time and part-year workers.

Model 3: Takes out workers with earnings below \$6500 or above \$160,000.

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## CHAPTER 5

### DIFFERENCES BETWEEN ASIAN AMERICAN AND WHITE WOMEN IN WORK-FAMILY TRADEOFFS AND THEIR CONSEQUENCES FOR EARNINGS

Asian Americans born or educated in the United States are unique among American minority groups in that they do not suffer a significant earnings disadvantage relative to whites with similar levels of human capital (Xie and Goyette 2004; Zeng and Xie 2004). Among men, after taking into account education and work experience, there is no significant earnings difference between Asian Americans and whites (Greenman 2004). Asian American women, by contrast, actually have higher earnings than comparable white women, even after controlling for a broad array of factors (Greenman 2004; Xie and Goyette 2004). This study explores the reasons behind the high relative earnings of Asian American women.

In addition to providing new information on the labor market outcomes of Asian American women, who have rarely been considered in the earnings literature, this study will contribute to our understanding of a larger issue – racial variation in the gender earnings gap. The fact that Asian American women, but not men, have higher earnings than comparable whites of the same sex is evidence of an interaction between race and gender. In this case, the interaction takes the form of a smaller gender earnings gap among Asian Americans than among whites. This pattern of racial variation in the gender earnings gap is pervasive in the United States: Among U.S.-born workers, non-Hispanic whites have the largest male-female earnings gap of any of the 19 specific racial/ethnic groups studied by Greenman and Xie (2006). This pattern of lower gender earnings gaps among minorities holds true among both minority groups that have very low

earnings relative to whites (such as African Americans) and among those with high relative earnings (such as most Asian American groups). Despite careful documentation of this empirical pattern, the causes of the race/gender interaction have not been fully explored.

The interaction between gender and race among Asian Americans and whites is a special case because Asian American and white men have comparable earnings. Thus, the race/gender interaction can be explored using a simpler approach than would be possible with other groups: under the assumption that there are no unobservable characteristics suppressing the earnings of Asian American men, explaining why Asian Americans' gender earnings gap is smaller than that of whites boils down to explaining why Asian American women earn more than white women. Therefore, while this study focuses empirically on earnings differences between Asian American and white women, conceptually and theoretically it also addresses the larger issue of the gender earnings gap.

Specifically, I address the hypothesis that Asian American women's earnings advantage may result from Asian American women not adjusting their labor force behavior as much as white women in response to parenthood. My reasoning is as follows: Asian American women's labor force participation rates have historically exceeded those of white women (Espiritu 1997; Xie and Goyette 2005). While white women's labor force participation rates have gradually caught up with those of Asian American women, employment among mothers with young children is still significantly higher among Asian Americans than among whites. There is an even greater contrast in the rates of full-time, full-year work (Greenman and Xie 2006). These differences suggest that Asian American women may be less likely to cut back on labor supply in response to parenthood. Such labor supply differences, due to the close link between work experience and earnings, should theoretically lead to higher earnings for Asian American women. I explore these issues using a sample of early-career Asian American and white scientists and engineers as a case study. The longitudinal nature of the data allows me to observe differences in employment patterns, earnings, and family formation as they develop over time.

### *Family and Gender Earnings Gaps Among Professionals*

Why might there be differences between Asian American and white women in the relationship between family and work? To answer this question, it is necessary to first examine the relationship between family and work in general. One of the dominant theories of the gender earnings gap in the social sciences is that provided by neoclassical economics (Becker 1991; Mincer and Polacheck 1979), which centers on the interplay between women's family responsibilities and their labor market outcomes. While there is a great deal of diversity in modern family structures, the neoclassical explanation primarily focuses on married-couple families with children (or on those who anticipate being part of such a family one day). This framework posits that decisions about the labor allocation of both spouses are made at the family level to maximize the family's utility. It assumes that families need both domestic production and labor market production, and that well-being is maximized if each spouse specializes in the area in which he or she has a comparative advantage. Because men are more likely to be the higher-earning spouse—and perhaps because some couples consider women to be more skilled at child-rearing—most couples choose for the wife to specialize in domestic production and the husband to specialize in labor market production.

There are several consequences for women's labor market outcomes: First, they may choose not to invest as much in human capital acquisition because they do not anticipate spending as much time in the labor force in which to reap the rewards. Second, their careers are likely to be interrupted due either to taking time out of the labor force or cutting back on hours worked in order to care for children. In addition to the income forgone as an immediate result of reductions in labor supply, such reductions slow down the rate of human capital acquisition from work experience, lowering earnings in the long run. Third, women may choose occupations that allow them to more easily juggle both work and family responsibilities. Such occupations theoretically have lower earnings penalties for taking time out, and possibly other "mother-friendly"

characteristics such as more flexible work arrangements, few demands for evening or weekend work, and the like (Becker 1981; Budig and England 2001). By the theory of compensating differentials, these characteristics come at the cost of lower earnings. The influence of family responsibilities on women's occupational choices is therefore thought to result in both occupational sex segregation and the lower earnings of "female" occupations. Thus, neoclassical economics provides a theoretical framework that explicitly links gender inequality at work with gender role differences at home. This explanation will henceforth be referred to as "role specialization theory."

Empirical tests of role specialization theory have yielded mixed results. In particular, its explanation of occupational sex segregation has not held up well to empirical scrutiny (see England et al. 1988, England 1994). On the other hand, there is little doubt that taking time out of the labor force to care for children does lower women's earnings (England 2005). There is also evidence that role specialization theory provides part of the explanation for the gender earnings gap among professionals. Noonan and Corcoran (2004, p.146) find that about half of the earnings disparity between male and female lawyers 15 years post-degree can be attributed to women's lower levels of labor supply. Xie and Shauman (2003) show that the gender gap in earnings for scientists and engineers is much larger for married workers with children than for childless workers, suggesting that family responsibilities have differential effects on men's and women's labor market outcomes. Many other studies have also documented the negative effect of child-related employment breaks on women's earnings in the general population of workers (Corcoran, Duncan, and Ponza 1983; England 2005; Jacobsen and Levin 1995).

While role specialization theory has been one of the most commonly invoked explanations for the gender earnings gap in the social sciences, it has important limitations (for examples, see England (2005), Greenman and Xie (2006)). Here I will limit my discussion to those most relevant to Asian Americans. The theory presents itself as being based solely on rational economic decision-making, and thus equally applicable to all families facing the same

economic circumstances. However, the extent to which families conform to its predictions is also likely to be influenced by culturally-variable attitudes and values. Because they are culturally variable, such attitudes and values are likely to also vary by racial and ethnic group, potentially making role specialization theory more applicable to some groups than others. Unique historical circumstances, such as the history of slavery for African Americans and the particular immigration history of Asian Americans, may also influence the extent to which role specialization theory is applicable to different racial and ethnic groups.

One of the theory's limitations is that it fails to consider that for both men and women, there are often non-economic rewards to work that may outweigh considerations of maximum efficiency in the family allocation of labor. Workers with high work motivation, especially if they have invested a great deal in the development of a career, are unlikely to make their work decisions based solely on economic factors. The majority of Asian American women are immigrants, and among the highly-educated (such as the sample of scientists and engineers used in this study) often came to the United States specifically to seek educational or employment opportunities. It is very likely that these women have a strong work commitment, regardless of family-level utility maximization. Furthermore, a growing number of these women are the "primary immigrant" in a family, bringing their husbands as dependents (Espiritu 1997). In such cases couples are probably very unlikely to specialize along traditional gender lines after arrival.

Second, the theory ignores both the importance of cultural values regarding the importance of work and culturally-defined expectations regarding the responsibility of men and women for contributing financially to the family. Attitudinal surveys have suggested that there is racial variation in such values and expectations, with African Americans and Mexican Americans both expressing more support than whites for the idea of couples' shared responsibility for providing income (Blee and Tickamyer 1995; Taylor, Tucker, and Mitchell-Kernan 1999). These attitudes coexist with more gender-traditional attitudes on other issues, such as women's responsibility in the home and their role in public life (McLoyd 2000). It seems likely that

attitudes regarding women and work have been shaped by the economic necessity of having most adults in the workforce among groups with lower earnings. Although Asian Americans' cultural values surrounding work and gender roles have not been directly measured with surveys, the recent immigrant history of so many Asian American families suggests that a similar argument may apply to them. Given the high costs of migration and the difficulty of gaining a solid economic footing in a new country, Asian American families may also have a higher expectation that women work outside the home, even if other gender-role attitudes remain more traditional.

Third, role specialization theory assumes, at least for families in which the wife's earnings are greater than the cost of child care, that there is still a perceived advantage of parental care that outweighs the additional income forgone in order to provide such care. However, there is variation in the value that different families place on different types of investments in children. For some families, having a parent available after school may not be as important as having the economic resources to provide children with the highest-quality educational experiences. Given the very high value placed on children's educational achievement in many Asian American groups (Goyette & Xie 1999; Slaughter-Defoe et al. 1990; Zhou and Bankston 1998), the assumption that the value of parental care would outweigh the desire to give children better educational opportunities is questionable. Thus, there is reason to question whether role specialization theory describes the decisions of Asian American and white families equally well.

There has been little empirical research on racial variation in the applicability of role specialization theory, in part because most studies lack sufficient sample sizes to do separate analyses by race. Greenman and Xie (2006) do address this issue, although they are limited by their inability to measure work experience directly. They find that racial variation in the gender earnings gap is found primarily among married workers, with little variation among unmarried workers. Furthermore, they find that the labor force participation of women in many minority groups is not as influenced by their husbands' earnings as it is among whites. Both findings

suggest that there may be higher gender role differentiation among white couples than among most other groups.

In addition to role specialization theory, another line of research on the relationship between family factors and women's earnings investigates reasons behind the "motherhood penalty," or the lower earnings of mothers compared to similar women without children. This literature finds that mothers have lower earnings than non-mothers even net of their lower labor supply (Budig and England 2001; Waldfogel 1997), suggesting that there are factors in play other than those emphasized by role specialization theory. Few studies have directly addressed racial differences in the motherhood penalty, but those that have tend to find smaller penalties for non-white mothers. Blair-Loy and DeHart (2003) find that there is no motherhood penalty for African American women lawyers. Waldfogel (1997) and Korenman and Neumark (1992) both find that African American mothers' earnings penalty is smaller than that of white mothers.' Budig and England (2001) report similar findings, for Latinas as well as African American women, but only for mothers with three or more children. No literature to date has examined the motherhood penalty among Asian American women.

Thus, there are both theoretical and empirical reasons to suspect that the relationship between family factors and labor market outcomes varies by race. The few existing studies on earnings differences between Asian Americans and whites have not been able to test the potential role of family factors adequately, primarily due to their reliance on cross-sectional data. This study uses longitudinal data on scientists and engineers to observe the effect of changes in family responsibilities on Asian American and white women's employment, job characteristics, and earnings. Specifically, I test three hypotheses:

- 1) Asian American women reduce their labor supply less in response to parenthood than white women, leading to a faster accumulation of work experience.

2) Asian American women are less likely to be deterred by parenthood from pursuing demanding professional careers – those often thought of as typical “male” careers – than are white women.

3) Differences in accumulated work experience and/or career type explain some or all of Asian American women’s earnings advantage relative to white women.

If work experience or career types are indeed a cause for the Asian-white earnings differential among women, it is best to observe women at their early-career stages. Emerging gaps in experience, career characteristics, and earnings can thus be observed simultaneously, making it possible to relate them to each other. If differences in work experience or career types are responsible for Asian American women’s higher earnings, then one would expect to see relatively small earnings gaps at the beginning of the career, followed by larger gaps later. Thus, to address my research questions I follow young workers as their careers develop over time.

## **Data and Methods**

### *Data*

I use data from the National Science Foundation’s Scientists and Engineers Statistical Data System (SESTAT). This integrated data system combines respondents from three different NSF surveys – the National Survey of College Graduates the National Survey of Recent College Graduates, and the Survey of Doctorate Recipients. The target population for SESTAT includes adults with at least a college degree who a) have a bachelor’s or higher degree in the natural or social sciences, mathematics, computer science, or engineering, or b) who work in one of those fields. A large cross-section of this population was surveyed in each of four survey years (1993, 1995, 1997, and 1999) and a subsample of each cross-section was then followed into later survey years. Because the purpose of this research is to examine early-career employment patterns and earnings growth, I use only those respondents who were first sampled in 1993 and who were



followed until the end of the survey in 1999. I also limit my analysis to respondents within the two youngest age cohorts of the survey, those under the age of 33 in 1993. This group includes 2,648 white women and 457 Asian American women.

SESTAT has both strengths and weaknesses as a data source for studying the career processes of Asian Americans. Its primary strength is that due to its large sample size and the high representation of Asian Americans in the science and engineering fields, SESTAT provides unique longitudinal data about Asian American workers. It has four primary drawbacks: First, the coverage is limited to scientists and engineers, and thus the results are not generalizable to other Asian American or white workers. Second, the sample is only followed for six years. This may not be a sufficient time horizon over which to observe career and earnings development. Third, it does not contain much information pertaining to the respondent's work history in the 2-year interval between surveys. Reliable work information is limited to the week of April 15 in the year of each survey. With repeated measures, however, it is still possible to differentiate respondents based on the number of survey reference weeks in which they were observed in certain states (such as working full-time versus being out of the labor force). Finally, while the sample size is adequate for studying Asian American scientists in the aggregate, it is not large enough to allow separate analyses by specific ethnic group. Given the diversity of sending countries, languages, and cultures among Asian Americans, this is a significant drawback.

I examine four outcome variables: Labor force participation, hours typically worked per week for those who are employed, whether the respondent is on a "professional-track" career path, and earnings. Labor force participation, hours, and earnings are measured directly by the survey, while I constructed the "professional-track" career outcome. My goal in creating a measure of a "professional-track" career was to capture high-status, demanding jobs of the type often considered the "best" jobs in science and engineering, but also widely considered to be among the most difficult to combine with child-bearing and rearing. For this study, a job is considered "professional-track" if it is full time and also meets any of the following criteria: 1)

the primary job activity is research (not including activities such as using research results to generate products); 2) the primary activity is professional practice and the respondent has a professional degree (i.e., doctors, lawyers, etc.); 3) the primary activity is computer programming or systems development AND the respondent has a graduate degree in math or computer science; or 4) the primary activity is “managing or supervising” and the job involved supervising others.

My key independent variable is parenthood status. The survey does not ask directly about births or other ways in which children may enter a family; instead, I must infer these events from changes in the number of children in the household between survey waves. For each survey wave, I create three measures: whether any new child has entered the household since the last survey, whether a first child has entered, and whether a second or higher-order child has entered.

Differences in labor supply uncovered in the analyses of hours worked per week and likelihood of being not in the labor force will be manifested in differences in work experience by the end of the observation period. For my analysis of earnings, I therefore treat work experience at last observation as a summary measure of the differences in labor supply I examine in my first two analyses. I measure work experience based on the respondent’s labor force status at each of the four survey waves. I create measures for years of full-time work experience, years of part-time work experience, and years out of the labor force by multiplying the number of years since the first observation by the proportion of observations the respondent was observed to be in each status. For example, if someone worked full-time in 1993, part-time in 1995, and full-time in 1997 and 1999, that person’s 1999 full-time work experience would be counted as 4.5 years (6 (# of years) times .75 (proportion of observations working full-time)).

In the multivariate models, I include the following control variables: Highest degree type (PhD, Professional, Masters, or Bachelors (omitted)); field of highest degree; whether current job is within the field of highest degree; whether born in U.S.; and 5-year birth cohort (the survey does not contain a less aggregated measure of age). It would also be very useful to have a

measure of marital status, but unfortunately this information is not included on the public-release file.

### *Statistical Models*

My first three analyses examine the effect of having a child on labor force behavior – specifically, labor force participation, hours worked per week, and the likelihood of being in a professional-track career. Because both the independent variable and the outcome are time-varying, I format the data into person-periods for these analyses. Each observation of each respondent is treated as a separate case. This allows me to examine the outcome at time  $t$  as a function of the predictor variables measured at time  $t-1$ . Because observations are not independent within persons, I use Huber-White standard errors and correct for clustering in all person-period analyses<sup>1</sup>. Variables are defined as follows:

L – Whether or not in the labor force (1 = yes)

H – Hours worked per week

P – Whether or not in a “professional-track” job (1=yes)

PC – Number of observations in a professional-track job

S – Log of annual salary from principal job

A – Asian American indicator

EF – Years of full-time work experience

EP – Years of part-time work experience

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<sup>1</sup> Winship and Radbill (1994) argue that using survey weights in multivariate analyses is unnecessary and undesirable if the weights are solely a function of the independent variables in the model. If this is the case, unweighted results are preferable because they are equally consistent and unbiased, but are more efficient and provide smaller standard errors. Winship and Radbill (1994) outline a test (p. 248), originally proposed by DuMouchel and Duncan (1983), to determine whether the weights are completely captured by the independent variables in the model. In brief, this test involves including the weight variable and its interactions with all the model’s other independent variables in the model. If the coefficients of weight variable and its interactions are jointly insignificant, this indicates that the weights are already captured by the model’s independent variables and unweighted OLS estimates are preferable. All of my multivariate models passed this test, so I do not use weights in these models. I do use weights for all descriptive statistics.

C – New child has entered household since last survey

X – a vector of control variables, including highest degree type, field of highest degree, whether job is in the same field as the highest degree, foreign birth, and age.

The subscript  $i$  refers to the individual,  $t$  refers to the time period.

Using logistic regression, I first model the likelihood of being in the labor force at time  $t$  as a function of whether a new child has been added to the family between time  $t-1$  and time  $t$ , in addition to hours, salary, and other covariates measured at time  $t-1$  (before the addition of the new child). Because I want to capture the effect of a child on the probability of dropping out of the labor force, this analysis is restricted to women who are employed at time  $t-1$ . Differences in the effect of a child between white and Asian American women are captured in the coefficient of the interaction term between having a child and being Asian American ( $B_5$ ):

$$L_{it} = B_0 + B_1H_{i(t-1)} + B_2S_{i(t-1)} + B_3A_i + B_4C_{it} + B_5(A_i * C_{it}) + B_6X_{i(t-1)} \quad (1)$$

Note that by measuring work-related covariates (such as salary and hours worked per week) *before* the birth took place, I reduce the bias that could otherwise result if women with poorer labor market prospects are simultaneously more likely to experience a birth and more likely to drop out of the labor force. Previous research on the effect of children on women's labor market outcomes has found that these effects may differ by parity (Waldfoegel 1997). I therefore repeat this analysis for women who do not have children at time  $t-1$  in order to estimate the effect of having a first child, and again among women who are already mothers at time  $t-1$  in order to estimate the effect of a second- or higher-order child. I model the relationship between having a child and hours worked per week in exactly the same way, except I use OLS rather than logistic regression:

$$H_{it} = B_0 + B_1H_{i(t-1)} + B_2S_{i(t-1)} + B_3A_i + B_4C_{it} + B_5(A_i * C_{it}) + B_6X_{i(t-1)} + \varepsilon_{it} \quad (2)$$

I do two analyses for professional-track career. First, I wish to establish if there are differences between Asian American and white women in the likelihood of being in such a career

at any given observation. I thus model the odds of being in a professional-track career using logistic regression, as follows:

$$P_{it} = B_0 + B_2A_i + B_3X_{i(t-1)} \quad (3)$$

Note that this model does not control for previous labor force outcomes such as salary and hours worked, as these may have been functions of being in a professional-track career at an earlier time point.

Second, I examine the relationship between motherhood and professional-track careers. The effect of having a child on being in a professional track career is potentially complex. Young workers' careers are often in flux, meaning that those whose first jobs are not professional-track may move into such jobs as they gain more work experience, while those who start out in such jobs may not stay in them. Therefore, in order to capture the total effect of parenthood it is desirable to examine transitions into and out of professional-track jobs simultaneously. To this end, I create a variable that is the difference between current professional track job status (1= in a professional track job) and the status at the previous observation. The variable can thus take on three values: -1 if the worker transitioned out of a professional track job, 0 if the worker did not change job type, or 1 if the worker transitioned into a professional track job. I then model this change using OLS regression as follows:

$$P_{it} - P_{i(t-1)} = B_0 + B_1H_{i(t-1)} + B_2S_{i(t-1)} + B_3A_i + B_4C_{it} + B_5(A_i * C_{it}) + B_6X_{i(t-1)} + \varepsilon_{it} \quad (4)$$

Finally, I model earnings growth from first to last observation. My goals are twofold: First, to establish whether earnings grow at the same rate for Asian Americans as for whites; second, to test the contributions of labor supply differences and differences in professional-track careers in explaining differences in earnings growth. I model labor supply differences as cumulative work experience over the observation period, while I model professional-track job differences as the total number of observations over the period that the respondent was in a professional-track job. For this portion of the analysis, I looked at change in both annual salary

and hourly earnings, but present results here for annual salary only. Annual salary is the preferred earnings measure because most of the workers in this highly-educated sample are paid on a salary basis, not on an hourly basis. This measure is thus more relevant and meaningful for them. It is also more likely to be correlated with long-term earnings and career prospects, since many salaried professional jobs (e.g., medical residents, assistant professors) require disproportionately large time commitments in the early-career stages.

I first model earnings at first observation in 1993 to establish baseline differences between Asian American and white women, both unadjusted and net of the vector of covariates  $X$ . I expect these initial differences to be small net of covariates. I then address Asian-white differences in earnings growth. I estimate the following models:

$$S_{i99} = B_0 + B_1 A_i + B_2 S_{i93} + \varepsilon_i \quad (5)$$

$$S_{i99} = B_0 + B_1 A_i + B_2 S_{i93} + B_3 X_{i93} + \varepsilon_i \quad (6)$$

$$S_{i99} = B_0 + B_1 A_i + B_2 S_{i93} + B_3 X_{i93} + B_4 EF_{i99} + B_5 EP_{i99} + B_6 H_{i99} \varepsilon_i \quad (7)$$

$$S_{i99} = B_0 + B_1 A_i + B_2 S_{i93} + B_3 X_{i93} + B_4 PC_{i99} + \varepsilon_i \quad (8)$$

In each equation,  $B_1$  indicates the difference between Asian Americans and whites in earnings growth between 1993 and 1999, net of the effect of 1993 earnings differences. In Equation (5), it gives the unadjusted difference. Equation (6) shows how much of this original difference is explained by covariates. Equation (7) adds current and past labor supply to the model. Current labor supply is measured by 1999 hours worked per week, while past labor supply is measured as accumulated full- and part-time work experience between 1993 and 1999. The reduction in  $B_1$  between models (6) and (7) indicates the extent to which earnings growth differences between Asian American and white women are attributable to differences in their cumulative labor supply differences over the 1993-1999 time period, while the reduction between models (6) and (8)

indicates the extent to which differences can be explained by differences in time spent in professional-track jobs.

## **Results**

### *Descriptive Results*

Several descriptive analyses are presented in Table 5.1. The goal of this portion of the analysis is simply to get a broad sense of possible differences between Asian American and white women, so I leave aside testing for statistical significance until the multivariate results.

The first panel in Table 5.1 shows differences in labor supply for all women, regardless of parenthood status. It appears that white women are less likely to work full-time than Asian American women, more likely to work part-time, and slightly more likely to be out of the labor force. Correspondingly, over the six-year observation period white women's average accumulation of full-time work experience is about .37 years lower than that of Asian Americans. The two groups are fairly similar in their family formation behavior over the study period. While more Asian American than white women have children at the first observation, similar proportions go on to have a birth during the study period, and there is no difference in the average number of children at the end of the study period. There are also no differences by parity in the likelihood of having a child.

The remainder of the table shows change in work patterns surrounding the arrival of a new child. Because there is no way to know the timing of the child's arrival during the two-year interval between observations, the observation after the arrival could be anywhere from a week or two up to two years later. As for the overall sample, in the observation before a child's arrival white women are somewhat less likely than Asian American women to be working full-time, and somewhat more likely to be working part-time or not in the labor force. They also work slightly fewer hours per week. At the observation after the new child, these differences have uniformly

widened. While at the observation before the new child white women were about 5 percentage points less likely than Asian American women to be working full-time, after the new child they are 13 percentage points less likely. While the change is not as large, Asian-white differences in part-time work and being out of the labor force are also greater after the arrival of a new child.

The last two panels show patterns of transitions among possible work statuses between the observations preceding and following the arrival of a new child. For white women, about 62% are working full-time before a child's arrival and continue to do so after the arrival – thus making no adjustment in labor supply. About 15% transition from full-time to part-time work, and about 9.6% transition from working to being out of the labor force. Asian women are noticeably more likely to work full-time and continue to do so after a new child, with 75% falling into this category. They are also apparently less likely to drop out of the labor force. The last panel repeats this analysis for just the subset of women who were working full-time before the child's arrival. We can see here that some of the racial differences in the second-to-last panel were due to Asian women's greater likelihood of working full-time at the pre-child observation rather than in racial differences in responses to parenthood. Nonetheless, even among this more select sample, Asian American women appear to be more likely to continue working full-time, somewhat less likely to transition to part-time work, and less likely to drop out of the labor force.

Table 5.2 presents means of each of the outcome variables and significance tests for differences between Asian Americans and whites. Because the outcomes are all time-varying, these results are computed using the person-period data in order to get a sense of overall racial differences. For the two binary outcomes – being out of the labor force and being in a “professional track” career – the tests are for the significance of white/Asian odds ratios. For the other measures, tests for group differences in means are reported.

There are no significant differences between white and Asian American women in the likelihood of being out of the labor force. There is also no difference in period-to-period change in whether or not the respondent is on a professional track career. However, white women do



have significantly lower overall odds of being in a professional track career. They also work about 2 hours less per week and earn about \$6,553 less per year. Next, I will test whether these differences are robust in a multivariate setting.

### *Multivariate Results*

Results for being out of the labor force at the observation after the arrival of a new child are presented in Table 5.3. Reported coefficients are from logistic regression models and thus represent the differences in the log-odds of being out of the labor force at the observation following a new child associated with each independent variable. Because preliminary analyses revealed significant differences by parity in the effect of children, results are presented separately for first children and for second-or-later children (sample size is insufficient to further distinguish between higher-order children). Coefficients that are statistically significant at the .05 level are underlined.

Columns (1) and (2) examine the odds of being not in the labor force (henceforth NILF) at time  $t$  among women who had no children at time  $t-1$ . Column (1) shows that having had a child since the last observation increases the log-odds of being NILF by about 1.9, meaning that the odds of being NILF are approximately 6.7 times higher for women who have had a first child since the last observation compared with women who have not yet had a first child. There is no significant racial difference in the odds of being NILF, nor is there any significant interaction between race and having had a child. Column (2) repeats this analysis, adding a set of control variables measured at time  $t-1$ . The addition of these covariates does not change the results from Column (1).

Columns (3) and (4) show the relationship between having a second- or higher-order child on the odds of being NILF. These results were calculated from a sample of women who already had children at time  $t-1$ , yielding a comparison between mothers who experience an additional birth and those who do not. Column (3) reveals that having a second child is positively

associated with the odds of being NILF, but its effect appears noticeably smaller than that of having a first child. In the absence of covariates, there is no significant racial difference or Asian/child interaction in the odds of being NILF. After the addition of covariates in Column (4), however, there is a significant negative interaction between being Asian and having a child. This model shows that while for white women having a higher-order child does increase the likelihood of being NILF, for Asian Americans it does not – the total effect of a new child for Asian Americans (.76 + -1.85) is actually less than zero. By demonstrating that there is a stronger relationship between children and being NILF for white than for Asian American women, this result provides partial support for my first hypothesis.

Results for hours worked per week are presented in Table 5.4. Again, separate results are presented for first children and for second-and-higher children. Column (1) shows that women who have had a first child since the last observation work, on average, 6.2 fewer hours per week than women who remained childless. Asian American women work on average about 2 more hours per week than white women. There is a positive interaction between being Asian and having a child, but it is not statistically significant. Column (2) adds covariates to the model, including hours worked per week at time  $t-1$ . After the addition of this control, the interaction between being Asian and having a first child is larger and becomes significant at the .05 level. This interaction shows that while white women work about 6.2 fewer hours after having a first child, Asian American women only reduce their work hours by about 3.5.

Columns (3) and (4) give results for the effect of a second-or-higher child on hours. Only mothers are included in this analysis. Again, the unadjusted model presented in Column (3) shows that Asian American women work significantly more hours per week (about 2.2) than white women. Column (3) also shows that there is still a significant reduction in hours following the arrival of an additional child, but this reduction, at about 2.6 hours, is considerably smaller than that associated with a first child. There is no significant difference in the size of this reduction between Asian American and white women. After the addition of control variables in

Column (4), there is no longer a significant difference in the hours worked by Asian American and white mothers<sup>2</sup>. Overall, the results from Table 5.4 indicate that Asian American women cut their hours back less in response to motherhood than white women after the birth of a first child, but that later children do not lead to the development of additional differences.

Racial and family status differences in professional track careers are explored in Table 5.5. Columns (1) and (2) give results from logistic regression models that test for differences between Asian American and white women in the probability of having a professional-track job. The unadjusted racial difference, shown in Column (1), indicates that Asian American women's odds of being in a professional-track job are about 50% higher than those of white women ( $\exp(.395)=1.3$ ). This difference, however, is fully explained by the covariates included in Column (2).

Columns (3) and (4) present results from OLS regression models of the change in professional-track career status between time t-1 and time t. A positive coefficient can indicate either a smaller likelihood of moving out of a professional-track career, a greater likelihood of moving into one, or some combination of both. For this outcome there was no indication of differences by parity, so only one set of results is shown for the effect of parenthood. Column (3) reveals that having had a child since the last observation is associated with negative change in professional-track career status, meaning that women who have had children are more likely to move out of such careers, less likely to move into them, or some combination thereof. There is no significant difference in change in professional-track careers between Asian American and white women. Column (4) indicates that the effect of having a child is robust to the addition of control variables. Again, there is no significant racial difference, nor any significant interaction between race and having a child. The results for professional-track career can be summarized as follows:  
Asian American women are more likely than white women to be in a professional-track career,

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<sup>2</sup> The disappearance of this difference is not due simply to the inclusion of previous hours, which would mean only that the difference between Asian American and white women at time t was no bigger than that at time t-1. Results are similar without previous hours.

but this difference is explainable on the basis of observed characteristics. There is no Asian-white difference in the likelihood of switching in or out of professional-track careers. Having a child does affect change in professional-track careers, but there is no racial difference in this effect.

So far, I have examined differences between Asian American and white women in adjustments in labor force behavior in response to parenthood. Next, I turn to the implications of these differences for earnings. Asian-white differences in logged annual salary at the baseline in 1993 are presented in the first panel of Table 5.6. As shown in Column (1), by 1993 the Asian American women in the sample were already earning approximately 7.5% more per year than the white women. Column (2), however, shows that in 1993 this entire difference can be explained by the human capital and other control variables in the model. Supplementary analyses (available upon request) showed that the vast majority of this change was due to the inclusion of the controls for highest degree type. In the early-career stages, then, Asian American and white women with comparable levels of education also have comparable earnings.

The next four columns examine salary growth from 1993 to 1999. In each model, 1999 earnings are regressed on 1993 earnings and other covariates. The inclusion of 1993 earnings in the models means that coefficients on other variables represent effects on earnings in 1999 net of earnings differences that already existed by 1993 – essentially, effects on earnings growth. Column (3) shows that without adjusting for any covariates, Asian American women experience significantly higher earnings growth from 1993 to 1999 than white women – an additional increase in log salary of about .14, or in percentage terms, about an additional 15% growth over the 6-year period. Part of this difference is attributable to differences in the covariates included in Column (4). After the addition of these covariates, the Asian-white difference is somewhat smaller at .095, but still significant. Columns (5) and (6) test the roles of the two explanatory variables of interest: Differences in professional-track careers and differences in cumulative labor supply. Because there was no Asian-white difference in the likelihood of being in a professional-track career after adjusting for covariates, it would be surprising if this factor was behind much of

the Asian-white difference in earnings growth. Indeed, Column (5) shows that it is not – although each additional observation in a professional-track job was associated with an additional increase in log earnings of about .06, the Asian-white difference is unaffected. Column (6) includes measures of full-time work experience, part-time work experience, and current hours worked per week. Together, these variables measure cumulative labor supply over the period from 1993 to 1999. Their inclusion in the model causes the Asian-white difference to drop from .095 to .038 and renders it statistically insignificant. The remaining difference in earnings growth between Asian American and white women is thus attributable to Asian American women’s higher labor supply over the 1993-1999 period<sup>3</sup>.

## **Discussion**

By examining the process through which earnings differences between Asian American and white women emerge over time, this study has clarified the reasons underlying the heretofore unexplained earnings “advantage” of Asian American women. In the early-career stages, Asian American women’s higher earnings are due almost entirely to their high educational attainment. There is no unexplained earnings “advantage” early in the career trajectory. Over time, however, Asian women’s earnings grow faster than those of white women, creating an unexplained gap later in the career trajectory. This study tested the role of labor supply differences over the early-career years in explaining the greater earnings growth of Asian American women. The findings demonstrate that Asian American women’s higher labor supply, in the form of greater accumulation of work experience and smaller reductions in hours worked per week over the observation period, does indeed account for the unexplained portion of Asian American women’s higher earnings growth rates.

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<sup>3</sup> Additional models (not shown) indicated that that both past work experience and current hours worked were important in explaining the Asian-white difference. While each variable by itself was sufficient to cause the Asian indicator to lose statistical significance, its effect size remained notably larger – on the order of about .05 – than the final model including both measures.

The results also demonstrate that Asian American and white women's different responses to parenthood contribute to these differences in labor supply. After controlling for Asian-white differences in covariates, Asian American women are less likely than white women to take time out of the labor force in response to having a child. They also make smaller reductions in the hours they work per week. But these general effects obscure interesting differences by parity, which can be summarized as follows: If Asian American women are going to drop out of the labor force in response to parenthood, they do it after the first child. Given that they are still employed at the time of a subsequent child's arrival, the additional child does not increase their likelihood of dropping out. For white women, by contrast, both first and later children increase the likelihood of dropping out. Among mothers who remain employed after a first child, white women make greater reductions in hours worked than Asian American women, and this Asian-white difference is not changed by the arrival of a subsequent child. These differences, while unexpectedly complex, ultimately lead to higher labor supply among Asian American mothers than among their white counterparts.

The results thus support the hypothesis that Asian American women adjust their labor supply less in response to parenthood than white women. I did not find support, however, for the hypothesis that Asian American women are less likely to be deterred by parenthood from pursuing demanding "professional-track" jobs. Although Asian American women are more likely than white women to hold such a job, this difference is explainable on the basis of demographic and human capital factors. There are no Asian-white differences in change into and out of professional-track jobs, either overall or in response to parenthood. Thus, while there is evidence of differential labor market responses to parenthood between Asian Americans and whites, there is no evidence that these differences encompass career characteristics; instead, they appear to be limited to differences in labor supply adjustments.

How robust are these findings? Potential limitations of the analysis fall into two primary categories: Data limitations and selection bias. The data, while unique in enabling a longitudinal

analysis of earnings among Asian Americans, are not ideally suited for studying career development or earnings growth. Of the problems mentioned earlier, including the short time horizon, lack of information on specific Asian ethnic groups, and the highly selective sample, the issue of lack of information on the period between survey waves deserves further comment. The survey was conducted only every two years, and few questions were asked about events between surveys – thus creating a “missing data” problem for periods between surveys. This problem affects the present analysis by compromising my ability to measure work experience accurately. Being out of the labor force is measured only at a single point in time at each survey. Because being out of the labor force typically seems to be a temporary state for this sample (less than 5% are observed to be NILF for more than one observation), it is likely that a large portion of shorter employment breaks take place between surveys and are thus not observed. These problems are compounded by the lack of information about the timing of the arrival of new children between surveys. If a typical employment break following a birth is one year, for example, then I would not observe that break for half the women who had a child between surveys.

This data limitation could potentially affect comparisons between Asian American and white women. Not observing employment breaks necessarily results in over-estimating work experience during the 1993-1999 period. Because there is no pattern as to whose spells will be observed and whose will not, it also introduces an element of random error to the measurement of work experience. As is well known, this kind of measurement error on the independent variable can cause attenuation bias. Given that being Asian American is positively associated with work experience, attenuation bias on the effect of work experience could cause positive bias on the estimated effect of being Asian American. However, my models that include work experience show a positive but small and statistically insignificant effect of being Asian American; thus, there is no remaining significant difference between Asian Americans and whites that could be caused by a biased effect of work experience.

A second source of potential problems is bias resulting from selection. Researchers on the relationship between children and women's earnings have long recognized the potential for results to be biased due to selectivity of women, especially mothers, into the labor force (Korenman and Neumark 1992). For example, if women with the highest earnings are those most likely to return to work after having children, the apparent effect of children on women's earnings would then be underestimated due earnings being observed only among the higher-earning mothers. Although providing accurate estimates of the effect of children on women's earnings is not the goal of my analysis, this type of selectivity could still have implications for my results. I find that Asian American women have higher earnings and earnings growth than white women; however, if selectivity into the labor force operates differently for Asian Americans and whites, this result could be unreliable. If Asian American women were selected into the labor force based on high earnings to a greater extent than white women, this could account for the difference I find. However, there is no indication of such selectivity in my sample: Controlling for previous earnings, Asian American women are actually *less* likely than white women to be out of the labor force following the addition of a child. It is more likely that selection bias would cause an underestimate of the difference between Asian Americans and whites: If the "extra" white women who are not working are those with lower earnings, estimates of white women's average earnings would be upwardly biased.

Finally, even if there are no biases resulting from selection into the labor force, the earnings analysis may still understate differences in economic outcomes between Asian American and white women. By considering only the group of women who have observed earnings in 1999, the comparison does not take into account racial differences in having zero earnings – in other words, in being not in the labor force. Because white women are more likely to be NILF, this comparison likely underestimates Asian-white differences.

I explored this possibility by doing some supplementary analyses using tobit models. Tobit models are designed to correct for selection caused by censoring of the type encountered



here, in which the earnings of women not in the labor force are not observed, by allowing the inclusion of units with censored information in the analysis. I repeated several of the earnings growth models presented in Table 5.6 using tobit models instead of OLS regression (results available upon request). The tobit models gave a considerably higher estimate of the unadjusted difference between Asian American and white women in 1993-1999 earnings growth. After accounting for differences in covariates, however, the tobit estimates were no longer much different from those of OLS. Thus, the adjusted models presented in Table 5.6 are unlikely to be highly biased due to white women's greater propensity to be out of the labor force. In conclusion, although it is not possible to prove that the results are not biased by any of the limitations discussed above, I have found no indications of such bias.

### **Conclusion**

This paper proposed that lower gender role specialization among Asian American couples might contribute to both Asian American women's high earnings and the smaller gender earnings gap among Asian Americans. As far as these results go, they provide support for this hypothesis. Asian American women are less likely than white women to respond to parenthood with reductions in labor supply, and their greater work experience accumulation over time explains their high rate of earnings growth. The high earnings of Asian American women also account for the lower gender gap among Asian Americans. However, gender role specialization by definition encompasses men just as much as women. The next crucial task in the investigation of racial differences in gender role specialization as a contributor to racial differences in the gender earnings gap is to bring men back into the picture.

The ideal analysis would examine domestic labor and outside employment simultaneously for both men and women. For models of gender role specialization within partnerships, the couple, rather than the woman, would be the primary unit of analysis. Furthermore, racial differences in selectivity into marriage would be explicitly considered, thus

no longer limiting the analysis to married or partnered individuals. The relationship between women's and men's career prospects, earnings potential, and the probability of getting married is known to vary by race (Oppenheimer, Kalmijn, and Lim 1997); thus racial differences in gender role specialization within marriage could result in part from racial differences in who gets married.

Unfortunately, at least for Asian Americans, no data exists that would make this kind of analysis possible. In absence of such data, however, the results of this study provide fairly strong support for the part played by lower gender role specialization among Asian American couples in producing their lower gender earnings gap. Although we still know little about the male side of the equation, we do now have evidence that Asian American women do not make the type of career adjustments predicted by role specialization theory to the same extent as white women do.

Table 5.1: Descriptive Statistics on Labor Force Status and Parenthood

	White	Asian	Difference
<u>LF Status (person-period data)</u>			
Full-Time	80.8	86.0	-5.2
Part-Time	14.6	10.5	4.1
Not in Labor Force	5.7	4.9	0.8
<u>Mean logged annual salary (person-period data)</u>			
	10.31	10.49	-0.18
<u>Mean change in logged salary from first to last obs</u>			
	0.260	0.353	-0.09
<u>Work experience at last obs</u>			
Full-time	4.82	5.19	-0.370
Part-time	0.87	0.56	0.308
NILF	0.30	0.25	0.044
<u>Parenthood Transitions</u>			
% w/ children at first observation	24.8	30.2	-5.4
% w/ new child during study	45.3	43.3	2.0
% w/ first child during study	41.8	39.7	2.1
% w/ 2nd+ child during study	13.9	15.6	-1.7
Avg family size at last observation (for those w/ kids)	1.8	1.8	0.0
<u>Observation before new child</u>			
% Working Full-Time	84.3	89.6	-5.3
% Working Part-Time	13.8	6.7	7.1
% Not in Labor Force	2.0	3.8	-1.8
Avg hours worked/week	41.0	43.6	-2.6
<u>Observation after new child</u>			
% Working Full-Time	61.7	74.7	-13.0
% Working Part-Time	24.7	15.8	8.9
% Not in Labor Force	13.5	9.5	4.0
Avg hours worked/week	36.9	41.2	-4.4
<u>LF Status Transitions after New Child</u>			
Full-Time to Full-Time	62.1	75.4	-13.3
Full-Time to Part-Time	15.0	13.2	1.8
Working (FT or PT) to NILF	9.6	3.6	6.0
Part-Time to Part-Time	13.4	7.9	5.5
<u>LF Transitions for prior FT workers</u>			
Full-Time to Full-Time	70.8	79.7	-8.9
Full-Time to Part-Time	17.1	13.9	3.2
Full-Time to NILF	12.1	6.4	5.7

Table 5.2: Unadjusted Means and Asian-White Differences in Outcome Variables

	Mean		Difference in means	Logit		Odds Ratio (White/Asian)
	White	Asian		White	Asian	
Not in Labor Force (NILF)	0.057	0.049	0.008	0.060	0.051	1.167
Hours/week	41.5	43.6	-2.1 **			
"Professional-track" Career	0.257	0.308	-0.051	0.346	0.446	0.776 *
Change in Professional-track Career	0.005	0.008	-0.004			
Annual Salary	41,166	47,719	-6,553 ***			

Note: Significance tests are reported for differences in means for continuous variables and odds ratios for binary variables.

\* p<.05

\*\* p<.01

\*\*\* p<.001

Calculations are based on person-period data

Table 5.3: The Effect of Having a New Child on Being Not in the Labor Force

	First Child <sup>(1)</sup>				Second or Later Child <sup>(2)</sup>			
	(1) (coef)	(p-value)	(2) (coef)	(p-value)	(3) (coef)	(p-value)	(4) (coef)	(p-value)
Had Child	<u>1.90</u>	(0.00)	<u>2.02</u>	(0.00)	<u>0.63</u>	(0.00)	<u>0.76</u>	(0.00)
Asian	-0.84	(0.07)	-0.53	(0.25)	-0.29	(0.31)	0.16	(0.68)
<b>Asian*Child</b>	<b>0.45</b>	<b>(0.44)</b>	<b>0.40</b>	<b>(0.51)</b>	<b>-0.75</b>	<b>(0.12)</b>	<b>-1.85</b>	<b>(0.02)</b>
Annual Salary			-0.15	(0.34)			-0.02	(0.92)
Previous Hours			-0.01	(0.14)			<u>-0.06</u>	(0.00)
Master's			<u>-0.60</u>	(0.02)			-0.18	(0.47)
PhD			<u>-0.76</u>	(0.01)			<u>-1.31</u>	(0.00)
Professional			-0.30	(0.49)			-1.72	(0.11)
Born 1960-1964			0.26	(0.58)			<u>16.45</u>	(0.00)
Born 1965-1969			0.27	(0.57)			<u>16.83</u>	(0.00)
Foreign-Born			0.00	(0.99)			0.31	(0.35)
Working outside Field			0.15	(0.50)			-0.27	(0.29)
Biology			<u>0.82</u>	(0.03)			0.40	(0.26)
Physical Sciences			<u>1.01</u>	(0.02)			0.21	(0.65)
Social Sciences			<u>0.82</u>	(0.02)			0.52	(0.11)
Engineering			0.68	(0.07)			0.33	(0.28)
Non S/E			<u>0.96</u>	(0.02)			-0.40	(0.32)
Constant	-3.87	(0.00)	-2.65	(0.12)	-2.43	(0.00)	-17.18	

Note: Underlining indicates statistical significance at the .05 level

Omitted categories: Bachelor's degree, Born 1970-1975, Math/Computer Science degree

1) Model includes only women without children at time t-1

2) Model includes only women with children at time t-1

3) All control variables are measured at time t-1

Table 5.4: The Effect of Having a New Child on Hours Worked per Week

	First Child <sup>(1)</sup>				Second or Later Child <sup>(2)</sup>			
	(1) (coef)	(p-value)	(2) (coef)	(p-value)	(3) (coef)	(p-value)	(4) (coef)	(p-value)
Had Child	<u>-6.21</u>	(0.00)	<u>-6.22</u>	(0.00)	<u>-2.61</u>	(0.00)	<u>-1.99</u>	(0.00)
Asian	<u>1.98</u>	(0.02)	0.14	(0.82)	<u>2.21</u>	(0.01)	0.32	(0.64)
<b>Asian*Child</b>	1.99	(0.19)	<b><u>2.69</u></b>	<b>(0.04)</b>	1.60	<b>(0.32)</b>	0.35	(0.80)
Annual Salary			<u>0.67</u>	(0.15)			<u>1.17</u>	(0.01)
Previous Hours			<u>0.51</u>	(0.00)			<u>0.64</u>	(0.00)
Master's			-0.93	(0.06)			-0.71	(0.21)
PhD			<u>2.21</u>	(0.00)			0.75	(0.24)
Professional			1.52	(0.16)			-1.82	(0.07)
Born 1960-1964			-1.24	(0.23)			-5.90	(0.10)
Born 1965-1969			-1.20	(0.24)			-6.36	(0.08)
Foreign-Born			-0.15	(0.81)			0.11	(0.85)
Working outside Field			0.29	(0.57)			0.76	(0.22)
Biology			-0.13	(0.85)			0.21	(0.79)
Physical Sciences			-0.96	(0.23)			1.16	(0.18)
Social Sciences			<u>-1.22</u>	(0.05)			0.04	(0.96)
Engineering			0.00	(1.00)			0.64	(0.33)
Non-S/E			0.08	(0.91)			0.93	(0.22)
Constant	45.3	(0.00)	16.71	(0.00)	40.0	(0.00)	7.35	(0.17)

Note: Underlining indicates statistical significance at the .05 level

Omitted categories: Bachelor's degree, Born 1970-1975, Math/Computer Science degree

- 1) Model includes only women without children at time t-1
- 2) Model includes only women with children at time t-1
- 3) All control variables are measured at time t-1

Table 5.5: The Effect of Having a New Child on Change in "Professional-Track" Career Status

	Log-odds of being in a "professional track" career				Change in Professional Track Career			
	(1) (coef)	(p-value)	(2) (coef)	(p-value)	(3) (coef)	(p-value)	(4) (coef)	(p-value)
Had Child					<u>-0.055</u>	(0.00)	<u>-0.052</u>	(0.00)
<b>Asian</b>	<b><u>0.395</u></b>	<b>(0.00)</b>	<b>0.011</b>	<b>(0.67)</b>	-0.007	(0.58)	0.006	(0.71)
<b>Asian*Child</b>					<b>0.032</b>	<b>(0.39)</b>	<b>0.033</b>	<b>(0.37)</b>
Annual Salary							-0.014	(0.17)
Previous Hours							-0.001	(0.20)
Master's			0.118	(0.00)			<u>-0.042</u>	(0.00)
PhD			<u>0.217</u>	(0.00)			<u>-0.044</u>	(0.00)
Professional			<u>0.678</u>	(0.00)			<u>-0.061</u>	(0.00)
Born 1960-1964			0.014	(0.70)			-0.038	(0.12)
Born 1965-1969			-0.023	(0.54)			<u>-0.049</u>	(0.04)
Foreign-Born			0.036	(0.16)			-0.004	(0.73)
Working outside Field			<u>-0.105</u>	(0.00)			0.014	(0.33)
Biology			<u>0.098</u>	(0.00)			<u>-0.062</u>	(0.00)
Physical Sciences			<u>0.174</u>	(0.00)			<u>-0.060</u>	(0.00)
Social Sciences			-0.048	(0.05)			<u>-0.028</u>	(0.04)
Engineering			<u>0.163</u>	(0.00)			<u>-0.048</u>	(0.00)
Non-S/E			<u>-0.091</u>	(0.00)			-0.019	(0.25)
Constant	-0.645	(0.00)	0.229	(0.00)	-0.009	(0.11)	0.254	(0.01)

Note: Underlining indicates statistical significance at the .05 level

Omitted categories: Bachelor's degree, Born 1970-1975, Math/Computer Science degree

Table 5.6: Asian-White Differences in Earnings and Earnings Growth

	1993 Salary				Salary growth, 1993-1999							
	(1) Unadjusted (coef) (p-value)		(2) Adjusted (coef) (p-value)		(3) Unadjusted (coef) (p-value)		(4) Adjusted (coef) (p-value)		(5) Adjusted w/ Professional-track (coef) (p-value)		(6) Adjusted w/ Experience (coef) (p-value)	
<b>Asian</b>	<b><u>0.074</u></b>	<b>(.004)</b>	<b>0.030</b>	<b>(.245)</b>	<b><u>0.139</u></b>	<b>(.000)</b>	<b><u>0.095</u></b>	<b>(.028)</b>	<b><u>0.100</u></b>	<b>(.020)</b>	<b>0.038</b>	<b>(.318)</b>
1993 Salary					<u>0.695</u>	(.000)	<u>0.619</u>	(.000)	<u>0.598</u>	(.000)	<u>0.578</u>	(.000)
Hours/week			<u>0.004</u>	(.001)							<u>0.017</u>	(.000)
Master's			<u>0.073</u>	(.001)			-0.016	0.677	-0.051	(.175)	0.008	(.815)
PhD			<u>0.135</u>	(.000)			<u>0.233</u>	(.000)	<u>0.176</u>	(.000)	<u>0.126</u>	(.001)
Professional			<u>0.206</u>	(.000)			<u>0.227</u>	(.002)	0.060	(.444)	<u>0.197</u>	(.002)
Born 1960-1964			<u>0.399</u>	(.000)			<u>-0.241</u>	(.004)	<u>-0.237</u>	(.004)	-0.136	(.062)
Born 1965-1969			<u>0.178</u>	(.000)			<u>-0.174</u>	(.035)	<u>-0.167</u>	(.041)	-0.106	(.142)
Foreign-Born			-0.039	(.147)			0.014	(.752)	0.005	(.917)	0.045	(.245)
Working outside Field			<u>-0.123</u>	(.000)			<u>0.103</u>	(.015)	<u>0.121</u>	(.005)	0.068	(.070)
Biology			<u>-0.297</u>	(.000)			<u>-0.136</u>	(.009)	<u>-0.169</u>	(.001)	<u>-0.166</u>	(.000)
Physical Sciences			<u>-0.149</u>	(.000)			-0.097	(.096)	<u>-0.141</u>	(.016)	-0.097	(.057)
Social Sciences			<u>-0.268</u>	(.000)			<u>-0.209</u>	(.000)	<u>-0.203</u>	(.000)	<u>-0.191</u>	(.000)
Engineering			<u>0.094</u>	(.001)			<u>0.053</u>	(.247)	0.013	(.782)	0.015	(.712)
Non-S/E			<u>-0.077</u>	(.021)			0.006	(.919)	<u>0.024</u>	(.658)	-0.036	(.455)
<b>Obs. Professional-track</b>									<b><u>0.056</u></b>	<b>(.000)</b>		
<b>FT experience</b>											<b><u>0.293</u></b>	<b>(.000)</b>
<b>PT experience</b>											<b><u>0.212</u></b>	<b>(.000)</b>
Constant	10.42	(.000)	10.03	(.000)	3.479	(.000)	4.49	(.000)	4.65	(.000)	2.44	(.000)

Note: Underlining indicates statistical significance at the .05 level

Omitted categories: Bachelor's degree, Born 1970-1975, Math/Computer Science degree



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## CHAPTER 6

### CONCLUSION

This dissertation has explored implications of two areas of the U.S. social landscape that have been undergoing rapid change within the past 30 years – the gender composition of the work force and the immigration-driven increase in the racial diversity of the population. The gradual diminishment of the gender earnings gap and the rapid rise in women’s labor force participation has been one of the major social changes of the twentieth century. However, the gender earnings gap remains, and according to recent data progress toward its elimination seems to have stalled (Blau and Kahn 2000). Understanding the reasons for this continuing disparity must remain a central task for researchers in social stratification in the coming years.

Yet such research must bear in mind that there is no *one* gender earnings gap to study, but rather a multitude of possible gaps at the intersections between gender and other important social divisions (McCall 2001, 2005). While most work on this kind of intersectionality has remained theoretical (Brewer, Conrad, and King 2002), a growing body of empirical evidence, including that presented in the preceding pages, confirms the complexity of patterns of racial and gender inequality. Attention to these nuances is necessary not only to accurately and inclusively portray patterns of inequality, but also due to the leverage it provides to help us understand the reasons for such inequality. If social scientific explanations of inequality seem to apply better to some groups than others, exploring why this is the case affords researchers the opportunity to discover limitations of existing theories and propose alternatives. Thus, subgroup variations in patterns of inequality are not just empirical nuances in need of documentation, but rather have the potential to be theoretically informative in a much broader sense.

The findings of this dissertation are a case in point. They have shown that there is great variation by race in the size of the gender earnings gap in the U.S. This racial variation applies primarily to married workers, suggesting that family factors may be somehow implicated. This suggestion is confirmed by later findings: White women's labor force participation is more contingent on their husbands' earnings than that women in the majority of other racial/ethnic groups, suggesting role specialization theory may be more applicable to non-Hispanic white families. Furthermore, Chapter 5 shows directly that Asian American women are less likely than white women to adjust their labor force behavior in response to parenthood – one of the key theoretical tenets of gender role specialization. Thus, overall the findings indicate that gender role specialization may be a more accurate description of the behavior of non-Hispanic white families than of other groups.

Several reasons were proposed for this, including greater economic necessity among lower-earning minority groups, different cultural orientations about men and women's shared responsibility for providing income, and the selectivity of immigration favoring highly motivated, career-oriented workers of both sexes. This dissertation was not able to test which of these explanations might be an accurate portrayal of the reasons behind racial variation in role specialization theory. Future research should relate variation in such factors directly to the division of labor within couples, both within and across ethnic groups.

The impact of immigration on patterns of racial and ethnic stratification in the U.S. is another area which will deserve much further study by social stratification researchers in coming years. This dissertation did not find any evidence of an emerging pattern of “downward assimilation” for today's immigrants. Rather, not surprisingly, it found that assimilation has different effects for groups from different sending countries, and even within the same group it is often simultaneously related to improvements with respect to some outcomes and deterioration with respect to others. In either case, outcomes appear to converge with those of the native

population with greater assimilation. However, findings also indicated that this pattern of convergence may be sensitive to local context: There was not as much evidence of convergence between immigrant and native behavior in poorer neighborhoods as in more advantaged neighborhoods.

These findings highlight the importance of considering that immigrants themselves have choices about whether and how much to assimilate. My findings from Chapter 3 give some indication that immigrant assimilation behavior varies systematically by local context, with less assimilation occurring in contexts in which it would be more likely to be harmful. Researchers trying to understand the place of immigrants in the changing racial/ethnic context of the U.S. would do well to be aware of potential interactions between contextual factors and immigrant assimilation behaviors. Thus far, researchers have considered contextual advantages and disadvantages as one factor influencing how immigrants will eventually fit into the system of racial inequality. However, the deliberate adaptation of immigrants themselves to their surroundings may alter contextual influences in complex and unpredictable ways.

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