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_____ _____

Ximena Leroux Date

Cigarette Smoking Among Hispanic and Non-Hispanic, White Adolescents: Segmented Assimilation and the Social Causes of Delinquency

By

Ximena Leroux
Doctor of Philosophy
Sociology

_____
Robert S. Agnew, PhD
Advisor

_____
Ellen L. Idler, PhD
Advisor

_____
Irene Browne, PhD
Committee Member

_____
Sabino Kornrich, PhD
Committee Member

_____
Fred Pampel, PhD
Committee Member

Accepted:

_____
Lisa A. Tedesco, Ph.D.
Dean of the James T. Laney School of Graduate Studies

_____
Date

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By

Ximena Leroux
B.S., Massachusetts Institute of Technology, 1996
M.B.A., INSEAD, 2000
M.A., Emory University, 2018

Advisors:
Robert S. Agnew, PhD
Ellen L. Idler, PhD

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Abstract

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Research on smoking among Hispanic persons in the United States presents a puzzle. In general, lower socioeconomic status correlates with higher smoking risk. However, Hispanic persons have lower status than non-Hispanic (NH) white ones and are less likely to smoke. Lower smoking rates among Hispanics are consistent across age groups and have persisted over time despite substantial declines in smoking. I set out to explore this puzzle by conceptualizing teen smoking as both unhealthy and delinquent behavior. What community and individual aspects of social life in the United States may account for lower smoking rates among Hispanics adolescents relative to NH white ones? To what extent does the protective effect of Hispanic ethnicity extend to the different immigrant generations?

I address these research questions with a new, comprehensive integration of segmented assimilation theory with the four main criminological theories. I test the resulting causal model using data from the first wave of the National Longitudinal Study for Adolescent to Adult Health. I find that, at the community level, Hispanic teens are less likely to live in co-ethnic, supportive neighborhoods than NH white ones. The causal model predicts Hispanic teens, then, are at higher risk for smoking, but multilevel regression analysis indicates no community-level effect on adolescents' individual-level smoking risk. I also find that, at the individual level, Hispanic and 1.5-generation adolescents, those brought to the United States as children, have lower exposure to pro-smoking social learning and general strain factors and higher exposure to protective social control and self-control ones. In single-level regression models, perceptual neighborhood characteristics and social factors mediate the association of Hispanic ethnicity with current and daily smoking. Both Hispanic ethnicity and 1.5-generation status retain their protective effect against the outcome of daily smoking, but Hispanic ethnicity loses its association with current smoking. The complete mediation of Hispanic ethnicity is due to the measure *friends who smoke*, so it needs careful interpretation because we know that Hispanic teens, who are less likely to smoke, primarily associate with other Hispanic teens, who are less likely to smoke. Further research is needed to resolve this social tautology.

Cigarette Smoking Among Hispanic and Non-Hispanic, White Adolescents: Segmented Assimilation and the Social Causes of Delinquency

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Acknowledgments

> *Only by stepping out of the taken-for-granted routines of society is it possible for us to confront the human condition…. This does not mean that only the marginal man or the rebel can be authentic. It does mean that freedom presupposes a certain liberation of consciousness. Whatever possibilities of freedom we may have, they cannot be realized if we continue to assume that the "okay world" of society is the only world there is. Society provides us with reasonably comfortable caves, in which we can huddle with our fellows, beating on the drums that drown out the howling hyenas of the surrounding darkness. "Ecstasy" is the act of stepping outside the caves, alone, to face the light.*

So reads the final paragraph of Peter Berger's 1963 classic, *Invitation to Sociology.* Pursuing a doctoral degree has felt at times like an ecstatic liberation to study, learn, think, and write, and other times like being pushed into utter darkness by inscrutable multilevel regression outputs or the terrifying realization that many pages of draft suddenly lead nowhere.

Over the past seven years, in the freedom to pursue my doctorate, I have huddled in more or less uncomfortable caves with my peers. We have howled in self-righteousness about the graduate condition or to display our enlightened wit in advanced seminars, or else avoided eye contact hoping that would hide us from the metaphorical hyena of being unprepared in class.

I thank my advisors, Ellen and Bob, who took turns beating drums of pragmatism, encouragement, patience, and insistence that I narrow my scope, refine my questions, improve my interpretations, and step into the light of finishing this project. I also thank the rest of my committee, whose input made for a better dissertation: Irene and Sabino, who also taught me methods, and Fred Pampel, whose research on smoking inspired me.

I am grateful for the many times that Pat Hamilton took me in, dusted me off, and sent me back out again. I am fortunate that Kim Hall always had time for coffee and friendship and Brandon Mitchell always had a smile and a kind word.

I dedicate my dissertation to the memories of Peter Berger, who answered my fan mail and told me I had an original idea, and of John Huss, a good friend who encouraged me to study theology and settled for sociology. Both died before I could invite them to my graduation party.

Finally and always, I credit my family. My mother, a great chemistry professor, reminded me at the right moment that the dissertation is *just* a requirement. Gracias, mamá. Wally and Lola, my adorable rescue dogs, I love you but you really didn't help at all. Jeff and Jamie, my husband and son, you are the smartest men I know, and Jeff, also the kindest, and Jamie, also the bravest.

We did it!

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Chapter 1. Introduction

Public health research on Hispanics and smoking presents a puzzle: we would expect Hispanics to have higher smoking rates than NH Whites; we know that Hispanics have lower SES than NH whites and that in the general population, low SES is connected to higher smoking rates. However, we find the opposite pattern from what we would predict: Hispanics in the United States are less likely to smoke cigarettes than non-Hispanic (NH) whites. Lower prevalence of smoking among Hispanics has persisted over time despite substantial overall declines in smoking[1], and it is consistent across age groups. At its peak, in 1997, the likelihood of current smoking among U.S. high school students[2] was 34.0 percent for Hispanics and 39.7 for NH whites (Centers for Disease Control and Prevention 2017). By 2017 the rates had fallen to 7.0 percent for Hispanic and 11.1 percent for NH white students (Kann et al. 2018). For adults, the likelihood of current smoking[3] for Hispanic and NH whites in 2005 was 16.2 and 21.9 percent, respectively (Jamal et al. 2016). By 2017 adult current smoking rates had fallen to 9.6 for Hispanics and 15.2 percent for NH whites (Phillips et al. 2017).

Furthermore, Hispanic current smokers smoke less frequently than NH whites. In 2015, only 56 percent of adult Hispanic current smokers were daily smokers, compared with 79 percent of NH white ones (Blackwell and Villarroel 2016). The same year, the 2-year average prevalence

[1] Adult current smoking rates have declined consistently since the 1960s, but youth current smoking increased sharply in the 1980s and then declined sharply in the 1990s; youth rates have continued to fall in line with adult rates since then (Office on Smoking and Health 2017).
[2] High school students were classified as current smokers if they reported smoking on at least one day in the 30 days before the survey.
[3] Adults were classified as current smokers if they reported smoking 100 cigarettes or more during their lifetime and who reported smoking on all or some days at the time of the survey.

of daily smoking among 10th and 12th graders who were current smokers ranged from 39 to 40 percent for Hispanics, versus 45 to 49 percent for NH whites (Miech et al. 2016).

The lower rates of cigarette smoking among U.S. Hispanics are noteworthy because on average Hispanics have less education and lower income than NH whites (DeNavas-Walt and Proctor 2015; Ryan and Bauman 2016). The broader pattern of association between socioeconomic status (SES) and adult smoking is in the reverse direction: across racial and ethnic groups, persons with lower educational attainment and lower income are more likely to smoke cigarettes (Filion et al. 2012; Pampel 2005; U.S. Department of Health and Human Services 2014a; Wang et al. 2018; Yang et al. 2008), and in general low SES is associated with higher prevalence of unhealthy behaviors, including tobacco use, physical inactivity, and poor nutrition (Pampel, Krueger, and Denney 2010).

There is evidence that Hispanics' smoking behavior, whether measured as lifetime cigarette use, smoking initiation, or current smoking, is significantly and positively associated with longer time since immigration, U.S. birth (vs. foreign birth), and use of English language (Echeverria et al. 2015; Myers et al. 2009; Parrinello et al. 2015; Unger et al. 2000). In addition, studies of immigrants of all races/ethnicities indicate that foreign-born individuals and second-generation[4] immigrants with two foreign-born parents are less likely to smoke on a daily basis than second-generation[5] immigrants with only one foreign-born parent, even after taking into

[4] In the literature on immigration to the U.S., the term "first generation" denotes persons born in other countries who have emigrated to the United states, "second generation" refers to U.S.-born children of at least one foreign-born, immigrant parent, and "third generation" is used to indicate persons born in the United States with U.S.-born parents (Acevedo-Garcia et al. 2005; Portes and Rumbaut 2014a). This dissertation follows the same usage. However, note that in other contexts, "first generation" sometimes refers to the U.S.-born children of foreign parents, as in this example provided in the *New Oxford American Dictionary:* a first generation Canadian whose parents were born in a farm in Vietnam (Stevenson and Lindberg 2010). The term "1.5 generation" refers to foreign-born persons who were brought to the United States in middle childhood, between ages 6 and 12 (Rumbault 2004).

[5] The influential work *Assimilation in American Life* (Gordon 1964) identified generational change as the key driver of structural integration among immigrant groups (Waters and Jiménez 2005). Since then, immigrant generation has been frequently used as a proxy measure for acculturation.

account measures of SES (Acevedo-Garcia et al. 2005). In some cases, the protective effect of being a first-generation immigrant is found only among women or is stronger for women than men (Acevedo-Garcia et al. 2005; Parrinello et al. 2015).

The substantial share of foreign-born persons among U.S. Hispanics, 34.9 percent in 2013, vs. 8.4 for the NH population (Treveylyan et al. 2016) emerges as a key factor in the group's lower smoking prevalence. The prevalence of smoking among Hispanic and other immigrants varies by region or country of birth and by gender (Baluja, Park, and Myers 2003; Gorman, Lariscy, and Kaushik 2014; Pérez-Stable et al. 2001). For example, in a survey of Latinos of different national origins living in eight U.S. cities in 1994, Pérez-Stable and his colleagues found that Puerto Rican women's current smoking likelihood (24.2 percent) was much higher than the likelihoods for Mexican American (10.4 percent) and Central American (10.1 percent) women[6]. However, they found no significant differences by country of origin among the men (2001).

This raises new questions. Are lower rates of smoking prevalence and frequency a feature of some first- and second-generation Hispanics rather than a characteristic of all U.S. Hispanics? Independently of the answer, why do Hispanic immigrants generally smoke less than U.S.-born Hispanics?

Some of the explanations proposed to account for the lower rates of smoking among immigrants relate to social facts of the country of birth or to emigration-specific processes (Acevedo-Garcia et al. 2005), both of which are independent of social life in the United States.

[6] The World Health Organization estimates the 2016 prevalence of adult daily smoking at 16 percent for the United States. The prevalence of daily smoking in the Latin American countries with the most emigrants to the United States are: Mexico, 8 percent; El Salvador, 6; Cuba, 25; Dominican Republic, 11; and Ecuador, 4 percent. WHO does not have smoking prevalence figures available for Guatemala, Honduras, and Peru (Brown and Stepler 2016; World Health Organization 2017). Mexico, El Salvador, Cuba, the Dominican Republic, and Guatemala, in that order, are among the top ten countries of origin for U.S. immigrants (Zong and Batalova 2015).

For example, the presence of female immigrants from countries with larger gaps between women's and men's smoking prevalence than those observed in the United States[7] would explain why the protective effect of foreign birth accrues more or only to women. Another example is the healthy migrant effect, the hypothesis that emigrants to the U.S. self-select from among those with higher-than-average health status in the home country, and presumably also better-than-average health behaviors, including not smoking (Riosmena, Wong, and Palloni 2013). This might explain why male immigrants smoke less than natives even if smoking prevalence in some of the originating countries is higher than in the United States.

Other explanations for the lower prevalence of smoking have to do with the fact that, over time, immigrants' children and grandchildren lose the social characteristics from their countries of origin and pick up behaviors considered American. This process is known as acculturation: immigrants' acceptance and incorporation of U.S. values, norms, practices, behaviors, language, and customs (Acevedo-Garcia et al. 2005; Echeverria et al. 2015; Myers et al. 2009; Unger et al. 2000). However, there is a problem when attributing smoking behavior to acculturation: that not all Americans are equally likely to smoke cigarettes, and, in any case, the majority of Americans do *not* smoke. Which part of American culture, then, do immigrants acculturate to? Segmented assimilation theory is helpful on this count.

The theory of segmented assimilation describes the process by which the children and grandchildren of immigrants integrate into the different socioeconomic segments of American society; it also identifies the family and community characteristics that lead to the different outcomes (Portes and Rumbaut 2001, 2014a; Portes and Zhou 1993). When immigrants arrive in

[7] For example, according to the most recent surveys in each country, the U.S. rates of male and female current tobacco smoking are 22 percent and 15 percent, respectively, while the corresponding Cuban rates are 27 and 11 percent (World Health Organization 2017).

the United States already possessing a high level of cultural capital[8] (such as a college education, practice in a profession or business management experience), then their children are likely to acculturate fully and easily enter professional and entrepreneurial occupations.

In contrast, the children and grandchildren of immigrants with low cultural capital may reach middle-class status through selective assimilation, retaining some norms and values of their parents' original cultures while investing themselves in their education in order to achieve middle-class status. However, there is the risk that children of immigrant parents with low cultural capital assimilate downward into low-status, menial occupations and be at risk for adopting deviant lifestyles; these youth experience dissonant acculturation, that is, they reject American mainstream values (Portes and Rumbaut 2014a).

The factor hypothesized to increase the likelihood that children of immigrants with low cultural capital will integrate into the middle class, and avoid the risk of downward assimilation, is having a strong, supportive co-ethnic community. This is based on the assumptions that immigrant are less likely to experience discrimination within their co-ethnic community and community members reinforce cultural values and provide support when the youth and their families have problems.

Cigarette smoking among immigrant adolescents is a behavior we can study using segmented assimilation theory because smoking is more prevalent in the U.S. than in most of the Latin American countries from whom the majority of immigrants come (see Footnote 6). In addition, there is evidence that smoking behavior increases with immigrant generation (Acevedo-Garcia et al. 2005; Parrinello et al. 2015), time since arriving in the United States (Parrinello et

[8] Portes and his colleagues use the term *human capital*. However, I believe that what they use this term for, which is educational achievement and professional and entrepreneurial experience, is better described by Bourdieu's term *cultural capital*, which includes valued, uncommon embodied skills and institutionalized educational credentials. The attainment and development of these requires long-term investments of time and money (Bourdieu 2016).

al. 2015), and acculturation (Kam, Cleveland, and Hecht 2010; Pokhrel et al. 2013). Differences in smoking between NH whites and Hispanics and between different generations of Hispanic immigrants, then, are partly explained by acculturation and the context in which immigrant families live, as well as country of origin and gender.

The last set of extant explanations for the lower rate and frequency of smoking among Hispanics involves the same aspects of social life that affect the native-born U.S. population. This research studies the social factors that promote and prevent deviant and criminal behavior. Examples of such causes are having friends who engage in delinquency and not being well-attached to family and school community.

Researchers studying smoking among Hispanics of different generations have found evidence in support of the four major theories of delinquency and crime, namely social learning theory (Echeverria et al. 2015; Myers et al. 2009; Unger et al. 2000), general strain theory (Kulis, Marsiglia, and Nieri 2009; Rajesh et al. 2015), social control theory (Miller et al. 2009; Rajesh et al. 2015), and self-control theory (Miller et al. 2009; Pokhrel et al. 2013).

Social learning theory (Akers 2011) proposes that delinquent and criminal behaviors are learned in the course of interaction with deviant peers and that the steps toward adoption of deviance include internalizing favorable definitions of deviant behavior, learning how to perform deviant acts through imitation of one's associates, and receiving differential reinforcement from deviant peers for engaging in deviant behaviors they find acceptable and desirable. Social learning theory is compatible with assimilation arguments according to which U.S. culture is more conducive to smoking. If the likelihood of smoking cigarettes is higher and the attitudes about smoking are more permissive in the United States than in an immigrant's country of origin, then the likelihood that the immigrants' associates and peers are smokers will be higher in the

U.S., increasing the chance that immigrants will adopt less reproving views of smoking and adopt the smoking habit. Furthermore, adolescents whose assimilation leads them toward integration into the lower classes, rather than the middle class, will have higher positive attitudes about smoking and other use of tobacco products.

General strain theory (Agnew 2007) attributes persons' likelihood to engage in criminal offenses to two sets of factors. The first set are the strains that persons are likely to experience: strains are events or conditions that persons dislike because they involve losing something they value, being treated badly by others, or being unable to reach valued goals. The second set of factors influence whether persons react to strains with deviance and crime: the ability to cope with strains in legal ways, the costs of coping through criminal behavior, and individual dispositions against criminal coping. General strain theory is also compatible with theories of immigrant integration. The key argument of segmented assimilation theory is that immigrant youth who grow up in enclaves, i.e., supportive, co-ethnic communities, are less likely to engage in deviant and criminal behaviors because those communities protect immigrant youth against strains such as discrimination and provide support for coping with the strains that do occur.

Social control theory (Hirschi 2002) proposes that our ties to conventional society prevent us from breaking its rules. Those ties can take the form of attachment to our families and friends, for example, or our belief that we should obey the rules of our society. Social control theory is also compatible with the literature on immigrant adaptation: it may be easier for immigrant youth growing up in enclaves to feel like they are accepted and valued in their communities, including at school and church. Such youth may be more likely to believe that U.S. values and institutions are worthy and invest themselves in their education, even as their families

reject behaviors that are more common in the United States, such as dating at earlier ages and cigarette smoking.

Self-control theory attributes all criminal and other risky or deviant behavior to the individual's low level of self-control (Gottfredson and Hirschi 1990). A person's level of self-control, relative to others in the population, is established early in life, as the result of appropriate parenting. Recent research has produced evidence that genetic and biological variables also affect individuals' self-control (Hay and Meldrum 2016). Persons with relatively lower self-control are more likely to engage in deviance and crime when the opportunity arises because they are impulsive, insensitive, and short-sighted. Self-control theory is also compatible with assimilation arguments because socialization to traditional Hispanic culture, which has a strong collectivist orientation, promotes the development of self-control, while socialization to American culture, which is individualistic, is less conducive to developing self-control (Tran 2016).

It is not surprising that youth smoking in general and among Hispanics of different generations is explainable through the same factors as used to explain delinquency, crime, and deviance. Teenage smoking is a status offense: it is illegal by virtue of adolescents' age, and therefore a form of delinquency. While not a criminal offense, smoking among adults is arguably deviant. Over the second half of the twentieth century, cigarette smoking became an increasingly frowned-upon behavior, characteristic of persons of low SES and disliked among groups at the top of the status hierarchy (Pampel 2005).

In this dissertation I seek to account for the phenomenon of lower cigarette smoking among Hispanic adolescents by focusing on aspects of their social life here, in the United States. I propose that knowing whether and how Hispanic adolescents of different generations and NH

white teens are differentially exposed to risk and protective factors for and against cigarette smoking will help answer my primary research question (RQ1) and the subordinate questions (RQ2 to 5) I will address in order to solve RQ1.

Research Questions

RQ1. Why is the likelihood of cigarette smoking lower among Hispanic adolescents than NH white adolescents?

RQ2. Why is the likelihood of cigarette smoking lower among youth from more recent immigrant generations than among non-immigrant youth and youth from later immigrant generations?

RQ3: Are there neighborhood characteristics that are associated with Hispanic ethnicity, immigrant generation, and the risk of smoking?

RQ4: Are there parental characteristics that are associated with Hispanic ethnicity, immigrant generation, and the risk of smoking?

RA5: Are there individual characteristics and social relationships that are associated with Hispanic ethnicity, immigrant generation, and the risk of smoking?

Relevance

A better understanding of the social processes that result in different risks of cigarette smoking among groups of the United States population is important because smoking cigarettes is the leading cause of preventable disease and death in the United States. Smoking is a major cause of cancer, cardiovascular and respiratory disease, and a risk factor for a number of other ailments (U.S. Department of Health and Human Services 2014b). In fact, lifelong smokers have a 50

percent probability of dying prematurely from complications of smoking (Benowitz 2010), and the Centers for Disease Control and Prevention attributes one in every five deaths every year to smoking, or close to half a million deaths annually (Centers for Disease Control and Prevention 2016).

Understanding the factors that affect use of all tobacco products among adolescents is important for three reasons. First, the habit of smoking cigarettes is established primarily during adolescence (Ellickson et al. 2004b; Janson 1999; Mathers et al. 2006; McGee, Williams, and Reeder 2006; U.S. Department of Health and Human Services 2014b), and people who start using tobacco at an earlier age are more likely to develop higher levels of nicotine addiction than those who start later in life (U.S. Department of Health and Human Services 2014b).

Second, young smokers face heightened risks for short- and long-term health conditions (U.S. Department of Health and Human Services 2014b), such as more and more severe respiratory illnesses, unfavorable lipid profiles and the potential retardation of the rate of lung growth. Third, despite the success of anti-smoking policies in dramatically reducing cigarette smoking among adolescents (Paoletti et al. 2012), and having the lowest rates[9] observed in 2018, the unexpected rise of e-cigarettes has put new youth cohorts at risk for nicotine addiction with its long-term health effects as well as the short-term risk of chemical exposure[10] leading to severe pulmonary disease that is not yet well understood (Davidson, Brancato, and Heetderks 2019). To the degree that youth continue to trial and adopt tobacco use, study of the social causes that caused smoking when it was more popular remains a relevant task.

[9] The rates of current smoking in 2018 are 9.9 percent and 7.2 percent among NH white and Hispanic high school students, respectively; the rates among middle school students are 1.6 percent among NH white students and 2.4 among Hispanic (Gentzke et al. 2019).

[10] The CDC reports that most of the patients reported using e-cigarette products containing cannabinoids, but some have reported only using e-cigarette products containing nicotine (Schier et al. 2019).

In the context of the study of health disparities, it is also important to understand how the prevalence of tobacco use is distributed across different groups of Hispanics. How much of the difference is driven by family and contextual characteristics is also important because insights gained through this research may be generalizable to immigrants of other ethnicities.

Contribution

The dissertation contributes to the literature on disparities in cigarette smoking by ethnicity and immigrant generation and to the broader corpus on ethnic disparities in delinquency by adding evidence about the mechanisms of the association between immigrant generation and cigarette smoking. For example, I will test whether the social processes that lead to tobacco use are the same for 1.5- and second-generation immigrants, and for immigrants and non-immigrants.

The dissertation also contributes to our understanding of the Hispanic Health Paradox, that in the United States, Hispanics – who as a group have below-average SES (DeNavas-Walt and Proctor 2015; Ryan and Bauman 2016) – have higher life expectancy than NH whites (Markides and Eschbach 2005). Researchers studying the paradox have hypothesized that Hispanics may enjoy sociocultural protection in the United States (Riosmena et al. 2013). My purpose in this project is to unpack what such protection entails.

While some criminological literature includes concepts drawn from segmented assimilation theory, the predictions of the theory have not been fully tested in the recent criminological literature. The dissertation will add to this literature by testing the theory and potential mechanisms.

Approach

My approach is to propose a new, comprehensive integration of segmented assimilation with the four key criminological theories and to test my resulting causal model using data drawn from the

National Longitudinal Study of Adolescent to Adult Health (Add Health, Harris 2013). My argument is that the social differences between the different groups co-vary with the causes for smoking (e.g., differential association with peers who smoke) or affect them (e.g., levels of strain and resources for coping.) This approach follows recent work by criminologists who have leveraged concepts of immigrant adaptation, differential association, and neighborhood disadvantage to study the different patterns of criminal offending among non-immigrants and immigrants of different generations (Bersani 2014b; Bersani, Loughran, and Piquero 2014; Stansfield 2012). However, there is a gap in research testing segmented assimilation theory concurrently with all four criminological theories.

In Chapter 2, I present as background the criminology and immigration literatures from which I draw the conceptual elements that guide my empirical research, together with the extant evidence from both literatures on cigarette smoking. In Chapter 3, I present my causal model, an integration of segmented assimilation theory and the leading criminogenic theories, as well as the hypotheses that constitute the model.

Chapters 4 and 5 are the empirical portion of the dissertation. In Chapter 4, I provide an overview of Add Health Study (Harris 2013), explain why it particularly appropriate for this project, and review the measures I create with the data drawn from the study. Chapter 5 is my presentation of results, where I review the results from each analyses and their implications for my research hypotheses. I finish the dissertation with my conclusions, in Chapter 6.

Chapter 2. Background

I present a combined empirical and theoretical background in this chapter rather than the more typical separate chapters for the empirical background and theoretical approach. However, there exists an abundance of theory-driven evidence about racial/ethnic disparities in cigarette smoking. This evidence is more easily presented in tandem with the different theories used to explain those disparities.

I begin the chapter with an empirical overview of the differences in cigarette smoking by race and ethnicity for NH whites and the two largest minority groups: Hispanics and NH blacks[11]. While this dissertation seeks to address questions about the difference in smoking rates between NH whites and Hispanics, presenting a thorough summary of extant evidence and the theories that explain the empirical phenomenon observed requires the inclusion of evidence about disparities between NH white subjects and NH black ones as well.

After that, I summarize the explanations that social researchers have provided for smoking behavior, focusing on the social causes of crime and their applicability and evidence regarding smoking behavior. Then I provide a brief overview of extant efforts to explain group differences in cigarette smoking and crime by race and ethnicity. A full review of the criminological theories that have been used to explain cigarette smoking and the evidence they have produced requires including the theories and evidence for crime in addition to the specific status offense of adolescent smoking.

After summarizing the theories and evidence for group differences in smoking and crime, I proceed with an overview of research into the adaptation of immigrants to U.S. society, specifically segmented assimilation theory. I focus on the theory's hypothesis that high parental

[11] In 2015, NH whites represented 62 percent of the U.S. population; Hispanics, 18 percent, and NH blacks, 12 percent (Pew Research Center 2015).

cultural capital and the presence of a co-ethnic community protect immigrant youth from the risk of downward assimilation and delinquent behavior. Finally, to wrap up the chapter, I present summaries of the extant evidence on immigration and cigarette smoking as well as on immigration and crime.

Cigarette Smoking by Race and Ethnicity

Despite large declines in the smoking rates of high school students over the past 25 years, racial and ethnic differences in youth smoking are remarkably stable. The likelihood that high school students are current smokers (i.e. that they have smoked at least once in the past month) fell by 80 percent between 1991 and 2017. During that period, the rank order in the smoking rates for the three larger racial/ethnic groups did not change. NH white high school students were the most likely to smoke (30.9 and 11.1 percent in 1991 and 2017, respectively), followed by Hispanic students of any race (25.3 and 7.0 percent), with the lowest rates (12.6 and 4.4 percent) among NH blacks (Kann et al. 2016, 2018). I present these trends visually in Figure 1.

Although rates of smoking grew in the 1990s, the general trend over the period shown is one of decline. Note that even as the smoking prevalence approaches the floor, the initial advantages[12] for Hispanic relative to NH white adolescents have widened. I measured these advantages using odds ratios of the likelihood of smoking for the two minority groups relative to NH whites, and I show the odds ratios in the bubbles at the beginning, middle, and end of the period. The advantages for Hispanics have widened since the 1997 peak, by 9 percent.

To further illustrate the growing advantage for the minority groups compared to NH whites, I calculated compounded annual growth rates (CAGR) for the prevalence of current smoking for each racial/ethnic group throughout the period. A CAGR shows the constant annual

[12] Since cigarette smoking harms smokers' health, lower group prevalence of smoking is considered an advantage.

rate of growth (or decline, in this case) that would result in the decline of a measure from the first to the last year in the period. I calculated the CAGR for each group from the 1997 peak to 2017 to show how large the decline in current smoking has been. I show the CAGR for each group in Figure 1 inside clear rectangles with dark font. Hispanic and NH black students have higher rates of decline (CAGR of -7.6 and -7.9 percent, respectively) than NH white ones (-6.2 percent). Finally, in dark rectangles with white font I present the total growth rate in the likelihood of smoking for each group of students, for the same period: NH black students' likelihood declined the most (81 percent), followed by the likelihoods for Hispanic students (79 percent) and NH white ones (72 percent). Additionally (but not shown in Figure 1), the likelihood of daily smoking among high school students in 2017 was 1.3 percent for Hispanic students and 1.1 percent for NH black ones, compared to 2.6 percent for NH whites (Kann et al. 2018).

We see different racial/ethnic patterns of cigarette smoking among adults than among adolescents (Jamal et al. 2016). In Figure 2, I show rates of current smoking for high school students and adults by race and ethnicity. Although Figure 2 does not cover as long a time period as Figure 1, it overlaps some of the later years. In 2005 and 2017, NH white students were more likely to smoke than Hispanics, and both were more likely to smoke than NH black students. The smoking advantage of Hispanic adolescents compared to NH white ones held for adults, but it did not for NH black teens. Among adults, NH black subjects were as likely as NH whites to be current smokers.

What creates the different pattern among adults is that prevalence of smoking for NH blacks shoots up from high school to adulthood. (But note these are smoking rates for students and adults in the same year, as opposed to rates for the same persons in adolescence and, years

later, during adulthood.) In 2017 the prevalence of adult smoking among NH blacks was over twice as large as the prevalence for high school students.

The rates of current smoking for NH white and Hispanic adults in 2017 also were higher than for high school students, but the ratios of adult to adolescent rates were not as large as for NH blacks. Lawrence and her colleagues (2014) have conducted research into these patterns of smoking, testing possible causes for the differences observed between racial/ethnic groups. I will summarize their research in the following section, "Social Causes of Cigarette Smoking."

This dissertation will focus on explaining why Hispanic adolescents were less likely to smoke cigarettes than NH white adolescents. It will not focus on other racial/ethnic or age differences observed, such as the lower rate of NH black adolescent smoking relative to both NH Whites and Hispanics. The dissertation, however, will draw on the research dealing with these other differences where relevant, and such differences may be addressed in future research.

Social Causes of Cigarette Smoking

Social factors associated with smoking have been researched in the fields of sociology, economics, public health, and criminology. In this section I describe the main explanations that researchers have developed for smoking, understanding it as an unhealthy behavior, from the first three disciplines. After that, I describe the criminological explanations developed for smoking as delinquent behavior.

Explanations from Sociology, Public Health, and Economics

Sociologists of health have focused primarily on two sets of causal factors for health-related behaviors: SES and social ties. In a seminal article, Link and Phelan (1995) proposed that access to material and non-material resources and social support are "fundamental causes" of the persistent inverse association of adult mortality and SES. They argued that measures of SES

don’t only capture income and wealth, but also reflect possession of social and cultural capital that help people maintain good health independently of the particular pathologies of different health conditions (Phelan et al. 2004).

More recently, researchers have extended the study of SES and social ties to disparities in health behaviors. After reviewing extant explanations of the association of low SES with unhealthy behaviors and the evidence supporting those explanations, Pampel and his colleagues identified nine broad explanations given for the relationships between SES and health behaviors, including cigarette smoking (Pampel et al. 2010). Many of the explanations they reviewed are derived from or test similar concepts to criminological ones or are consistent with criminological explanations. (I will summarize criminological explanations for cigarette smoking further on in this chapter). Next I describe the nine explanations that Pampel and his colleagues identified (2010).

Two of the explanations the authors reviewed did not have clear evidentiary support. The two explanations are that low-SES persons lack the knowledge to make informed choices, and that SES confers greater agency to search for interventions to improve health as well as efficacy in procuring those interventions (Pampel et al. 2010).

Of the explanations with clear support in the evidence, four are based on or match concepts studied in criminology. According to one, low SES not only reflects a disadvantaged social position that causes stress or strain, but it also is a drain on the capacity to cope; therefore, disadvantaged persons turn to smoking and other unhealthy behaviors to help regulate their mood. The second one is that the personality trait of low self-control is the cause for low SES and for unhealthy behaviors, including cigarette smoking.

The third explanation addresses the ways that healthy behaviors spread through the networks that high-SES persons are enmeshed in, since their family, friends, and other associates support healthy behaviors, sanction unhealthy behaviors, and exchange information on health behaviors. In addition, their networks provide high-SES persons with social support. This third explanation is also consistent with criminological theories, which explain both deviant and normative behaviors. Arguments that strong social support (of a conventional nature) reduces the likelihood of deviance are consistent with the theories of crime and deviance. Similarly, arguing that economic resources and social capital from one's networks increase the chance that one will deal in a normative manner with strains is consistent.

The fourth criminologically-compatible explanation of unhealthy behaviors is a macro-level one: that low-income neighborhoods provide fewer opportunities for their residents to engage in health-promoting activities because they lack parks, gyms, community centers, biking paths, and stores that sell fresh food. Residents in such neighborhoods have fewer resources to cope with the strains they experience, and therefore turn to unhealthy behaviors such as smoking. However, while there is evidence of fewer resources and perception of lower access to resources in poor neighborhoods, support for a causal relationship is less clear.

Two other explanations that Pampel and his colleagues identified (2010) are based on the economic concept of rational choice and its mechanism of cost-benefit evaluation. The first explanation is that persons with low status are more likely to have a high discount rate for future utility. In other words, they favor behaviors that give them short-term relief from stress (such as smoking, drinking, using other substances, or eating fatty foods) even if they increase mortality over the long run. In economic terms, the utility or benefit derived from long-term good health is lower than the utility derived from the short-term benefit of relieving stress. There is evidence

that increases in cigarette prices decrease cigarette consumption. Another reason persons living in low-SES neighborhoods may discount the utility of long-term health may be a fatalistic belief that individual efforts made to improve one's health will yield little benefit given ongoing risks from living in neighborhoods ridden with crime or working under conditions hazardous to health. There is evidence that hopelessness and fatalistic beliefs mediate the association of low SES and unhealthy behaviors (Pampel et al. 2010). This argument is also compatible with criminological explanations, since fatalistic beliefs and hopeless attitudes can spread through social learning (and result from chronic strains).

A second economic argument is that that persons of low SES have limited financial and social capital to identify and procure health aids, such as smoking cessation treatments, and adopt healthy behaviors, such as exercising regularly or eating a more nutritious diet (Pampel et al. 2010). This argument is also compatible with criminological explanations, since financial and social capital confer access to resources for coping with strains.

The last explanation in the Pampel et al. review (2010) is a sociological one, derived from theories about the intergenerational transfer of class advantage through investments for one's children to develop fitting tastes and dispositions (Bourdieu 1984), and the use of fashion and lifestyle as a means to signal membership in high-SES groups (Veblen 1992). According to this explanation, high SES status is associated with better health behaviors because lifestyles are one of the ways in which persons of high status seek to distinguish themselves. What constitutes a distinctive health lifestyle varies through; nowadays, not smoking is the upper-class thing to do (Pampel 2005). In addition, exercising, engaging in sports past adolescence and early adulthood, and weight maintenance are typical choices of high-SES individuals (Pampel et al. 2010).

This last explanation is also consistent with the criminological theory of social learning. A social-learning statement of the explanation is that members of high-SES groups reinforce belief and engagement in healthy behaviors in each other, while low-SES group members share beliefs and engagement in unhealthy behaviors and do not reinforce healthy behaviors among each other.

While much research on smoking in sociology of health and public health has focused on the prevalence of smoking among different groups, the review article summarized above shows that much research has been conducted into the causal mechanisms for the observed associations of race/ethnicity and smoking behavior. Many of the causal explanations proposed are consistent with criminological theory or employ criminology-compatible concepts. Moreover, it can be beneficial to incorporate criminological theory to the study of cigarette smoking, even if one understands it as an unhealthy behavior rather than a delinquent one. In criminology the various covariates of deviance have been systematized and specified more broadly and completely than in health research.

Criminological theory explains adolescents' delinquency and deviance through an examination of a very comprehensive set of the social relations and contexts in which youth are enmeshed; a 360-degree view of their social life, so to speak. A particular contribution of the criminological approach is the insight that behaviors considered deviant by the mainstream and figures of authority sometimes are considered normative by the youth and their friends, an argument that does more for explanations of unhealthy behaviors than considerations of expected benefits and costs from such behaviors. For these reasons, I think it is useful at this point to introduce the four main theories and summarize extant evidence of cigarette smoking as a delinquent behavior. I proceed with this task below.

Explanations from Criminology

In this section I list and describe the key arguments made in each of the four key theories of crime and deviance. I provide a rationale for why smoking should be explainable by each of the theories and then present research on smoking that supports each theory.

Social Learning

The theory of social learning (Akers 2014) reformulates and extends the differential association theory of crime, according to which persons learn criminal behavior in interaction with others, adopting their favorable definitions of crime (Sutherland and Cressey 2014). Akers brings behavioral and learning theories from the field of psychology to bear on differential association theory, and he identifies four mechanisms through which interaction with peers, family, and members of the community leads persons to the others' behaviors. Akers' theory is equally applicable to deviant and to normative behavior – the mechanisms of social learning apply to both. Therefore, the theory is applicable to both abstinence and use of substances as social behaviors acquired and sustained through interactive social processes (Akers and Lee 1996).

The first mechanism is differential association, which refers to an individual's regular interaction with a particular group of persons, especially family and friends, as well as his or her identification with a more distant reference group. Through these direct and indirect associations with friends and family members who are deviant, the individual learns definitions of deviant behavior that promote, allow, or excuse it. Definitions are attitudes, meanings, rationalizations, and evaluations of behaviors as right of wrong, desirable or undesirable, or justifiable or not.

Differential reinforcement is the sum of past, present, and future rewards and punishments a person expects as the result of engaging in deviant behavior. Rewards include monetary gain, pleasure, or admiration from friends gained from engaging in deviant acts.

Finally, imitation is the way that a person learns to conduct deviant behaviors: by observing peers engage in deviance.

Smoking is susceptible to social learning explanations. If, for example, a teenager spends time with friends who smoke when they are hanging out, the teenager will learn that smoking is acceptable, even desirable. In addition, he will have plenty of opportunities to observe the ritual of lighting up, taking that first puff, and enjoying smoking, so imitation will be easier. He is likely to experience approval and camaraderie as a fellow smoker and will have first-hand experience of the mood lift and improved physical and mental function that nicotine produces, making him look forward to this positive reinforcement.

In a seminal article, Akers and Lee tested the four mechanisms of social learning using longitudinal data on adolescent cigarette smoking (1996). The researchers found support for each mechanism on the outcome of smoking among a school sample of students who were interviewed annually five times, from middle school to high school. In addition, the evidence supported the more complex sequential learning process hypothesized in the theory.

More recently, researchers of adolescent smoking have deployed social learning theory (Kobus 2003). There is evidence that parental and, especially, peer smoking are conducive to smoking. Teens are more likely to smoke if their friends smoke, likely to smoke more if their friends' level of smoking increases, and more likely to select friends who smoke as much or as little as they do (Alexander et al. 2001; Ali and Dwyer 2009; Audrain-McGovern et al. 2006; Bui 2013; Flay et al. 1994; Haas and Schaefer 2014; Kandel, Kiros, Schaffran, and Hu 2004).

Social Control

Social control theory, also known as the theory of social bonding, was first stated in 1969 in Hirschi's book Causes of Delinquency. According to this theory (Hirschi 2002), the bonds that

teenagers have to their families, school communities, and to conventional society in general act as indirect controls that prevent youth from engaging in delinquency. In Causes, Hirschi presented evidence from his analysis of the Richmond Youth Project (Wilson, Hirschi, and Elder 1965) that delinquency increases as social bonds decrease.

The central premise of social control theory is "that all of us, beginning at birth, possess the hedonistic drive to act in the kinds of selfish and aggressive ways that lead to criminal behavior" (Pratt, Franklin, and Gau 2008). Therefore, what needs explaining is not why youth commit delinquent acts, but rather, why they refrain from doing so. Hirschi argued that four types of social bonds tie people to conventional society and thus preclude delinquency. It was important for Hirschi (2002) to be able to test causes of crime independently of individuals' engagement or lack of engagement with it – he considered this necessary for testing Durkheim's concept of socialization as the internalization of norms.

Hirschi defined four types of social bonds. The first one is involvement, the time a person spends engaged in conventional activities. The second one is attachment; the respect and care people have for significant others. The third, commitment, captures persons' investment in conventional activities. The fourth type of bond is belief, or the individual's commitment to his or her society's value system.

Smoking is explainable by social control theory because it is considered a delinquent and deviant behavior (U.S. Department of Health and Human Services 2014a). Social control theory predicts a higher prevalence of smoking among persons who do not get along with their family; do not have good, stable relationships with friends and significant others; do not get along with teachers and other students; don't care about their education; don't have stable employment; do not participate in communities such as church or volunteer groups; and do not care whether

about the moral beliefs of their parents and other authorities. The theory also predicts that youth under direct control and who think it is likely that parents, school officials, or police will detect and punish deviant acts are less likely to smoke cigarettes.

Researchers have found evidence that the likelihood that teenagers will become smokers varies with family structure and how well teens get along with their families, at school, and at church. Traditional family structure, closer relationships with parents and with peers and teachers at school, commitment to education, and more frequent religious attendance have been associated with lower adolescent rates of smoking (Kandel, Kiros, Schaffran, and Mei-Chen 2004; Nonnemaker, McNeely, and Blum 2003; Resnick et al. 1997; Skinner et al. 1985; Wallace et al. 1999). Some of this evidence is based on cross-sectional analyses, which do not test the causal arguments in social control theory. However, some of the evidence is based on longitudinal analysis, supporting the causal argument (for example, Kandel, Kiros, Schaffran, and Mei-Chen 2004 and Nonnemaker, McNeely, and Blum 2006).

General Strain

Agnew's general strain theory proposes that "individuals are pressured into crime by the strains they experience" (2007:3). Strains, which are events or conditions originating in social life that individuals dislike, create negative emotional states that pressure the individual to take corrective action to relieve or escape the effect of strain. The corrective actions persons pursue may be criminal, but some persons are able to engage in legal ways of coping. Differences in the strains experienced, emotional vulnerability to strain, and the resources and skills for coping in legal ways help explain individual-level variations in criminal behavior.

Strains are more conducive to crime if their magnitude is high, if they are perceived as unjust, if they result in reductions in social control (as higher social control would guide strain-

relieving, corrective actions towards legal behavior), of if they create incentives for criminal coping. In addition, strains can increase the likelihood of crime whether persons experience them directly or vicariously, and even if they simply anticipate them.

There is evidence that some strains affect adolescents in particular and increase the teens' propensity to criminal activity (Agnew 2007). They include bad relationships with and among parents and family, such as family conflict, parental abuse and neglect, and parental separation and divorce. Parental rejection and erratic, harsh punishments are among the strongest predictors of juvenile crime. Other important criminogenic strains for adolescents involve relations with school officials, such receiving poor grades, experiencing demeaning treatment and unfair punishment, and with peers, including physical and verbal abuse. Poverty, victimization, experiences with prejudice and discrimination, and homelessness affect both adolescents and adults.

Smoking is explainable through general strain theory because smoking cigarettes reduces stress and anxiety and improves mood (Benowitz 2010). This helps individuals reduce and better cope with the negative emotions caused by strains. However, once a person has developed dependence on nicotine, withdrawal causes irritability, depressed mood, restlessness, anxiety and anhedonia (Benowitz 2010), making it harder for persons to handle strain and creating pressure for the person to smoke again.

Researchers have established empirical evidence for the association of different kinds of strains with smoking behavior. For example, longitudinal analysis with Add Health has produced evidence that adolescents' expectations to not attend college or live past age 35[13] are associated with higher frequency of adult smoking (McDade et al. 2011). General strain theory has also

[13] This evidence may support classical strain theory rather than general strain, but I group it with other evidence supporting the latter.

been applied to Turkish youth in cross-sectional designs, producing results that middle schoolers' strain arising from trouble at school, negative life events, and violent victimization is associated with higher likelihood of smoking (Yilmaz, Lo, and Solakoğlu 2015), and that among college students, having higher expenses than income and experiencing anger are independently associated with higher likelihood of smoking (Özbay 2014).

Self-Control

Self-control theory was proposed by Gottfredson and Hirschi (1990), in contradiction to Hirschi's earlier social control theory (2002). The theory asserts that the association of social control and general strain variables with criminality is spurious. Rather, the key characteristic of individuals that determines criminal involvement is their level of self-control. The theory of self-control is that high self-control prevents deviant and criminal activity, while low self-control causes deviance as well as the lack of stable, positive social bonds and resources for coping with strain.

In Gottfredson and Hirschi's theory, the individual's level of self-control is established early in life as the result of direct control of children by parents. Effective child-rearing promotes the development of self-control. In turn, effective child-rearing requires that parents have affection for their children. It consists of monitoring the child's behavior, recognizing deviant behavior when it occurs, and adequately punishing that behavior. When children develop self-control, they are not likely to use force or violence to get what they want, they are pliable to parents' orders, and they are more considerate of others.

A child's level of self-control may increase in older childhood, decrease during adolescence, and increase again in adulthood, but his relative level of self-control, compared to others of the same age, is typically stable. More recent research into the trait of self-control has

shown that, in addition to the way children are reared, genetic and neurobiological variables and social relationships throughout life are other important factors that affect persons' level of self-control (Hay and Meldrum 2016).

The two criminologists derived the characteristics of persons with low self-control from the characteristics of criminal acts. For example, they argue that crimes provide immediate gratification, and therefore criminals are unable or unwilling to defer gratification. After examining other characteristics of criminal activity, they concluded that, "[P]eople who lack self-control will tend to be impulsive, insensitive, physical (as opposed to mental), risk-taking, short-sighted, and nonverbal, and they will tend therefore to engage in criminal and analogous acts" (1990:90). Hay and Meldrum, researchers studying self-control more recently, define it as "the practice of overriding immediate impulses to replace them with responses that adhere to higher order standards that typically follow from values, social commitment, and interests in long-term well-being" (Hay and Meldrum 2016:7).

Cigarette smoking can be interpreted as a manifestation of low self-control. Neuropharmacological research indicates that nicotine use results in a pleasurable experience, improves moods, and enhances cognitive and physical functions. Repeated exposure to the substance, even occasional exposure over a few days or weeks, results in tolerance and dependence on the user. Withdrawal results in anxiety, stress, and depressed mood (Benowitz 2010; DiFranza et al. 2000; Watkins, Koob, and Markou 2000).

Regular smokers fit many of the characteristics of persons with low self-control. Persons who light up frequently are impulsive: they give in to the desire to smoke when withdrawal produces negative affect. They are short-sighted because they choose the immediate satisfaction of smoking despite knowing that later on, they will feel anxious and depressed. They are risk-

takers because the improved mental and physical function that nicotine provides comes with long-term health risks. In brief, they do not override their impulses in favor of responses that adhere to higher-order standards.

There is a wealth of evidence on self-control and smoking, some coming from the field of psychology and some from the literatures on sociology and criminology. Evidence for the association of self-control and smoking behaviors is generally supportive of self-control theory. Glicksohn and Nahari (2007) found that lower self-control is associated with higher frequency of smoking among college students. Moffitt and colleagues (2011) studied a birth cohort in Dunedin, New Zealand and found that lower self-control in childhood is associated with higher likelihood of dependence on nicotine and other substances in adulthood. Sussman, McCuller, and Dent (2003) found that lower self-control is associated with higher smoking frequency in a sample of at-risk students. In contrast with the findings listed so far, Arneklev, Grasmick, and their colleagues (1993) found no evidence of an association between self-control and smoking; the authors consider that the scales used to measure self-control have problems, or that smoking is not equally appealing to all people.

Wills and colleagues (2008) studied a metropolitan sample of middle and high school students and found that self-control moderates the link between peer substance use and negative life events on the consumption of cigarettes. Audrain-McGovern and her colleagues (2006) studied a sample of tenth graders, and found that self-control has direct effects on baseline smoking frequency, as well as indirect effects through peer smoking, and peer smoking predicted changes in the frequency of future smoking. Pokhrel and his colleagues (2013) found that self-control, together with peer substance use, including smoking, mediates the effects of immigrant acculturation on future substance use. Lee and colleagues found evidence that self-control

mediates the association of childhood poverty with the higher likelihood of smoking in adulthood (Lee et al. 2013).

In conclusion: many of the explanations of cigarette smoking provided by sociology, public health, and economics are compatible with criminological theories of criminal and deviant behavior. Collectively the four theories of crime and deviance are comprehensive and systematic in the scope and definition of social factors for deviant behavior, from the poor development of self-control in childhood and adolescence due to poor parenting, through the lack of strong bonds to family, school, community and rejection of conventional social values, taking into account the influence of peers, friends, and associates, and accounting for the lack of resources one would need to cope in legitimate ways with the bad feelings that problematic social interactions inevitably cause. This is the reason I decide to leverage the four criminological theories as the basis of my theoretical approach in Chapter 3: that applying them to my empirical problem will result in as comprehensive as possible an understanding of the various social aspects of adolescent smoking.

Social Causes of Racial/Ethnic Differences in the Rates of Cigarette Smoking and Crime

In this section I return to the topic of differences in health and other deviant behaviors across racial/ethnic groups. Earlier in the chapter I presented the evidence of the differences in cigarette smoking between NH whites, Hispanics, and NH blacks. Here I present the different social explanations researchers have developed for those differences. I incorporate explanations of group differences in crime because the theoretical approach I am developing is based on understanding crime as a delinquent behavior. Therefore, it is pertinent to review the social

causes for group differences in crime in addition to the causes for the specific delinquent behavior of cigarette smoking.

Explanations of Racial/Ethnic Differences in Cigarette Smoking

In addition to establishing statistically significant differences in the prevalence of cigarette smoking among different racial/ethnic groups, some researchers have also investigated the social mechanisms that underlie such disparities. As was the case with the social explanations for smoking behavior, the research I describe tests hypotheses that are consistent with criminological theory.

Ellickson and her coauthors (2004a) tested whether various risk factors (measures of social influence, social bonding[14], pro-smoking attitudes, and problem behaviors) helped account for the lower rates of weekly smoking (having smoked in the past week) they observed among African American and Asian American subjects in comparison to white subjects[15] in a sample of middle-school students recruited 1985 in California and Oregon who were followed for 10 years. The researchers found some of the risk factors under consideration helped account for lower rates of weekly smoking at age 14 among African American students and Asian American, as well as among Asian American students at age 18. Those factors include peer and parental smoking and approval of smoking, low self-efficacy in resistance to smoking, which are consistent with social learning and self-control theory, as well as problematic behaviors and use of other substances, which in criminological research would be treated as covarying outcomes rather than predictors.

[14] Despite the similarity in the name of the groups of risk factors considered Ellickson et al. (2004) did not operationalize criminological theories. Although several of the factors they considered are the same as those in that operationalize criminological theories (such as best friend and peer smoking, parental smoking and approval of and beliefs about cigarette smoking), these measures are not grouped in the same way.

[15] The authors found no statistically significant differences in the rates of weekly smoking at ages 14 and 18 between white and Hispanic students.

Other researchers have established the impact of social determinants for smoking that correspond to factors identified in the criminological theories. Furthermore, the protective effect of some of these determinants are stronger for Hispanic women than for NH white or NH black ones. Perreira and Cortes (2006) researched risky health behaviors among urban pregnant women and found lower rates of cigarette smoking during pregnancy among Hispanic and NH black women compared to NH white women. They found that social support in the form of being married to and receiving affection from the unborn child's father, the presence of a family able to provide financial or in-kind assistance, having a job, and attending church reduced the likelihood of smoking in all the groups studied. In contrast, stress from domestic violence or feeling unsafe in their neighborhoods and the father's use of tobacco increased the likelihood that the women would smoke during pregnancy. The researchers also found that some social support factors were more important for some groups than for others. For example, having an affectionate partner or spouse and attending church were more important protective factors for Hispanic women. Affection and support from one's partner and church attendance reflect bonds of attachment and belief, stress and fear are elements of general strain, and partner smoking is a social learning factor.

There is evidence of racial/ethnic differences in the group trajectories of smoking from adolescence to adulthood. Pampel (2008) tested whether achieved SES and the transition into adult roles helped account for the differences in the group trajectories of NH white and black subjects. Using two nationally representative datasets, one a cohort study and the other longitudinal, he found that the adolescent advantage in smoking (that is, lower rates of smoking) among NH black subjects is lost in adulthood. NH white' subjects' smoking prevalence increased from early adolescence on, stabilized in the mid-twenties, and dropped in the mid-

thirties. In contrast, NH black adolescents smoke less than NH white ones through adolescence, and their smoking prevalence increased at a slightly slower pace than NH white teens'. However, NH blacks' prevalence continued to increase through early adulthood, surpassing the prevalence of smoking for NH white young adults at their inflection point. NH black adult's prevalence reached a plateau later than NH whites', in the late twenties, and only started to drop when NH black young adults were in their early thirties.

Researchers have also suggested that factors not associated with SES, such as yet-unmeasured cultural norms and experiences of discrimination, are likely to affect group trajectories of smoking prevalence by race and ethnicity (Lawrence et al. 2014). The conclusion that discrimination may help account for the observed differences in the trajectories is consistent with general strain theory. In their comparison of the group trajectories of smoking among Hispanics, American Indians and Hawaiian Natives, and Asians, Lawrence and her colleagues hypothesized that group differences in achieved SES (educational attainment, income, and wealth) and the transition to adult roles (for example, becoming a parent, starting a professional job, or becoming a head of household) would help account for observed differences in the group trajectories, but found no support for their hypotheses. These findings led them to consider other factors they did not measure in this project.

Overall, there is not very much research about the lower rates of cigarette smoking among Hispanic adolescents compared to NH white ones. More of the research on cigarette smoking among Hispanics has focused on differences in rates of smoking among Hispanics of different immigrant generations; I present a summary of that research in the last section of this chapter.

A recap of the material I have presented in this chapter is in order. I introduced the empirical phenomenon that the prevalence of adolescent cigarette smoking among NH whites, Hispanics, and NH blacks has been significantly different from the early 1990s through the mid-2010s, with decreasing prevalence in the order I listed the three groups. After that I presented overviews of different social scientific explanations of cigarette smoking, together with the extant evidence supporting those explanations.

According to prior research and theory, lower rates of cigarette smoking among Hispanic adolescents relative to NH white adolescents may be due to lower exposure to family and friends who smoke or consider smoking acceptable (social learning theory). In addition, stronger bonds of attachment to family and church communities may also lower the risk of smoking among Hispanics (social control theory). However, there are also factors that may increase that risk. Lower average SES among Hispanics may be result in higher levels of strain due to discrimination, living in poorer neighborhoods with higher rates of crime, and the inability to reach conventional goals such as attending and graduating from college, leading to a higher risk (general strain theory).

Throughout the process of researching and presenting this body of theoretical and empirical work, I have observed that the leading criminological theories jointly provide a comprehensive set of hypotheses and evidence about the different aspects of social life that may lower the prevalence of cigarette smoking among Hispanic youth, which is the phenomenon I seek to explain. Since I will approach cigarette smoking as a form of delinquency, I also provide an overview of explanations of the observed group differences in crime by race and ethnicity, next.

Explanations of Racial/Ethnic Differences in Crime

Historically, research on the association of race/ethnicity and crime has been based on classical criminological theories of structural disadvantage. The key insight from the work conducted in the 1980s and early 1990s is that the concentration of disadvantage in black communities is the cause of higher neighborhood rates of violent crime (Peterson and Krivo 2005). More recently, researchers have studied the association of race/ethnicity, socioeconomic disadvantage, and community- and individual-level crime (Agnew 2007; Anderson 1999; Feldmeyer and Cui 2015).

Based on his ethnographic work in disadvantaged, predominantly black neighborhoods in Philadelphia, Anderson (1999) proposed one mechanism for the association: that in disadvantaged, highly disorganized neighborhoods, residents are isolated and often cannot rely on the police for protection. A collective defensive mechanism arises: the development of a "code of the street," informal norms for public behavior, especially violence, that stand in opposition to mainstream, normative behavior.

This code of the street is an alternative honor code that stands in opposition to mainstream normative behaviors. According to Anderson (1999) the code of the streets results from collective socioeconomic disadvantage rather than from particular racial/ethnic values or cultures. For example, according to the code, drug dealers and street thugs are role models whose behavior and style is to be emulated. Police and public officers, on the contrary, are not considered respectable within this code. Parenting norms are also different under the code. For example, while it is common for parents in the neighborhoods Anderson studied to use physical punishment to discipline their children, the code prescribes that "the decent thing to do" is to explain to the punished child why his or her behavior was wrong, and "street," undesirable, so that the child will learn from the experience.

Agnew (2007) has applied general strain theory to understand why race and ethnicity are associated with crime. He observes that NH blacks and Hispanics are somewhat more likely than NH whites to engage in serious crime, but that race/ethnicity by itself has little or no association with minor crime. Instead, he suggests that higher rates of violent crime among NH blacks and Hispanics is the result of higher likelihood of experiencing strains conducive to crime among members of these groups. In addition, NH blacks and Hispanics are less likely to have resources that help them cope with strain in legal ways rather than criminally. The reasons that members of these two groups experience more strains are the association of race/ethnicity with economic disadvantage and the pernicious effects of racial/ethnic discrimination.

Comparing Asian and other racial/ethnic groups, Feldmeyer and Cui (2015) also found that strain helps account for delinquent behavior. In their analysis of data drawn from a nationally representative, longitudinal study of adolescents, the authors found support for the theories of general strain, social control, and social learning. NH Asians report lower levels of violence and drug use than NH whites, NH blacks, Hispanics, and Native Americans, but similar levels of property offenses. Lower levels of strain, higher levels of school attachment, and lower exposure to delinquent peers help account for the differences in delinquency.

It is interesting to note that the literature on Hispanic criminal involvement is at odds with the evidence that Hispanics are at lower risk for cigarette smoking. Hispanic subjects have lower rates of smoking but higher rates of serious crime than NH white ones. The key theories of crime explain the higher criminality of Hispanics as the result of higher strain that is driven by structural disadvantage. How is it, then, that Hispanics, who likely experience more strains than NH whites, are less likely to smoke cigarettes?

The answer may lie in the heterogeneity of the Hispanic population and its high proportion of foreign-born persons, with 40 percent foreign-born individuals in year 2000 (Flores 2017) in comparison with only three percent among NH white individuals (Malone et al. 2003). Evidence of differential criminal involvement among Hispanic persons from different immigrant generations as well as differential cigarette smoking risk may solve the apparent contradiction.

Indeed, Bersani (2014c) provides evidence that the risk of criminal involvement among Hispanic youth varies across different immigrant generations. Analyzing trajectories of self-reported criminal offending from adolescence to early adulthood with the NLSY97 cohort, comprised of adolescents age 12 to 16 at the baseline in 1997, she found that foreign-born youth had lower involvement in crime than native-born youth, regardless of the type of crime assessed. While she reports that second-generation immigrants have higher rates of criminality than first-generation immigrants, she found the patterns of offending among the second generation of immigrants are not different from those of native-born youth.

It may be that first-generation immigrants have more protective social factors than second-generation ones, since it is unlikely that they have less of a structural disadvantage and therefore less strain. Protective factors may be that first-generation immigrants are less likely to hold definitions of crime (and cigarette smoking) as acceptable behavior, have stronger family bonds and higher religiosity, and higher self-control.

Accordingly, in the last section of this chapter I turn to extant theories and evidence about immigration, smoking, and criminality.

Theories of Immigrant Adaptation

Here I provide an overview of research on the adaptation of immigrants to U.S. society, the segmented assimilation theory of immigrant integration, and the literature on immigrant generational status as a predictor of cigarette smoking and crime.

Research on Europeans who migrated to the United States from the turn of the twentieth century through its first half focused on the process through which the immigrants' children and grandchildren gradually became indistinguishable from other white, middle-class Americans. (Gordon 1964). What were the markers of full integration into the American mainstream? How many generations did it take for the descendants of immigrants to reach the end of the process? What factors made the journey, so to speak, easier or harder?

Such research was based on the assumptions that all immigrants would eventually integrate into the mainstream and that each successive immigrant generation would attain higher socioeconomic status than their parents and grandparents. The assumptions seem to hold overall for the children of more recent immigrants. Traditional measures of immigrant adaptation (English language use, residential integration, intermarriage, and SES attainment) show that, for the most part, the children of immigrants are integrating well into U.S. society (Card 2005; Waters and Jiménez 2005).

However, some contemporary immigration scholars point out that the assumptions of the straight-line assimilation model do not apply to all immigrant families (Tran 2016; Zhou 1997). For example, Portes and Zhou (1993) observed that in the 1980s, the outlook for SES attainment for members of the second generation was not as uniformly positive as the straight-line assimilation model would predict. Conducting ethnographic work in diverse immigrant communities, they found that some second-generation youth were on track to reach middle-class

status through educational attainment. However, other members of the second generation were not on track to do better or even as well as their parents; instead, they were adopting the norms and values of disaffected, inner-city minorities. In other words, instead of a uniform path of upward mobility, the process of assimilation was segmented, distributing immigrants' children to different socioeconomic segments of U.S. society.

According to Portes and Zhou (1993), some reasons for the segmentation of immigrant assimilation outcomes had to do with change in the labor market in the last quarter of the twentieth century. Opportunities for upward economic mobility through gradually better paid blue-collar occupations disappeared as the manufacturing industry declined, closing off an avenue that had been available for earlier second-generation immigrants. However, other features of the American social context remained the same. Racial and ethnic prejudice continued to result in discrimination against non-white immigrants[16]. Yet other determinants of immigrants' children assimilation outcomes are the educational and professional attainment of their foreign-born parents and their families' place of residence (Portes and Rumbaut 2001, 2014a).

Portes and his coauthors (Portes and Rumbaut 2001, 2014a; Portes and Zhou 1993) proposed the theory of segmented assimilation to make sense of the variety of immigrants' integration outcomes. I describe the theory next, focusing on the family factors that put the children and grandchildren of foreign-born immigrants at risk for poverty and deviant lifestyles.

[16] An important effect of the Immigration and Naturalization Act of 1965 was to increase the diversity of newcomers to the United States in terms of the national origin, race/ethnicity, language and religion of immigrants and refugees (Card 2005).

Segmented Assimilation Theory

The central tenet of segmented assimilation theory is that the outcomes of the process of adaptation to U.S. society vary, and rapid acceptance and integration into the American mainstream is just one of the possible outcomes (Portes and Rumbaut 2001). Therefore, the key question that segmented assimilation theory seeks to answer is, "Into what segment of U.S. societies will different second-generation immigrants integrate, and why?"

Over the years, Portes and his coauthors have emphasized different aspects of the integration experience. For example, Portes and Zhou (1993) ask what characteristics make second-generation youth more susceptible to downward assimilation. They develop a typology of vulnerability and resources that affect the likelihood of that outcome, which is very compatible with criminological explanations of delinquency and deviance.

The vulnerabilities the authors describe include being subject to racial or ethnic prejudice (a form of strain), residence in inner cities and consequent interaction with delinquent youth (a social learning argument), and the absence of mobility ladders such as those that existed earlier in the United States (another strain and social control argument, since unemployment or underemployment and the inability to reach valued goals are criminogenic strains.)

Resources that reduce the risk of downward assimilation include government assistance for refugees (this can reduce strain, for example, by helping immigrant families find and rent adequate housing), exemption from legal prejudice (such exemption prevents strain), and the presence of a supportive, co-ethnic community (which provides immigrant families with social capital, a resource for coping in legal ways.)

Another statement of the theory has a slightly different approach. In the fourth edition of "Immigrant America: A Portrait," Portes and Rumbaut (2014a) specify in some detail the different paths of economic mobility that immigrants follow across the first, second, and third

generation. The two determinants of the immigrants' children assimilation outcomes are the foreign-born parents' level of cultural capital and the presence of a supportive, co-ethnic community where the family resides.

Although this instance of the theory does not make the importance of racial and ethnic discrimination explicit, it has the benefit of simplicity, consisting of two easily testable hypotheses. This is the expression of segmented assimilation theory that I incorporate into my investigation. In Figure 3, I provide a visual representation of the different mobility paths according to the two critical factors that Portes and Rumbaut propose (2014a).

Clarification of related but distinct terms is pertinent at this point. Acculturation refers to the immigrants' adoption of the host society's values, norms, and practices. Integration refers to the adaptation outcome, that is, whether immigrants are accepted in middle-class, white neighborhoods, employed in mainstream occupations, and invited to socialize with native-born friends and neighbors. The distinction in the two terms is relevant because an immigrant can fully internalize American values, norms, and practices, and still be rejected, hypothetically, from a role coaching the neighborhood baseball or soccer team, despite his or her love of the sport and proficiency in coaching.

Segmented assimilation theory considers three types of acculturation (Portes and Rumbaut 2014a). Consonant acculturation refers to the wholesale, unproblematic adoption of the host culture. Selective acculturation entails the adoption of some values from the host culture, such as belief and emphasis in education as the path for economic mobility, in tandem with retention of some values from the culture of origin, such as a collectivist orientation to family and community and higher parental control of adolescents. The third type is dissonant

acculturation, in which the values of the host society are rejected as worthless or unachievable and the retention of ethnic cultural elements may be adopted as a form of protest.

The statement of the theory in the 2014 instance is as follows: if members of the first generation (i.e., the foreign-born parents) come to the United States possessing high cultural capital, in the form of education and/or entrepreneurial experience, that eases their children's full cultural assimilation and access to professional or entrepreneurial occupations, resulting in complete integration into the mainstream by the third generation.

In contrast, the mobility path for the families of foreign-born parents who come to the United States with low cultural capital, that is, without education or professional or entrepreneurial experience, is less certain. The mobility path for the children of these immigrants depends on the presence of a strong co-ethnic community, which to some degree shields the children from racial or ethnic prejudice and systematic discrimination, increases social control, and enmeshes the parents in networks that provide social capital.

Second-generation immigrants living in such communities are more likely to selectively acculturate, adopting some mainstream values such as the importance of individual effort and education for economic mobility while retaining traditional values such as the emphasis on family. These children of foreign-born immigrants have higher chances of attaining middle class status through educational attainment than their counterparts without the support of a community, and their children (the third generation) may achieve full integration.

The last combination is that of foreign-born parents with low cultural capital who don't live in a co-ethnic community. Without the social capital and social control that a co-ethnic community provides, the children of working-class immigrants are more exposed to discrimination, economic disadvantage, and deviant peers, all criminogenic factors. To the

degree that the parents have low resources and are under strain themselves, childrearing may be challenging for them, resulting in their children's low self-control. In addition, these children are less likely to mix elements of their parents' cultures, since they appear foreign and quaint but unrealistic, and this further reduces social control.

The likelihood that these second-generation immigrants experience dissonant acculturation, in which they reject mainstream values, increases, lowering social control. They are unlikely to successfully navigate educational institutions and attain the education that would support mobility into the middle class, or they may simply lose interest in education. In turn, the risk of stagnation in low-paying, menial jobs increases, increasing strain. If these second-generation immigrants adopt an adversarial outlook (as a result of low social control, high strain, and low coping resources), the risk that they will engage in delinquency and deviance, including smoking and other unhealthy behaviors, increases. In turn, their children, the third generation, have fewer resources and role models at the outset and also are at risk for downward assimilation.

The next two sections wrap up the background chapter of this dissertation. I present brief overviews of empirical evidence on the association of immigrant status with cigarette smoking and criminal involvement.

Evidence on Immigration and Cigarette Smoking

Empirical research on immigration and cigarette smoking tends to investigate two immigrant characteristics, separately or jointly: generational status and acculturation. Some authors have investigated these associations for all immigrants (Acevedo-Garcia et al. 2005; Jones et al. 2016; Unger et al. 2000) or across ethnicity and by national origin (Baluja et al. 2003). Others have studied specific ethnic or national-origin groups (Echeverria et al. 2015; Parrinello et al. 2015).

Some of these studies have established the different prevalence of smoking by group (Acevedo-Garcia et al. 2005; Baluja et al. 2003), while others have tested causal hypotheses, sometimes manifestly testing criminological theories (Kam et al. 2010; Pokhrel et al. 2013) and other times, concepts consistent with those theories (Echeverria et al. 2015; Kulis et al. 2009; Rajesh et al. 2015; Unger et al. 2000)

Acevedo-Garcia and her coauthors (2005) investigated the prevalence of daily smoker status by immigrant generation among the foreign- and U.S.-born of all races/ethnicities who participated in the Tobacco Use Supplement (TUS-CPS) of the Current Population Survey, which is a large, nationally representative sample of adults. They found that first-generation immigrants are the least likely to smoke daily, while U.S.-born individuals of U.S. born parents (that is, third generation immigrants and non-immigrants) are the most likely to do so. Among second-generation immigrants, having two first-generation parents lowered the likelihood of smoking vis-à-vis second-generation immigrants with only one foreign parent. Furthermore, the protective effect of having two first-generation parents among second-generation immigrants was stronger for females, racial/ethnic minorities, and persons with low incomes.

In their discussion, the authors hypothesize that the lower smoking rates among first-generation immigrants may be explained by lower rates of overall smoking and advantages in female smoking in the countries of origin, as well as the healthy-immigrant effect hypothesized by researchers investigating mortality advantages Hispanics have over NH whites[17].

Baluja, Park, and Myers (2003), also using TUS-CPS data, compared the prevalence rates of current smoking between the foreign- and U.S.-born of every racial/ethnic group. They found lower prevalence rates for all foreign-born groups, except for male Asian-Pacific Islanders. They

[17] This phenomenon is known as the Hispanic Health Paradox (see Riosmena, Wong, and Palloni 2013).

also found differences by national origin among first-generation Asian/Pacific Islanders (statistics by national origin were not available for other immigrants). Japanese immigrants had the highest overall prevalence and Indian immigrants had the lowest ones. South Korean, Japanese, and Vietnamese immigrants had the highest rates among males, and India and Hong Kong, the lowest. The ranking by prevalence for women were somewhat similar: highest rates among Japanese and South Korean immigrants, and lowest among Indian and Chinese ones.

Echeverria and his colleagues (2015) studied smoking behavior and attitudes about smoking among Hispanic young adults who participated in the National Young Adult Survey, a nationally representative survey of U.S. young adults. They found that higher immigrant generation status and acculturation are positively associated with acceptance of cigarette smoking, and lower likelihood of smoking current smoking among young adults whose Hispanic peers do not find smoking acceptable.

Evidence on Immigration and Crime

While researchers studying cigarette smoking among immigrants do not refer to segmented assimilation theory frequently, some researchers of immigration and crime do. Bui and Thongniramol (2005), Le (2015), Peterson and Krivo (2005), and Stansfield (2012) have incorporated concepts from the theory of segmented assimilation, arguing that second-generation immigrants face particular challenges. However, some of these researchers interpret the theory in a narrow way, stating that segmented assimilation predicts higher rates of criminal involvement among second-generation vs. first-generation immigrants, overall. Such interpretations gloss over the important elements of the theory: that some, but not all second-generation immigrants are more likely to offend than their parents.

Others researchers (Bersani 2014a, 2014b) question whether the phenomenon of higher criminal involvement in the second generation actually supports segmented assimilation theory. They argue instead that higher involvement in crime in the second and later generations may reflect a social process of regression to the mean, so to speak, in which second-generation immigrants have similar exposure to and susceptibility to criminogenic factors as the rest of the native-born, non-immigrant population. Consistent with segmented assimilation theory, they find that second-generation immigrants exhibit similar behaviors to non-immigrants of similar race, ethnicity, and socioeconomic status, although they interpret the evidence to mean that low-SES *causes* dissonant acculturation, reversing the causality of selective assimilation theory, which posits that low-SES *results* from dissonant acculturation..

Using data from the National Longitudinal Survey of Youth, a nationally representative sample of U.S. youth, Bersani (2014b) analyzed group trajectories of self-reported offending from early adolescence to early adulthood to find out whether first-, second-, and third-generation youth have different age-patterns of criminal involvement. She found an overall pattern of rising prevalence of offending from ages 12 to around 16, followed by a decline in offending through the early twenties. Over the ages studied, prevalence was lower for first-generation immigrants than for second- and third-generation youth. The trajectories for the latter two groups were very similar in shape and level, with the disparities relative to first-generation immigrants appearing in and growing from early adolescence on, reaching their peak at the inflection point around ages 16 and 17, and then declining into the early twenties. The shape of these trajectories is similar to the ones that Pampel (2008) and Lawrence and coauthors (2014) described for smoking prevalence.

In a second set of group trajectories, Bersani (2014b) identified five different trajectories of offending, based on the overall frequency of offending by age: she gave each group a self-explanatory label: non offenders (more than half of the sample), followed, in decreasing share, by earlier onset (also with earlier desistance), later onset (with later desistance), adolescent offenders (with a leptokurtic curve peaking around age 17), and late desisters (who have a flatter but higher curve throughout the period).

Some generational status groups are associated with the different trajectories. First-generation immigrants were most likely to belong to the non-offender trajectory group and least likely to belong to the late desister one, while second-generation immigrant youth are distributed across the different offender groups in the same proportions as the general population.

Although this study did not test the causes for the different offending trajectories and the associations between some of the trajectories and first-generation status, it provides an interesting picture of the heterogeneity in youth offending patterns that is not reflected in the more-commonly reported prevalence and frequency of criminal involvement.

In summary, there is mixed evidence about the rate of criminal involvement by Hispanic persons; some research indicates Hispanics have higher rates of serious crime but not of minor crime, while other research indicates that Hispanics have lower rates of criminal involvement, especially among foreign-born individuals, and that second-generation Hispanic immigrants do not have higher rates of criminal involvement than NH white.

This concludes my review of the background on cigarette smoking among the larger racial/ethnic groups in the United States. I have presented the key extant theories about the social causes of smoking, the explanations that have been proposed for differences in group rates of

smoking and criminal involvement by race/ethnicity, the theories of immigrant adaptation, and the results of empirical research on immigration on smoking and on crime.

As my review shows, extant theories and prior research suggest that lower rates of adolescent smoking among Hispanic youth relative to NH white youth may be explained in part by the higher proportion of recent immigrants, who have lower rates of peer smoking, parent smoking, and parental and peer approval of smoking behavior. In addition, Hispanic youth may smoke less because of stronger social bonds to family and community. However, there also is evidence that Hispanics may have higher exposure to sources of strain, which would increase their rates of smoking. Low self-control is another risk factor for smoking, although in my review of the literature I did not find evidence of higher or lower self-control among Hispanic youth.

Chapter 3. Theoretical Approach

In this chapter I propose a causal model to guide my dissertation's statistical analyses. In the model, I integrate segmented assimilation theory with the four key criminological theories to explain observed group differences in the rate of current cigarette smoking among NH white and Hispanic adolescents. This causal model is consistent with the theories and evidence I have presented in Chapter 2. Below, I begin by stating the research questions I seek to answer. After that, I present the causal model. To close the chapter, I state my research hypotheses.

Research Questions and Rationale

The question that motivates this dissertation project is:

> RQ1: Why is the likelihood of cigarette smoking lower among Hispanic adolescents than NH white adolescents?

As I have pointed out in Chapters 1 and 2, a salient fact about Hispanic youth in the United States is that they are much more likely to be immigrants than NH white youth, so a second research question to answer is:

> RQ2: Why is the likelihood of cigarette smoking lower among youth from more recent immigrant generations than among non-immigrant youth and youth from later immigrant generations?

The research task here is to find what *being Hispanic* and *belonging to the more recent immigrant generations* means, that is, finding what factors among the multiple dimensions of adolescents' social life are associated with Hispanic ethnicity and earlier immigrant generation, and testing those factors for association with the risk of cigarette smoking.

Based on the theoretical background I presented in Chapter 2, there are three types of social factors that may be associated with both Hispanic ethnicity and immigrant generation as well as with cigarette smoking rates: characteristics of the neighborhoods where youth live, characteristics of the youths' parents, and the youths' individual characteristics and social relationships. Accordingly, I add three research questions to the list:

RQ3: Are there neighborhood characteristics that are associated with Hispanic ethnicity, immigrant generation, and the risk of smoking?

RQ4: Are there parental characteristics that are associated with Hispanic ethnicity, immigrant generation, and risk the of smoking?

RQ5: Are there individual characteristics and social relationships of adolescents that are associated with Hispanic ethnicity, immigrant generation, and the risk of smoking?

Integrating Extant Theories of Smoking Behavior

In Chapter 2, I argued that many of the known social causes for adolescent cigarette smoking are captured by or consistent with the main four criminological theories of social learning, general strain, social control, and self-control. I presented evidence supporting each theory as a good explanation of adolescent smoking in particular. I also presented evidence that rates of cigarette smoking among Hispanic subjects vary according to immigrant generation, and that measures of assimilation into American society are significant predictors of smoking behavior.

I propose to integrate the theory of segmented assimilation with the four criminological theories. This theoretical integration will allow for a better understanding of the factors that result in lower rates of smoking among Hispanic adolescents than we would have if we applied the theories separately.

Rationale for the Theoretical Integration

The key concepts in segmented assimilation theory are factors external to and outside the control of immigrant teenagers. For example, we can think of the cultural capital (educational attainment and professional or managerial experience) that immigrant parents have accumulated in their countries of origin, before their emigration, as an objective, unchangeable reality from the standpoint of those immigrants' children. It is a priori, in Berger and Luckmann's (1966) terms, to the social experience of the immigrants' children in the United States. Similarly, the characteristics of the neighborhoods where immigrants settle their families are external to and outside the control of the immigrants' children. Whether immigrant teenagers have parents with high or low cultural capital and live in a co-ethnic, supportive neighborhood or not also precede the adolescent's experience, both logically and temporally.

I propose that we can treat neighborhood and paternal characteristics as upstream, distal mediators of the impact of Hispanic ethnicity and immigrant generation on the downstream outcome of cigarette smoking behavior. In contrast, the concepts from the four main criminological theories directly reflect the immigrant teenager's experience of and reaction to the social world they inhabit. The criminological factors are the result the adolescent's internalization of their external, objective reality.

For example, negative emotionality, the key mechanism of general strain theory, results from teenager's social interactions with friends, parents and other family members, as well as with neighbors and teachers and peers at school. Furthermore, to the degree that immigrant parents with low resources have to settle in the more affordable neighborhoods with higher crime rates and lower collective efficacy, the distal mediators (neighborhood and parental characteristics) affect the proximate ones (the criminogenic factors.) Similarly, high self-control is a personality trait inherent to each teenager, one that results from good parenting starting early

in the teen's life. It also stands to reason that the higher a teenager's parents' educational attainment and managerial or professional experience, the higher the parents' level of self-control, which in turn increases the chances that the parents instill self-control in their children.

We can consider the criminogenic factors as proximate predictors of adolescent smoking behavior, affected by and therefore downstream from the distal predictors from segmented assimilation theory but upstream from the outcome of adolescent smoking.

Cigarette smoking behavior that results from the combination of distal and proximate mediators can be understood as the externalization of the teenager's negative emotionality, the result of adopting definitions that cigarette smoking is cool or edgy, or required to be part of the gang, so to speak. Whether resulting from the desire to assuage negative emotionality or to belong with one's friends, smoking cigarettes is more likely if the teenager has low self-control, that is, if he or she is less able to resist the pressure to smoke.

In this way, general strain, pro-smoking social learning, and low self-control are risk factors for cigarette smoking. However, if the teenager has strong bonds to conventional society, such as high attachment to parents and teachers who disapprove of smoking, those bonds reduce the likelihood that the teenager will give in to the temptation to smoke. In this way, social control is a protective factor against cigarette smoking.

Adolescent cigarette smoking, then, is the outcome of adolescents' multitude of social and personal factors. It is the externalization of the emotions, definitions, commitments, and self-control of adolescents. To finish borrowing from Berger and Luckmann (1966), smoking behavior as the externalization of adolescents' emotions, definitions, and commitments is the objectification of the many social processes in which adolescents participate. Youth smoking rates are a social fact that appears as objective reality to youth and sociologists alike.

Causal Model

I present my causal model in Figure 4. The elements in the model are, from left to right, predictors (Hispanic ethnicity and immigrant generation), distal mediators (co-ethnic, supportive community and parental cultural capital), proximate mediators (pro-smoking social learning, general strain, social control, and low self-control), and the outcome (cigarette smoking.)

I chose to list Hispanic ethnicity and immigrant generation as two separate predictors. While Hispanic persons are more likely to be immigrants, and especially recent immigrants, than NH white persons, there are also NH white immigrants. Keeping these concepts separate may also allow extension of this causal model to test smoking and other risky behaviors with different racial/ethnic groups.

My distal mediators are the two key factors from segmented assimilation theory: first, the presence of a supportive, co-ethnic community, one in which parents and their adolescent children feel safe and where parents and teenagers receive support and advice on navigating school and work environments from neighbors, friends, and acquaintances of the same ethnicity. The second key factor is the educational level and professional or managerial experiences that the immigrating parents reached in their home countries, before they emigrated, and which I refer to as parental cultural capital. While Portes and Rumbaut (2014a) identified the two factors for the assimilation of 1.5 generation youth, the same factors arguably affect outcomes for second- and third-generation youth. Only one modification is needed to apply the two factors to later generations: allowing that parental cultural capital of first- and second-generation parents be attained in the United States rather than in the country of origin.

In the next step, I bring in the four key criminological theories as mediators between community and parental characteristics and the outcome, the risk of cigarette smoking. There are precedents in Portes and his colleagues' work for connecting the theory of segmented

assimilation to criminological theory: Portes and Rumbaut (2014a) make implicit causal connections with some criminogenic factors. For example, if youth know and respect neighbors who came from the same country as the youth's parents, they may be more likely to behave well when they spend time outdoors with their friends; this would be an instance of the social control bond of attachment promoting normative behavior. Experiences of discrimination, such as being the object of slurs, would be forms of strain that create anger and resentment, negative feelings that pressure youth into delinquency. However, living in a co-ethnic community is likely to reduce the frequency of such bad treatment and protect youth against strain.

The final step is to connect the criminogenic factors to the outcome. In Chapter 2, I presented evidence supporting each theory as a good account of the social causes of cigarette smoking. However, I don't limit my operationalization of each theory only to the factors which have already received empirical support, but rather include as complete an operationalization of each theory as I am able to capture with the Add Health data that I use to conduct this analysis.

I consider two outcomes in this causal model. The primary one is *current smoking*, defined as having smoked on at least one day in the 30 days leading up to the day of the baseline interview. I test a secondary outcome, *daily smoking*, defined as having smoked every day in the 30 days leading up to the interview, to assess the sensitivity of the causal model to the more intense behavior of daily smoking.

Correlation, No Causation

In this project I will only test these concepts in cross-sectional analyses, through which I cannot establish the direction of causality. I do not estimate longitudinal models at this point because testing the causal model I propose will require fitting a two-level regression model, as I explain in Chapter 4, "Data and Methods". Adding a longitudinal element would imply fitting a three-

level model and increase the complexity of the empirical analysis. However, longitudinal modeling to assess causality is a possible next step for further research using the Add Health study.

Since my analysis is cross-sectional and not causal, I use lines rather than arrows to connect the elements in the model. However, the left-to-right placement of the elements follows the logic I discussed above. Solid lines indicate that I expect to find positive associations between elements; dotted ones indicate I expect to find negative associations.

Operationalizing the Concepts

In Figure 5, I list the measures I will use to operationalize each concept and test the model. I describe the measures in detail in Chapter 4.

Hypotheses

The hypotheses I present below are guided by the theories and evidence I presented in Chapter 2. In the causal model I propose associations between several factors and each factor has a number of operationalizing measures, so I state my hypotheses at the concept-level rather than for each measure.

Hypotheses About the Predictors

The first hypothesis, below, may seem counterintuitive. After all, segmented assimilation theory states that the presence of a co-ethnic, supportive community is a key factor for immigrant youth to find a path to assimilation into the middle class. However, Portes and Rumbaut (2014b) did not state that all Hispanic youth have the benefit of living in such type of community. Given that in general Hispanic persons have lower SES than NH white ones, and with support from criminological assessments that higher strain among Hispanic people is due to structural

disadvantage, it makes more sense to hypothesize that Hispanic youth are less likely than NH white youth to have the benefit of supportive communities.

H1. Hispanic youth are less likely to live in co-ethnic, supportive communities than NH white youth.

H2. Immigrant youth are less likely to live in supportive communities than non-immigrant youth.

H3. Immigrant and Hispanic youth are less likely to have parents with high cultural capital (measured as parental education) than NH white or non-immigrant youth.

Hypotheses About the Distal Mediators

Here is where the postulates of segmented assimilation theory come in. Independently of the chances that Hispanic youth have of living in supportive communities and having parents with high cultural capital, the theory predicts that when both conditions are true, the youth are more likely to follow upward assimilation paths.

H4. Youth living in co-ethnic, supportive communities are less likely to smoke cigarettes.

H5. Youth whose parents have high cultural capital (measured as parental education) are less likely to smoke cigarettes.

My theoretical integration is to propose that pro- and anti-criminogenic individual characteristics mediate the associations stated in hypotheses H4 and H5. The next four hypotheses provide the rationale or reason for H4 and H5.

H6. Youth living in co-ethnic, supportive communities have less risk of exposure to pro-smoking social learning, of experiencing criminogenic strains, and of having low self-control.

H7. Youth living in co-ethnic, supportive communities are more likely to have strong social control bonds.

H8. Youth whose parents have high cultural capital (measured as parental education) have less risk of exposure to pro-smoking social learning and criminogenic strains, and of having low self-control.

H9. Youth whose parents have high cultural capital (measured as parental education) are more likely to have strong social control bonds.

Hypotheses About the Proximate Mediators

I derive these two hypothesis directly from the criminological theories. Recall that adolescent cigarette smoking is a status offense and therefore it is appropriate to study it as a form of delinquency.

H10. Youth with higher exposure to pro-smoking social learning, criminogenic strains, and with low self-control are more likely to smoke cigarettes.

H11. Youth with strong social control bonds are less likely to smoke cigarettes.

Mediation Hypotheses

Any mediation hypothesis is based on the assumption that the predictor is associated with both the mediator and the outcome (Baron and Kenny 1986). However, since I have proposed two predictors and two sets of mediators, distal and proximate, each with several measures, I do not

formulate a hypothesis for each assumed association. Instead, I state three general mediation hypotheses, as follows.

H12. The association of Hispanic ethnicity and immigrant generation with the outcome is mediated by neighborhood-level community characteristics, individual-level community characteristics, and parental education.

H13. The association of Hispanic ethnicity and immigrant generation with the outcome is mediated by adolescents' individual characteristics and social relations (that is, the criminogenic factors)

H14. The association of neighborhood- and individual-level community characteristics and parental education with the outcome are mediated by adolescents' individual characteristics and social relations (that is, the criminogenic factors).

Testing the Hypotheses: The Rest of the Dissertation

In Chapter 4, next, I present the methods I will use to test the causal model, describe the Add Health study from which I draw data and the measures that operationalize each concept, and outline the analytical strategy I follow to test each of the stated hypotheses. I present the results of my analyses in Chapter 5 and indicate whether I found evidence in support of each hypothesis. Finally, in Chapter 6, I discuss the relevance of the analytical results and conclude the dissertation.

Chapter 4. Data and Methods

Data

For this investigation into adolescent smoking behavior I draw data from the baseline of the Add Health study, a longitudinal study of a nationally representative, probability-based sample of students in grades seven to 12 during school year 1994-95. The study, managed by the Carolina Population Center at The University of North Carolina at Chapel Hill, has followed over 20,000 participants with five waves of data collection, starting in 1994 and ending in 2016 (Harris, Halpern, et al. 2009).

Add Health has a school-based sampling design. A sample of 80 high schools and 52 middle schools from the US was selected with unequal probability of selection. Incorporating systematic sampling methods and implicit stratification into the Add Health study design ensured this sample is representative of US schools with respect to region of country, urbanicity, school size, school type, and ethnicity (Harris et al. 2009).

Students attending the participating schools filled out a questionnaire including topics such as the respondent's demographics, household structure, and risk behaviors at school. Samples of students were selected from the schools' rosters to participate in in-home interviews (Harris and Udry 2015, Chantala 1999).

Add Health researchers interviewed the selected students at their homes with a CASI[18]-assisted instrument, covering topics of peer networks, family dynamics, substance use, and educational aspirations and expectations, among others. Students participating in this phase numbered 20,745, including the core, nationally representative sample described above plus

[18] Researchers conducted the teenagers' in-home interviews using audio-based, computer-assisted self-interviewing (CASI) technology for sensitive health status and risk behavior questions (Harris 2013 Design & Accomplishments).

special oversamples based on ethnicity, disability, and other characteristics. At each student's home, if possible, the researchers administered a questionnaire to the subject's parent, preferably the mother or mother figure, achieving a response rate of 85 percent. The parent questionnaire included questions about the parents' education, interaction with his or her adolescent child, perception of neighborhood characteristics, and household income, among other topics (Harris and Udry 2015).

In addition to individual-level measures obtained from teenagers and their parents through interviews and questionnaires, the restricted-use Wave I data also include contextual variables that provide a direct measurement of the social context of the subjects' lives (Harris 2018 presentation user conference). Contextual measurements are derived from the subjects' addresses and external data sources such as the Census Bureau and the Federal Bureau of Investigation, and include measures of crime, poverty, education, and households' demographic characteristics. Add Health makes available these contextual variables at different summary levels (state, county, census tract[19], and block group[20]), depending on the level of aggregation at which the source data was available or collected. These data are provided at the subject level, so adolescents living in the same county, for example, have the same county-level contextual data (Billy et al. 1998).

[19] Census tracts are small statistical subdivisions of a county, established by local committees for the purpose of reporting decennial census data and designed to be relatively homogeneous units in terms of population characteristics, economic status, and living conditions; each census tract usually contains between 2,500 and 8,000 people, with an average population of 4,000 (Billy, Wenzlow, and Grady 1998 "National Longitudinal Study of Adolescent Health: Part I Wave I and II Contextual Database, U.S. Census Bureau 1994 "Glossary" in *Geographic Areas Reference Manual*).

[20] Block group (BG) is the lowest level of geography for which the Census Bureau tabulated sample data in the 1990 census; each BG combines a number of census blocks and is a subdivision of a census tract. In the 1990 census, each BG comprised an average of 452 housing units or approximately 1,100 people (Billy, Wenzlow, and Grady 1998 "National Longitudinal Study of Adolescent Health: Part I Wave I and II Contextual Database, U.S. Census Bureau 1994 "Glossary" in *Geographic Areas Reference Manual*).

Add Health is well-suited for the empirical test of my research hypotheses due to its national representativity, its oversample of minority groups, timing of Wave 1 data collection consistent with that for the empirical phenomenon that led to this investigation, and the breadth of social characteristics, relationships, and experiences captured, including responses from the subject's parents, as well as the associated contextual datasets.

Concepts and Measures

In Figure 5, I present the measures I used to operationalize the concepts in the causal model. I discuss each measure's creation and its objective in the following pages.

Several of the measures shown in Figure ("Concepts and Measures") are scales based on multi-item ordered items; I have coded these scales to make my statistical models as parsimonious as possible, making the assumption that each scale reflects an underlying latent trait that matches the concepts in the theories that guide the causal model. I rely as much as possible on scales used in previous, published research with Add Health. I only create new scales when I have not identified an extant scale for key concepts, such as the social bond of *investment*, or where more recent research indicates that an existing scale, such as Perrone's (2004) *self-control* scale, stands to be updated (de Ridder et al. 2012).

I validate all scales using the iterated principal factor method to confirm a factor solution, and I generate the scales corresponding to that solution. Through this process I retain the shared variance of the items used to operationalize each concept while reducing the number of measures I feed into each model (Bandalos and Finney 2010).

A brief discussion of two issues in the validation of the scales is in order. First, the majority of the scales are based on ordinal, Likert-type items, so their internal consistency should not be assessed using Cronbach's alpha because that coefficient rests on the assumption that the

underlying items are continuous and normally distributed. While an exception can be made for Likert-type items with at least five categories (Osborne 2010) with distributions that approach normality, the Likert items on which the scales are based are skewed, and some of them have fewer than five response categories. It has been established that item skewness results in lower inter-item correlation and alpha, especially in cases of scales constructed from few items (Greer et al. 2006).

While several scales reach the customary threshold of acceptable internal consistency[21] despite the skewed distribution of the underlying items, some do not. An argument can be made for keeping scales drawn from the literature that only achieve modest reliability ($\alpha >= .70$), and that justifies including some of the scales I present below. Still, some fail to achieve even modest reliability. In the interest of having as complete as possible operationalizations of the theoretical concepts in my causal model, I keep the scales I drew from the literature, following the approach that Bandalos and Finney (2010) recommend for exploratory factor analysis in "The Reviewer's Guide to Quantitative Methods in the Social Sciences": that using extant, theory-driven scales on which research has already been conducted is acceptable, even at the expense of increased measurement error. I make a note of scales that only reach modest or low reliability in the description of measures.

The second issue in scale validation is that some of the scales are based on dichotomous items, such as *negative life events.* The appropriate measures of reliability for those scales are tetrachoric correlation for those based on dichotomous items and polychoric correlation for

[21] According to Lance, Butts, and Michels (2006), expert psychometrician Nunally specified a minimum scale reliability (the commonly used Cronbach's alpha) of .80 for all but early stages of research. While Nunally considered an even higher threshold to be indispensable in high-stakes testing situations "such as selection for college admission based on readiness test scores [or] institutionalization of elder care recipients based on diminished cognitive capacity" (Lance et al, 2006: 206), he recognized that in early stages, researchers could save time and energy by accepting a modest reliability of .70.

ordered ones (Osborne 2010). For those scales I report the tetrachoric correlation coefficient, ρ. As happens for the scales discussed above, some of these measures also fail to reach a modest level of reliability (such as *acquaintanceship).* I also retain these scores, making a note of their low reliability.

The final note I make before describing the measures is that I have modified some of the extant scales in one of three ways. First, I move items from one scale to another if I need the item for the latter and that scale is more important for my analysis. For example, Stogner and Gibson (Stogner and Gibson 2010) include all 19 items from the "Feelings Scale" of the in-home questionnaire in their *depression* scale. However, one of those items captures how frequently the subject had trouble paying attention, and I need that item to operationalize the personality trait of self-control.

Second, I modified scales that contained items that fit other concepts better. For example, the *negative life events* that Daigle, Cullen, and Wright (2007) present is constructed from dichotomous items indicating whether there have been suicides or suicide attempts among the subject's family and friends plus an interval item indicating how many times the subject received a fight injury that required medical attention over the past year. I consider that last item fits better as an addition to Daigle and her colleague's *victimization* scale.

The third and last type of modification was standardizing all scales based on Likert items by setting the scales' mean to zero and their standard deviation to one. This allows for easier interpretation of regression coefficients, as it is difficult to explain what an increase of one unit means in, for example, the *impulsivity* subscale of *self*-control, or to assess whether one unit in that scale is more meaningful than a unit increase in the *school connectedness* scale.

Below I describe and discuss each measure. Where applicable, I include my justification for changes I make to previously published scales.

Dependent Variables

1. *Current smoking* is a dichotomous measure indicating whether the subject smoked in the 30 days leading up to the in-home interview. Creating the measure requires three items from the Add Health Wave I dataset (H1TO1, H1TO2, and H1TO5), which capture the answers to the questions, "Have you ever tried cigarette smoking, even just 1 or 2 puffs?", "How old were you when you smoked a whole cigarette for the first time?", and "During the past 30 days, on how many days did you smoke cigarettes?" Add Health relied on skip patterns to streamline questionnaires so that subjects were not asked questions that were not applicable to them. Teenagers who answered, "No," to the first question were not asked the second one, and those that answered they have never smoked a full cigarette were not asked the third question. Where respondents were not asked a question, their answers are coded as missing. Creating *current smoking* and the other dependent variable, *daily smoking* requires setting missing values that result from the skip pattern to zeroes.
2. *Daily smoking* is a dichotomous measure indicating whether the subject smoked every day out of the 30 leading up to the in-home interview. I created this measure based on the same items as for *current smoking.*

Independent Variables

1. *Hispanic* is a dichotomous measure which identifies subjects who indicated their ethnicity is Hispanic (item H1GI4), independently of how they self-identified in terms of race. The balance of the analytical sample comprises non-Hispanic, white-only

subjects, who were identified through five additional items that ask subjects to indicate their race or races from the options white, African American, American Indian or Native American, Asian or Pacific Islander, and Other (H1GI6A, H1GI6B, H1GI6C, H1GI6D, and H1GI6E).

2. *Immigrant generation* is a categorical variable with three levels: 1.5 generation, 2nd generation, and non-immigrant. This measure is based on three items (H1GI11, H1RM2, and H1RF2) that capture U.S. nativity, or not, for the subject, his or her resident mother, and his or her resident father. If a subject has one or two foreign-born biological parents, but does not live with them[22], and reports that he or she lives with U.S.-born parents, then I classify that subject as not being the child of immigrants and I assign him or her to the non-immigrant category. I have no way of telling whether a subject is a 3rd generation immigrant, since I do not have nativity indicators for grandparents, so all children of U.S.-born parents are classified as non-immigrants. If a subject reports being born abroad but not having at least one foreign-born residential parent, I assume that subject is an international adoptee[23], and group him or her with other non-immigrants.

Distal Mediating Variables

There are seven distal mediators in the causal model (see Figure 5); these operationalize the key concepts from the theory of segmented assimilation. The first six measures operationalize the concept of *supportive, co-ethnic community*. I operationalize these contextual measures at the

[22] This is the case for 283 subjects, one percent of the core sample. The subjects may have lived with these non-resident, biological parents for some time or not at all. Understanding the specific causes why subjects do not live with these parents is feasible, but beyond my scope at this time.

[23] Two hundred and five subjects, one percent of the core sample, meet these conditions. Thirty-two percent of these adolescents report having a foreign-born, non-residential biological parent; 20 percent report having a U.S.-born, non-residential biological parent; the rest did not report having non-residential, biological parents.

geographic level of census tract because census tracts are designed to be homogenous units in terms of population characteristics, economic status, and living conditions and small enough to be considered neighborhoods (Kim et al. 2010; U.S. Department of Commerce. Bureau of the Census 1994). The seventh measure operationalizes the concept of *parental cultural capital,* at the individual level of analysis.

Supportive, Co-ethnic Community

I operationalize this concept with six measures drawn from Kim and his coauthors' work (2010) on neighborhood contextual and individual-level characteristics that may affect adolescents' health behaviors. Following Kim et al., after creating a scale for each concept, I code it into tertiles to facilitate the interpretation of results. I also aggregate the individual scales to the census-tract level and then set them to tertiles.

Drawing on the institutional resource model of contextual neighborhood effects, Kim and his colleagues (2010) operationalize the structural neighborhood characteristics *Hispanic-immigrant concentration, concentrated poverty,* and *residential stability* with measures from the 1990 census that Add Health provides at the census-tract level. Although Portes and Rumbaut (2014) don't call out the second and third structural neighborhood conditions specifically, these concepts match the characteristics of a community theorized to improve or decrease immigrant children's chances of upward vs. downward assimilation.

1. *Hispanic-immigrant concentration is based on three items (CST9011, CST90397,* and *CST90399;* $\alpha = .92$*)* averaging the proportions of the census tract's population that is of Hispanic origin, foreign-born, and has limited English skills.
2. *Concentrated poverty* is calculated from four census-tract level items reflecting the proportions of households led by single females, with income below the poverty level,

and receiving public assistance, plus the unemployment rate (items CST90626, CST90580, CST90479, CST90754; $\alpha = .87$).

3. *Residential stability* is based on the average of two items (CST90329 and CST90803) that capture the proportion of residents age five and older who resided at the current address since 1985 or earlier, indicating a residency period of at least five years, and the proportion of owner-occupied households. These two items have very low correlation (r=.47) and fail to load onto one factor.

Drawing on collective efficacy theory (Sampson and Raudenbush 1997), Kim and his colleagues operationalize the perceptual characteristics *acquaintanceship, informal control*, and *public nuisance* as individual-level measures and also as contextual ones, rolled-up to the census-tract level. These concepts are consistent with Portes's and Rumbaut's (2014) description of the type of support and lack of nuisance that immigrant families may enjoy in the type of co-ethnic communities in which an upward assimilation paths for the children of immigrants is likely.

4. *Acquaintanceship* is based on an acquaintanceship score calculated from three dichotomous, individual-level items that measures how well neighborhood residents know each other (H1NB1, H1NB2, and H1NB3). The items capture the adolescent subject's agreement with the statements, "You know most of the people in your neighborhood", "In the past month, you have stopped on the street to talk with someone who lives in your neighborhood", and "People in this neighborhood look out for each other." This score's reliability is low ($\rho = .62$[24]).
5. *Informal control* is a based on parental responses and measures the shared norm that adults will supervise and protect the neighborhood's youth. I calculate it using two Likert

[24] I report reliability coefficients evaluated over the subpopulation of NH white and Hispanic subjects.

items from the parental questionnaire (PA31 and PA32): "If you saw a neighbor's child getting into trouble, would you tell your neighbor about it?" and "If a neighbor saw your child getting into trouble, would your neighbor tell you about it?". I reverse-code the five response categories so that 5 corresponds to "Definitely would," and 1 corresponds to "Definitely would not," and average the items. This scale's reliability is low (α = .57).

6. *Public nuisance* measures the degree to which responding parents consider there are problems in their neighborhoods. The score is based on Likert items from the parental questionnaire (PA33, PA34, and PA35) which record the parent's answer to the questions, "In this neighborhood, how big is a problem is litter or trash on the streets and sidewalks", "[…] how big a problem are drug dealers and drug users?", and "How much would you like to move away from this neighborhood?" Each item takes one of three values: 1 for "Not at all," 2 for "Some," and 3 for "Very much." This scale's reliability is low (α = .66). Since it is an attitudinal measure, it also indexes the parent's level of neighborhood-based strain.

Parental Cultural Capital

The last distal mediating variable is *highest parental capital*, a measure drawn from Skalamera and Hummer's (2016) work on the effect of educational attainment and health behaviors. While Portes and Rumbaut (2014) discuss two elements of parental cultural capital, educational attainment and professional or managerial experience in their country of origin, I have no way to assess whether the parents who participated in the Wave I Add Health survey had any such experience before they emigrated to the United States. It is tempting to add a measure of parental occupation based on adolescent-reported occupation of the resident parents. However, this would be problematic because the occupation of the subject's parents does not necessarily reflect low

educational attainment or lack of professional or managerial experience, and may be the result of low English-language skills, the temporary lack of a work permit among legal asylum candidates, or the lack of U.S. professional credentials.

7. *Highest parental education* captures the higher educational attainment of the responding parent and his or her spouse or partner; I drew this measure from Skalamera and Hummer's (2016) work. This ordinal measure ranges from 1, for less than high school, to 5, for a graduate degree, and I construct it with two ordinal items from the parental questionnaire that capture the responding parents answers in items PA12 and PB8, "How far did you / your current [spouse/partner]) go in school?" I take the higher of the two items to create the measure.

Proximate Mediating Variables

I treat the measures operationalizing eighteen concepts from the four criminological theories underlying my causal model as mediators for the effect of living in a co-ethnic, supportive community and having parents with high cultural capital, or not, on smoking behavior. I group the measures by theory and indicate whether there are key concepts from the theories that I am not able to operationalize with the Add Health data.

Social Learning

I am able to operationalize only one of the key concepts in social learning theory (Akers 2014): *differential association.* I am not able to operationalize the other three components: *imitation*, *differential reinforcement*, and *definitions.*

1. *Parent smokes* is a dichotomous variable indicating whether the responding parent reported that she or he smokes. It is based on an item from the parental questionnaire, "Do you smoke?" (PA64).

2. *Smoking friends* is a count of how many of the subject's three closest friends smoke at least one cigarette a day, as reported by the subject (item H1TO9). I treat this as an ordered categorical rather than a continuous variable to allow for non-linear effect as the number of friends who smoke increases. Previous research indicates that this is one of the key variables associated with adolescent smoking, and in regression analyses, this variable has the highest coefficients (Park, Weaver, and Romer 2009; Stanton et al. 2009). However, there are well-documented issues with this variable, namely that adolescents' reports of friends smoking is biased towards the subject's smoking behavior (Henry, Kobus, and Schoeny 2011; Kandel 1996). I will address these problems in Chapter 6.

Social Control

There are four types of bonds in social control theory (Hirschi 2002): *attachment, belief, commitment,* and *involvement*. I am able to operationalize each type. I drew two measures of *attachment* to family and one measure of *attachment* to school from Dornbusch et al.'s work (2001). I use two measures of adolescent religiosity that I modified from Nonnemaker and his colleague's work (2003) to operationalize *belief.* While Hirschi defined this bond in secular rather than religious terms, religiosity can be considered as a conventional belief in the United States: most Americans are affiliated to a church or other religious organization and even the majority of those who do not report believing in some form of spirituality consider religious institutions to benefit communities (Pew Research Center 2012). I operationalize the bond of *commitment* in terms of adolescents' commitment to their education, with three measures. To complete the operationalization of social control theory, I create one scale to operationalize *involvement*, the youths' participation in conventional activities.

3. *Parent-family connectedness* (α = .83) is a standardized measure of the degree to which teenagers feel connected to their parents and family (Dornbusch et al. 2001). The scale is based on 13 Likert items (H1WP9, H1WP13, H1NM14, H1NF14, H1WP10, H1WP14, H1PF1, H1PF23, H1PF5, H1PF25, H1PR5, H1PR7, and H1PR8) which capture responses to questions about the subjects' parents such as, "How much do you think your mother/father cares about you?" or agreement to statements like, "Most of the time my mom/dad is warm and loving," The scale also incorporates responses to questions about the subject's family, such as, "How much do you feel that people in your family understand you?" and, "How much do you feel that your family pays attention to you?" I recoded some items so that the value 5 corresponds to higher levels of attachment to parents and family.
4. *Parent's closeness* (Dornbusch et al. 2001) is a standardized measure of how close the responding parent feels to her or his teenage child. It is based on four Likert items from the parental questionnaire, posed as the question, "How often would it be true for you to make each of the following statement about your child?" and followed by statements such as, "You get along with him/her," and "You feel you can really trust him/her." I reverse-code one item so higher values reflect higher perceived closeness on the parent's part. This scale's reliability is modest (α = .70). While the items in this measure resemble those in *parent-family connectedness,* these ones are based on the responding parent's responses and not on the subject's ones. The two measures have a significant correlation (r = .35).
5. *School connectedness* (Dornbusch et al. 2001) is a standardized measure designed to measure how much adolescents feel close to their schools, teachers, and schoolmates. It is

based on eight Likert items (H1ED15, H1ED18, H1ED19, H1ED20, H1ED22, H1ED23, H1ED24, and H1PR2; $\alpha = .72$) that indicate the teenagers' degree of agreement with statements such as, "You feel close to people at your school," and "The teachers at your school treat students fairly," or how frequently it happens that the subject "[Has] trouble getting along with [his or her] teachers / other students?" I reverse-code some items so higher values indicate a higher degree of connectedness to the school community.

6. *Public religiosity* is a standardized measure of the frequency with which the teenage subjects report attending religious services (H1RE3) or other religious activities organized specifically for youth (H1RE7). Responses to the two Likert items are coded into four response categories; never (4), less than once a month (3), once a month or more but less than weekly (2), and once a week or more (1). I reverse the categories so that higher frequency of attendance is coded with a higher number. Then I modify the items because they were not presented to adolescents who reported not having a religion (in item H1RE1). I recover those observations, set them to zero, then average the two items, and finish by standardizing the resulting average. My rationale is that reporting a religion indicates some degree of belief in conventional norms even without attending religious activities. This modification also prevents me from losing 14 percent of the samples' observations due to missingness from the skip pattern.
7. *Private religiosity* is a standardized measure reflecting how important the subjects report religion is to them (H1RE4; 1: not important at all, to 4: very important) and how frequently they pray (H1RE6; 1: at least once a day, to 4: less than once monthly.) I reverse-code the first item, then make the same modification as I do for the *public religiosity* scale, and finally average and standardize the resulting measure.

8. *Conventional daily activities* is a discrete measure that operationalizes the bond of involvement. I base it based on Likert items (H1DA1, H1DA2, H1DA3, H1DA4, H1DA5, H1DA6) from the "Daily Activities" section, which capture how frequently the subject engaged in activities such as housework, hobbies, sports, and exercise over the past week. The items are coded from 0 ("not at all") to 3 ("five or more times"). I do not include one item from the "Daily Activities" section about the frequency of just hanging out with friends because friends who do not break norms will influence towards conventionality and friends who break norms will influence towards deviance. There is no reason to think these items will cluster together, so I dichotomized the items, by keeping the values 0 ("not at all") and 1 ("1 or 2 times") and recoding higher values, corresponding to higher weekly frequency, to 1 (rho = .21). In analysis I treat this measure as a continuous one.

General Strain

The key intervening mechanism in general strain theory is the experience of negative emotions (Agnew 2007). I operationalize negative emotionality with the measure *negative affect.* Agnew (2007) categorizes three type of events that may cause negative emotionality: the *loss of something valued*, *being treated badly*, and *failing to achieve goals*. I operationalize *losing something valued* with two measures: *health strain*, drawn and modified from Stogner and Gibson's work (2010), and *negative life events*, drawn and modified from Daigle, Cullen, and Wright's work (2007). Three measures operationalize *being treated badly:* I draw *victimization* and *forced sex*[25] from Daigle et al. (2007), and create a third measure, *conflict with parents.* I am

[25] Only for female subjects

not able to find measures for *failure to achieve* goals using these data, although longitudinal analysis over subsequent waves of the Add Health study should make this possible.

9. *Negative affect,* standardized, is a subscale of the "Feelings Scale" items in the Add Health in-home questionnaire (α = .86). It includes all but one of the nineteen items[26] measuring depression, loneliness, unhappiness, and sadness in the "Feelings Scale" of the Add Health in-home. I remove one item (H1FS5, "How often was the following true over the past week? You had trouble keeping your mind on what you were doing") because it does not capture emotion, but rather the student's inability to focus. This item fits the concept of *low self-control* better.
10. *Health strain* (α = .76) is a standardized measure I draw from Stogner and Gibson (2010), based on 14 Likert items[27] that capture how frequently subjects have experienced possible health symptoms as vague as headaches, dizziness, and waking up feeling tired as well as more specific ones such as painful urination and chest pains. I draw the scale from Stogner and Gibson (2010).
11. *Negative life events* counts four types of events the subjects may have experienced over the past year: the suicide or suicidal attempt among the subject's family and friends. I base it on four dichotomous items (H1SU4, H1SU5, H1SU6, and H1SU7; (α = .46), drawing the scale from Daigle et al. (2007) and make one modification, as follows. Daigle and her coauthors included item H1FV13, which measures how many times over the past year the subject suffered injuries needing medical attention in a fight, but I consider that item fits the *victimization* scale better (after recoding it to a binary variable),

[26] H1FS1, H1FS2, H1FS3, H1FS4, H1FS6, H1FS7, H1FS8, H1FS9, H1FS10, H1FS11, H1FS12, H1FS13, H1FS14, H1FS15, H1FS16, H1FS17, H1FS18, and H1FS19
[27] H1GH2, H1GH3, H1GH4, H1GH5, H1GH6, H1GH7, H1GH8, H1GH9, H1GH10, H1GH11, H1GH12, H1GH13, H1GH14, and H1GH15

and confirm this assumption through factor analysis. In analysis I treat this measure as a continuous one.

12. *Victimization* is a standardized scale, based on seven dichotomous items (H1FV1, H1FV2, H1FV3, H1FV4, H1FV5, H1FV6, and H1FV13; $\alpha = .71$). Six of them are Likert items that indicate how frequently over the past year the subject witnessed, was at risk of, or suffered gun or knife violence, was jumped or got into a physical fight, coded from 0 for "never" to 2 for "more than once." I added one item to Daigle et al.'s (2007) scale: the number of times the subject suffered a serious injury in a fight, after recoding responses from 2 to 365 times to 2 for "more than once", so the item matches the other ones in the scale.
13. *Forced sex* is based on dichotomous item H1CO10 for female subjects, "Were you ever physically forced to have sexual intercourse against your will?". Male subjects were asked whether they had ever forced someone to have intercourse against that person's will, indicating perpetration rather than victimization, so I only use this measure for female subjects.
14. *Conflict with parents* is a dichotomous variable indicating whether the adolescent subject had a serious argument with his or her father or mother about the teen's behavior over the past month, based on two items (H1WP17G and H1WP18G, with r=.49).

Self-Control

I operationalize *self-control* with four variables. The first two are the subscales *impulsivity* and *lack of restraint,* which I create to operationalize the two factors of trait self-control (Maloney, Grawitch, and Barber 2012). Maloney and his colleagues confirmed the multi-dimensionality and discriminant validity of Tangney's Brief Self-Control Scale (BSCS). I choose to use the

BSCS as my starting point for operationalizing trait self-control based on de Ridder and her colleagues' (2012) assessment that the Tangney scale is more highly correlated to the suppression of undesirable behaviors as well as the promotion of desirable ones than other extant scales.

Before listing and describing the variables I use to operationalize self-control, I discuss the way I implemented the BSCS using the Add Health data. In Table 1, I present the component items from BSCS and the Add Health items I match to the BSCS ones. Although I do not find enough items matching those in BSCS for a full implementation with Add Health, the scale I create does have a fitting two-factor solution that is consistent with the dimensions of impulsivity and restraint that Maloney and his colleagues (2012) identified.

The BSCS items I could not match involve motivations for bad behavior (items 5, "I do certain things that are bad for me, if they are fun"), or the desire for higher self-control (item 7, "I wish I had more self-discipline,"). According to Gottfredson and Hirschi (1990), the concept *self-control* is linked to the personality trait *per se*, as well as behaviors that result from low self-control, and not the justifications for or desire to change one's low self-control. I present the two subscales for the BSCS below:

15. *Impulsivity*, a standardized measure, is the first subscale of *self-control* and it is based on three Add Health items (H1ED16, H1ED17, and H1FS5, $\alpha = .67$).
16. *Restraint*, also standardized, is the second subscale of *self-control*, and I construct it from four items (H1PF18, H1PF19, H1PF20, and H1PF21; $\alpha = .75$).

In addition to the two subscales, I also include two measures from Daigle and her colleague's work (2007). These measures do not operationalize components of self-control, but rather parent-led precursors to the development of this trait. According to Gottfredson and

Hirschi (1990), children develop self-control when their parents or caregivers care enough about the children and are able to monitor for and detect undesirable behavior, and appropriately discipline their children when they behave inappropriately. Although Add Health has no measures of such parental activity in the subjects' early life, it allows for the operationalization of two concepts we can reasonably assume are the continuation of good parenting from earlier in the subjects' lives: giving adolescents the *autonomy* to make their own decisions on a day-to-day basis and *maternal supervision.*

17. *Autonomy* is a count of seven dichotomous items (H1WP1, H1WP2, H1WP3, H1WP4. H1WP5, H1WP6, and H1WP7) that indicate whether the subject's parents allow the subject to make his or her own decisions about aspects of their daily lives such as their curfew on weekend evenings, the people with whom the adolescents hang around, the clothes they wear, and the food they eat. This scale has low reliability ($\rho = .62$). Another name for this measure may be *lack of parental norm enforcement,* but I keep Daigle and her colleague's (2007) name for the measure.
18. *Lack of maternal supervision* is a standardized scale based on three items (H1RM11, H1RM12, H1RM13) that capture the frequency with which the subject reports his or her mother is present at points in the day: when the subject goes to school, returns from school, and goes to sleep. Reliability is very low ($\alpha = .33$), but Daigle and her colleagues (2007) explain that one shouldn't expect high covariance in these items, as, for example, a working mother who is present when her child leaves for school may arrive at home later than the child returns from school. I changed the sign of the standardized scale so higher values in this measure reflect less supervision; according to the theory of self-control, less parental supervision will lead to lower self-control.

Control Variables

I include two control variables for known covariates of smoking behavior: sex and age. Among high school students, male sex is associated with higher likelihood of tobacco use and cigarette smoking in comparison with female sex (Gentzke et al. 2019; Nelson et al. 2008). Researchers have also established that older adolescents are at higher risk of cigarette smoking than younger ones (Johnston et al. 2016)

1. *Male* indicates male sex at birth (item BIO_SEX).
2. *Age at Wave I* indicates the subject's age at the time of the Wave I, in-home interview. I coded it using three items for the interview year, month, and day (IYEAR, IMONTH, and IDATE) and Stata code provided by the Add Health study.

Analytical Approach

To test my hypotheses about the association of individual- and community-level social factors with adolescent smoking behavior (Figure 4), I conduct a series of univariate, bivariate, and single- and multi-level, multivariate analysis. I use the software Stata version SE/14.1 for data management, to create and describe the analytical measures, and to test my research hypotheses with regression models. I also leverage Stata survey capabilities to adjust for Add Health's complex survey design.

Design-Based Analysis

Ignoring the design structure of Add Health will result in incorrect estimates of proportions, means, regression parameters, and variances, as the study included oversamples of supplemental samples based on ethnicity (Cuban and Puerto Rican, among others) and other characteristics. This means that the probability of selection into the study was not even across participants (Chen and Chantala 2014).

I follow Add Health's guidelines to prepare my data for design-based, cross-sectional analysis (Chen and Chantala 2013). First, I use the *svyset* command to set the item REGION as the stratum variable, identifying PSUCID as the primary sampling unit, and apply the Wave I grand sample weights (item GSWGT1). Second, I delete all observations missing sample weights[28]. Third and last, I create an indicator variable (*okwhis*) to define the subpopulation of interest, NH white and Hispanic subjects; in this step I also identify complete records.

I also follow the guidelines Add Health provides for using Stata's *subpop* option to obtain descriptive statistics, parameter estimates, and regression analysis for the subpopulation of interest. Due to the Add Health's complex survey design, student's t-tests and chi-square tests are not appropriate. Instead, I use design-adjusted Wald tests and the design-based Pearson *f*-tests for mean and proportional differences between the two groups.

Descriptive Statistics and Bivariate Analysis

I present bivariate correlations for all measures in Table 2. Bold font indicates which correlations are statistically significant.

Association of Predictors, Mediators, and Outcomes

I organize the analytical portion of this dissertation in the same order as the hypotheses I stated in Chapter 3. The hypotheses reflect the associations I propose in my causal model (see Figure 4). I begin by testing Hypotheses 1 to 3 about the association of the predictors with the outcomes, distal mediators, and proximate mediators. I calculate summary statistics comparing the means and proportions for Hispanic adolescents in comparison to NH white ones (I show the

[28] Observations without sampling weights correspond to additional subjects outside the sampling frame that Add Health added to ensure a large enough sample for specialized analysis of genetically related individuals

results in Table 3) and for adolescents of the 1.5 and second immigrant generations in comparison to non-immigrants (see Table 4.)

Next, I test Hypotheses 5b, 5c, 6b, and 6c, which state that the distal and proximate mediators are significantly associated, in Tables 5 (for social learning and self-control), 6 (for general strain), and 7 (for social control). I also confirm there are significant associations between both sets of mediators and the outcomes (Hypotheses 5a and 6a), but do not present those results since the associations become evident in the regression models that I describe further below.

Multilevel Analysis

I conduct a two-level analysis to test the hypothesis that living in a co-ethnic, supportive community is associated with a lower prevalence of cigarette smoking (H4a). This test requires a multilevel modeling (MLM) because grouping effects appear when the individual observations that we study are not independent of each other due to the way they are grouped. For example, students grouped in classrooms may have different reading scores based on their teachers' characteristics: students in classrooms with experienced English teachers may have higher average reading grades than students in classrooms with inexperienced teachers.

Given that students are nested within classrooms, running a single-level OLS regression to predict the effect of student characteristics such as race or the previous year's reading score on current scores violates the linear model assumption that the scores observed be independent from one another. Including a variable for teacher experience, perhaps a continuous measure capturing the teachers' years of experience, will further compound rather than solve the problem: standard errors for the teacher experience coefficient estimate will be artificially lowered because all students in the same classroom will have the same value for teacher experience. It is more

appropriate to fit a two-level regression model with students at Level 1 and teachers, or classrooms, at Level 2.

Returning to this dissertation project: testing that the presence of a supportive, co-ethnic community is associated with a lower likelihood of cigarette smoking requires MLM. The goal of the multi-level model, a two-level one, is to simultaneously estimate two types of effects on the variance of the outcome: first, the effects attributable to the grouping of adolescents into neighborhoods with different characteristics, and second, the variance in the outcome that is attributable to the adolescents' individual characteristics. Adolescents are at the lower level of analysis, or Level 1 in the model, and neighborhoods are the higher level, Level 2. The outcome, adolescents' prevalence of *current smoking*, is at Level 1.

The first step in MLM is to fit an intercept-only or unconditional model to the outcome. In a two-level model, the magnitude of the grouping effect is estimated as the proportion of the variance in the Level-1 outcome that is attributable to the way Level-1 units are grouped into Level-2 units. The Intraclass Correlation Coefficient (ICC) captures this proportion. A low ICC, smaller than 10 percent, means that very little of the variance of the outcome is attributable to the grouping into Level-2 units, and further MLM analysis is not justified. A higher ICC indicates there are substantial grouping effects justifying fitting the model with predictors at each level of analysis.

I fit an empty, intercept-only 2-level logistic regression for the outcome *current smoking*, with adolescents at Level 1 and neighborhoods at Level 2. I present results Table 4. As I explain in Chapter 5, the grouping effect is too low to justify further MLM. Therefore, I proceed with single-level multivariate logistic regressions to test my research hypothesis.

Single-Level Analysis

Although MLM analysis is not justified, I can test the effect of perceptual contextual neighborhood characteristics together with other individual characteristics because the perceptual neighborhood characteristics are native Level-1 measures. I test my causal model by fitting a number of logistic regression models, as follows.

Mediation of Predictors and Distal Mediators by Criminogenic Measures

To test the hypotheses about the proximate mediators (H6 and H7) and the mediation hypotheses (H8 and H9), I fit six series of logistic regression models (Tables 9 to 14). In the first four (Series A to D), I first test the effect of the predictors of the outcome. Then I add the individual-level, perceptual measures of a supportive community (*acquaintanceship, informal control,* and *public nuisance*) and parental cultural capital (*highest parental occupation*). Finally, I add the measures from each criminological theory to create what I call single-theory regression series (social learning in Series A, general strain in Series B, social control in Series C, and self-control in Series D). In the fifth model, Series E, I tested the four theories concurrently. I add a sixth set of regressions, Series E, for the outcome *daily smoking*, to test the sensitivity of my causal model to the more intense smoking behavior.

The goal of each regression series is to test whether the proximate mediators, which operationalize the criminogenic concepts, reduce the association of the distal predictors with the outcome. The regressions taken together allow us to identify which criminogenic theories have measures significantly associated with the outcome.

I adjust all models for complex survey design, weighting individual observations to account for the different probabilities of selection that result from the collection of special samples (Chen and Chantala 2014). Each series presents nested models and I conduct an F-test

for the first model in each series and then for the addition of measures or blocks of measures in each subsequent step. At each step, I obtain the pseudo-R^2 coefficient to assess how well the models explain the outcome's variance, the model's Variance Inflation Factor (VIF) to rule out problematic levels of multicollinearity that may increase the standard errors of the estimated coefficients, and assess the relative quality of the sequential models by calculating the Akaike Information Criterion (AIC).

I describe each series in more detail here. In series A, I begin by testing the association of *Hispanic* ethnicity with *current smoking* (Model A1), controlling for *male* sex and *age.* In the next steps, I enter *immigrant generation* (A2), the distal predictors (A3), and the measures for social learning theory in two steps (A4 and A5). I begin Series B, C, and D with the same model as A3 and adding the measures for the other three criminogenic theories in steps corresponding to the different components of each theory. In series E, I test the combined effect of the measures from all the theories, starting with the same model as A3 and adding all measures for each criminogenic theory in decreasing order of pseudo-R^2 for each single-theory model.

I run a sixth and final model series, Series F, similar to Series E but with *daily smoking* as the outcome. I intend this series to be a sensitivity analysis for my causal model, with the goal of observing whether the same protective and risk factors (those that reduce or increase the likelihood of smoking, respectively) for *current smoking* are significantly associated with the more intense smoking behavior of *daily smoking.* I present all results from the single-level logistic regressions in Tables 9 to 15.

Chapter 5. Results

Analytical Sample

The analytical sample consists of 9,185 adolescents. From the 20,745 subjects that Add Health enrolled at Wave I, only 18,924 belong to the core, nationally representative sample, and form the starting set for cross-sectional analysis. From that set, I only include the 12,857 observations for NH White and Hispanic subjects[29]. Then I remove observations missing neighborhood or other demographics (n = 47), and the outcome variables (n = 164). Removing observations missing the distal mediators results in a large loss of observations, 17 percent (n=2,132). This is mostly due to the number of cases missing variables based on parental responses, as the overall rate of parental non-response was 15 percent. Removing observations missing any of the proximate mediators results in the loss of another 1,329 cases. Overall, missing cases represent 29 percent of the starting sample of NH White and Hispanic subjects but only 16 percent of the sample of NH White and Hispanic subjects whose parents completed the parental questionnaire.

Descriptive Statistics

I present pairwise correlations for all analytical measures in Table 2. Note the correlations are not adjusted for the complex design of the survey.

Bivariate Statistics for Hispanic vs. NH white adolescents

In Table 3, I present the comparison of all analytical variables' means or proportions for NH white and Hispanic subjects and indicate the p-value from the adjusted Wald tests of differences

[29] Note that NH white persons represented 76 percent of the U.S. population in 1990, (U.S. Bureau of the Census 1992), but they only represent 51 percent of the Add Health core sample, as Add Health oversampled minority groups. Persons of Hispanic origin, regardless of race, represented 9 percent of the 1990 U.S. population, but 17 percent of the Add Health sample.

in means for continuous variables, or the F-test of independence for categorical ones. The means and proportions I present in this table are adjusted for Add Health's complex survey design.

The overall prevalences of *current smoking* and *daily smoking*, not shown on the table, are 29 percent and 11 percent, respectively. There are significant differences in these rates between NH white subjects and Hispanic subjects. Hispanic adolescents are one-third less likely to have smoked in the past month (*current smoking* proportions of .21 vs. .30 for NH white teens) and less than half as likely to smoke daily (.05 vs. .12).

To confirm that I am not conflating Hispanic ethnicity with non-white race, I compared the prevalences of both smoking outcomes among Hispanic subjects of white and non-white race, and found that the rates for Hispanics of different race are very close and not statistically significant. I also compared the prevalences for white Hispanic subjects with those for NH white ones and found that the rates are significantly different. The prevalence of *current smoking* among white Hispanic subjects is .22, compared with .20 among non-white Hispanic ones, while the rates of *daily smoking* are .07 and .04, respectively.

There are significant differences between NH white subjects and Hispanic ones in several analytical measures. These include the five of the six L-2[30] distal mediators and all four L-2 distal mediators. Among the proximate mediators, which are L-1, both social learning measures, three of six of the general strain measures, three of six social control measures, and one of the four self-control measures are significantly different for the two groups. Out of 15 hypothesized risk factors, eight are significant, and out of 13 hypothesized protective factors, ten are significant.

[30] Level 2 (L-2) refers to the contextual, neighborhood-level measures, while Level 1 (L-1) refers to measures at the individual level of analysis.

Hispanic adolescents are more likely to belong to the second and 1.5 generation (35 and 24 percent, respectively) than NH white adolescents (4 and 1 percent, respectively). Overall, they have lower exposure than NH Whites to seven out of the ten significant protective factors. *Hispanic-Immigrant concentration*, *parent's closeness*, and *private religiosity* are the only hypothesized protective factors for which Hispanic subjects have better measures than NH White ones. Hispanic subjects have higher exposure to four out of the eight significant risk factors than NH white ones. Larger proportions of Hispanics live in neighborhoods with high L-2 *public nuisance*, and their means are higher for L-1 *public nuisance*, *negative affect* and *victimization*.

Next, I present a more detailed interpretation of the summary statistics in Table 3, organized by type of measure. At the end of each section I indicate whether, based on the hypothesized risk and protective factors in the causal model, we expect Hispanic subjects to be at higher or lower risk of smoking than NH white ones.

Distal Mediators

Contextual Perceptual Neighborhood Characteristics

Recall that perceptual, contextual (i.e., L-2), neighborhood characteristics are based on native L-1 measures that I aggregated to the neighborhood level and then transformed into tertiles. Hispanic subjects are less likely than NH white subjects to live in neighborhoods with high levels of L-2 *acquaintanceship* (13 vs. 27 percent) and L-2 *public nuisance* (27 percent vs. 14 percent), but more likely to live in neighborhood with high levels of L-2 *informal control* (43 vs. 25 percent).

Overall, Hispanic teens are more likely to live in neighborhoods with lower collective efficacy, or, in terms of segmented assimilation theory, less supportive ones. We would expect this to increase the likelihood of smoking among Hispanic teenagers relative to NH white ones.

Contextual Structural Neighborhood Characteristics

Recall that structural neighborhood characteristics are based on native L-2 measures, originated at the census-tract level. I categorized the scales I constructed from those measures into tertiles to denote neighborhoods with low, medium, and high levels. Based on these characteristics of neighborhoods where the teenagers live, I would predict that Hispanic adolescents are more likely to smoke than NH white ones.

Hispanic teens are more likely than NH white ones to live in neighborhoods with high *Hispanic-immigrant concentration* (48 percent vs. 3 percent) [31]. NH white subjects are more likely to live in neighborhoods with high *residential stability* than Hispanic ones (68 percent vs. 19 percent). There are no significant differences in the levels of neighborhood *poverty* in which Hispanic and NH white subjects reside.

I would predict that Hispanic teens face a higher risk of smoking due to lower levels of *residential stability.* Making a prediction based on *Hispanic-immigrant* concentration is difficult because I did not include a measure of white concentration. The measure I used to measure co-ethnicity for Hispanic adolescents is not sufficient to compare the co-ethnicity of Hispanic vs. NH white adolescents. This is a limitation in my methodology, and I will address it in the conclusion of the dissertation.

However, since I know the pattern in the distribution of the core sample of Add Health over census tracts with different levels of white and Hispanic population concentration (see footnote 31), I will make a tentative prediction that, in general, Hispanic teens are at higher risk of smoking. The reason is that, in general, Hispanic teens are less likely to live in co-ethnic

[31] Note, however, that over the core Add Health sample, 99 percent of white adolescents live in census tracts where the proportion of the population that is white is higher than 50 percent. In contrast, only 2 percent of Hispanic adolescents live in census tracts where the proportion of the population that is Hispanic is over 50 percent.

Hispanic neighborhoods than white teens are likely to live in co-racial white neighborhoods. This underlines the puzzle of lower smoking rates among Hispanic teens compared to NH white ones.

Individual Perceptual Neighborhood Characteristics

Altogether, the individual-level distal mediators (L-1 perceptual neighborhood characteristics and parental cultural capital) suggest that Hispanic subjects should smoke *more* than NH white ones. Specifically, NH white subjects reported higher scores of *acquaintanceship* and *informal control* than Hispanic ones (means of .10 vs. -.15 for the former, -.07 vs. -.14 for the latter), and the parents of NH white subjects reported lower scores of *public nuisance*, on average, than the parents of Hispanic ones (-.04 vs .16).

Parental Cultural Capital

Parental cultural capital – as measured by parental education -- also appears to favor nonsmoking among NH whites *Highest parental education* is an ordinal measure with five levels; its base category is *less than high school*. The parents of NH white subjects are more likely to be college graduates and completed post-graduate professional training (36 percent vs. 17 percent) than the parents of Hispanic subjects.

Proximate Mediators

All proximate mediators are operationalized through L-1 measures. In the following paragraphs I describe results from bivariate analysis of the proximate mediators.

Social Learning Mediators

Despite the characteristics of their neighborhoods and low parental cultural capital, both risk factors for increased smoking among Hispanics teens, these adolescents experience protective factors from their parents and peers. This is particularly notable because the parents and friends

of the Hispanic subjects in the Add Health study experienced the same neighborhood characteristics as the subjects I am studying.

The responding parents of Hispanic adolescents are less likely to report smoking cigarettes (.23) than the parents of NH white teens (.32) , and Hispanic teens are less likely to report that two or three of their closest friend smoke (.19) than NH white ones (.27). These hypothesized risk factors predict lower smoking rates among Hispanic adolescents.

General Strain Mediators

The mediators that operationalize general strain theory push the risk of smoking among Hispanic adolescents in opposite directions. Some of these measures increase the predicted risk of smoking and one of them decrease the predicted risk of smoking among Hispanic teens relative to NH white ones.

Hispanic teens have much higher scores of *negative affect* than NH white ones (.12 vs. -.14) and they also have higher mean scores of *victimization* (.17 vs. -.09). These mean scores should increase the likelihood that Hispanics smoke. Conversely, Hispanic adolescents' mean scores of *health strain* are lower than NH white ones' (-.18 vs. .01), which should lower the risk of smoking among Hispanic teens. There are no differences between Hispanic and NH white teenagers in their average scores of *negative life events, forced sex,* and *conflict with parents.* However, there are significant differences in the standardized scores of *negative affect, health strain,* and *victimization.*

Social Control Mediators

Two *social control* measures indicate a lower risk of smoking among Hispanic adolescents and one indicates a higher risk. Compared with NH white parents and subjects, Hispanic parents report higher scores of *parent's closeness* (.14 vs .00) and Hispanic teenagers report higher

scores of *private religiosity* (.15 vs. -.02). There are no significant differences in the scores of *parent-family connectedness, school connectedness,* or *public religiosity,* but there are differences in the other social control measures. In terms of the count of *conventional daily activities*, the mean is slightly lower for Hispanics (3.69) than for NH whites (3.81).

Self-Control Mediators

There are no differences between Hispanic and NH White teenagers' mean scores of *impulsivity, lack of restraint,* or *lack of maternal supervision.* The only difference in this set of measures is in *autonomy*, which on average is higher for NH white subjects (-.01) than for Hispanics (-.24). This difference would predict lower rates of smoking for Hispanic teenagers.

In summary, the differences in means and proportions of risk and protective factors for Hispanic in comparison with NH white adolescents provide a mix of predictions for higher and lower smoking rates among Hispanics. Solving the puzzle of lower rates of smoking among HA requires a more sophisticated statistical model – namely, logistic regression.

Controls

The proportions of males and the average age of subjects are not significantly different between NH White subjects and Hispanic ones.

Bivariate Statistics for Immigrant vs. Non-Immigrant Adolescents

In Table 4, I present a similar set of summary statistics as in Table 3, in this case comparing means and proportions for second- and 1.5-generation immigrants relative to non-immigrant youth. Immigrant adolescents have lower likelihoods of *current smoking* and *daily smoking* than non-immigrant adolescents: second-generation youth are only around two thirds as likely as non-immigrant youth to be *current* smokers (.23 vs. .30) and one half as likely to be *daily* smokers (.06 vs. .12). The difference is steeper for 1.5-generation youth: they are only one half as likely

to smoke currently than non-immigrant youth (.15 vs .30) and one third as likely to smoke daily (.04 vs. .12).

Note that smoking rates for non-immigrant youth are the same as for NH white youth; this is due to large overlap between the two groups, as 95 percent of non-immigrant youth are NH white. This does not mean, however, that the sample of Hispanic youth is the same as the sample of immigrant youth, as Hispanics represent 76 percent of 1.5-generation immigrants and only 58 percent of second-generation immigrants in the sample.

Of thirteen hypothesized protective factors, 11 are significantly associated with *immigrant generation*, and immigrant youth have advantages over non-immigrant youth in five of those factors. Higher proportions of immigrant youth live in neighborhoods with high L-2 *informal control* and *Hispanic-immigrant concentration* and they have better scores than non-immigrant youth in *parent's closeness* and *private religiosity.* Immigrants of the 1.5 generation have better scores than non-immigrants in *school connectedness* (.19 vs. .06), but second-generation immigrants have a worse score (-.00).

Eight of the 15 hypothesized risk factors are significantly associated with immigrant generation, but only three of those factors show higher risk for immigrant youth. Immigrant adolescents have higher scores of *negative affect*, *victimization*, and *autonomy* than non-immigrant youth. Second-generation immigrant adolescents have higher average *negative life events* than non-immigrant adolescents (.30 vs. .27), but 1.5-generation adolescents have lower averages than both (.17).

I do not present as detailed an analysis of Table 4 as I presented for Table 3. Instead, I highlight key differences between the two tables. I already mentioned one additional protective factor for immigrant youth, *school connectedness.* Two risk factors that are significant in the

comparison of Hispanic vs. NH white youth are not significant in this comparison: L-2 and L-1 *public nuisance,* both of which indicated higher risk for Hispanics. Two risk factors that are not significant in the previous comparison are significant in this one: *negative life events*, which indicates higher risk for second-generation but lower risk for 1.5-generation youth, and *impulsivity*, which indicates lower risk for immigrant youth of either generation.

The balance of protective and risk factors is slightly better for immigrants than for Hispanics. While half of the significant risk factors (four out of eight) put Hispanics and immigrants at higher risk for smoking, there are more protective factors for immigrants than for Hispanics. Six out of eleven significant protective factors (55 percent) favor immigrants, but only three out of ten favor Hispanics (30 percent). This suggests that Hispanics adolescents are less likely to smoke cigarettes than NH white adolescents because of their high composition of immigrants. It remains to be seen how much of the association of the outcomes with *Hispanic* ethnicity remains after adjusting for *immigrant generation* and the mediating factors.

Implications for the Research Hypotheses About Predictors

The comparison of summary statistics for Hispanic vs. NH white adolescents allows me to evaluate my first three research hypotheses. I keep track of the evidentiary support for these and the other research hypotheses in Table 16.

Hypothesis H1, that Hispanic youth are less likely to live in co-ethnic, supportive communities than NH white youth, is supported by the evidence. Hispanic youth are less likely to live in neighborhoods with high L-2 and L-1 *acquaintanceship* and *informal control* and (L-2) *residential stability.* They are also more likely to live in neighborhoods with high L-2 and L-1 *public nuisance.*

It is appropriate at this point to recall the rationale behind the statement that Hispanic adolescents are less likely to live in co-ethnic neighborhoods than NH white ones. The measure *Hispanic-immigrant* concentration captures the proportion of immigrants and Hispanic persons in a neighborhood. However, I consider that low values in the measure can be interpreted as indicative of a high concentration of non-immigrant, NH white residents, and a higher proportion of NH white teenagers (60 percent) are likely to live in neighborhoods with low *Hispanic-immigrant concentration* than the proportion of Hispanic teenagers (48 percent) who live in neighborhoods with high *concentration.* Furthermore, based on the distribution of white and Hispanic subjects from the core sample of Add Health across census tracts by proportion of white and Hispanic population, we know that white teenagers are much more likely to live in co-racial, white neighborhoods than Hispanic teens are to live in co-ethnic, Hispanic neighborhoods (see footnote 31, above).

The evidence partially supports hypothesis H2, that immigrant youth are less likely to live in supportive communities than non-immigrant youth. Higher proportions of immigrant youth live in neighborhoods with low L-2 and L-1 *acquaintanceship* and L-2 *residential stability* than non-immigrant youth. However, higher proportions of immigrant youth also live in neighborhoods with high L-1 and L-2 *informal control*.

Hypothesis H3, that immigrant and Hispanic youth are less likely to have parents with high educational attainment than NH white and non-immigrant youth, is supported by the evidence. The parents of Hispanic youth are less likely to have graduated from college or obtained post-college professional training than the parents of NH white youth. The parents of immigrant youth are also less likely to have a college degree or professional training than the parents of non-immigrant youth.

Association of Distal Mediators and Controls with the Outcomes

In Table 5, I present the result from regressing both outcomes, *current smoking* and *daily smoking,* on the distal mediators and the control measures. In the following lines I describe the results for the distal mediators, first, and for the controls, second.

The only perceptual characteristic significantly associated with *current smoking* is *public nuisance*: in both the L-2 and L-1 versions of the measure, higher levels of *public nuisance* are associated with higher likelihood of *current smoking,* as expected per the causal model. Two structural, L-2 neighborhood characteristics are associated with the outcome. The first one is *Hispanic-immigrant concentration,* for which higher levels are associated with lower likelihood of *current smoking.* The second one is *residential stability*: higher levels of this measure are associated with a higher risk of *current smoking.* Higher levels of *highest parental education* are associated with lower likelihood of *current smoking,* but the intermediate levels (*high school graduate* and *some college*) are associated with a higher risk in comparison with the reference category (*less than high school*).

Results for the outcome *daily smoking* are very similar to those I have described for *current smoking*. The same distal mediators that are associated with *current smoking* are associated with *daily smoking,* and in the same direction, but in general with larger magnitudes of association. One additional distal mediator is associated with *daily smoking.* The L-1 perceptual neighborhood characteristic *acquaintanceship* is negatively associated with this outcome.

Only one of the control variables is significantly associated with the outcomes. As expected, each additional year of age is significantly associated with an increase in the risk of

current and *daily smoking.* However, against expectations, *male* is not significantly associated with the outcomes.

Implications for the Research Hypotheses About Distal Mediators and Outcomes

Hypothesis H4, that youth living in co-ethnic, supportive communities are less likely to smoke cigarettes is mostly supported by the evidence. The direction of three out of four significant associations of the distal mediators with the outcome *current smoking* are in the direction hypothesized.

Higher levels of L-1 and L-2 *public nuisance* are associated with higher likelihood of *current smoking*, while higher levels of *Hispanic-immigrant concentration* are associated with lower likelihood of *current smoking.* These three significant associations are in the hypothesized direction of association, but the fourth significant association is in the opposite direction than hypothesized: higher levels of *residential stability* are associated with higher levels of *current smoking*.

In terms of the outcome *daily smoking*, the significance and direction of association is the same as for *current smoking*. However, an additional mediator, L-1 *acquaintanceship*, is significantly associated with lower likelihood of smoking, in the direction hypothesized.

Hypothesis H5, that higher levels of *parental education* are associated with a lower risk of smoking, is also supported for both outcomes. However, the direction of the association is positive at the intermediate levels of *highest parental education*, that is, if the parent reports the highest parental education is *high school graduate* or *some college*, the teenagers' likelihood of association is higher than the base category, *less than high school.*

Association of Distal and Proximate Mediators

In Tables 6, 7, and 8, I present the results from testing the association of the distal mediators and proximate mediators. On the left-hand side of the tables, I group the distal mediators into L-2 perceptual neighborhood characteristics, L-2 structural neighborhood characteristics, L-1 perceptions of neighborhood, and L-1 parental characteristics. Along the top of the tables I place the proximate mediators, organized by criminological theory. Table 6 shows the results from testing the associations for social learning and self-control measures, and Tables 7 and 8 show the results for general strain and social control measures, respectively.

The results I present in these tables are the coefficients from running an OLS regression for each continuous mediator on each of the distal predictors or the odds ratios from a logistic or ordinal regression of the categorical mediators on each of the distal predictors. Not every distal predictor is significantly associated with every mediator, but every predictor has an association with one or more of the mediators from each theory. This shows the value of integrating multiple criminological theories and segmented assimilation theory.

There are more and stronger significant associations for the high levels of the distal mediators than for the medium levels. (Recall the reference category for the categorical distal predictors is the level *Low*.) Similarly, within *highest parental education* the categories *college graduate* and *professional training after college* are associated with more of the mediators than the categories *high school graduate* and *some college*, all in relation to the reference category, *less than high school*.

I present a high-level overview of these results here. *Public nuisance* is associated with every social learning, social control, and general strain measure, but with only one of the self-control measures. *Acquaintanceship* is associated with all self-control measures and all but one

of the social control measures, but only two of the general strain measures and neither of the social learning ones. *Informal control* is associated with three out of the six social control measures, only two general strain measures, and none of the self-control measures.

I also tested the association of the proximate mediators and the outcomes. I do not present a table of results or detailed discussion in the interest of brevity. As expected based on prior research, every measure is significantly associated with the outcome in the hypothesized direction. The measures of social learning, general strain, and low self-control are positively associated with the risk of *current* and *daily smoking*. The measures of social control are negatively associated with the outcomes.

Implications for the Research Hypotheses About the Distal and Proximate Mediators

Research hypothesis H6, that living co-ethnic, supportive communities is associated with fewer risk factors, is supported by the evidence. The vast majority of the significant associations of measures of co-ethnic, supportive neighborhoods with social learning and self-control factors (in Table 6), and with general strain (Table 7), are negative. An interesting exception is worth pointing out. Note that *negative affect* and *victimization* are significantly associated with high neighborhood *Hispanic-immigrant concentration* (in Table 7.)

Research hypothesis H7, that living in co-ethnic, supportive communities is associated with more protective factors, is also supported by the evidence. Out of the 36 significant associations between neighborhood characteristics and social control mediators in Table 8, 28 are positive. However, there some interesting exceptions. For example, *parent's closeness* is lower in neighborhoods with medium and high L-2 *acquaintanceship.*

Research hypothesis H8, that having parents with higher educational attainment is associated with fewer risk factors, is supported by the evidence. All the significant associations between higher *parental education* and the social learning and self-control (see Table 6) as well as general strain (Table 7) mediators are negative.

Research hypothesis H9, that having parents with higher educational attainment is associated with more protective factors, is also supported by the evidence. Almost all the significant associations between higher *parental education* and social control factors are positive.

Next, I present the multilevel analysis I conduct to assess whether and how neighborhood-level events are associated with the risk of cigarette smoking. After that, I present the results from the single-level analyses.

Multilevel Analysis Results

I begin the multilevel analysis by fitting an intercept-only model to the outcome *current smoking,* with adolescents as the L-1 units and neighborhoods at Level 2. I describe the specifications of the model below.

Level-1 Model

(1) $$\mathrm{P}\left(anysmoking_{ij} = 1 \mid \beta_j\right) = \phi_{ij}$$

(2) $$\log \frac{\phi_{ij}}{(1-\phi_{ij})} = \eta_{ij}$$

(3) $$\eta_{ij} = \beta_{0j}$$

The three elements of the L-1 model, a generalized linear model, are (1) a random component, that is, the distribution of the response variable *current smoking,* a Bernoulli distribution, where $anysmoking_{ij}$ stands for the expected probability of smoking for adolescent *i* in neighborhood *j*; (2) a link function which specifies the link between the model's random and

systematic components, that is, how the expected response value relates to the linear predictor of the explanatory variables; and (3) the systematic component, in this case the one parameter the model will estimate: β_{0j}, the average likelihood of *current smoking* at the neighborhood level.

Level-2 Model

$$\beta_{0j} = \gamma_{00} + u_{0j} \quad (4)$$

In the L-2 model, we set the neighborhood average likelihood of *current smoking* β_{0j}, as equal to the grand mean, γ_{00}, which is the average likelihood of smoking across all neighborhoods, plus the error term u_{0j}, which denotes the variance in the likelihood of smoking across neighborhoods.

Mixed Model

$$\eta_{ij} = \gamma_{00} + u_{oj} \quad (5)$$

We obtain (5) by substituting equation (4) into equation (3). The regression coefficient for *current smoking* for student *i* in neighborhood *j* is the result of the fixed coefficient γ_{00}, the grand mean, plus the random coefficient u_{oj}, the variance in neighborhood levels of *current smoking.* The Intraclass Correlation Coefficient (ICC), is calculated using u_{oj}.

MLM results

I present results for the intercept-only model in Table 9. The average coefficient for *current smoking* across neighborhoods is -.97. The odds ratio corresponding to this coefficient is $e^{-.97} =$ .38. The probability of *current smoking* for an average neighborhood, one with a random effect u_{oj} of zero, is calculated as $1 - 1/(1 + e^{-.97})$ = .27. The likelihood of *current smoking* for an average neighborhood is thus 27 percent; it is slightly lower than the average individual likelihood of 29 percent. The difference is likely due to a higher proportion of neighborhoods

with high concentrations of individuals at high risk for smoking than neighborhoods with low concentrations of such persons.

The ICC is the proportion of the variance in the adolescents' likelihood of *current smoking* that we can attribute to their grouping in neighborhoods. It is calculated as the variance σ_{u0} of .21 divided by the total variance in the outcome. ICCs lower than ten percent indicate that too small a portion of the variance is attributable to the grouping effect to justify fitting a multilevel model. In this case, the variance of *current smoking*, a standard logistic distribution with scale factor 1, is fixed at $\pi^2/\approx 3.29$ (Hox, Moerbeek, and van de Schoot 2018). Therefore, ICC = $.21/3.29 = .06$. Fitting a multilevel model is not justified, so I proceed with single-level analysis from here on.

Implications for the Research Hypotheses about Neighborhood-Level Distal Mediators

Hypothesis H4 is that youth living in co-ethnic, supportive communities are less likely to smoke cigarettes. Per the results of the intercept-only model, I am not able to reject the corresponding (but not stated) null hypothesis. Therefore, H4 is not supported by the multilevel evidence. However, there is support for the association of L-1 distal mediators and the outcomes.

Single-Level Logit MLE Regression Results for Current Smoking

I present results of five logistic regression series for the outcome *current smoking* in Tables 10 through 14. I label the regression series presented in each table as follows: Series A tests the social learning mediators; Series B, the general strain ones; Series C, the social control ones, and Series D, the self-control ones. Series E tests all the mediators together. I present one more regression series, F, in Table 15, in which I evaluate the sensitivity of the causal model to smoking behavior by testing a more intense behavior as the dependent variable: *daily smoking.*

Series A: Testing the Distal Predictors and the Social Learning Mediators

Table 10 displays regression series A, in which I first regress the dichotomous outcome *current smoking* on *Hispanic* ethnicity and the controls *male* and *age* (Model A1). In this first step, the odds ratio for *Hispanic* is highly significant and quite substantial: it is associated with a 42 percent decrease in the likelihood of *current smoking.* While the model's p-value indicates its validity, its pseudo-R^2 of three percent indicates it explains very little of the variance in the outcome.

In Model A2 I add *immigrant generation* into the model. The category *1.5 generation* is significant; it is associated with a 56% reduction in the risk of smoking, and its addition results in an increase in the odds ratio and p-value of *Hispanic*, indicating that once we account for *immigrant generation,* the significance and magnitude of *Hispanic* decrease.

In the third step, in Model A3, I add all the distal mediators in one step, adding to the model the measures that capture the teens' and their parents' individual-level perceptions of neighborhood characteristics, *acquaintanceship, informal control,* and *public nuisance,* as well as *highest parental education.* Recall the first three measures capture the *supportive community* component of segmented assimilation theory, and the latter one, its *parental cultural capital* component.

Among the first three, only *public nuisance* is significant; with an odds ratio of 1.09, indicating that an increase of one standard deviation in this measure is associated with an almost 10 percent increase in the likelihood of smoking. Higher levels of parental education, *college graduate* and *professional training after college,* are significantly associated at the .01 level of significance, predicting 33 and 38 percent reductions in the likelihood of smoking for youth whose parent attained those levels of education when compared with the subjects whose parents did not complete high school.

Unexpectedly, the significance and effects of *Hispanic* and *1.5 generation* increase in this model. This indicates that the measures I added in Model A3 may act as suppressors (MacKinnon, Krull, and Lockwood 2000) on the association of *Hispanic* and *1.5 generation* with *current smoking*. Hypothesis H12, that neighborhood characteristics and parental education mediate the association of the predictors with the outcome, is not supported by the evidence.

In the last two steps of Series A, I add the social learning measures *parent smokes* and *smoking friends.* While *parent smokes* is highly significant and substantial in model A4, indicating an increase in the likelihood of adolescent smoking of almost fifty percent, its effect is no longer significantly associated with the outcome once I enter *smoking friends* in model A5. The first close friend who smokes multiplies the likelihood that the subject smokes four-fold, for an increase of 303 percent relative to having none of one's close friends smoke. The second one multiplies the likelihood eleven-fold, and the third one increases it almost 24-fold.

Here and throughout the rest of the analysis, as I test the mediators from the other criminological theories, the measure *smoking friends* has the highest odds ratios by far. Caution, however, is required in the interpretation of odds ratios for the effect of smoking friends because of issues involving causal ordering of one's and one's peers' smoking (Haas and Schaefer 2014) and measurement problems in adolescents' reports of peers' deviant behavior (Bauman et al. 1989; Iannotti, Bush, and Weinfurt 1996; Kandel 1996). I will address these issues in Chapter 6.

According to hypothesis H13, criminogenic factors mediate the effect of the predictors *Hispanic* and *1.5 generation* on the outcome. In terms of social learning factors, the hypothesis is supported for *Hispanic* ethnicity, which loses significance as its odds ratio increases in models A4 and A5. However, the hypothesis is not supported for *1.5 generation*, as this measure stays highly significant and its effect decreases only marginally.

According to hypothesis H14, criminogenic factors also mediate the effect of neighborhood characteristics and parental education on the outcome. In terms of social learning factors, the hypothesis is supported. No distal mediators retain significant associations with the outcome once the mediator *smoking friends* enters, in model A5.

Although not included in this project's hypotheses, the results for the control variable *male* sex in Series A is worth noting. In Model A1, with no predictor other than *Hispanic* in the model, *male* has significant odds ratio lower than one. The odds ratio remains significant through model A5, indicating that males are 16 percent less likely to smoke cigarettes than females. This contradicts the non-hypothesized expectation that *male* teenagers are more likely to smoke than females[32].

As expected, even if not hypothesized, the odds ratio for the control measure *age* is significant across Series A, and higher than one. This indicates that higher age is associated with higher likelihood of smoking. This result is not notable, so I will not point it out again.

At each step from A2 to A4, F-tests indicate that the addition of each variable or group of variables is significant. VIF increases at each step but does not reach levels indicating problematic multicollinearity, and monotonic and substantial decreases in AIC indicate each subsequent models improves over the previous one. Pseudo-R^2 also improves at each step of the model, from 3 percent in model A1 to a substantial 23 percent in model A5. As we will see in the following tables, among the single-theory model series (Series A through D), Series A explains much more of the variance in *current smoking* than the other ones. The variance explained by Series A (23 percent pseudo- R^2) is followed in magnitude by that for Series B for general strain

[32] See the section "Control Variables" under the heading "Concepts and Measures," in Chapter 4.

(11 percent pseudo-R^2) and C for social control (11 percent[33]), and then by Series D for self-control (9 percent).

Series B: Testing the General Strain Mediators

I present Series B, which tests the general strain mediators, in Table 11. Recall that the first model, B1, is the same as model A3 and includes the demographic controls and the distal predictors. I add the general strain measures in two steps, the first one for strains resulting from losing something valued and the second for strains resulting from being treated badly by others. All strain measures are significant, and all are associated with increases in the likelihood of *current smoking*.

The largest odds ratios in this series are for *forced sex*[34], *conflict with parents*, and *victimization.* Females who have experienced *forced sex* are almost 80 percent more likely to smoke than those who have not, teens who have had serious arguments with one or both of their parents are 61 percent more likely to smoke (although we don't know whether the topic of the fight is smoking behavior), and an increase of one standard deviation in the *victimization* scale is associated with an increase of one-half in the likelihood of smoking. The measures *negative affect*, *health strain,* and *negative life events* have odds ratios between 1.15 and 1.35.

Research hypotheses H13 is not supported by the evidence for general strain. The odds ratio for *Hispanic* remains significant and drops substantially, from .67 in model B1 to .56 in model B3. This is the largest effect for *Hispanic* in any of the regression series. However, the hypothesis is supported for *1.5 generation,* which remains significant but with a slightly smaller effect in model B3.

[33] While pseudo-R^2 for Series B rounds down to 11 percent and up to 11 percent for Series C, the difference is very small.
[34] This measure can only take a value of one for females.

Research hypothesis H14 is supported by the evidence for general strain. The three significant distal mediators in model B1 are no longer significant in model B3.

In Series B, the control measure *male* loses its significant association with the outcome when the general strain measures are included in the model. The odds ratio for *male* in model B3 indicates that males and females do not have differential risks of *current smoking* when the predictors, distal mediators, and general strain proximate mediators are taken into consideration.

The regression model in Series B reaches a pseudo-R^2 of 11 percent. Both sets of additions, in models B2 and B3, have significant F-tests.

Series C: Testing the Social Control Mediators

I present the results for Series C, which tests the social control measures as mediators in the association of the distal predictors and the outcome *current smoking*, in Table 12. The first model I present in this table, C1, is the same as model A3, which includes the demographic controls and the distal predictors.

I enter the social control measures into the regression in three steps, in groups that correspond to the bonds of attachment, belief, and involvement. Four of the six social control measures are significant when I first enter them into the model. The four, *family-parent connectedness, parent's closeness, school connectedness,* and *public religiosity,* remain significant and stable in magnitude through the last model, C4. All measures are associated with lower likelihood of adolescent smoking, reducing the risk of *current smoking* between 18 and 29 percent.

Research hypothesis H13 receives support from the evidence about social control, as the protective effect of *Hispanic* ethnicity is lower in model C4 (30 percent) than in C1 (33 percent). Although the size of the effect is not significantly different (the confidence intervals for the odds

ratios overlap), the significance of the association decreases as the odds ratio increases from model C1 to C4. The measure *1.5 generation* also loses some of its protective effect from model C1 (59 percent) to C4 (53 percent). An interesting outcome in this series is that the measure *2nd generation*, which has not been significantly associated with the outcome in the previous regression series, becomes a significant protective factor in models C2, C3, and C4.

Research hypothesis H14 is not supported by the evidence for social control. The neighborhood measure *public nuisance* loses significance in model C2, but another neighborhood measure, *acquaintanceship*, gains and retains a significant effect in models C2 to C4. Note that, against the hypothesis that higher social control is associated with lower risk of cigarette smoking, *acquaintanceship* is associated with a 12 percent higher likelihood of *current smoking* in model C4. The two significant levels of parental education in model C1 remain significant, if with slightly lower impact, in model C4.

The control measure *male* is significant in model C4, and its odds ratio indicates a *current smoking* risk reduction of 15 percent for males in comparison with females when taking account of the distal mediators and the social control proximate mediators. It is interesting that *male* loses its significant association with the outcome when the family- and school-related mediators are included, in model C2, but regains it when the religiosity measures are added, and specifically due to the effect of *private religiosity* in model C3.

As I show in the Model Information block at the bottom of the series, every step up to C4 improves the explanatory value and fit of the regression model, with pseudo-R^2 reaching 11 percent. However, the F-test for model C4 indicates the addition of *daily activities* does not reach significance, and the very small drop in VIF from C3 to C4 indicate that model C3 is the better one.

Series D: Testing the Self-Control Mediators

I present the last single-theory model series, Series D for self-control mediators, in Table 13. I add the self-control measures in two steps, first the components of the personality trait self-control, *impulsivity* and *lack of restraint*, with the precursors of self-control, *autonomy* and *lack of maternal supervision*, second.

Three self-control measures are significant in the last model, D3: *lack of restraint* (an increase of one standard deviation is associated with a three-quarter increase in the likelihood of smoking), *autonomy* (an increase of one standard deviation is associated with a 13 percent increase in the likelihood), and *lack of maternal supervision.* The effect of this last measure is against the hypothesized direction: higher *lack of maternal supervision* is a significant *protective* effect against cigarette smoking. It is possible that *lack of maternal supervision* is not an independent variable: mothers whose children misbehave and/or smoking cigarettes may supervise their children more closely. Another reason for the unexpected effect may lie in an incorrect assumption that current *maternal supervision* is a proxy for appropriate parenting early in the subjects' lives.

Research hypothesis H13 is supported by evidence from self-control for *1.5 generation* but not for *Hispanic* ethnicity. Research hypothesis H14 is not supported. *Public nuisance* remains a significant risk factor through model D3 and *acquaintanceship* gains significance (again, as a risk factor) in model D2. The effects of the two significant paternal education levels, *college graduate* and *professional training after college*, remain significant in the last model and the size of their effect increases with the addition of the self-control measures.

The control measure *male* retains a significant association with the outcome and increases with the addition of the self-control measures to the model. In model D3, its odds ratio indicates that being *male* instead of female reduces the teenagers' *current smoking* risk by 25 percent.

The regression model in series D reaches a pseudo-R^2 of 9 percent. Both additions have significant F-tests.

Series E: Testing All Mediators

In Table 14, I present the results of the regression series E, which models the outcome *current smoking* on the distal predictors, all hypothesized mediators, and the demographic controls. I present detailed notes and results from Table below. I also present a summary of the final results, from this regression series in Figure 6.

Although all hypothesized measures are included in each of the Series E models, I only display the measures or categories that have significant associations with the outcome in one or more of the models. I made this decision in the interest of making the table easier to read. Three examples by way of clarification follow here. First, *parent smokes* and *impulsivity*, among other measures, are not significant in any of the models in this series, so I do not display them in the table. Second, *acquaintanceship* is significant in models E4 and E5, so I display the measure in the table although it is not significant in models E1 to E3. Third, *Hispanic* is only significant in model E1; since it is significant in at least one of the models, I display it.

As in Series B through D, in Series E, the starting model, E1, is the same as model A3. In models E2 to E4 I add all the measures from each criminological theory, in the same order as I presented Series B to D. I add all the social learning measures in model E2, and, as shown, the three categories of *smoking friends* are significant, and remain so throughout the series, although their odds ratios are reduced as I enter the measures for the other theories.

It is important to note that Hispanic ethnicity loses significance at this step, but being an immigrant of the *1.5 generation* remains significant throughout, if with slightly decreasing impact. The categories *college graduate* and *professional training after college* of distal

predictor *highest parental education* lose significance at this step as well, and remain insignificant throughout the rest of the series.

In model E3 I add all the general strain measures. Five of them are significantly associated with the outcome: *negative affect*, *health strain*, *victimization*, *forced sex*, and *conflict with parents.* It is interesting that distal mediator *public nuisance* regains significance at this step.

I add the social control variables in model E4 and find that only *parent's closeness* and *school connectedness* are significant. The neighborhood measure *acquaintanceship* regains significance, while the strain measure *forced sex* loses it. I add the self-control measures in the last model, E5, and find that only *lack of restraint* is significantly associated with the outcome. *Negative affect* loses significance at this step.

The control measure *male* is associated with the outcome in models E1 and E2 (the same as models as A3 and A5, already described). Consistently with the results from Series B, the addition of the general strain measures reduces the odds ratio for *male* so that it becomes non-significant in model E3, and that does not change with the addition of the social control mediators in model E4. In model E5, consistently with the results from series D, the addition of the self-control mediators increases the magnitude of association between *male* sex and the outcome, so that the odds ratio for *male* is significant again. At this final point its odds ratio indicates a reduction in risk vis-à-vis females of 18 percent.

Altogether, research hypotheses H1, that the association of Hispanic ethnicity and the outcome is mediated by adolescent's individual characteristics and social relations, is supported by the evidence. However, research hypothesis H14, that the association of neighborhood characteristics and parental education with the outcome are also mediated by the adolescents' individual characteristics and social relations, has mixed support. While the significant distal

mediator *highest parental education* loses significance from model E2 on, neighborhood characteristics retain or gain significance and have larger effects in model E5 compared to E1.

Below I list the factors that retain significant associations with *current smoking* in model E5, organizing them in two groups. The first group includes protective factors, those that reduce the likelihood of smoking, while the second group includes risk factors, those that increase its likelihood. Within each group, I list the measures or measure categories in decreasing order of impact and provide their odds ratios inside parentheses.

In model E5, there are only three significant protective factors against *current smoking*. (See Figure 6 for a summary of the model's results.) Those protective factors are *1.5 generation* (.47), *parent's closeness* (.85), and *public nuisance* (.92). There are eight significant risk factors in model E5: *three smoking friends* (15.65), *two smoking friends* (8.76), *one smoking friend* (3.41), *conflict with parents* (1.45), *lack of restraint* (1.29), *victimization* (1.20), *health strain* (1.16), and *acquaintanceship* (1.09).

Series E's models reach pseudo-R^2 of 28 percent in this model. Not surprisingly, most of the models' explanatory power is gained with the addition of the social learning factors. Its key predictor, *smoking friends*, has the largest impact on the results and eclipses the effect of most other significant factors, although the size of its effect remains suspect due to possible causal ordering and measurement issues. That other variables remain significant or gain significance after entering this factor is notable. It is also notable that despite the high number of measures I include (26 measures in addition to *current smoking),* model E5 does not suffer from collinearity (average VIF stays at a healthy 1.53 and the highest VIF across all measures is 2.99). Every addition in model E has a significant F-test, although the drop in AIC from model E4 to model E5 indicates that the last model does not fit the data much better than the penultimate one.

Sensitivity Analysis: Single-Level Logit MLE for Daily Smoking

In Table 15, I present the results for the final analysis I conduct: Series F, testing the distal predictors and all mediators for the outcome *daily smoking*. After regressing the outcome on the demographic controls and the distal predictors in the first step, F1, I enter the blocks of variables for each criminological theory in order of decreasing pseudo-R^2 for each single-theory model (analyses not shown here): social learning (pseudo-R^2 = .30), social control (.21), general strain (.14), and self-control (.11). I present a summary of the results from the final model in the series, model F5, in Figure 7.

The most important difference between Series F, for *daily smoking*, and Series E, for *current smoking*, is that *Hispanic* remains significantly associated with *daily smoking*, reducing the likelihood that adolescents are daily smokers by 53 percent. A number of measures that were not significant in model E5 are significant in F5: *parent smokes*, *public religiosity*, *private religiosity* (with an unexpectedly positive association), *conventional daily activities* and *autonomy*.

There are five protective factors in model F5: *Hispanic* ethnicity, already mentioned, *1.5 generation* (.42), *public religiosity* (.64), *parent's closeness* (.81), *conventional daily activities* (.81), and *school connectedness* (.89). There are 10 risk factors: *three smoking friends* (28.39), *two smoking friends* (13.64), *one smoking friend* (3.91), *parent smokes* (1.50), *conflict with parents* (1.41), *private religiosity* (1.17), *health strain* (1.17), *lack of restraint* (1.15), *victimization* (1.14), *and autonomy* (1.19).

Research hypothesis H13 receives support from the evidence in model F. The magnitude of the effects for *Hispanic* and *1.5 generation* are reduced throughout the model[35]. Research

[35] However, the odds ratio for *Hispanic increases slightly between models F2 and F5*.

hypothesis H14 is also supported, as no distal mediators are associated with the outcome in model F5.

The control measure *male* is not significantly associated with the outcome *daily smoking* in any of the models in this series. In contrast, the other control measure, *age*, has a highly significant positive association with higher likelihood of smoking.

Series F starts and ends with higher pseudo-R^2 than Series E, with model F1 at eight percent, and model F5 at 35 percent (compared with four and 28 percent in models E1 and E5, respectively.) As in series E, the largest increase in pseudo-R^2 is due to the inclusion of the social learning measures.

All models in series F have significant F-tests and none have problematic levels of multicollinearity. However, AIC only drops two units from model F4 to F5, indicating that model F5 does not have a much better fit than model F4.

Altogether, it appears that we can account for the protective effect of *Hispanic* ethnicity against *current smoking* through its various significant associations with neighborhood characteristics, parental education, and criminogenic factors. However, we cannot account for the protective effect of *Hispanic* ethnicity against *daily smoking* or the protective effect of belonging to the 1.5 immigrant generation for either outcome.

Summary

I show whether the evidence from my analyses supports each of the research hypothesis in Table 16. Most research hypotheses were supported by the evidence, but some were not, and there are interesting exceptions to the overall pattern of results. I document those exceptions in Table 16 but do not discuss them here. Low ICC in the intercept-only multilevel model means that we

cannot reject the unstated null hypothesis that there is no neighborhood grouping effect on the outcome, but we have sufficient evidence to reject all other null hypotheses (also unstated.)

The results I present in Tables 3 and 4, the summary statistics by Hispanic ethnicity and immigrant status, indicate that Hispanic and immigrant youth are less likely to live in supportive neighborhoods than NH white and non-immigrant youth. The evidence supports H1 and H2. The summary statistics also indicate that Hispanic and immigrant youth are less likely to have parents with high levels of educational attainment. The evidence supports H3.

Per Table 5, youth who live in co-ethnic, supportive communities are generally at lower risk for *current smoking*, as are youth whose parents have higher educational attainment. The evidence supports H4 and H5.

The evidence in Tables 6, 7, and 8 mostly support H6 and H7 about the association of neighborhood characteristics and criminogenic factors. Characteristics of more co-ethnic and supportive neighborhoods are associated with lower exposure to the factors for social learning and general strain, and negatively associated with the factors for social control. However, there is evidence about positive and negative associations of co-ethnic, supportive neighborhood characteristics and low self-control.

Similarly, evidence about the association of higher parental education and criminogenic factors (Tables 6, 7, and 8) mostly supports H8 and H9, as higher parental education is associated with lower exposure to social learning and general strain and with higher social control. However, there is evidence that higher parental education is associated with higher *lack of maternal support* (for adolescents whose parents have a college degree) and lower (for adolescents whose parents attained professional training.)

The regression series I present in Tables 10 to 13 support the hypotheses about the association of proximate mediators and the outcome (H10 and H11): higher levels of social learning, general strain, and low self-control are significantly, independently associated with higher risk of smoking, while higher levels of social control are associated with a lower risk. I also tested the unconditioned association of the proximate mediators and the outcomes, but do not present those results. Every measure is significantly associated with the outcomes in the hypothesized direction.

Some of the mediation hypotheses are supported by the evidence in Tables 10 to 15 and some are not. The association of Hispanic ethnicity and the outcome is not mediated by neighborhood and parental characteristics (H12) or by the criminogenic factors from general strain and self-control (H13). However, the association is mediated by the criminogenic factors of social learning and social control (also H13). Finally, the association of neighborhood characteristics and the outcome is not mediated by the criminogenic factors, but the association of parental education is (H14). The results in Table 16 support both mediation hypotheses (H13 and H14).

The Answer to the Research Question

Next, I formulate the answer to my first and primary research question: Why is the likelihood of cigarette smoking lower among Hispanic adolescents than NH white adolescents? I find the answer by putting together results from regression series E and F (Tables 13 and 14) and the summary statistics from Tables 3 and 4. The answer is that, in comparison with NH white adolescents, Hispanic adolescents have higher exposure to factors that protect against the risk of smoking and lower exposure to risk factors for smoking.

Per the last column of Series E, the factors with a positive, significant, independent association with a higher likelihood of *current smoking* are L-1 neighborhood *acquaintanceship*, having *smoking friends*, *health strain*, *victimization*, and *conflict with parents*. Hispanic adolescents tend to be protected by their characteristics along these dimensions: they are less likely than NH white adolescents to live in neighborhoods with high *acquaintanceship* and to have friends who smoke cigarettes (Table 3). On this count, the social nature of cigarette smoking makes lower neighborhood acquaintanceship a protective factor for Hispanic teens, just as having fewer smoking friends protects them. Hispanic teens also report significantly lower rates of *health strain*, but their scores for *lack of restraint* and *conflict with parents* are not significantly lower than for NH white teens. The only risk factors for which Hispanics have higher exposure are neighborhood *public nuisance* and *victimization.*

Only two protective factors are significantly and independently associated with *current smoking* in Table 14: belonging to the *1.5 generation* and *parent's closeness*, and Hispanic teens score higher than NH white ones on both measures (see Table 3). In addition, immigrants of the *1.5 generation* report significantly lower rates of *victimization* and score higher on *parent's closeness* than *2nd generation* immigrants (see Table 4); that may explain why adolescents from the *1.5 generation* are protected against smoking but adolescents from the *2nd generation* are not.

Next I consider the results in Table 15 (Series F, for *daily smoking*) and the table of summary characteristics for Hispanic and NH white and non- and immigrant teenagers (Tables 3 and 4). From the factors significantly associated with higher likelihood of *daily smoking* in Table 14, Hispanics have better (lower) scores for most. The exception is *private religiosity*, the only risk factor for which Hispanics have significantly higher scores. Hispanic teenagers have higher scores on all significantly associated protective factors except for *conventional daily activities*, in

which they score lower than NH white teens. Hispanic adolescents have higher exposure to protective factors and lower exposure to risk factors for *daily smoking.*

Chapter 6. Conclusion

In this project I set out to understand why Hispanic teenagers were less likely to smoke cigarettes in the 1990s, a counterintuitive finding given that, in general, Hispanic persons in the United States have lower SES than NH white persons, and low SES is associated with higher rates of cigarette smoking. Drawing on segmented assimilation theory and the four dominant theories of crime, I hypothesized that certain characteristics of the neighborhoods where adolescents live as well as their parents and the teens' own characteristics and social relations help us make sense of the phenomenon observed, and I found evidence in support of most of my hypotheses.

The principal point of departure for my analysis was that the Hispanic population has a higher composition of immigrants than the NH white population, hence the attention to segmented assimilation theory. Through a review of the extant social explanations for cigarette smoking and its association with SES, race and ethnicity, and immigrant status I found that that criminology has the most comprehensive, best specified, and most thoroughly tested hypotheses for delinquent behavior, including adolescent cigarette smoking. This led me to propose a causal model integrating the four key theories of crime with immigrant assimilation as a way to explain adolescent smoking *qua* delinquent behavior.

As may be expected from a causal model with as many concepts, multifarious operationalizing measures, and hypothesized positive and negative associations as I proposed in Figures 4 and 5, my empirical analysis produced a long list of hypotheses and a combination of evidence in support and contrary to the hypotheses. That the evidence supports many of the research hypotheses is not a surprise given that the hypotheses were drawn from extant, well-supported theories.

In the following paragraphs I briefly recap my main findings and discuss an important caveat to the key finding that the association Hispanic ethnicity with the outcome current smoking appears to be fully mediated by social learning in regression Series B and E. Then I discuss the notable, unexpected finding that male sex is associated with a lower risk of current smoking. After that, I discuss the limitations of my research, including some important measurement problems; the contribution my work makes to the literature, and; to finish the discussion of my research, directions for future research.

Main Findings

In the following paragraphs I discuss the two main findings of my research. First, Hispanic ethnicity is not a significant predictor for the likelihood of current smoking, but being an immigrant of the 1.5-generation, is. Second, in aggregate, the proximate mediators do mediate the association of Hispanic ethnicity and immigrant generation with the outcome.

Hispanic Ethnicity and Immigrant Generation

My analyses indicate that, in comparison with NH white and non-immigrant teens, Hispanic and 1.5-generation adolescents are less likely to live in co-ethnic, supportive neighborhoods, which indicates a higher risk of smoking cigarettes. However, 1.5-generation teens are less likely to smoke currently or daily and Hispanic teens are less likely to smoke daily. The reason is that, in comparison to NH white teens and 2nd-generation and non-immigrant teens, respectively, Hispanic and 1.5-generation teens have lower exposure pro-smoking general strain and social learning risk factors and higher exposure to protective social control and self-control ones.

As I started this research project, I set out to investigate the association of lower adolescent smoking rates with Hispanic ethnicity. In the logistic regressions for the outcome current smoking, Hispanic ethnicity is not a significant predictor once the social learning

measures are included. One way to interpret this result is that Hispanic ethnicity is fully mediated, explained away, so to speak, by the social learning measures. However, that would be a premature conclusion.

We know that Hispanic teenagers are less likely to smoke cigarettes than NH white ones, so to the degree that Hispanic teenagers associate more with other Hispanic teens than with NH white ones, the subjects' friends' Hispanic ethnicity remains an important factor in our understanding of these teens' lower smoking rates. There is empirical evidence that Hispanics are more likely to have Hispanic than non-Hispanic friends. For example, research on friend networks using the Add Health study shows that adolescents of Mexican and Cuban heritage are four and two times as likely to nominate other Hispanic teens than non-Hispanic ones as their best friends, respectively (Kao and Joyner 2006). Other research with the Add Health network data shows that Hispanic students display assortative mixing, a propensity for dyadic associations with other Hispanic students rather than students of other ethnicity, in the majority of schools, while that the opposite process, selecting non-Hispanic best friends, is concentrated in schools where Hispanics are a small minority (Goodreau, Kitts, and Morris 2009).

Therefore, a better interpretation of my results is that Hispanic teens are at lower risk for cigarette smoking in great part because their friends are Hispanic, and Hispanic friends are less likely to smoke. The problem is that this seems to be a circular explanation: Hispanic teens smoke cigarettes less than NH white teens mainly because Hispanic teens smoke cigarettes less. This quasi-tautology may be solvable, but the solution highlights a limitation in my causal model, as I will discuss further below.

The possible solution to the quasi-tautology may lie in knowing that Hispanic teenagers are more likely to have emigrated to the U.S. from Latin American countries or be the children

or grandchildren of immigrants from those countries, and we know that in the nineties, smoking rates in those countries were lower than smoking rates in the United States.

To illustrate this point, I list the point estimates for the age-standardized prevalences of daily smoking in 1980 and 1996 for the United States as well as Mexico, Cuba, Nicaragua, and El Salvador, the countries with the highest raw numbers of foreign-birth respondents in the Add Health survey. The rates in those two years are relevant because the parents of the Add Health subjects were between old childhood and early adulthood in 1980 and 1996 marks the end of the first Add Health data collection wave. I list the countries and their smoking prevalence in 1980 and 1996, respectively, in declining order by the prevalence in 1980. The age-adjusted prevalence of daily smoking for the population age 15 and higher was 30.6 and 21.6 percent in the United States; 25.9 and 19.0 percent in Mexico; 23.1 and 19.3 percent in Cuba; 17.0 and 11.0 percent in Nicaragua, and 11.3 and 10.5 in El Salvador (Ng, Freeman, et al. 2014: Online supplement).

Not including country of birth among my measures is a limitation of my research. If corrected, it may help better unravel the puzzle of lower smoking among Hispanic teens. Future research can test for the effect of grouping at the country-level on the variance of the individual teenagers' likelihood of smoking. The Add Health core sample includes almost 300 subjects born in Mexico and 200 born in Cuba, followed by 65 subjects from Nicaragua and 41 from El Salvador, making such a test feasible.

Criminology-Derived Mediators

For the most part, the empirical evidence supports the hypothesized bivariate associations that comprise the middle part of the causal model. The results from my regression analyses support the mediation hypotheses that comprise the rest of the causal model. Taken together, these

findings show the value of the approach I took, integrating segmented assimilation theory with the criminological theories.

Other Notable Findings

I discuss four sets of notable findings next. First, two important exceptions to the overall patterns of association are summarized in Table 16. After that, the result that parents' reports of closeness to their adolescent children are significant for both outcome measures but the adolescent's reports of family connectedness are not (see Tables 14 and 15). Finally, I discuss the unexpected association of male sex with lower risk of current smoking (see Tables 10 and 12-14).

Higher Public Nuisance and Higher Informal Control

Even though Hispanic and immigrant teens are more likely than NH white and non-immigrant teens to live in neighborhoods with high levels of L-2 public nuisance and low acquaintanceship, they are more likely to live in neighborhoods with high informal control. My expectation was that informal control would vary in direct relation with acquaintanceship. An examination of the two categorical variables (not shown) indicates that adolescents who live in neighborhoods with low acquaintanceship are more likely to live in neighborhoods with high informal control, while teens who live in neighborhoods with high acquaintanceship are more likely to live in neighborhoods with low or medium informal control.

One reason for the discrepancy may be that *acquaintanceship* is based on items from the adolescent's in-home questionnaire and *informal control* is based on the parental questionnaire, although I do not have a theory for what causes the parents' and adolescents' different perceptions of the neighborhood. However, *public nuisance*, also based on items from the parental questionnaire, does vary with *acquaintanceship* in the expected direction.

It is possible that the relevant mechanism behind the apparent contradiction is one about the parents' perceptions and behavior: that parents who perceive that their neighborhoods have higher *public nuisance* are more likely to make an effort to keep tabs of their and their neighbors' adolescent children. However, teens living in neighborhoods with higher L-2 *informal control* are less likely to have high levels of *maternal supervision* (another of the exceptions I note in Table 16). This brings us back to possibility of different perceptions between adolescents (whose answers are the basis for *maternal supervision*) and their parents.

Examples of recent research on discrepancies between adolescents' and their parents' perceptions include work on the impact of discrepant perceptions about the family environment and parental behaviors on the youths' psychological maladjustment (Human et al. 2016; Korelitz and Garber 2016) and the association of inaccurate parental perceptions of their teenage children's sexual experience and the teenagers' future sexual activity (Mollborn and Everett 2010, conducted using Add Health). Future research with Add Health may explore whether discrepancies about teenagers' and their parents' perceptions of their neighborhoods or the degree of parental direct control are associated with the other criminogenic mediators and predictive of the teens' future deviance.

High Residential Stability and Higher Risk of Smoking

Another set of findings in contradiction of the research hypotheses is that high residential stability is associated with a higher likelihood of current smoking and daily smoking (in Table 5) and parent smokes (in Table 6), and is an independent, significant predictor for current smoking (in Table 14). Since the measure residential stability is meant to operationalize characteristics of supportive neighborhoods, and in segmented assimilation theory supportive neighborhoods are

expected to promote better outcomes for immigrant teenagers, the hypothesized associations between residential stability and the various smoking measures are negative.

Upon second thought, however, those hypothesized associations seem to ignore the social nature of cigarette smoking. After all, there is research addressing the sociable effects of cigarette smoking. For example, Schaefer and Haas (Haas and Schaefer 2014) analyze peer influence for cigarette smoking while controlling for network homogeneity in two of the saturated school samples of Add Health. They report that cigarette smoking anchors the creation and maintenance of friendship ties among adolescents.

It may be that the unexpected direction of the association between smoking behavior and *residential stability* reflects that adolescents are more able to maintain friendships in stable neighborhoods. Recall also that in neighborhoods with L-2 acquaintanceship, the Add Health subjects' parents are more likely to smoke. It is reasonable to assume that *residential stability* facilitates *acquaintanceship* and, in the 1990s, that results in higher risk of adult smoking. At any rate, the results under discussion make sense in terms of the theory of social learning.

Parent's Closeness but Not the Teens' Perceptions

A third unexpected finding worth noting is that parent's closeness, based on items from the parental questionnaire, is a significant, independent predictor of current smoking and daily smoking (Tables 14 and 15), but the analogous measure parent-family connectedness, based on the in-home teen questionnaire, is not.

Parent-family connectedness is significantly associated with the outcome *current smoking* in all models in Series C (Table 12), but it loses significance when the measures for social learning and general strain are present (as in Models E and F, Tables 14 and 15), even if the models are run without *parent's closeness.* Backtracking, we see that *parent family*

connectedness is not significantly different for Hispanic teens in comparison to NH white ones, and it is not significantly associated with *immigrant generation*, either.

Although the two measures are moderately correlated (after adjusting for survey design, an increase of a standard deviation in *parent's closeness* is significantly associated with an increase of .35 standard deviations in *parent-family connectedness*), they seem to capture different aspects of the parent-adolescent relationship. Future research may address what it is that parents know about their relationship with their adolescent children that the adolescents do not, adding to our understanding of discrepancies in the perceptions of parents and their teen children.

Male Sex Protects Against Current Smoking

The results of regression Series E (see Table 14) indicate that male subjects have a lower likelihood of current smoking than females. In model E5, the significant odds ratio for males indicates a risk reduction of 18 percent. I did not hypothesize differences in smoking risk by sex, but I expected higher rates among males. That expectation was based on extant research, but evidence of higher smoking risk among male adolescents are more nuanced than I perceived initially. Some of the available evidence points to no sex differences in adolescent smoking risk, while other suggests that there may be a crossover effect over adolescence. Well-established evidence that U.S. adult males have been more likely to smoke than adult females from the 1960s on (Wang et al. 2018) and that male adults smoke more tha female ones in other countries (World Health Organization 2017) also shaped my expectation.

Research based on the 1997 Youth Risk Behavior Survey shows that overall rates of lifetime, current, and frequent cigarette use[36] among high school students were not significantly different for males than for females (U.S. Department of Health and Human Services 1998). According to this report, the only significant differences in cigarette use by gender are higher rates for NH black male teens compared to NH black female ones in terms of current and frequent cigarette use).

Other research indicates higher rates for males among older teens but no difference among younger ones. For example, based on their analysis of data drawn from the Monitoring the Future study, Nelson, Mowery, and their coauthors report that, "[b]y 1990, prevalence [of current cigarette smoking] was higher among adolescent boys than among girls…" (2008:906) This statement, however, only refers to teens in the 12th grade. In the very next sentence the authors state that, "[s]ince 1991, trends in smoking by gender among students in grades 8 and 10 generally paralleled other patterns …, although there were no differences in prevalence between adolescent boys and girls" (2008:906). Based on the data for young adults, Nelson et al. found that current smoking rates for males began surpassing those for females in the late 1980s and remained higher through the 1990s and early 2000s.

This project's results for regression model A1 suggest that exploring how sex and age interplay may be fruitful. With only Hispanic ethnicity, male sex, and age in the model, male sex is a significant predictor for lower smoking risk. The results from series B, testing the general strain mechanisms, are also interesting; among the single-theory regression series, this is the only one in which the final odds ratio for male sex is not significant.

[36] Lifetime cigarette use was defined as every trying cigarette smoking, current use, as smoking on at least one of the 30 days preceding the survey, and frequently smoking, as smoking cigarettes on at least 20 of the 30 days preceding the survey (U.S. Department of Health and Human Services 1998).

Future research with the Add Health data can establish whether the lower odds ratio of current smoking for males compared to females reported in Tables 10, 12, 13, and 14 are driven by changing relative smoking rates by gender over age. At what age does the risk of smoking for male teens drop lower than the risk for females? Also, is the lower risk for males found only among my analytical sample or also more broadly in the core sample? Reviewing evidence of gender-specific exposures and effects by gender is also needed, together with testing for possible moderation by gender of the general strain mediators in my causal model.

This completes the discussion of findings, both the hypothesized ones and the unexpected, notable ones. In the following paragraphs I address the limitations of this research project.

Limitations

As with any research, weaknesses inevitably accompany the contributions of this project. My research is limited by some issues in the causal model, in the operationalization of concepts, and in the analytical strategy.

Causal Model

As I discussed above, an important limitation of my research is not including country of origin as predictor of adolescent cigarette smoking risk. By including the country of origin of foreign-born subjects from Latin American countries, I may have been able to avoid the seeming tautology that Hispanic adolescents are less likely to smoke because they are more likely to associate with other Hispanic adolescents, who are less likely to smoke.

Different countries of origin may imply different levels of risk for adolescent cigarette smoking. It is possible that prevalence of smoking in immigrant adolescents' country of origin

influences the teens' smoking indirectly through the attitudes their parents and other adults in their communities hold about smoking, as well as more directly through parental smoking.

For that matter, such a mechanism would also apply to U.S.-born parents and their adolescent children. The results from regression Series F (see Table 15) support such logic, as parental smoking is a significant predictor for the teenagers' likelihood of daily smoking. In addition to future research that tests for country-of-origin effects, testing for mediation of such effect through parental smoking may be possible.

Operationalization of Concepts

This research is also limited by problems in my operationalization of concepts. The first one is that some I could not fully operationalize all the key concepts from the theories underlying my causal model. The second is the issue of modest and low reliability in several of the measures operationalizing the theory-driven concepts. The third one is that there are well-known issues in relying on subject reports of their peers' smoking behavior. These three problems are unavoidable given that the items in the Add Health data are set. However, that same data allow for good operationalization of several other concepts, and that constitutes a strength of this research.

The fourth and final problem in my operationalizations could have been avoided. It is the decision to operationalize co-ethnicity specifically as Hispanic co-ethnicity.

Missing and Thin Operationalizations

I found differential success in the effort to operationalize the key concepts from each of the theories underlying my causal model. I could not operationalize the concepts from two of the criminological theories, as follows. From the theory of social learning, measures for three of the four mechanisms are missing: *imitation*, *differential reinforcement*, and *definitions;* this makes

for a very thin operationalization of social learning From the theory of general strain, I have no operationalizations for *failure to achieve goals*, one of the sources of negative emotionality; this theory is operationalized fairly well, but not completely.

I was able to operationalize the community component of segmented assimilation theory fairly well, but not so the parental component. I was not able to measure *professional or managerial experience.*

Modest and Low Reliability

Some of the measures I used have only moderate reliability, if not outright unreliability. As I explained in Chapter 4, I drew most of the measures from the literature, so that I am able to build on existing evidence. The only measure I created from scratch, *conventional daily activities*, has low reliability, but it was significant in my last regression series.

Subject-Reported Friends' Smoking

Measuring friends' cigarette smoking by proxy, as I do in this analysis, is a known methodological problem in tests of social learning theory. Research on friends' influence on research subjects' substance use is typically measured by asking the subjects to report about their friends rather than asking both subject and friends to self-report their own behavior (Belendiuk, Molina, and Donovan 2010). Assessing friends' behavior this way is easier than interviewing all the members of friend networks, but it also raises important issues.

Researchers studying the accuracy of adolescent's perceptions of friends' use of tobacco, alcohol, and marijuana have found that the teens' perceptions are biased in the direction of their own use. That is to say that reports of teens who use are biased toward reporting that their friends also use, thereby over-reporting peer substance use, while non-users' reports are biased toward reporting that their friends also abstain, thereby underreporting peer substance use (Henry et al.

2011; Kandel 1996). Research using the Add Health sample has confirmed this bias (Henry et al. 2011). Since fewer adolescents use these substances, studies based on subject's report of peer substance use underestimate the behavior of interest and overestimate the effect of peer substance use on the studied subjects. Kandel estimated that estimates of peer effects based on cross-sectional data and perceptions of peer behavior are overstated by a factor of five (Kandel 1996).

Dividing the effect sizes from Series E (Table 15) by five results in scaled-down point estimates of the effect of *current smoking* for adolescents with one, two, and three friends who smokes (compared to adolescents whose friends do not smoke) that are still larger than the impact of all significant factors in the model. The odds ratio for the effect of having one friend is scaled down from 3.41 to 1.48[37]. The scaled down odds ratios for having two and three smoking friends are 2.55 and 3.93. It is nice knowing that the odds ratios don't scream of collinearity anymore (despite the reassuring VIF), but this quick fix does not solve the problem of correctly estimating all other odds ratios.

There are yet two more considerations worth noting in relation to this problem. One is that we also have research showing that adolescents' perceptions of their friends' substance use are better predictors of the teens' behavior than their friends' actual substance use (Henry et al. 2011). The second one is that, although in analysis I have assumed unidirectional causality, from the subject's friends' smoking to the subject's smoking, there is evidence that adolescents tend to become friends with other teens whose smoking (or abstention) matches their own (Haas and Schaefer 2014).

[37] I scaled down effect sizes as follows: the odds ratio for *current smoking* for adolescents with one smoking friend in Table 15 is 3.41. This translates into an additional risk of 241percent in comparison with adolescents with no smoking friends. Dividing 241 by 5 results in 48, so the scaled down effect size is an additional risk of 48 percent, with an odds ratio of 1.48.

It may be possible to find out how much subjects' reports of friends' smoking are overstated in Add Health using the friendship nominations datasets, which identify the study subjects who nominated each other as friends. A correction factor may then be adjusted to the item in question and allow re-evaluation of hypotheses about adolescent smoking based on social learning theory, alone, or tested together with hypotheses from the other criminological theories.

Measuring Co-Ethnicity

This issue is much less complicated than the problem of teens' reports of their friends' smoking, and it may be easily addressed in future research. Based on my interpretation of segmented assimilation theory, I operationalized co-ethnicity specifically as Hispanic co-ethnicity. However, as I indicated earlier in this manuscript, the same factors that increase the likelihood of normative outcomes among immigrant adolescents of the 1.5 generation should increase the likelihood of normative outcomes among non-immigrant adolescents. If living in co-ethnic communities results in better outcomes for Hispanic adolescents, then shouldn't living in co-ethnic NH white communities result in better outcomes for NH white adolescents?

The argument can go either way, especially when discussing cigarette smoking. On the one hand, higher rates of smoking among NH white adolescents and adults are likely to lead to higher rates of smoking for NH white teens who live in neighborhoods with higher concentration of NH white adolescents. On the other hand, living in neighborhoods that are not NH-white-co-ethnic may be associated with strain among NH white adolescents, leading to a higher risk of smoking, or be protective because of lower pro-smoking social learning.

At any rate, measuring neighborhood co-ethnicity for NH white adolescents is feasible with the contextual information that the Add Health study provides. Future research can explore whether co-ethnicity has different effects among populations of different ethnicity.

Analytical Issues

There are also weaknesses in my analytical approach. I did not test the hypothesized mediations directly, I was only able to conduct a partial test of segmented assimilation theory, and more sophisticated single-level regression models may have fit the data better. I describe each issue next.

First, I only tested mediation indirectly, by examining the effect that adding new measures has on the coefficients from previous regression models, rather than through structural equation modeling. Here, the depth in the operationalization of concepts, a strength, resulted in a high number of analytical variables, making sophisticated statistical methods difficult.

Second, the low ICC I found for the hypothesized grouping effects on the variance of the outcome resulted in an only partial test of segmented assimilation theory. Once my analytical model resolved to single-level analysis, I was not able to test whether community co-ethnicity and structural characteristics are independent, significant protective factor against smoking behavior when evaluated together with the other mediators. However, I was able to test the associations of those factors with the predictors, proximate mediators, and outcomes, separately. In future research I may be able leverage the design of the Add Health study and test for grouping effects at the school level, modifying the segmented assimilation theory's hypothesis that co-ethnicity is supportive by attempting to conceptualize it as a school characteristic.

Third and last, it is very likely that some of the measures in my regression models interact with each other. For example, it is possible that there are gender and ethnicity moderation effects for the different criminological theories. Moderated mediation models, justified through hypotheses driven by both the theories and existing evidence, may have been more appropriate than the simple regression models I fit.

Contribution

The mediation hypotheses (H12, H13, and H14) are the ones that interested me the most at the outset of this project. I consider that they represent a contribution to the sociological study of adolescent smoking, one which should help study other health behaviors. Proposing that criminological factors mediate the association between immigrant parents' cultural characteristics (ethnicity and cultural capital) and the social environments in which they find themselves in the United States with their children's downstream behavior is a reformulation of segmented assimilation theory in criminological terms. If anybody accuses me of hatching a plan to break out criminology from the study of criminal behavior so it can extend to the study of other behaviors of concern, I will happily plead guilty.

That the mediation hypotheses were only partially supported by the evidence does not diminish the utility of the causal model. Had I based my empirical tests on segmented assimilation alone, then the lack of support for H12 (that neighborhood and parental characteristics mediate the association of Hispanic ethnicity and the outcome) would make my results rather uninteresting. Including criminological theories in the conceptual model led to a number of unexpected findings in addition to confirming some of my research hypotheses.

This research makes a contribution to the study of disparities in health behaviors by ethnicity and immigrant generation. It extends the literature on smoking among Hispanic adolescents to include a direct comparison to NH white adolescents. It contributes to our understanding of the Hispanic Health Paradox by providing evidence about the social mechanisms underlying the sociocultural advantage for Hispanic persons in the United States.

The integration of segmented assimilation theory with the key criminological theories provides a path to understand what it is about *being Hispanic* that protects Hispanic teenagers in

the United States against cigarette smoking and will also be useful in unpacking the nativity paradox among immigrant groups of different ethnicities and in the study of other health behaviors. By operationalizing the four criminological theories as thoroughly as possible, this work also contributes to the body of evidence on the association of immigration and ethnicity with delinquency.

Directions for Future Research

Future research can leverage the causal model and methodology of this project to the study of differences in adolescent smoking behavior among other racial and ethnic groups in the United States, such as NH black or Asian teenagers. Such work should correct the measurement of co-ethnicity, measuring it for each ethnic and racial group if it is possible. That work should also include testing for country-of-origin effects, and can focus on Hispanic teens as well as Asian ones in comparison with NH white teens. A hypothesis that country-of-origin smoking prevalence affects American immigrant teen's smoking through parental smoking can be tested as part of this work, as well as possible interactions between immigrant generation and the concepts for each of the criminological theories.

More work is required to understand the finding that male sex is a significantly protective against teen smoking. Is this effect driven by opposite sex-age trends in smoking over the course of adolescence? Is there such an effect for other risky behaviors? How is this "male advantage" lost in adulthood?

Findings that a measure based on parent's responses is a significant predictor for smoking but the similar measure based on teen's responses are not point to another area of research. What is it about parent's knowledge of their adolescent children that results in this finding, and what hypotheses can be designed to explore this? A related area for future research lies in analyzing

the finding of discrepancies between teenagers' and their parents' perceptions of their neighborhoods and testing whether those discrepancies are associated with the risk of deviant behaviors.

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TABLE 1. TANGNEY'S (2004) BRIEF SELF-CONTROL SCALE AND CORRESPONDING ADD HEALTH ITEMS

BSCS items	Add Health items
1. I am good at resisting temptation	
2. I have a hard time resisting bad habits	
3. I am lazy	
4. I say inappropriate things	
5. I do certain things that are bad for me, if they are fun	
6. I refuse things that are bad for me	H1PF20. Do you agree or disagree that when making decisions, you generally use a systematic method for judging and comparing alternatives[?]
7. I wish I had more self-discipline	
8. People would say that I have iron self-discipline	
9. Pleasure and fun sometimes keep me from getting work done	H1ED17. Since school started this year, how often have you had trouble getting your homework done?
10. I have trouble concentrating	H1ED16. Since school started this year, how often have you had trouble paying attention in school? H1FS5. How often was the following true during the past week [that] you had trouble keeping your mind on what you were doing[?]
11. I am able to work effectively toward long-term goals	
12. Sometimes I can't stop myself from doing something, even if I know it is wrong	
13. I often act without thinking about all the alternatives	H1PF18. Do you agree or disagree [that] when you have a problem to solve, one of the first things you do is get as many facts about the problem as possible[?] H1PF19. Do you agree or disagree [that] when you are attempting to find a solution to a problem, you usually try to think of as many different ways to approach the problem as possible[?] H1PF21. Do you agree or disagree [that] after carrying out a solution to a problem, you usually try to analyze what went right and what went wrong[?]

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TABLE 2. PAIRWISE CORRELATIONS OF INDIVIDUAL-LEVEL MEASURES

Measures	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. Hispanic	1.00												
2. Immigrant generation	0.62	1.00											
3. Current smoking	-0.09	-0.11	1.00										
4. Daily smoking	-0.09	-0.09	0.53	1.00									
5. zAcquaintanceship	-0.11	-0.12			1.00								
6. zInformal control	0.09	0.13			-0.15	1.00							
7. zPublic nuisance	0.06		0.06	0.07	-0.04	0.07	1.00						
8. Highest parental education	-0.31	-0.24	-0.04	-0.05		-0.02	-0.17	1.00					
9. Parent smokes	-0.08	-0.09	0.11	0.13	0.02	-0.06	0.12	-0.19	1.00				
10. Smoking friends	-0.07	-0.08	0.52	0.44			0.11	-0.10	0.16	1.00			
11. zNegative affect	0.12	0.07	0.20	0.14	-0.12	0.04	0.11	-0.15	0.08	0.20	1.00		
12. zHealth strain	-0.08	-0.09	0.16	0.11	-0.06		0.03	0.05	0.05	0.09	0.42	1.00	
13. zVictimization	0.13	0.04	0.19	0.17		-0.04	0.12	-0.12	0.10	0.24	0.18	0.11	1.00
14. Forced sex (females only)		-0.03	0.12	0.13			0.04	-0.03	0.05	0.10	0.16	0.11	0.04
15. Conflict with parents		-0.01	0.16	0.10			0.05		0.04	0.12	0.23	0.20	0.12
16. zParent-familiy connectedness	-0.02	-0.01	-0.19	-0.13	0.15	-0.03	-0.09	0.05	-0.04	-0.18	-0.40	-0.21	-0.14
17. zParent's closeness	0.08	0.10	-0.22	-0.17	-0.03	-0.04	-0.12		-0.05	-0.22	-0.20	-0.11	-0.15
18. zSchool connectedness			-0.21	-0.19	0.18	-0.04	-0.11	0.06	-0.09	-0.24	-0.38	-0.23	-0.25
19. zPublic religiosity			-0.14	-0.16	0.10	-0.02	-0.06	0.10	-0.18	-0.17	-0.08		-0.07
20. zPrivate religiosity	0.07	0.05	-0.14	-0.13	0.09		-0.07	0.03	-0.13	-0.15	-0.06		-0.07
21. Conventional daily activities	-0.07	-0.06	-0.10	-0.13	0.17	-0.05	-0.06	0.12	-0.02	-0.14	-0.13		
22. zImpulsivity	-0.05	-0.06	0.10	0.06	-0.07			0.03		0.08	0.16	0.13	0.08
23. zLack of restraint	-0.04	-0.06	0.25	0.17	-0.09		0.04	0.03	0.04	0.22	0.37	0.35	0.22
24. zAutonomy	-0.08	-0.08	0.11	0.10	-0.05		-0.03	0.05	0.04	0.11		0.04	
25. zLack of maternal supervision	-0.03	-0.03	0.07	0.05	-0.04			0.08		0.05	0.05	0.06	
26. Male sex					0.03	-0.05				0.02	-0.15	-0.13	0.24
27. Age	0.09	0.11	0.15	0.15	-0.11	0.06		-0.07	-0.02	0.18	0.12		0.02

Measures	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.
14. Forced sex (females only)	1.00													
15. Conflict with parents	0.06	1.00												
16. zParent-familiy connectedness	-0.10	-0.24	1.00											
17. zParent's closeness	-0.10	-0.22	0.35	1.00										
18. zSchool connectedness	-0.09	-0.15	0.37	0.20	1.00									
19. zPublic religiosity	-0.05	-0.02	0.14	0.06	0.16	1.00								
20. zPrivate religiosity	-0.05		0.18	0.10	0.17	0.76	1.00							
21. Conventional daily activities	-0.06		0.15	0.05	0.17	0.13	0.10	1.00						
22. zImpulsivity	0.03	0.10	-0.25	-0.13	-0.23	-0.05	-0.10	-0.07	1.00					
23. zLack of restraint	0.07	0.22	-0.31	-0.22	-0.39	-0.10	-0.13	-0.10	0.33	1.00				
24. zAutonomy	0.05		-0.06		-0.03	-0.15	-0.12	-0.11		0.06	1.00			
25. zLack of maternal supervision		0.04	-0.10	-0.05	-0.06	-0.03	-0.04	-0.05	0.05	0.08	0.07	1.00		
26. Male sex	-0.17	-0.07	0.07		-0.02	-0.04	-0.08	0.09		0.10	-0.03		1.00	
27. Age	0.08		-0.14		-0.08	-0.13	-0.07	-0.27	-0.08	0.08	0.31	0.05	0.07	1.00

NOTES: Pairwise correlations were calculated without adjustment for survey design; all categorical measures are treated as continuous; only significant correlations at the .05 level of significance are shown; the prefix z indicates measures that are standardized. Immigrant generation is coded as 1 non-immigrant, 2 second generation, and 3 for 1.5 generation.

TABLE 3. SUMMARY STATISTICS: MEANS AND PROPORTIONS COMPARING NH WHITE AND HISPANIC ADOLESCENTS

Measures	N = 9,185 NH White (86%) Mean/Prop [1]	SE	Hispanic (14%) Mean/Prop [1]	SE	P-value [2]
Outcomes (L-1)					
Current smoking	.30	.01	.21	.01	<.000
Daily smoking	.12	.01	.05	.01	<.000
Predictors (L-1)					
Immigrant generation					<.001
Non-immigrant	.95	.01	.41	.05	
Second generation	.04	.00	.35	.03	
1.5 generation	.01	.00	.24	.03	
Distal mediators					
Contextual perceptual neighborhood characteristics (L-2)					
Acquaintanceship [3]					<.001
Low	.14	.02	.35	.04	
Medium	.60	.04	.52	.04	
High	.27	.04	.13	.02	
Informal control [3]					<.05
Low	.06	.01	.09	.02	
Medium	.69	.03	.48	.05	
High	.25	.03	.43	.05	
Public nuisance [3]					<.01
Low	.31	.03	.25	.03	
Medium	.55	.03	.47	.04	
High	.14	.02	.27	.04	
Contextual structural neighborhood characteristics (L-2)					
Residential stability [4]					<.001
Low	.09	.02	.56	.08	
Medium	.22	.04	.22	.05	
High	.68	.05	.19	.14	
Hispanic-immigrant concent. [4]					<.001
Low	.60	.05	.11	.03	
Medium	.38	.05	.40	.08	
High	.03	.01	.48	.09	
Concentrated poverty [4]					
Low	.49	.05	.44	.08	
Medium	.31	.05	.30	.08	
High	.19	.04	.26	.09	
Individual perceptual neighborhood characteristics (L-1)					
Acquaintanceship [5]	.10	.03	-.15	.05	<.001
Informal control [5]	-.07	.02	-.14	.06	<.01
Public nuisance [5]	-.04	.04	.16	.07	<.01
Parental cultural capital (L-1)					
Highest parental education [6]					<.001
Less than high school	.05	.01	.36	.03	
High school graduate	.26	.01	.21	.02	

Table 3 continues on the following page.

TABLE 3. SUMMARY STATISTICS: MEANS AND PROPORTIONS COMPARING NH WHITE AND HISPANIC ADOLESCENTS

N = 9,185	NH White (86%)		Hispanic (14%)		
Measures	**Mean/Prop** [1]	**SE**	**Mean/Prop** [1]	**SE**	**P-value** [2]
College graduate	.19	.01	.10	.01	
Prof. training post college	.17	.02	.07	.01	
Proximate Mediators (L-1)					
Social learning					
Parent smokes	.32	.01	.23	.02	<.01
Smoking friends					<.001
No friends	.53	.02	.60	.02	
One friend	.20	.01	.20	.01	
Two friends	.13	.01	.09	.01	
Three friends	.14	.01	.10	.01	
General strain					
Negative affect [5]	-.14	.02	.12	.05	<.001
Health strain [5]	.01	.01	-.18	.05	<.001
Negative life events [6]	.27	.01	.29	.03	
Victimization [5]	-.09	.02	.17	.04	<.01
Forced sex (only for females)	.03	.00	.02	.00	
Conflict with parents	.39	.01	.42	.02	
Social control					
Parent-family connectedness [5]	.09	.02	.06	.5	
Parent's closeness [5]	.00	.02	.14	.04	<.01
School connectedness [5]	.06	.02	.07	.05	
Public religiosity [5]	.03	.03	.06	.05	
Private religiosity [5]	-.02	.03	.15	.05	<.001
Conventional daily activities [6]	3.81	.03	3.69	.04	<.05
Self-Control					
Impulsivity [5]	.03	.02	-.02	.05	
Lack of restraint [5]	-.02	.03	-.06	.05	
Autonomy [5]	-.01	.04	-.24	.07	<.01
Lack of maternal supervision [5]	-.01	.02	-.10	.04	
Controls (L-1)					
Male	.51	.01	.49	.02	
Age	15.25	.14	15.31	.23	

Abbreviations: Prop: proportion, SE: linearized standard error, Conc: concentration, Prof: professional

Notes: *1.* Means are provided for continuous variables and proportions for categorical ones; all estimates are adjusted for complex survey design

2. Only p-values smaller than .05 are shown; they are calculated using the design-based F-test of independence for categorical variables and the adjusted Walt test of mean difference for continuous variables; two-tailed

3. Based on L-1, individual-level measures aggregated to the neighborhood level

4. Based on native L-2, neighborhood-level measures

5. L-1 standardized measures, set to mean= 0 and SD = 1

6. L-2 categorical measures with at least five levels that I treat as continuous.

TABLE 4. SUMMARY STATISTICS: MEANS AND PROPORTIONS COMPARING ADOLESCENTS BY IMMIGRANT GENERATION

N = 9,185	Non-immigrant (87%)		2nd generation (8%)		1.5 generation (4%)		
Measures	**Mean/Prop** [1]	**SE**	**Mean/Prop** [1]	**SE**	**Mean/Prop** [1]	**SE**	**P-value** [2]
Outcomes (L-1)							
Current smoking	.30	.01	.23	.02	.15	.02	<.001
Daily smoking	.12	.01	.06	.02	.04	.01	<.001
Predictors (L-1)							
Hispanic	.06	.01	.58	.06	.76	.06	<.001
Distal mediators							
Contextual perceptual neighborhood characteristics (L-2)							
Acquaintanceship [3]							<.001
Low	.14	.02	.28	.03	.43	.05	
Medium	.59	.04	.55	.05	.48	.06	
High	.26	.04	.18	.03	.09	.02	
Informal control [3]							<.001
Low	.06	.01	.09	.05	.05	.01	
Medium	.70	.03	.47	.04	.40	.06	
High	.25	.03	.44	.05	.55	.06	
Public nuisance [3]							
Low	.30	.03	.31	.04	.29	.04	
Medium	.55	.03	.49	.04	.47	.04	
High	.15	.02	.20	.04	.24	.05	
Contextual structural neighborhood characteristics (L-2)							
Residential stability [4]							<.001
Low	.11	.03	.43	.07	.64	.08	
Medium	.23	.04	.22	.05	.16	.05	
High	.66	.04	.35	.06	.19	.06	
Hispanic-immigrant concentration [4]							<.001
Low	.58	.05	.23	.05	.09	.03	
Medium	.38	.05	.42	.07	.39	.09	
High	.04	.01	.35	.08	.52	.10	
Concentrated poverty [4]							
Low	.49	.05	.44	.07	.38	.09	
Medium	.31	.05	.35	.07	.30	.09	
High	.20	.04	.20	.07	.32	.12	
Individual perceptual neighborhood characteristics (L-1)							
Acquaintanceship [5]	.09	.03	.00	.05	-.31	.08	<.001
Informal control [5]	-.07	.02	.11	.06	.34	.09	<.001
Public nuisance [5]	-.01	.04	-.03	.08	-.03	.09	
Parental cultural capital (L-1)							
Highest parental education [6]							<.001
L.t. high school	.06	.01	.29	.04	.45	.05	
High school grad.	.26	.01	.20	.02	.15	.03	
Some college	.33	.01	.24	.02	.20	.03	
College graduate	.19	.01	.13	.02	.11	.02	
Prof. training	.16	.02	.14	.02	.10	.02	

Table 4 continues on the following page

TABLE 4. SUMMARY STATISTICS: MEANS AND PROPORTIONS COMPARING ADOLESCENTS BY IMMIGRANT GENERATION

N = 9,185	Non-immigrant (87%)		2nd generation (8%)		1.5 generation (4%)		
Measures	**Mean/Prop** [1]	**SE**	**Mean/Prop** [1]	**SE**	**Mean/Prop** [1]	**SE**	**P-value** [2]
Proximate mediators (L-1)							
Social learning							
Parent smokes	.32	.01	.21	.02	.18	.03	<.001
Smoking friends							<.01
No friends	.53	.02	.59	.03	.64	.04	
One friend	.20	.02	.21	.02	.17	.02	
Two friends	.13	.01	.11	.01	.08	.01	
Three friends	.14	.01	.09	.01	.11	.02	
General strain							
Negative affect [5]	-.12	.02	.03	.07	.13	.07	<.001
Health strain [5]	.02	.01	-.19	.05	-.30	.08	<.001
Negative life events [6]	.27	.01	.30	.04	.17	.03	<.001
Victimization [5]	-.07	.02	.07	.05	-.02	.04	<.05
Forced sex (females)	.03	.00	.02	.01	.01	.01	
Conflict with parents	.39	.01	.42	.02	.36	.03	
Social control							
Par.-family connect. [5]	.09	.02	.08	.06	.08	.05	
Parent's closeness [5]	-.00	.02	.14	.04	.27	.07	<.001
School connect. [5]	.06	.02	-.00	.05	.19	.06	<.01
Public religiosity [5]	.03	.03	.06	.05	.08	.09	
Private religiosity [5]	-.01	.03	.12	.05	.15	.07	<.01
Conv. daily activities [6]	3.80	.03	3.85	.05	3.60	.07	<.01
Self-control							
Impulsivity [5]	.03	.02	-.03	.06	-.16	.04	<.001
Lack of restraint [5]	-.01	.02	-.14	.06	-.12	.07	
Autonomy [5]	.01	.04	-.23	.07	-.31	.12	<.01
Lack of maternal sup. [5]	-.01	.02	-.05	.05	-.14	.06	
Controls (L-1)							
Male	.51	.01	.50	.02	.48	.03	
Age	15.24	.13	15.18	.20	15.66	.29	<.05

Abbreviations: Prop: proportion, SE: linearized standard error: L.t.: less than; Grad: graduate; Prof: professional (post-college), Par: parent; Connect=connectedness; Conv: conventional; Sup: supervision

Notes:

1. Means are provided for continuous variables and proportions for categorical ones; all estimates are adjusted for complex survey design
2. Only p-values smaller than .05 are shown; they are calculated using the design-based F-test of independence for categorical variables and the adjusted Walt test of mean difference for continuous variables; two-tailed
3. Based on L-1, individual-level measures aggregated to the neighborhood level
4. Based on native L-2, neighborhood-level measures
5. L-1 standardized measures, set to mean= 0 and SD = 1
6. L-1 categorical measures with at least five levels that I treat as continuous.

TABLE 5. ASSOCIATION OF THE DISTAL MEDIATORS AND CONTROLS WITH THE OUTCOMES

N = 9,185	Current Smoking		Daily Smoking	
Measures	**OR/Coef.(SE)**[1]	**P-value**[2]	**OR/Coef.(SE)**[1]	**P-value**[2]
DISTAL MEDIATORS				
Contextual perceptual neighborhood characteristics (L-2)				
Acquaintanceship[3]				
Medium	1.10(.15)		1.25(.25)	
High	1.12(.15)		1.14(.24)	
Informal control[3]				
Medium	1.02(.15)		1.05(.22)	
High	.89(.14)		.94(.20)	
Public nuisance[3]		<.01		<.001
Medium	1.43(.14)		1.79(.25)	
High	1.29(.15)		1.64(.30)	
Contextual structural neighborhood characteristics (L-2)				
Residential stability[4]		<.05		<.05
Medium	1.26(.21)		1.43(.45)	
High	1.55(.24)		2.01(.58)	
Hispanic-immigrant concentration[4]		<.001		<.001
Medium	.80(.09)		.72(.12)	
High	.54(.08)		.24(.07)	
Concentrated poverty[4]				
Medium	1.11(.16)		1.19(.24)	
High	1.22(.18)		1.27(.26)	
Individual perceptual neighborhood characteristics (L-1)				
Acquaintanceship[5]	-.03(.03)		-.09(.04)	<.05
Informal control[5]	.04(.04)		.01(.05)	
Public nuisance[5]	.10(.03)	<.01	.18(.05)	<.001
Parental cultural capital (L-1)				
Highest parental education[6]		<.01		<.001
High school graduate	1.15(.16)		1.23(.24)	
Some college	1.11(.16)		1.02(.19)	
College graduate	.87(.13)		.78(.15)	
Prof. training post college	.79(.12)		.54(.12)	
CONTROLS (L-1)[7]				
Male	.92(.06)		.97(.03)	
Age	.24(.02)	<.001	.36(.04)	<.001

I present table notes and abbreviations in the following page.

NOTES AND ABBREVIATIONS FOR TABLE 5

NOTES:

1. Odds ratios provided for categorical variables and coefficients for continuous ones; all estimates are adjusted for complex survey design; the reference category for all L-2 categorical measures is *low.*
2. Only p-values smaller than .05 are shown; they are calculated using the design-based F-test of independence for categorical variables and the adjusted Walt test of mean difference for continuous variables; two-tailed
3. Based on L-1, individual-level measures aggregated to the neighborhood level
4. Based on native L-2, neighborhood-level measures
5. L-1 standardized measures, set to mean= 0 and SD = 1
6. Reference category is *less than high school.*
7. Odds ratio is shown for *male;* coefficient is shown for *age.*

ABBREVIATIONS**:** OR: odds ratio, Coef: coefficient, SE: linearized standard error, Prof: professional.

TABLE 6. ASSOCIATION OF DISTAL AND PROXIMATE MEDIATORS: SOCIAL LEARNING AND SELF-CONTROL

	Social Learning		**Self-Control**			
Proximate Mediators	Parent smokes	Friends smoke	Impulsivity [3]	Lack of restraint [3]	Autonomy [3]	Lack mat. sup. [3]
Distal Mediators	OR(SE)	OR(SE)	Coef.(SE)	Coef.(SE)	Coef.(SE)	Coef.(SE)
L-2 Perceptual Neighborhood Characteristics						
Acquaintanceship [1]						
Medium	1.23(.13)	1.19(.14)	-.02(.04)	-.01(.05)	.06(.07)	-.03(.04)
High	1.42(.20) *	1.14(.16)	-.04(.05)	-.09(.05) *	-.01(.08)	-.10(.05)
Informal control [1]						
Medium	.84(.13)	.95(.14)	-.12(.08)	-.04(.07)	.09(.08)	.13(.05) *
High	.61(.10) **	.79(.12)	-.14(.09)	-.04(.08)	.11(.09)	.14(.05) *
Public nuisance [1]						
Medium	1.44(.14) ***	1.50(.15) ***	-.06(.03)	.04(.03)	-.00(.05)	-.03(.03)
High	2.09(.24) ***	1.77(.21) ***	-.05(.05)	-.02(.05)	-.05(.07)	-.12(.05) *
L-2 Structural Neighborhood Characteristics						
Hispanic-immigrant conc.[2]						
Medium	.74(.09) *	.81(.10)	.01(.04)	.01(.05)	.04(.07)	.05(.04)
High	.56(.11) **	.63(.10) **	-.12(.06) *	-.06(.07)	-.22(.12)	-.13(.06) *
Residential stability [2]						
Medium	1.13(.21)	1.06(.17)	-.14(.07) *	.14(.06) *	-.03(.04)	.05(.07)
High	1.47(.22) *	1.36(.19) *	-.16(.06) **	.07(.05)	-.02(.03)	.07(.05)
Concentrated poverty [2]						
Medium	1.22(.16)	1.32(.20)	-.07(.04)	-.07(.05)	-.07(.08)	-.08(.05)
High	1.61(.23) **	1.61(.23) **	-.22(.05) ***	-.16(.06) *	-.08(.09)	-.22(.05) ***
L-1 Perception of Neighborhood						
Acquaintanceship [3]	1.04(.04)	.97(.03)	-.08(.01) ***	-.12(.02) ***	-.04(.01) ***	-.05(.01) ***
Informal control [3]	.84(.03) ***	.99(.03)	.02(.01)	-.00(.01)	.02(.02)	+.02(.01)
Public nuisance [3]	1.34(.05) ***	1.23(.05) ***	.01(.02)	.04(.02) **	-.04(.02)	-.03(.01)
L-1 Parental Characteristics						
Highest parental educ.[5]						
High school graduate	1.14(.19)	1.08(.13)	-.02(.05)	-.09(.06)	.27(.08) **	.23(.05) ***
Some college	.77(.12)	.87(.10)	.14(.05) **	.02(.06)	.27(.08) ***	.32(.05) ***
College graduate	.43(.08) ***	.62(.08) ***	.06(.05)	.00(.06)	.21(.09) *	.33(.05) ***
Prof. training	.19(.03) ***	.49(.07) ***	.07(.06)	-.04(.06)	.31(.09) ***	-.37(.06) ***

Abbreviations: Est=estimate, SE=linearized standard error, Conc=concentration, Educ=education, Prof=professional, Mat=maternal, Sup=supervision

Notes: 1. Based on individual measures rolled up to the neighborhood level and categorized into tertiles; the reference category for each one is "Low"

2. Based on native neighborhood-level measures and categorized into tertiles; the reference category for each one is "Low"

3. Standardized measures, set to mean=0 and SD=1

4. Reference category is less than high school

Significance legend: * for p<.05; ** for p<.01, *** for p<.001

TABLE 7. ASSOCIATION OF DISTAL AND PROXIMATE MEDIATORS: GENERAL STRAIN

	Proximate Mediators					
	Negative affect[4]	Health strain[4]	Neg. life events	Victimization[4]	Forced sex[6]	Conflict w par.
Distal Mediators	Est.(SE)	Est.(SE)	Est.(SE)	Est.(SE)	OR(SE)	OR(SE)
L-2 Perceptual Neighborhood Characteristics						
Acquaintanceship [1]						
Medium	-.05(.04)	-.02(.04)	.00(.03)	-.05(.04)	1.06(.23)	.94(.08)
High	-.12(.04)	-.00(.05)	-.03(.03)	-.07(.06)	.87(.24)	.83(.07) *
Informal control [1]						
Medium	-.13(.06) *	-.05(.05)	-.08(.04)	-.24(.07) **	.48(.13) **	1.03(.11)
High	-.14(.06) *	-.10(.05) *	-.11(.04) *	-.28(.07) ***	.37(.11) **	1.00(.12)
Public nuisance [1]						
Medium	.12(.03) ***	-.00(.03)	.04(.02) *	.06(.03) *	1.09(.24)	1.07(.07)
High	.23(.05) ***	-.05(.05)	.08(.03) *	.30(.05) ***	1.21(.31)	1.19(.10)
L-2 Structural Neighborhood Characteristics						
Hispanic-immigrant conc.[2]						
Medium	.01(.04)	-.02(.03)	.03(.03)	.03(.04)	.99(.22)	1.05(.08)
High	.29(.08) ***	-.20(.06) **	.01(.03)	.30(.07) ***	.96(.36)	.98(.12)
Residential stability [2]						
Medium	-.14(.07) *	.14(.06) *	-.03(.04)	-.17(.07) *	1.20(.60)	1.02(.10)
High	-.16(.06) **	.07(.05)	-.02(.03)	-.23(.05) ***	.89(.26)	.95(.09)
Concentrated poverty [2]						
Medium	.03(.05)	-.01(.04)	.02(.03)	.08(.05)	.86(.21)	.93(.07)
High	.07(.05)	-.05(.04)	-.05(.03)	.13(.05) **	1.16(.28)	.97(.09)
L-1 Perception of Neighborhood						
Acquaintanceship [3]	-.13(.01) ***	-.07(.02) ***	-.00(.01)	.01(.01)	1.02(.08)	.96(.03)
Informal control [3]	.04(.02) *	.00(.02)	-.01(.01)	-.04(.01) **	1.12(.09)	1.00(.03)
Public nuisance [3]	.09(.02) ***	.03(.01) *	.04(.01) **	.13(.02) ***	1.23(.10) *	1.14(.04) ***
L-1 Parental Characteristics						
Highest parental educ.[5]						
High school graduate	-.28(.05) ***	.06(.07)	-.03(.04)	-.17(.06) **	.71(.19)	.86(.09)
Some college	-.35(.05) ***	.10(.07)	-.02(.04)	-.19(.06) **	.96(.26)	.95(.10)
College graduate	-.44(.05) ***	.09(.07)	-.06(.04)	-.33(.06) ***	.57(.18)	.88(.09)
Prof. training	-.53(.05) ***	.14(.08)	-.09(.04) *	-.44(.05) ***	.40(.12) **	.79(.08) *

Abbreviations: SE=linearized standard error, Conc=concentration, Educ=education, Prof=professional, Neg=negative, Par=parents

Notes: 1. Based on individual measures rolled up to the neighborhood level and categorized into tertiles; the reference category for each one is "Low"

2. Based on native neighborhood-level measures and categorized into tertiles; the reference category for each one is "Low"

3. Standardized measures, set to mean=0 and SD=1

4. Reference category is less than high school

Significance legend: * for p<.05; ** for p<.01, *** for p<.001

TABLE 8. ASSOCIATION OF DISTAL AND PROXIMATE MEDIATORS: SOCIAL CONTROL

	Proximate Mediators					
	Par-fam conn.[3]	Parent's close.[3]	School conn.[3]	Public rel.[3]	Private rel.[3]	Daily activities
Distal Mediators	Coef.(SE)	Coef.(SE)	Coef.(SE)	Coef.(SE)	Coef.(SE)	Coef.(SE)
L-2 Perceptual Neighborhood Characteristics						
Acquaintanceship [1]						
Medium	.08(.05)	-.12(.04) **	-.04(.05)	.03(.07)	.02(.06)	.08(.05)
High	.14(.06) *	-.16(.04) ***	-.09(.06)	.15(.08)	.07(.08)	.14(.05) *
Informal control [1]						
Medium	.02(.06)	-.17(.06) **	.09(.06)	.08(.06)	-.01(.06)	.02(.06)
High	-.01(.06)	-.18(.06) **	.16(.07) *	.12(.06) *	.03(.07)	-.01(.06)
Public nuisance [1]						
Medium	-.10(.03) **	-.05(.03)	-.15(.04) ***	-.10(.06)	-.10(.05)	-.07(.05)
High	-.13(.05) **	-.10(.05) *	-.16(.05) **	-.27(.07) ***	-.22(.07) **	-.17(.07) *
L-2 Structural Neighborhood Characteristics						
Hispanic-immigrant conc.[2]						
Medium	.03(.05)	.08(.03) *	-.01(.05)	-.03(.07)	.02(.07)	.05(.06)
High	-.10(.07)	.21(.04) ***	-.05(.07)	-.10(.08)	.06(.08)	-.14(.06) *
Residential stability [2]						
Medium	.01(.07)	-.06(.05)	.02(.07)	-.03(.09)	-.11(.09)	.11(.07)
High	.01(.05)	-.09(.04) *	.05(.06)	-.02(.08)	-.11(.07)	.10(.06)
Concentrated poverty [2]						
Medium	.02(.05)	-.00(.04)	-.05(.05)	.07(.07)	.05(.07)	-.07(.06)
High	.00(.06)	-.02(.05)	-.02(.06)	.09(.10)	.11(.09)	-.24(.07) **
L-1 Perception of Neighborhood						
Acquaintanceship [3]	.15(.01) ***	-0.1(.02)	.18(.02) ***	.10(.02) ***	.09(.02) ***	.16(.01) ***
Informal control [3]	-.04(.01) **	-.08(.01) ***	-.04(.01) **	-.02(.02)	-.03(.02)	-.06(.02) **
Public nuisance [3]	-.09(.01) ***	0.12(.02) ***	-.09(.01) ***	-0.7(.02) ***	0.07(.02) ***	-.06(.02) **
L-1 Parental Characteristics						
Highest parental educ.[4]						
High school graduate	.05(.05)	-.11(.05) *	.03(.06)	-.00(.07)	-.03(.07)	.08(.05)
Some college	.01(.05)	-.13(.06) *	.02(.06)	.07(.07)	.02(.07)	.17(.05) **
College graduate	.09(.06)	-.07(.06)	.10(.07)	.27(.07) ***	.16(.07) *	.27(.06) ***
Prof. training	.11(.06)	-.05(.06)	.26(.07) ***	.32(.09) ***	.14(.09)	.39(.06) ***

Abbreviations: SE=linearized standard error, Conc=concentration, Educ=education, Prof=professional, Conn=connectedness, Close=closeness, Rel=religiosity

Notes: 1. Based on individual measures rolled up to the neighborhood level and categorized into tertiles; the reference category for each one is "Low"

2. Based on native neighborhood-level measures and categorized into tertiles; the reference category for each one is "Low"

3. Standardized measures, set to mean=0 and SD=1

4. Reference category is less than high school

Significance legend: * for p<.05; ** for p<.01, *** for p<.001

TABLE 9. INTERCEPT-ONLY TWO-LEVEL MODEL FOR CURRENT SMOKING

Model	**Intercept only**
	Coefficient (SE)
Fixed part	
Intercept (γ_{00})	-.97(.03)
Random part	
σ^2_{u0}	.21(.04)
ICC (Variance explained by σ^2_{u0})	.06(.01)

Note: Robust standard errors.

TABLE 10. LOGISTIC MLE ODDS RATIOS FOR CURRENT SMOKING: MODEL SERIES A, TESTING HISPANIC ETHNICITY, IMMIGRANT GENERATION, DISTAL PREDICTORS, AND SOCIAL LEARNING MEDIATORS

Model [1]:	**A1**	**A2**	**A3**	**A4**	**A5**
Variables	OR(SE)				
Predictors					
Hispanic	.58(.07)***	.75(.10)*	.67(.09)**	.70(.09)**	.82(.13)
Immigrant generation [2]					
2nd generation		.77(.10)	.77(.11)	.80(.11)	.84(.15)
1.5 generation		.44(.09)***	.41(.09)***	.44(.09)***	.43(.11)***
Distal Mediators					
Acquaintanceship [3]			1.00(.03)	1.00(.03)	1.01(.04)
Informal control [3]			1.03(.03)	1.04(.03)	1.06(.04)
Public nuisance [3]			1.09(.04)*	1.07(.03)*	.98(.03)
Highest parental educ. [4]					
High school graduate			.89(.12)	.91(.12)	.96(.16)
Some college			.86(.11)	.91(.11)	1.09(.16)
College graduate			.67(.09)**	.74(.10)*	1.02(.17)
Professional training			.62(.08)***	.71(.09)**	1.04(.16)
Proximate Mediators: Social Learning					
Parent smokes				1.49(.11)***	1.12(.09)
Smoking friends [4]					
One friend					4.03(.40)***
Two friends					11.07(1.18)***
Three friends					23.57(2.49)***
Controls					
Male	.86(.06)*	.86(.06)*	.85(.06)*	.86(.06)*	.84(.07)*
Age	1.28(.03)***	1.28(.03)***	1.28(.03)***	1.29(.03)***	1.16(.02)***
Model information [5]					
Model p-value [6]	<.001	<.001	<.001	<.001	<.001
Pseudo R-squared	.03	.03	.04	.05	.23
Mean / Max VIF	1.01/1.01	1.32/1.73	1.68/2.91	1.65/2.92	1.56/2.92
AIC	11,272	11,215	11,118	1,.055	8.600

NOTES:

1. Weighted N = 9,185; overall probability of *current smoking* is 29 percent; constant not reported; significance for two-tailed tests: *p<.05;**p<.01; ***p<.001
2. Reference category: Non-immigrant
3. Measures standardized to mean=0 and SD=1
4. Reference category: Less than high school
5. Reference category: None
6. Models A2 through A5 are nested in model A1; pseudo R-square obtained for the logit model without design adjustment; VIF and AIC obtained by running as an unadjusted OLS model
7. P-values shown for model F-tests as follows: A1, for the model; A2 through A5, for the addition of each measure or block of measures

ABBREVIATIONS: OR=Odds ratio, SE=Linearized standard error, VIF=Variance inflation factor, AIC=Aikake information criterion.

TABLE 11. LOGISTIC MLE ODDS RATIOS FOR CURRENT SMOKING: MODEL SERIES B, TESTING GENERAL STRAIN MEDIATORS

Model[1]: **Variables**	**B1** OR(SE)	**B2**	**B3**
Predictors			
Hispanic	.67(.09)**	.64(.09)**	.56(.09)**
Immigrant generation [2]			
2nd generation	.77(.11)	.77(11)	.75(.11)
1.5 generation	.41(.09)***	.43(.09)***	.44(.10)***
Distal Mediators			
Acquaintanceship [3]	1.00(.03)	1.06(.04)	1.05(.04)
Informal control [3]	1.03(.03)	1.04(.03)	1.06(.04)
Public nuisance [3]	1.09(.04)*	1.05(.03)	.99(.04)
Highest parental education [4]			
High school graduate	.89(.12)	1.01(.13)	1.04(.14)
Some college	.86(.11)	.98(.13)	.99(.13)
College graduate	.67(.09)**	.79(.11)	.84(12)
Professional training	.62(.08)**	.75(.10)*	.83(.11)
Proximate Mediators: General Strain			
Negative affect [3]		1.47(.06)***	1.35(.05)***
Health strain [3]		1.20(.04)***	1.15(.04)***
Negative life events		1.42(.08)***	1.27(.07)***
Victimization [3]			1.51(.06)***
Forced sex (females)			1.79(.32)***
Conflict with parents			1.61(.12)**
Controls			
Male	.85(.06)*	1.05(.07)	.87(.06)
Age	1.28(.03)***	1.28(.03)***	1.29(.03)***
Model information [5]			
Model p-value [6]	<.001	<.001	<.001
Pseudo R-squared	.04	.08	.11
Mean / Max VIF	1.68/2.91	1.61/2.93	1.54/2.94
AIC	11,118	10,633	10,292

NOTES:

1. N = 9,185; overall probability of *current smoking* is 29 percent; constant not reported; significance for two-tailed tests: *p<.05;**p<.01; ***p<.001
2. Reference category: Non-immigrant
3. Measures standardized to mean=0 and SD=1
4. Reference category: Less than high school
5. Models B2 and B3 are nested in model B1; pseudo R-square obtained for the logit model without design adjustment; VIF and AIC obtained by running as an unadjusted OLS model
6. P-values shown for model F-tests as follows: B1, for the model; B2 and B3, for the addition of each measure or block of measures

ABBREVIATIONS: OR=Odds ratio, SE=Linearized standard error, VIF=Variance inflation factor, AIC=Akaike information criterion.

TABLE 12. LOGISTIC MLE ODDS RATIOS FOR CURRENT SMOKING: MODEL SERIES C, TESTING SOCIAL CONTROL MEDIATORS

Model [1]:	**C1**	**C2**	**C3**	**C4**
Variables	**OR(SE)**			
Predictors				
Hispanic	.67(.09)**	.69(.10)**	.71(.10)*	.70(.10)*
Immigrant generation [2]				
2nd generation	.77(.11)	.75(.10)*	.76(.10)*	.76(.10)*
1.5 generation	.41(.09)***	.46(.09)***	.47(.10)***	.47(.10)***
Distal Mediators				
Acquaintanceship [3]	1.00(.03)	1.10(.04)**	1.12(.04)**	1.12(.04)**
Informal control [3]	1.03(.03)	.99(.04)	.99(.04)	.99(.04)
Public nuisance [3]	1.09(.04)*	1.01(.04)	1.00(.04)	1.00(.04)
Highest parental education [4]				
High school graduate	.89(.12)	.88(.12)	.89(.12)	.89(.12)
Some college	.86(.11)	.83(.11)	.85(.11)	.86(.11)
College graduate	.67(.09)**	.67(.09)**	.71(.10)*	.72(.10)*
Professional training	.62(.08)***	.66(.09)**	.71(.09)*	.72(.10)*
Proximate Mediators: Social Control				
Parent-family connected. [3]		.84(.03)***	.85(.03)***	.86(.03)***
Parent's closeness [3]		.71(.02)***	.71(.02)***	.71(.02)***
School connectedness [3]		.66(.02)***	.68(.02)***	.68(.02)***
Public religiosity [3]			.82(.04)***	.82(.04)***
Private religiosity [3]			.97(.05)	.97(.05)
Conventional daily activities				.94(.04)
Controls				
Male	.85(.06)*	.87(.06)	.85(.06)*	.85(.06)*
Age	1.28(.03)***	1.27(.03)***	1.26(.03)***	1.25(.03)***
Model information [5]				
Model p-value [6]	<.001	<.001	<.001	>.05
Pseudo R-squared	.04	.10	.11	.11
Mean / Max VIF	1.68/2.91	1.60/2.92	1.71/2.92	1.68/2.92
AIC	11,118	10,455	10,385	10,375

NOTES:

1. Weighted N = 9,185; overall probability of *current smoking* is 29 percent; constant not reported; significance for two-tailed tests: **p*<.05;***p*<.01; ****p*<.001
2. Reference category: Non-immigrant
3. Measures standardized to mean=0 and SD=1
4. Reference category: Less than high school
5. Models C2 through C4 are nested in model C1; pseudo R-square obtained for the logit model without design adjustment; VIF and AIC obtained by running as an unadjusted OLS model
6. P-values shown for model F-tests as follows: C1, for the model; C2 through C4, for the addition of each measure or block of measures

ABBREVIATIONS: OR=Odds ratio, SE=Linearized standard error, VIF=Variance inflation factor, Connected=connectedness, AIC=Akaike information criterion.

TABLE 13. LOGISTIC MLE ODDS RATIOS FOR CURRENT SMOKING: MODEL SERIES D, TESTING SELF-CONTROL MEDIATORS

Model[1]: **Variables**	**D1** OR(SE)	**D2**	**D3**
Predictors			
Hispanic	.67(.09)**	.65(.09)**	.66(.09)**
Immigrant generation[2]			
2nd generation	.77(.11)	.83(.12)	.83(.12)
1.5 generation	.41(.09)***	.43(.09)***	.44(.10)***
Distal Mediators			
Acquaintanceship [3]	1.00(.09)	1.09(.04)*	1.09(.04)***
Informal control [3]	1.03(.03)	1.04(.04)	1.04(.03)
Public nuisance [3]	1.09(.04)*	1.07(.04)*	1.08(.04)*
Highest parental education [4]			
High school graduate	.89(.12)	.96(.13)	.92(.12)
Some college	.86(.11)	.86(.11)	.81(.10)
College graduate	.67(.09)**	.66(.09)**	.63(.09)**
Professional training	.62(.09)**	.62(.08)***	.58(.08)***
Proximate Mediators: Self-Control			
Impulsivity [3]		1.07(.04)*	1.07(.04)
Lack of restraint [3]		1.76(.06)***	1.75(.06)***
Autonomy [3]			1.13(.04)**
Lack of maternal sup.[3]			.91(.03)**
Controls			
Male	.85(.06)*	.74(.06)***	.75(.06)***
Age	1.28(.03)***	1.28(.03)***	1.25(.03)***
Model information [5]			
Model p-value [6]	<.001	<.001	<.001
Pseudo R-squared	.04	.09	.09
Mean / Max VIF	1.68/2.91	1.61/2.91	1.56/2.95
AIC	11,118	10,580	10,545

NOTES:

1. N = 9,185; overall probability of *current smoking* is 29 percent; constant not reported; significance for two-tailed tests: *p<.05;**p<.01; ***p<.001
2. Reference category: Non-immigrant
3. Measures standardized to mean=0 and SD=1
4. Reference category: Less than high school
5. Models D2 and D3 are nested in model 1; pseudo R-square obtained for the logit model without design adjustment; VIF and AIC obtained by running as an unadjusted OLS model
6. P-values shown for model F-tests as follows: D1, for the model; D2 and D3, for the addition of each measure or block of measures

ABBREVIATIONS: OR=Odds ratio, SE=Linearized standard error, VIF=Variance inflation factor, AIC=Akaike information criterion, Sup.= supervision.

TABLE 14. LOGISTIC MLE ODDS RATIOS FOR CURRENT SMOKING, MODEL SERIES E, TESTING ALL PROXIMATE MEDIATORS IN SEQUENCE

Model [1]: **Variables [2]**	**E1** OR(SE)	**E2**	**E3**	**E4**	**E5**
Predictors					
Hispanic	.67(.09)**	.82(.13)	.73(.12)	.77(.13)	.76(.12)
Immigrant generation [2]					
1.5 generation	.41(.09)***	.43(.11)***	.44(.11)**	.47(.11)**	.47(.11)**
Distal Mediators					
Acquaintanceship [3]	1.00(.03)	1.01(.04)	1.05(.04)	1.08(.04)*	1.09(.04)*
Public nuisance [3]	1.09(.04)*	.98(.03)	.93(.03)*	.91(.03)**	.92(.03)*
Highest parental educ. [4]					
College graduate	.67(.09)**	1.02(.17)	1.10(.18)	1.09(.18)	1.02(.17)
Professional training	.62(.08)***	1.04(.16)	1.17(.18)	1.16(.18)	1.08(.17)
Proximate Mediators: Social Learning					
Smoking Friends [5]					
One friend		4.03(.40)***	3.63(.37)***	3.46(.36)***	3.41(.35)***
Two friends		11.07(1.08)***	9.72(1.02)***	8.92(.94)***	8.76(.93)***
Three friends		23.57(2.49)***	19.01(2.08)***	16.43(1.72)***	15.65(1.62)***
Proximate Mediators: General Strain					
Negative affect [3]			1.24(.06)***	1.16(.07)**	1.12(.06)
Health strain [3]			1.23(.05)***	1.23(.05)***	1.16(.05)**
Victimization [3]			1.26(.06)***	1.21(.05)***	1.20(.05)***
Forced sex (females) [3]			1.55(.34)*	1.40(.31)	1.42(.32)
Conflict with parents			1.56(.13)***	1.49(.13)***	1.45(.13)***
Proximate Mediators: Social Control					
Parent's closeness [3]				.85(.03)***	.85(.03)***
School connect. [3]				.87(.04)**	.92(.04)
Proximate Mediators: Self-Control					
Lack of restraint [3]					1.29(.05)***
Controls					
Male	.85(.06)*	.84(.07)*	.91(.08)	.88(.07)	.82(.07)*
Age	1.28(.03)***	1.16(.02)***	1.18(.03)***	1.18(.03)***	1.16(.03)***
Model information [8]					
Model p-value [9]	<.001	<.001	<.001	<.001	<.001
Pseudo R-squared	.04	.23	.26	.27	.28
Mean / Max VIF	1.68/2.91	1.56/2.92	1.49/2.94	1.55/2.95	1.53/2.99
AIC	11,118	8,600	8,268	8,171	8,115

I present table notes and abbreviations in the following page.

NOTES AND ABBREVIATIONS FOR TABLE 14

NOTES:

1. N = 9,185; overall probability of *current smoking* is 29 percent; constant not reported; significance for two-tailed tests: **p*<.05;***p*<.01; ****p*<.001
2. All hypothesized variables for each theory are included in the model but only those that are significant in one of the five models are displayed in this table.
3. Reference category: Non-immigrant
4. Measures standardized to mean=0 and SD=1
5. Reference category: Less than high school
6. Reference category: None
7. Models E2 through E5 are nested in model E1; pseudo R-square obtained for the logit model without design adjustment; VIF and AIC obtained by running as an unadjusted OLS model
8. P-values shown for model F-tests as follows: E1, for the model; E2 through E5, for the addition of each measure or block of measures

ABBREVIATIONS: OR=Odds ratio, SE=Linearized standard error, Educ=education, Connect=connectedness, VIF=Variance inflation factor, AIC=Akaike information criterion.

TABLE 15. LOGISTIC MLE ODDS RATIOS FOR DAILY SMOKING: MODEL SERIES F, TESTING ALL PROXIMATE MEDIATORS IN SEQUENCE

Model [1]: / **Variables [2]**	**F1** OR(SE)	**F2**	**F3**	**F4**	**F5**
Predictors					
Hispanic	.39(.09)***	.51(.12)**	.50(.12)**	.48(.12)**	.47(.12)**
Immigrant generation [3]					
1.5 generation	.35(.15)*	.40(.17)*	.44(.18)	.42(.17)*	.42(.17)*
Distal Mediators					
Public nuisance [4]	1.18(.06)***	1.07(.06)	1.03(.06)	1.01(.06)	1.01(.06)
Highest parental educ. [5]					
College graduate	.54(.09)***	.98(.20)	1.00(.21)	1.04(.23)	1.02(.23)
Professional training	.38(.08)***	.78(.18)	.85(.20)	.91(.22)	.88(.22)
Proximate Mediators: Social Learning					
Parent smokes		1.71(.18)***	1.58(.19)***	1.50(.19)**	1.50(.18)**
Smoking Friends [6]					
One friend		4.81(.98)***	4.23(.86)***	3.97(.82)***	3.91(.81)***
Two friends		18.58(3.27)***	14.80(2.60)***	13.75(2.40)***	13.64(2.40)***
Three friends		45.81(7.89)***	32.48(5.52)***	29.36(5.05)***	28.39(4.92)***
Proximate Mediators: Social Control					
Parent's closeness [4]			.79(.05)***	.81(.05)***	.81(.05)***
School connectedness [4]			.79(.04)***	.87(.05)*	.89(.05)*
Public religiosity [4]			.63(.05)***	.63(.05)***	.64(.05)***
Private religiosity [4]			1.20(.08)*	1.16(.09)*	1.17(.09)*
Conv. daily activities			.84(.04)**	.81(.04)***	.81(.04)***
Proximate Mediators: General Strain					
Health strain [4]				1.22(.07)***	1.17(.06)**
Victimization [4]				1.14(.06)*	1.14(.06)*
Conflict with parents				1.42(.17)**	1.41(.18)**
Proximate Mediators: Self-Control					
Lack of restraint [4]					1.15(.07)*
Autonomy [4]					1.19(.07)**
Controls					
Age	1.45(.05)***	1.36(.06)***	1.32(.06)***	1.35(.06)***	1.32(.06)***
Model information [9]					
Model p-value [10]	<.001	<.001	<.001	<.001	<.001
Pseudo R-squared	.08	.30	.33	.34	.35
Mean / Max VIF	1.68/2.91	1.56/2.92	1.60/2.93	1.55/2.95	1.53/2.99
AIC	3,774	1,887	1,719	1,601	1,599

I present table notes and abbreviations in the following page.

NOTES AND ABBREVIATIONS FOR TABLE 15

NOTES*:*

1. N = 9,185; overall probability of *daily smoking* is 11 percent; constant not reported; significance for two-tailed tests: **p*<.05;***p*<.01; ****p*<.001

2. All hypothesized variables for each theory are included but only those that are significant in at least one of the five models are displayed.

3. Reference category: Non-immigrant

4. Measures standardized to mean=0 and SD=1

5. Reference category: Less than high school

6. Reference category: None

7. Reference category: Never

8. Reference category: Neither

9. Models F2 through F5 are nested in model F1; pseudo R-square obtained for the logit model without design adjustment; VIF and AIC obtained by running as an unadjusted OLS model

10. P-values shown for model F-tests as follows: F1, for the model; F2 through F5, for the addition of each measure or block of measures

ABBREVIATIONS: OR=Odds ratio, SE=Linearized standard error, Educ=education, Connect=connectedness, VIF=Variance inflation factor, AIC=Akaike information criterion.

TABLE 16. EVIDENTIARY SUPPORT FOR THE RESEARCH HYPOTHESES

Hypothesis		Evidence in Table(s):	Does evidence support the hypothesis?	Important Exceptions
H1.	Hispanic youth are less likely to live in co-ethnic, supportive communities than NH white youth.	3	Yes, mostly	• More Hispanic teens live in neighborhoods with high L-2 *informal control*
H2.	Immigrant youth are less likely to live in supportive communities than non-immigrant youth.	4	Yes, mostly	• More immigrant teens live in neighborhoods with high L-1 and L-2 *informal control*
H3.	Immigrant and Hispanic youth are less likely to have parents with high cultural capital (measured as parental education) than NH white or non-immigrant youth.	3, 4	Yes	
H4.	Youth living in co-ethnic, supportive communities are less likely to smoke cigarettes.	5	Yes, mostly	• Living in neighborhoods with high L-2 *residential stability* is associated with higher risk of smoking
H5.	Youth whose parents have high cultural capital (measured as parental education) are less likely to smoke cigarettes.	5	Yes	• Parental education categories *high school graduate* and *some college* are associated with higher risk of smoking
H6.	Youth living in co-ethnic, supportive communities have less risk of exposure to pro-smoking SL, of experiencing criminogenic GS, and of having low SelfC. (See abbreviations at the bottom of the table)	6, 7, 8	Yes, mostly (for SL, GS, and SoC) Mixed (for SelfC)	• Teens living in neighborhoods with higher L-2 *informal control* have less *maternal supervision*, while teens who live in neighborhoods with higher L-2 *poverty* have more

TABLE 16. EVIDENTIARY SUPPORT FOR THE RESEARCH HYPOTHESES

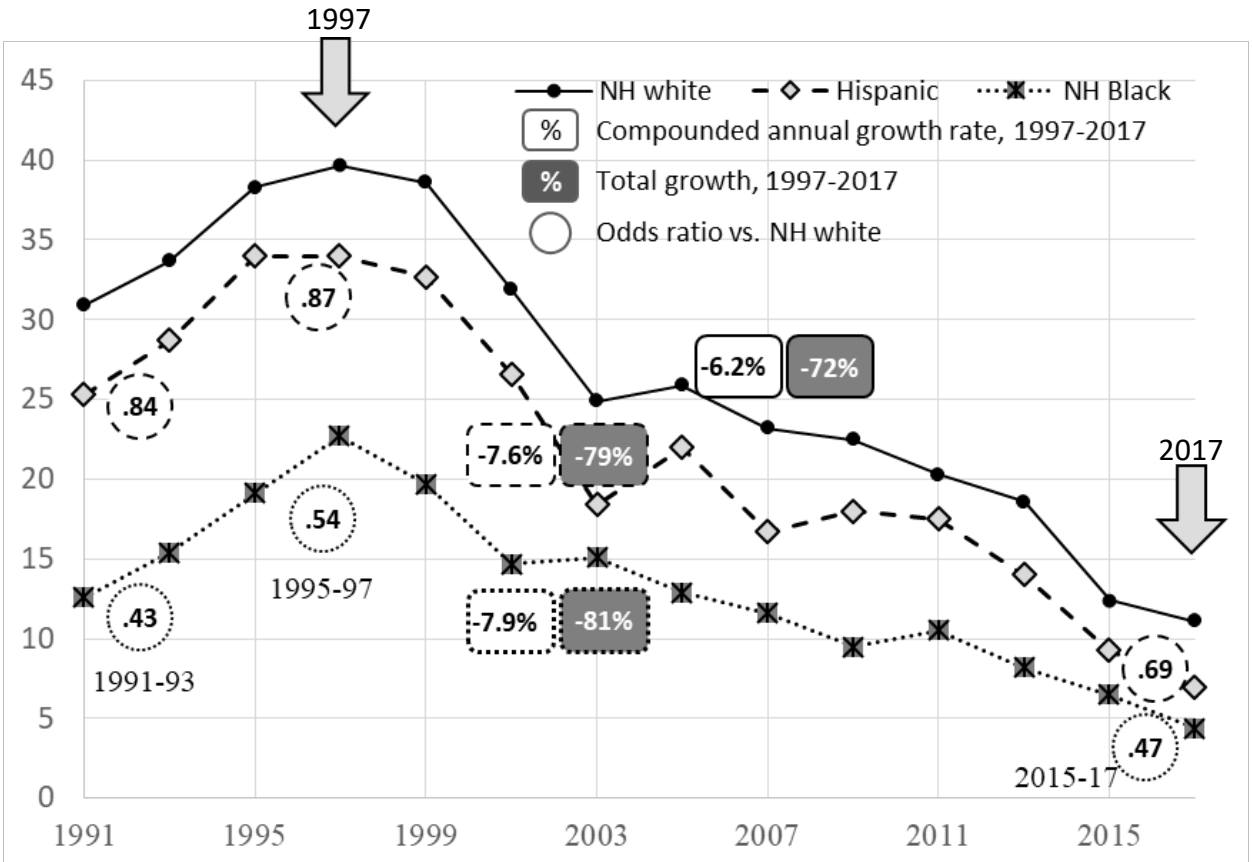
Hypothesis		Evidence in Table(s):	Does evidence support the hypothesis?	Important Exceptions
H7.	Youth living in co-ethnic, supportive communities are more likely to have strong SocC bonds.	6, 7, 8	Yes, mostly	• Parents in neighborhoods with *high acquaintanceship* report lower *parent's closeness*
H8.	Youth whose parents have high cultural capital (measured as parental education) have less risk of exposure to pro-smoking SL and criminogenic GS, and to have low SelfC.	6, 7, 8	Yes (for SL and GS) Mixed (for SelfC)	• Teens whose parents have a *college degree* or *professional training* have higher autonomy
H9.	Youth whose parents have high cultural capital (measured as parental education) are more likely to have strong SocC bonds.	6, 7, 8	Yes, mostly	• Parents with a *college degree* or *professional training* report lower *parent's closeness*
H10.	Youth with higher exposure to pro-smoking SL, criminogenic GS, and with low SelfC are more likely to smoke cigarettes.	10, 12, 13	Yes	
H11.	Youth with strong SocC bonds are less likely to smoke cigarettes.	11	Yes	
H12.	The association of Hispanic ethnicity and the outcome is mediated community characteristics parental education.	10	Yes (only at L-1)	

TABLE 16. EVIDENTIARY SUPPORT FOR THE RESEARCH HYPOTHESES

Hypothesis	Evidence in Table(s):	Does evidence support the hypothesis?	Important Exceptions
H13. The association of Hispanic ethnicity and the outcome is mediated by adolescents' individual characteristics and social relations (that is, SL, GS, SocC, and SelfC).	10-15	Yes (for all prox. moderators together) Yes (for SL and Hisp; Self-C and Hisp)	• Not for GS • Not for 1.5-generation and SelfC • Not for the association of SL and 1.5generation
H14. The association of neighborhood- and individual-level community characteristics and parental education with the outcome are mediated by adolescents' individual characteristics and social relations (SL, GL, SocC, SelfC).	14	Mixed (yes for parental ed. & all prox. moderators together; not for nhood. chars.) Yes (for SL, parental ed.-GS, neighborhood-SocC)	• Not for SelfC • Not for the associations of nhood. chars. with GS or SocC

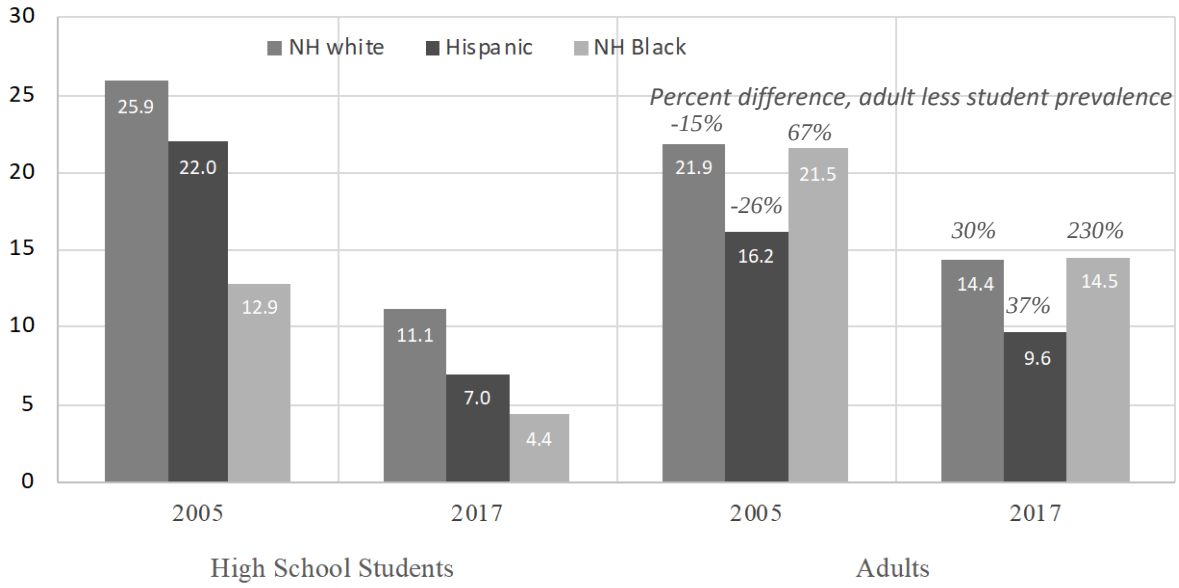
ABBREVIATIONS: SL: social learning, GS: general strain, SocC: social control, SelfC: Self-control, ed.: education, nhood.: neighborhood, chars.: characteristics.

FIGURE 1. PERCENT CURRENT CIGARETTE SMOKERS AMONG U.S. HIGH SCHOOL STUDENTS, 1991-2017



Source: Data from High School YRBS United States, calculations by author.

FIGURE 2. PERCENT CURRENT CIGARETTE SMOKERS AMONG U.S. HIGH SCHOOL STUDENTS AND ADULTS, 1995 AND 2015



Sources: Blackwell and Villarroel 2016, 2018; Kann et al. 2016, 2018.

FIGURE 3. IMMIGRANT ASSIMILATION PATHS BY PARENTAL CAPITAL AND PRESENCE OF CO-ETHNIC COMMUNITIES.

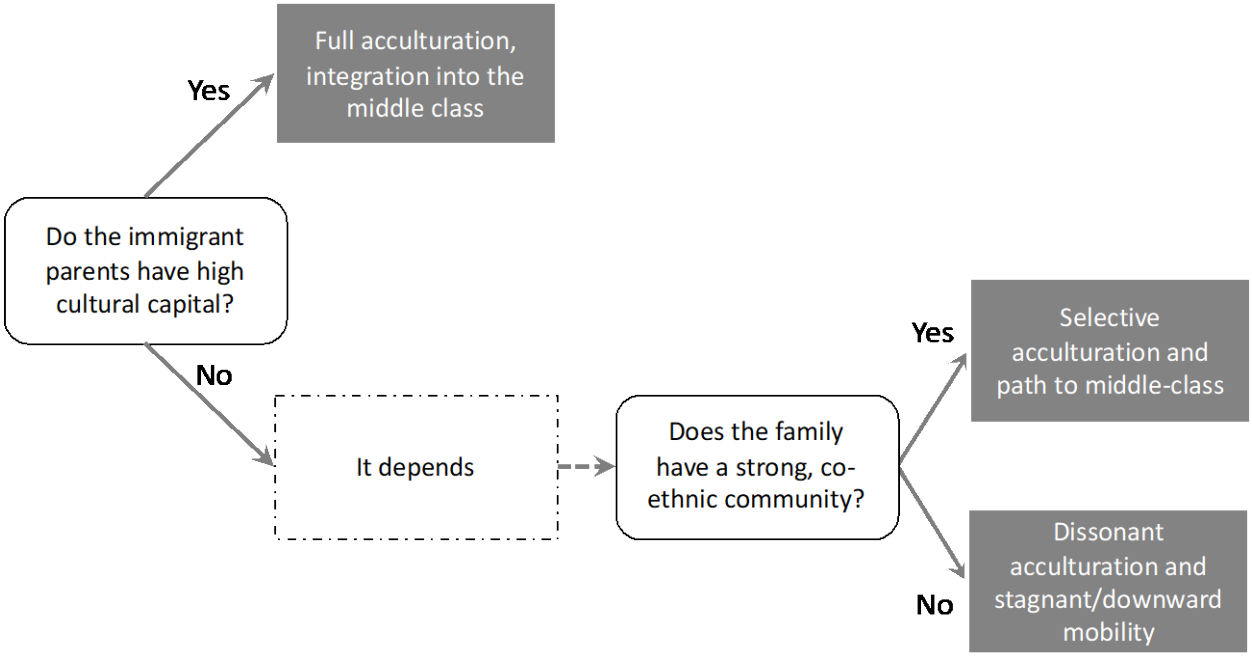


FIGURE 4. CAUSAL MODEL: CIGARETTE SMOKING AS A FUNCTION OF HISPANIC ETHNICITY AND IMMIGRANT GENERATION, MEDIATED BY NEIHGBORHOOD AND PARENTAL CHARACTERISTICS AND INDIVIDUAL CRIMINOGENIC FACTORS

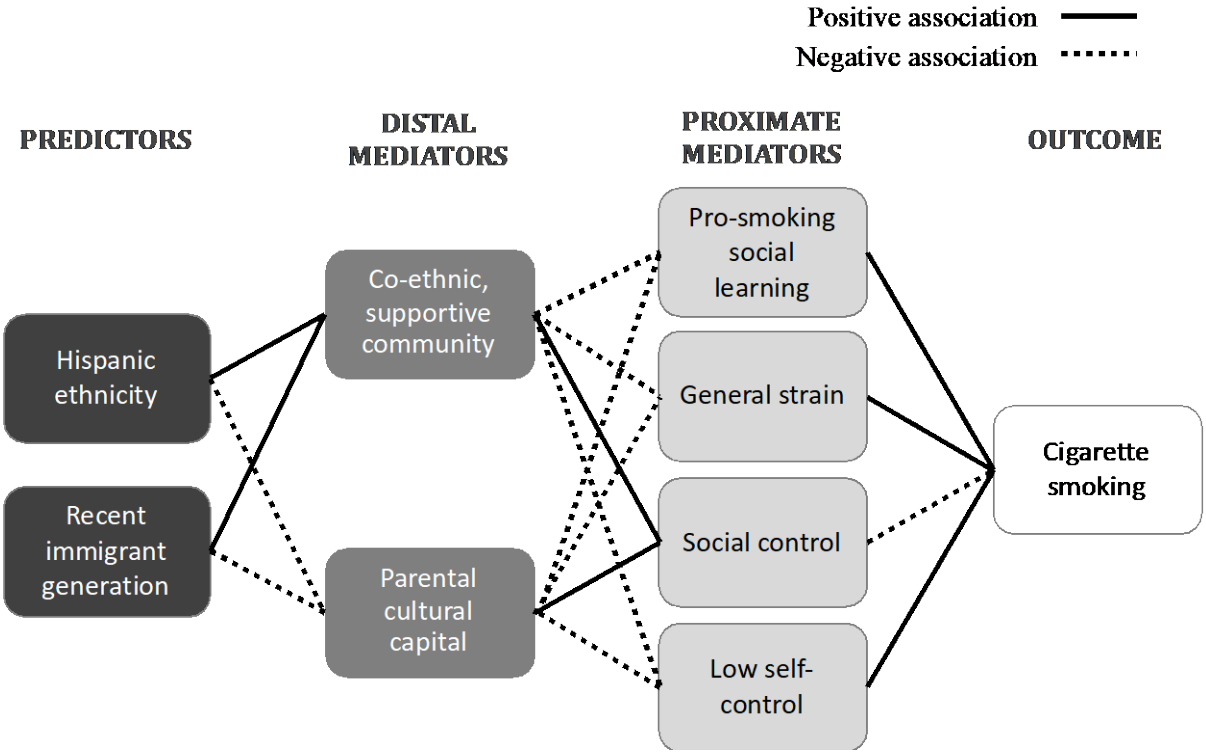
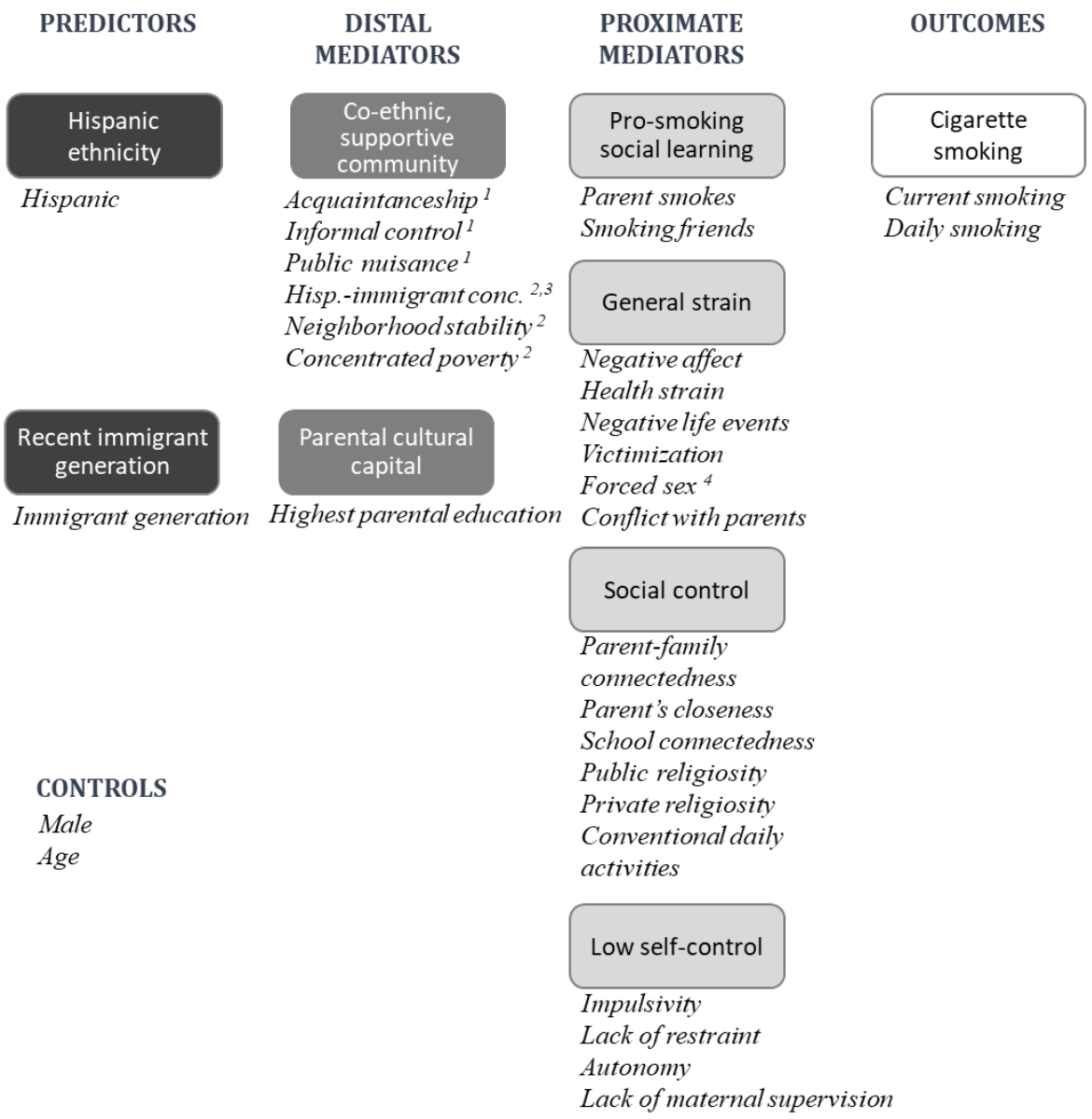


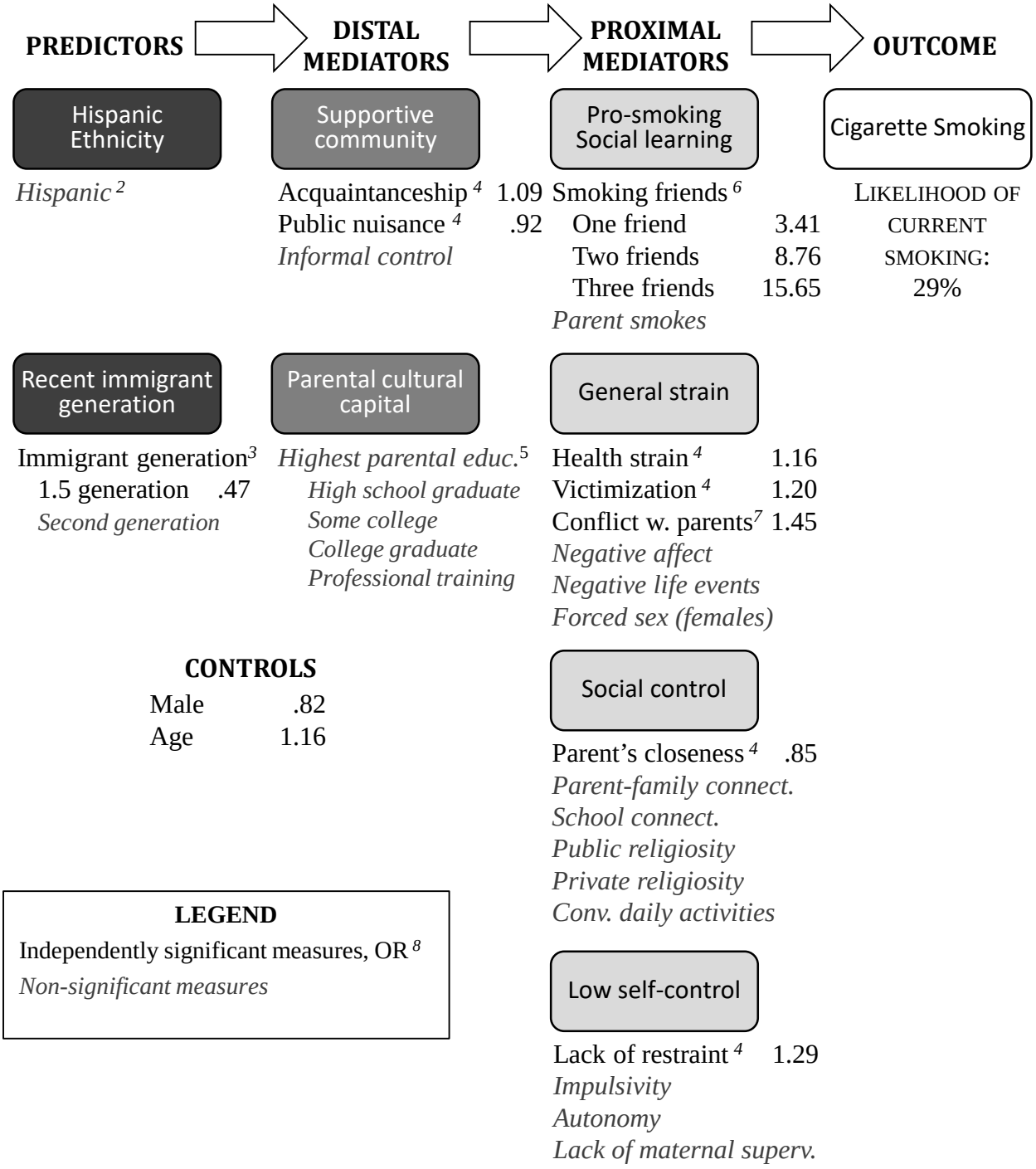
FIGURE 5. CONCEPTS AND MEASURES



NOTES:

1. Perceptual contextual variable with two versions: one at the individual level (L-1) and the other, aggregated to the neighborhood level (L-2)
2. Structural contextual variables, neighborhood-level (L-2)
3. Hispanic-immigrant concentration
4. Only for females`

FIGURE 6. SUMMARY RESULTS, MODEL E5[1] FOR CURRENT SMOKING*



** I present figure notes and abbreviations in the following page.*

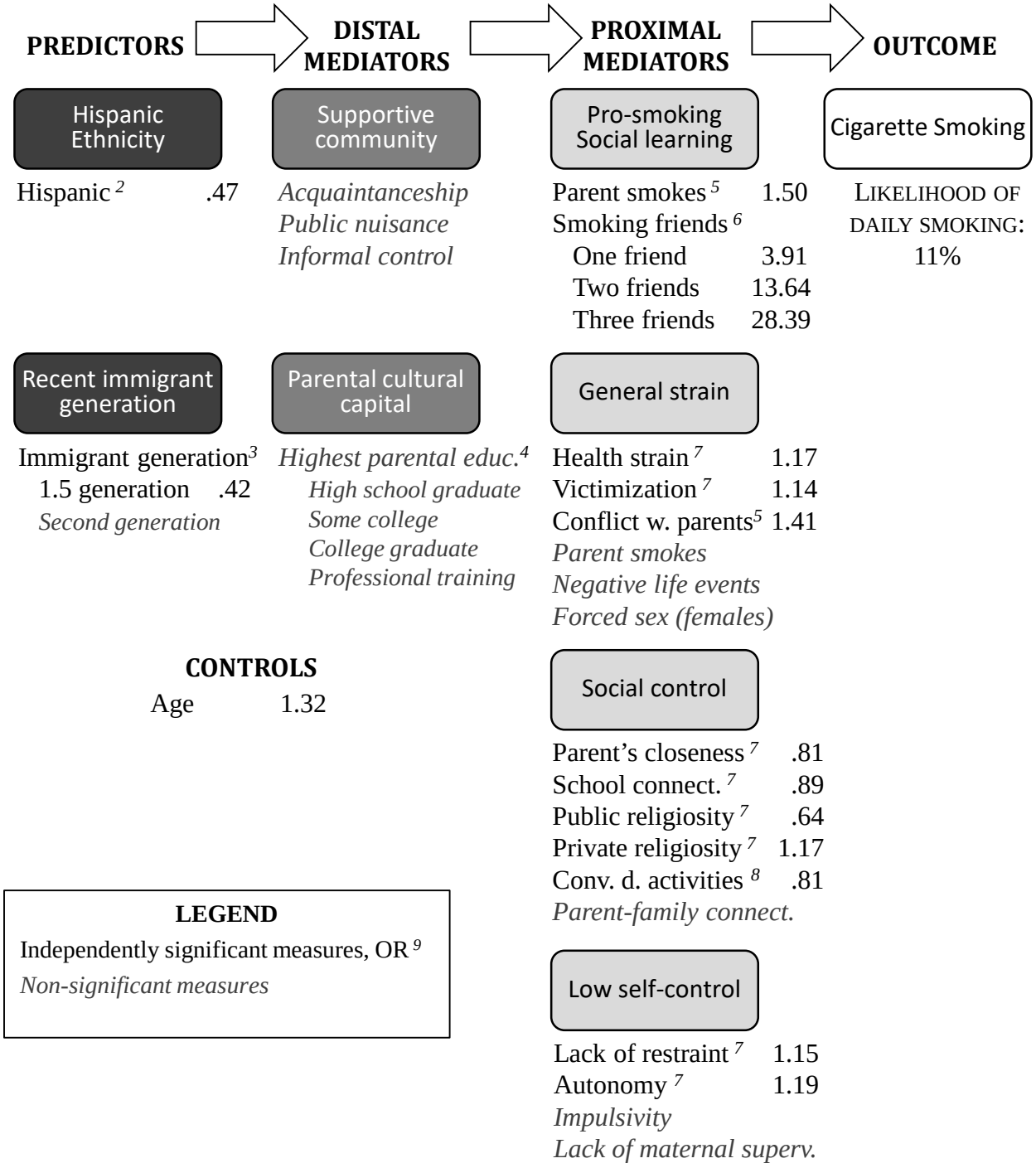
NOTES AND ABBREVIATIONS FOR FIGURE 6

NOTES:

1. Full results for Model E5 are shown in Table 14; MLE odds ratios for current smoking; N=9,185; significance level is .05
2. Reference category: non-Hispanic white
3. Reference category: non-immigrant
4. Measures standardized to mean=0 and SD=1
5. Reference category: Less than high school
6. Reference category: No smoking friends
7. Dichotomous measure
8. Odds ratios greater than one indicate significant positive associations between the independent variable and the outcome. Odds ratios less than one indicate significant negative associations. Odds ratios are not shown for measures without significant independent association with the outcome.

ABBREVIATIONS: OR=Odds ratio, Educ=education, W=with, Connect=connectedness, Conv=conventional, Superv=supervision.

FIGURE 7. SUMMARY RESULTS, MODEL F5[1] FOR DAILY SMOKING*



** I present figure notes and abbreviations in the following page.*

NOTES AND ABBREVIATIONS FOR FIGURE 7

NOTES:

1. Full results for Model F5 are shown in Table 15; MLE odds ratios for daily smoking; N=9,185; significance level is .05
2. Reference category: non-Hispanic white
3. Reference category: non-immigrant
4. Reference category: Less than high school
5. Dichotomous measure
6. Reference category: No smoking friends
7. Measures standardized to mean=0 and SD=1
8. Continuous scale
9. Odds ratios greater than one indicate significant positive associations between the independent variable and the outcome. Odds ratios lower than one indicate significant negative associations. Odds ratios are not shown for measures without significant independent association with the outcome.

ABBREVIATIONS: OR=Odds ratio, Educ=education, W=with, Connect=connectedness, Conv=conventional, D=daily, Superv=supervision.