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Identifying Opportunities to Improve the Health of At-Risk Youth through the Education and
Juvenile Justice Systems

A dissertation submitted in partial satisfaction of the
requirements for the degree of Doctor of Philosophy
in Health Policy and Management

by

Lauren Nichol Gase

2016

ABSTRACT OF THE DISSERTATION

Identifying Opportunities to Improve the Health of At-Risk Youth through the Education and
Juvenile Justice Systems

by

Lauren Nichol Gase

Doctor of Philosophy in Health Policy and Management

University of California, Los Angeles, 2016

Professor Ninez A. Ponce, Chair

This dissertation applied a social determinants of health perspective to examine the relationships between health, academic, and juvenile justice-related structures, interventions, and outcomes among at-risk youths in the United States.

The first study, *Relationships between Student, Staff, and Administrative Measures of School Climate and Student Health and Academic Outcomes*, examined student, staff, and administrative measures of school climate to understand the extent to which they were related to each other and student outcomes. Multilevel regression analyses showed student, staff, and administrative measures of school climate to be weakly correlated. Strong associations were found between student outcomes and student-reports of engagement and safety, while staff-

reports and administrative measures of school climate showed limited associations with students' outcomes.

The second study, *Understanding Racial and Ethnic Disparities in Arrest: The Role of Individual, Home, School, and Community Characteristics*, identified characteristics of young adults who were more likely to become involved in justice-based punitive systems. Multilevel regression analyses showed significantly higher likelihood of having ever been arrested among Blacks, when compared to Whites, even after controlling for a range of delinquent behaviors. Notably, racial/ethnic disparities in arrest were no longer present after accounting for racial composition of the neighborhood.

The third study, *The Impact of Two Los Angeles County Teen Courts on Youth Recidivism: Comparing Two Informal Probation Programs*, assessed a juvenile justice system diversion program being implemented in Los Angeles County. Logistic and survival models showed Teen Court participants to have lower rates of recidivism than comparison group participants, after controlling for potential confounders.

This dissertation provides a research-grounded approach for how public health might apply its population health frame to support a more holistic vision for health and wellness within the education and juvenile justice systems. Moving forward, research and practice efforts to address the social determinants of health will require an expanded definition of what it means for youths to be “healthy,” greater willingness among researchers and practitioners to focus on multi-component/multi-system interventions, more meaningful communications and alignment

between systems, and a more explicit focus on identifying factors that can facilitate successful policy and program implementation.

The dissertation of Lauren Nichol Gase is approved.

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Chapter Two is a version of Gase, L.N., Glenn, B., Gomez, L.M., Kuo, T., Inkelas, M., & Ponce, N. Understanding racial and ethnic disparities in arrest: the role of individual, home, school and community characteristics. *Health and Social Behavior*. [Under Review]. Chapter Three is a version of Gase, L.N., Gomez, L., Glenn, B., Inkelas, M., Kuo, T., & Ponce, N. Relationships between student, staff, and administrative measures of school climate and student health and academic outcomes. *Journal of School Health*. [Under Review]. Chapter Four is a version of Gase, L.N., Kuo, T., Lai, E., Stoll, M.A., & Ponce, N. (2016). The impact of two Los Angeles County teen courts on youth recidivism: comparing two informal probation programs. *Journal of Experimental Criminology*. 12:105-126. DOI: 10.1007/s11292-016-9255-1. Dr. Stoll and Ms. Lai contributed to the study analyses and development of the manuscript.

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- Kuo T, Gase LN, Inkelas M, Population Health and Policy Workgroup.** Dissemination, implementation, and improvement science research in population health: opportunities for public health and the CTSA's. *Clinical and Translational Science*. 2015;8(6):807-813.
- Gase LN, Butler K, Kuo T, The Los Angeles County School Attendance Task Force Workgroup.** The current state of truancy reduction programs and opportunities for enhancement in Los Angeles County. *Children and Youth Services Review*. 2015;52:17-25.

Gase LN, Barragan N, Simon P, Jackson D, Kuo T. Public awareness of and support for infrastructure changes to increase walking and biking in Los Angeles County. *Preventive Medicine*. 2015;72:70-75.

Gase LN, Kuo T, Teutsch S, Fielding JE. Estimating the costs and benefits of providing free public transit passes to students in Los Angeles County: lessons learned in applying a health lens to decision-making. *International Journal of Environmental Research and Public Health*. 2014;11(11):11384-11397.

Gase LN, Kuo T, Collier K, Guerrero LR, Wong MD. Assessing the connection between health and education: identifying potential leverage points for public health to improve school attendance. *American Journal of Public Health*. 2014;104(9):e47-54.

Gase LN, Pennott R, Smith K. “Health in all policies”: taking stock of emerging practices to incorporate health in decision-making in the United States. *Journal of Public Health Management and Practice*. 2013;19(6):529-540.

Dunet DO, **Gase LN**, Oliver M, Schooley MW. Evaluative thinking: a tool to inform policy development and policy impact evaluations. *American Journal of Health Promotion*. 2012;26(4):201-203.

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CHAPTER 1: Introduction

BACKGROUND

Health is defined as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity” (World Health Organization 1946). Applying this holistic conceptualization of health to youths implies that they are not only free from disease and practice health-promoting behaviors, but also have an opportunity to meaningfully express themselves, build strong relationships with their communities, and gain the knowledge and skills they need for future success. In general, most youths in the United States are free from acute and chronic health conditions. What is less well understood is the extent to which youths are achieving an optimal state of wellbeing. Some indicators paint a troubling picture. For example, 24% of adolescents do not have an adult in their lives with whom they can talk to about serious problems and over 13% do not feel safe at school (Healthy People 2015a). Moreover, there are large disparities in many indicators of youth wellbeing, for example, racial/ethnic minorities and youths with lower socioeconomic status have higher rates of exposure to community violence, lower levels academic achievement, and higher rates of arrest and incarceration.

In the past decade, many leading health organizations have not only begun to broaden their thinking of what it means to be healthy, but have also expanded their conceptualization of the factors that influence health and wellbeing. The World Health Organization’s *Conceptual Framework for Action on the Social Determinants of Health* summarizes the role that structural determinants (e.g., social and public policies, educational attainment, income) play in influencing material circumstances (e.g., housing, exposure to hazards), psychosocial factors (e.g., stress,

community connectedness), and behavioral and biologic factors (e.g., lifestyle, health behaviors), which in turn influence health status, disease, and overall wellbeing (Solar and Irwin 2010). In the United States, Healthy People 2020's social determinants of health framework describes the importance of economic stability, education, social and community context, and neighborhoods in influencing health (Healthy People 2015b). In addition, the National Academy of Medicine (formerly the Institute of Medicine) has described the importance of adverse environmental factors and economic and social conditions - as well as the public policies and social values that shape those conditions - in creating shorter lifespans for Americans (Institute of Medicine 2013). Overall, there is increased attention being paid to the "social determinants of health" which shape the physical and social environments where people live, learn, work, and play and, in turn, influence health and wellbeing.

With its focus on building healthy communities and promoting health equity, public health is grounded in the mission of protecting and promoting the health of populations (American Public Health Association n.d.). As an even broader lens, public health has begun to embrace a population health approach focused on addressing the social determinants of health – a model that recognizes the interdependencies among health, educational, economic, and social factors (Gase et al. 2013). Such an expanded perspective is also beginning to emerge within health care organizations, which are increasingly grappling with how to address the social determinants of health (Institute for Healthcare Improvement 2013). The U.S. Centers for Medicare & Medicaid Services' recent decision to fund Accountable Health Communities underscores federal commitments to help build health care systems that identify and address patients' social needs (Alley et al. 2016). Other key indicators of change include an American Medical Association

policy supporting medical education and faculty training on the social determinants of health (AMA Wire 2014) and recommendations from the National Academy of Medicine on ways to integrate social and behavioral measures into electronic health records as a part of meaningful use (Institute of Medicine 2014). However, despite this progress, many health-focused activities continue to operate in accordance with the medical model of curing disease or preventing a singular adverse outcome. Both public health and health care systems often lack an explicit focus on many of the environmental and contextual factors that influence health and fail to partner with “non-health” systems that can have the greatest impact on health (Kindig and Isham 2014; Shortell 2013).

This dissertation sought to apply the emerging population-based, social determinants of health perspective to examine two systems that have significant impacts on the health and wellbeing of youths: education and juvenile justice. Youths in the United States are mandated to attend school for at least 10 years of their lives; the quality and characteristics of schools and youths’ level of educational attainment play critical roles in influencing their short and long-term health and wellbeing (Centers for Disease Control and Prevention 2009; Robert Wood Johnson 2013; Thapa et al. 2013). Looking at juvenile justice, contact with the system represents a critical turning point in a youth’s health, social, and economic trajectory; unfortunately, such disruption disproportionately impacts the most vulnerable youths (Brame et al. 2012; Gatti et al. 2009). By indentifying key opportunities to shape positive youth development (e.g., position schools as health promoting places, identify ways to decrease contact with the justice system), the research presented in this dissertation showcases examples of the type of work needed to address the underlying factors that shape health, wellbeing, and equity among youths.

THEORETICAL FRAMEWORK

The framework guiding this dissertation (Figure 1.1) provides an overview of the major individual, environmental, and social factors that influence youths' downstream health and wellbeing. A synthesis of theories and empirical research on youth development, the framework is intended to provide a practical tool that can be used to generate research on the social determinates of health, as opposed to a comprehensive causal model.

The framework draws from empirical work on youth assets, resilience, and positive youth development (Masten and Coatsworth 1998; Oberle et al. 2011; Scales et al. 2006; Theokas et al. 2005; Theokas and Lerner 2006) and concepts presented in developmental systems theory (Griffiths and Tabery 2013) and life course health development theory (Fine and Kotelchuck 2010; Halfon et al. 2014; Hertzman and Power 2003), which emphasize the interconnections between social, economic, and environmental exposures and experiences; the cumulative impact and interactions between stressors over time; and the need to address risk and protective factors across the life course. From the risk perspective, youths can be faced with a variety of environmental and individual risk factors, stemming from communities, schools, families, social relationships, genetics, personal characteristics, or adverse experiences. Reducing exposure to such risk factors could reduce risky behaviors and improve health outcomes (National Research Council 2009). From a protective factors (strengths-based) approach, building the environmental and individual protective factors of youths can help buffer the effects of risk factors (i.e., through resilience) as well as lead directly to positive development, including healthier behaviors and outcomes (Kia-Keating et al. 2011; Lee et al. 2012).

By considering the multiple sources of risk and protective factors, this framework illustrates the potential to intervene at multiple levels (individual, home, school, community) and time points across the life course. In the context of this dissertation, particular focus is placed on the health, education, and juvenile justice systems, which all intervene at various points in the trajectory of youths' wellbeing. The systems can promote healthy and safe environments, for example, by creating high quality schools and communities free from violence. Likewise, the systems can implement programs or policies aimed at enhancing individual-level protective factors or preventing or removing risk factors, for example, through providing positive parenting programs or supportive extracurricular activities. Finally, and perhaps most commonly, systems can intervene on youths' behaviors. Unfortunately, interventions at this end of the spectrum are often reactive and punitive in nature, for example, youths are arrested when they engage in delinquent behaviors, suspended when they act out at school, or are offered treatment when they are identified as having a substance abuse problem. While research points to the need to move away from such reactive, deficit-based approaches, this frequently represents a point at which systems become triggered for involvement and intervention.

DISSERTATION AIMS

To truly promote the health of youths, it is important to consider the multiple, inter-related factors that impact youths and their families. This dissertation applied a social determinants of health perspective in order to a) provide a more nuanced understanding of the relationships between health, academic, and juvenile justice-related structures and outcomes and b) identify ways in which the work of the education and justice systems can be modified (i.e., through meaningful policies and programs) to promote the holistic wellbeing of youths and families. The

dissertation has an explicit focus on addressing the needs of at-risk youths, including racial/ethnic minority youths and youths from low socio-economic backgrounds, as they are more frequently faced with adverse circumstances, have greater health burden, and are disproportionately represented in punitive systems. This dissertation moves beyond simply describing that such disparities exist and instead begins to highlight opportunities for upstream intervention.

The three aims addressed in this dissertation focus on both preventive (e.g., how to design systems to promote health) and reactive (e.g., how to meet youths' needs once they exhibit problems) approaches. Specifically, aim I focused on identifying opportunities to improve school climate in order to promote positive academic and health outcomes, aim II focused on identifying individual and contextual reasons underlying racial/ethnic disparities in the extent to which youths are captured by punitive systems, and aim III focused on examining the potential effectiveness and ways to improve outcomes for youths once they have been identified by the justice system.

Aim I: Examine associations between student, staff, and administrative indicators of school climate and youths' academic and health outcomes

School climate, the quality and character of school life, is recognized as an integral component of a comprehensive approach to school wellness. While previous studies have shown associations between school climate and a variety of student health and academic outcomes, there is little consensus on the best ways to define and study this multifaceted

construct. This study sought to examine the relationships between student, staff, and administrative measures of two of the core domains of school climate - engagement and safety - in order to understand the extent to which they were related to each other and student outcomes of mental health, substance use, and academic achievement. The study combined student and staff survey data with administrative data from school districts in Los Angeles County, a large, racially and economically diverse jurisdiction. Primary data sources included the California Healthy Kids Survey and the California School Climate Survey, which provided student and school staff perspectives on school climate as well as student academic and health outcomes. In order to inform school-based measurement and improvement approaches, this study sought to better elucidate which elements of school climate (and from whose perspective) matter most for youths' wellbeing.

Aim II: Identify individual, family, and environmental factors that influence whether youths become involved in juvenile-justice based punitive systems in order to elucidate underlying factors that drive racial/ethnic disparities.

It is well documented that youths of low socioeconomic status and from racial/ethnic minority backgrounds are overrepresented in the juvenile and criminal justice systems; however, reasons for these differences are unclear. This study sought to move beyond describing differences in order to explore the role of structural determinants, including home, school, and community factors associated with involvement in punitive systems. The study examined a) to what extent there were racial/ethnic differences in arrest and to what extent they were explained by differences in individual-level delinquent behaviors

and b) what aspects of community and school environments were associated with differences in arrests, after controlling for individual-level delinquent behavior and other individual and family-level characteristics. The primary data source was the National Longitudinal Study of Adolescent to Adult Health which contains variables needed to explore individual and contextual drivers of justice system contact. Given the wide range of short- and long-term detrimental effects associated with justice system contact and its role in influencing inequities, by better articulating the factors driving racial/ethnic disparities in arrests, we can begin to identify leverage points to help shift health, social, and economic trajectories.

Aim III: Assess a potential juvenile justice system diversion program being implemented in Los Angeles County to understand its impacts on youths' outcomes and identify opportunities to better meet youths' needs.

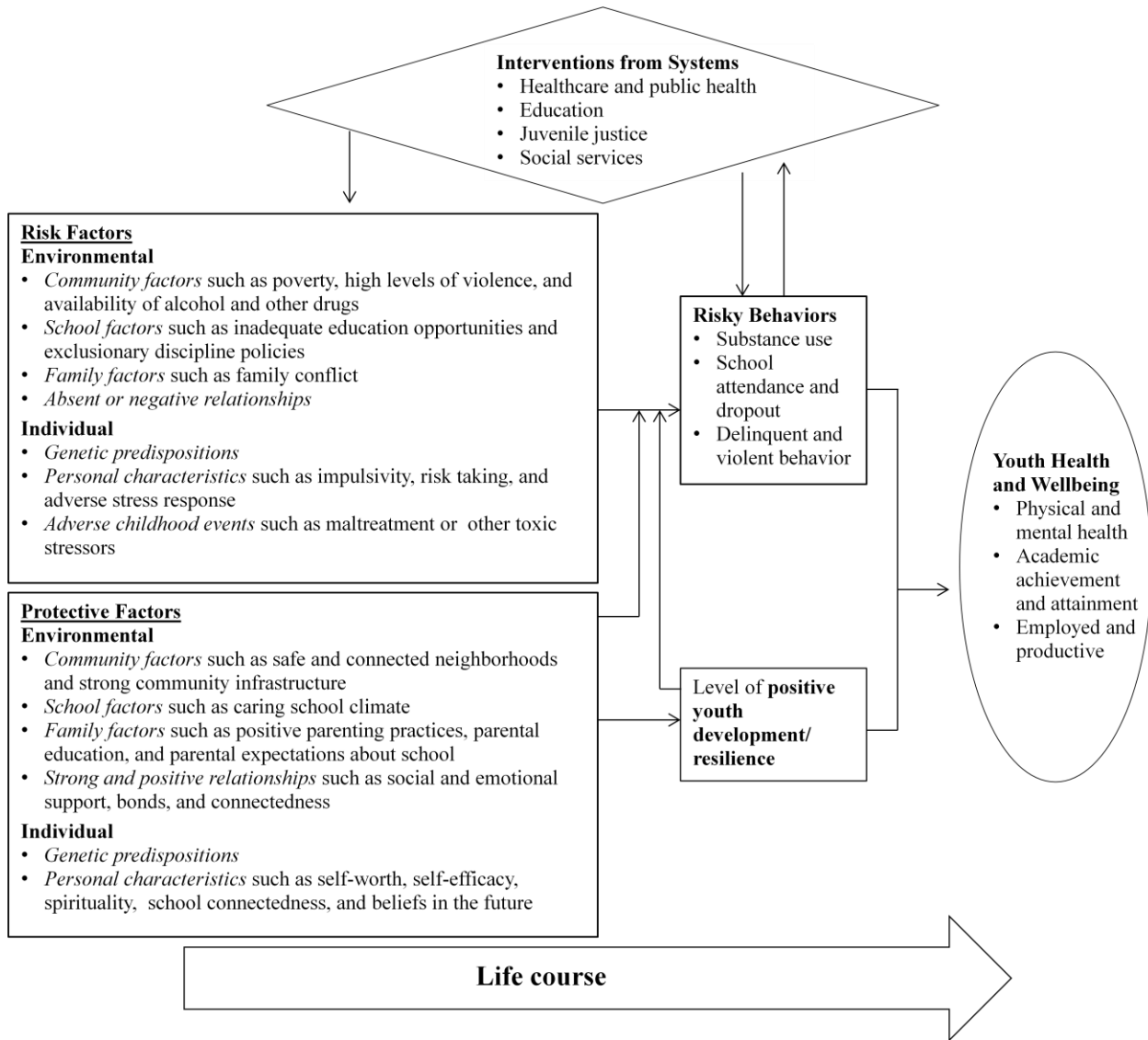
In order to keep youths out of the traditional justice system, many jurisdictions have developed and implemented juvenile diversion programs, such as the Teen Court program, in which offenders are judged by their peers and offered solution-focused sentences. While the evidence for the impact of Teen Courts on youths' outcomes is inconsistent, such programs are theorized to serve as a positive alternative to traditional justice system processing by providing a peer-driven sentencing mechanism that allows youths to take responsibility, to be held accountable, and to make restitution. This study sought to examine the extent to which youths who participated in the Los Angeles County Teen Court program had lower rates of recidivism compared to those who did

not, after controlling for other risk factors. Administrative data were abstracted from the Los Angeles County Probation department in order to obtain records of youths' characteristics, program participation, and outcomes. This study sought to provide concrete information to help inform ongoing implementation of the Teen Court program locally as well as to lay the groundwork for identifying opportunities to enhance juvenile justice system diversion programs more generally to maximize positive health impacts.

These aims are addressed in the following three dissertation chapters: Chapter Two (*Relationships between Student, Staff, and Administrative Measures of School Climate and Student Health and Academic Outcomes*) presents the study to address Aim I; Chapter Three (*Understanding Racial and Ethnic Disparities in Arrest: The Role of Individual, Home, School, and Community Characteristics*) presents the study to address Aim II; and Chapter Four (*The Impact of Two Los Angeles County Teen Courts on Youth Recidivism: Comparing Two Informal Probation Programs*) presents the study to address Aim III. The dissertation then concludes with Chapter Five, which summarizes the results and lessons learned from the studies, with a focus on describing implications for policy and practice and directions for future research.

TABLES AND FIGURES

Figure 1.1. Major individual, environmental, and social factors that influence youths' health and wellbeing ^a



^a Risk and protective factors included in this framework are provided as illustrative examples; they are not intended to represent a comprehensive list of all influences. Moreover, community, school, family, and individual-level risk and protective factors are likely to be inter-related (e.g., environments influence gene expression) and differ across the life course (e.g., some personal characteristics may be an earlier (age-related) expression of resilience).

REFERENCES

- Alley, D.E., Asomugha, C.N., Conway, P.H., & Sanghavi, D.M. (2016). Accountable health communities: addressing social needs through Medicare and Medicaid. *New England Journal of Medicine*. 374(1):8-11.
- AMA Wire. (2014). *What future doctors need to know about health determinants*. Retrieved from: <http://www.ama-assn.org/ama/ama-wire/post/future-doctors-need-health-determinants>.
- American Public Health Association. (n.d.). *What is public health?* Retrieved from: <https://www.apha.org/what-is-public-health>.
- Brame, R., Turner, M.G., Paternoster, R., & Bushway, S.D. (2012). Cumulative prevalence of arrest from ages 8 to 23 in a national sample. *Pediatrics*. 129(1):21-27.
- Centers for Disease Control and Prevention. (2009). *School connectedness: strategies for increasing protective factors among youth*. Atlanta, GA: U.S. Department of Health and Human Services.
- Fine, A., & Kotelchuck, M. (2010). *Rethinking MCH: the Life Course Model as an organizing framework*. Washington, DC: The U.S. Department of Health and Human Services. Retrieved from: <http://mchb.hrsa.gov/lifecourse/rethinkingmchlifecourse.pdf>.
- Gase, L.N., Pennott, R., & Smith, K. (2013). "Health in all policies": taking stock of emerging practices to incorporate health in decision-making in the United States. *Journal of Public Health Management and Practice*. 19(6):529-540.
- Gatti, U., Tremblay, R., & Vitaro, F. (2009). Iatrogenic effect of juvenile justice. *Journal of Child Psychology and Psychiatry*. 50(8):991-998.

- Griffiths, P., & Tabery, J. (2013). Developmental systems theory: what does it explain, and how does it explain it. *Advances in Child Development and Behavior*. 44:65-94.
- Halfon, N., Larson, K., Lu, M., Tullis, E., & Russ, S. (2014). Lifecourse health development: past, present and future. *Maternal and Child Health Journal*. 18(2):344-365.
- Healthy People. (2015a). *Early and middle childhood*. Retrieved from:
<https://www.healthypeople.gov/2020/topics-objectives/topic/early-and-middle-childhood#two>.
- Healthy People. (2015b). *Social determinants of health*. Retrieved from:
<http://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health>.
- Hertzman, C., & Power, C. (2003). Health and human development: understandings from life-course research. *Developmental Neuropsychology*. 42(2-3):719-744.
- Institute for Healthcare Improvement. (2013). *Keynote 4: Donald Berwick. 25th Annual National Forum on Quality Improvement in Health Care*. Retrieved from:
<http://app.ihl.org/tv/#video=5cbd9341-8f0f-4ba6-967e-63892264600c>.
- Institute of Medicine. (2014). *Capturing social and behavioral domains and measures in electronic health records: phase 2*. Washington, DC: The National Academies Press.
- Institute of Medicine. (2013). *U.S. health in international perspective: shorter lives, poorer health*. Washington, DC: The National Academies Press.
- Kia-Keating, M., Dowdy, E., Morgan, M., & Noam, G. (2011). Protecting and promoting: an integrative conceptual model for healthy development of adolescents. *Journal of Adolescent Health*. 48(3):220-228.

- Kindig, D., & Isham, G. (2014). Population health improvement: a community health business model that engages partners in all sectors. *Frontiers of Health Services Management*. 30(4):3-20.
- Lee, T., Cheung, C., & Kwong, W. (2012). Resilience as a positive youth development construct: a conceptual review. *The Scientific World Journal*. 2012:390450.
- Masten, A.S., & Coatsworth, J.D. (1998). The development of competence in favorable and unfavorable environments: lessons from research on successful children. *American Psychologist*. 53(2):205-220.
- National Research Council. (2009). *Preventing mental, emotional, and behavioral disorders among young people: progress and possibilities*. Washington, DC: The National Academies Press.
- Oberle, E., Schonert-Reichl, K.A., & Zumbo, B.D. (2011). Life satisfaction in early adolescence: personal, neighborhood, school, family and peer influences. *Journal of Youth and Adolescence*. 40(7):889-901.
- Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948.
- Robert Wood Johnson Foundation. (2013). *Why does education matter so much to health?* Retrieved from: <http://www.rwjf.org/en/library/research/2012/12/why-does-education-matter-so-much-to-health-.html>.

- Scales, P.C., Benson, P.L., & Mannes, M. (2006). The contribution to adolescent well-being made by nonfamily adults: an examination of developmental assets as contexts and processes. *Journal of Community Psychology*. 34(4):401-413.
- Shortell, S. (2013). *A bold proposal for advancing population health*. (Discussion Paper)
Retrieved from: <http://www.iom.edu/Global/Perspectives/2013/BoldProposal>.
- Solar, O., & Irwin, A. (2010). *A conceptual framework for action on the social determinants of health*. Social Determinants of Health Discussion Paper 2 (Policy and Practice).
Retrieved from:
http://www.who.int/sdhconference/resources/ConceptualframeworkforactiononSDH_eng.pdf.
- Thapa, A., Cohen, J., Guffey, S., & Higgins-D'Alessandro, A. (2013). A review of school climate research. *Review of Educational Research*. 83(3):357-385.
- Theokas, C., Almerigi, J., Lerner, R.M., Dowling, E.M., Benson, P.L., & Scales, P.C. (2005). Conceptualizing and modeling individual and ecological asset components of thriving in early adolescence. *Journal of Early Adolescence*. 25(1):113-143.
- Theokas, C., & Lerner, R.M. (2006). Observed ecological assets in families, schools, and neighborhoods: conceptualization, measurement, and relations with positive and negative developmental outcomes. *Applied Developmental Science*. 10(2):61-74.

CHAPTER 2: Relationships between Student, Staff, and Administrative Measures of School Climate and Student Health and Academic Outcomes

INTRODUCTION

School climate, the quality and character of school life, is recognized as an integral part of a comprehensive approach to school wellness. The *Whole School, Whole Community, Whole Child* framework, which includes social and emotional climate as one of its ten components, highlights the important role of students' psychosocial wellbeing in influencing their social and emotional development and in promoting overall health (Lewallen et al. 2015).

School climate is a multifaceted concept that involves many aspects of the student's educational experience, including school safety, relationships with other students, and perceptions of teaching and learning. While previous studies have shown associations between school climate and a variety of student health and academic outcomes, there is little consensus on the best ways to define and study school climate (Bradshaw et al. 2014; Michael et al. 2015; Thapa et al. 2013). Researchers and practitioners have identified a number of domains of school climate; however, limited information is available on how they interact to facilitate positive student behaviors and outcomes. In addition, while most experts agree that coupling administrative data sources with assessments of students and staff perspectives can provide a more holistic understanding of school climate, little data are available on the extent to which these perspectives contradict or complement each other (Mitchell et al. 2010; Thapa et al. 2013).

The present study sought to examine the associations between two of the core domains of school climate – student engagement and safety – and student academic and health outcomes,

combining data from student reports, teacher reports, and administrative records. In order to inform school-based measurement and improvement efforts, this study sought to better elucidate which elements of school climate (and from whose perspective) matter most for youth wellbeing.

Domains and Measures of School Climate

The National School Climate Council (2007) defines a positive and sustained school climate as one that “fosters youth development and learning necessary for a productive, contributing, and satisfying life in a democratic society” (p.4). School climate is a perception-based concept grounded in students’, parents’, and school personnel’s experiences of school life (National School Climate Center n.d.). When measuring and studying school climate, two related challenges are frequently present: deciding what aspects of school climate to measure and from where to obtain data.

While there is no national consensus on the domains of school climate, recent research syntheses suggest that two of the most commonly studied areas are engagement and safety. The U.S. Department of Education’s three-pronged model of school climate includes a focus on both physical and emotional safety and student engagement (Bradshaw et al. 2014). A recent review of school climate research highlights the importance of safety (e.g., rules and norms, physical security, emotional security), relationships (e.g., respect for diversity, social support, school connectedness), and teaching and learning (e.g., service learning, social, emotional, ethical, and civic learning) in influencing youth outcomes (Thapa et al. 2013). While safety and engagement have been established as core components of school climate, little empirical work has been done

to describe the extent to which these domains have unique contributions and/or interact to influence student outcomes.

A second challenge facing the study of school climate is identifying the most meaningful data sources. Collecting perspectives from different school actors is widely recognized as an important component of a comprehensive assessment of school climate (Thapa et al. 2013).

However, relatively few studies have considered if and how perspectives on school climate vary among student, staff, and administrative data sources (You et al. 2014). The limited number of studies examining agreement between student and school staff perspectives show mixed results, with some studies demonstrating concordance (Brand et al. 2008; Espelage et al. 2014), while others show discrepancies (Mitchell et al. 2010; Waasdorp et al. 2011). Differences in perceived safety may be related to differential rates of victimization or perceptions of risk, with students tending to perceive greater levels of risk (Bosworth et al. 2011; Waasdorp et al. 2011).

Differences in ratings of engagement may be related to the tendency of teachers to report more favorable conditions, especially on the quality of teacher-student interactions (Mitchell et al. 2010; Brand et al. 2008). With regard to administrative data, while suspension and truancy rates have been identified as core accountability metrics of school climate (California Department of Education 2016a; California Department of Education 2016b), the extent to which these measures reflect student or staff perspectives of safety or engagement is unclear.

Overview of the Study

The present study examined the relationships between student, staff, and administrative measures of school climate in order to understand the extent to which they were associated with each

other, as well as student outcomes of mental health, substance use, and academic achievement. The study used data from school districts in Los Angeles County, a large, racially and economically diverse jurisdiction. By further exploring the relationships between the domains and measures of school climate, we aim to inform monitoring and evaluation approaches and illuminate potential leverage points to improve the wellbeing of students.

METHODS

Participants

This study combined data from three sources: student perspectives of school climate were derived from the core module of the California Health Kids Survey (CHKS); staff perspectives of school climate were derived from the California School Climate Survey (CSCS); and administrative measures of school climate were obtained from the California Department of Education (CDE).

Both the CHKS and the CSCS are overseen by WestEd, in partnership with CDE, which began funding WestEd in 1997. Districts receiving certain federal grants are required to implement the CHKS every two years; other districts do so voluntarily (Austin et al. 2016). Both the CHKS and CSCS have been shown to be reliable and valid for measuring school climate (American Institutes for Research 2016; You et al. 2014), having been used to measure progress among the California high schools participating in the federal *Safe and Supportive Schools Program* (Hanson 2012) and districts working with the *California Office to Reform Education* to develop school climate accountability measures under a No Child Left Behind waiver (CORE n.d.).

For the present study, we used data from all school districts in Los Angeles County that administered the CHKS and the CSCS during the 2014-2015 academic year. The sample contained 33,572 students from 121 schools across 18 districts, including the Los Angeles Unified School District, the second largest school district in the United States. The school districts included in the study sample represent over half (55.7%) of the total 7th – 12th grade student population in Los Angeles County.

On average, 277.5 students (standard deviation [SD]: 295.9, range: 8 to 1137) and 34.8 staff (SD: 25.2, range: 1 to 111) responded from each school. Sample characteristics are presented in Table 2.1. Schools had high levels of students eligible for free or reduced-price lunch (mean: 0.71, SD: 0.24) and English-language learners (mean: 0.20, SD: 0.13). Average enrollment was 996 students (SD 669). The majority of students were in grades 7 (26%), 9 (32%), or 11 (26%). There were roughly equal number of males and females. The majority of the student identified as Hispanic/Latino (76%), with fewer identifying as non-Hispanic White (11%), Black (6%), Asian (8%), or other/mixed (10%).

Procedure

The CHKS is an anonymous, self-administered survey taken at school either on paper or online, depending on district preferences. School staff administer the survey, following detailed instructions provided by WestEd and CDE that were designed to maintain confidentiality (Austin et al. 2016). Students are surveyed only with the consent of parents or guardians; districts are given the option of using active or passive parental consent. The CSCS is an anonymous, self-administered online survey. In order to enhance accuracy and build staff buy-in, WestEd

recommends that districts offer the CSCS to all minimally certificated staff working in all schools that are participating in the CHKS. The survey methodologies are described in greater detail elsewhere (Austin et al. 2016; WestEd 2016).

Measures

Outcomes

Five student outcomes, constructed using data from the CHKS, were selected to examine aspects of student wellbeing potentially influenced by school climate. Depressive symptoms or suicidal ideation, was coded as “present” if students indicated that they ever “feel so sad or hopeless almost everyday for two weeks or more that you stopped doing some usual activities” or “seriously consider attempting suicide” in the past 12 months. Tobacco use was coded as “yes” if students indicated that they had used either “cigarettes” or “smokeless tobacco” at least one day in the past 30 days; otherwise it was coded as “no.” Alcohol use was coded as “yes” if students indicated that they had “one drink of alcohol” at least one day in the past 30 days; otherwise it was coded as “no.” Similarly, marijuana use was coded as “yes” if students indicated that they had used marijuana at least one day in the past 30 days; otherwise it was coded as “no.” Finally, grade point average was constructed by coding self-reported grades as numerical values (“mostly A’s” coded as 4.0, “mostly A’s and B’s” as 3.5, etc.).

Student Perceptions of School Climate

Student perceptions of school climate were taken from the CHKS, using established guidance for scale construction and factor structure (Hanson 2012). Four student measures of *student engagement* were used. *High expectations and caring relationships* was constructed based the

average of six items indicating the extent of agreement (on a four point scale) of whether the student feels that there are adults at the school who have high expectations for him/her, cares about the him/her, etc. *Opportunities for meaningful participation* was constructed based on the average of three items indicating the extent of agreement (on a four point scale) of whether the student feels that there are meaningful opportunities to participate at school. *School connectedness* was constructed based on the average of four items indicating the extent of agreement (on a five point scale) of whether the student feels close to people at the school, is happy at the school, etc. *Perceived safety* was constructed based on the average of two items indicating the extent of agreement (on a five point scale) of whether the student feels safe at school.

Four student measures of *school safety* were used. *Violence perpetration* was constructed by adding responses to seven items (coded as “yes” or “no”) indicating whether the student took part in any of the activities (been in a physical fight, carried a gun, etc.) on school property in the past 12 months. *Violence victimization* was constructed by adding responses to six items (coded as “yes” or “no”) indicating whether the student experienced any of the events (been afraid of being beat up, had mean rumors spread about him/her, etc.) on school property in the past 12 months. *Harassment and bullying* was constructed by adding responses to five items (coded as “yes” or “no”) indicating whether the student had been harassed or bullied as a result of the listed traits (gender, race/ethnicity, religion, etc.) in the past 12 months. *Substance use on school property* was constructed by adding responses to four items (coded as “yes” or “no”) indicating whether the student had used cigarettes, alcohol, marijuana, or other illegal drugs on school property in the past 30 days.

Composite measures of *student engagement* and *school safety* were developed using the linear combination of the factor loadings provided by the factor analysis, specifying a two-factor structure and promax rotation. Composite measures were constructed to have a mean of zero and a variance of one where larger values reflect better ratings of school climate. Composite measures of *student engagement* and *school safety* were then partitioned into student-level (level one, within-school) and school-level (level two, between-school) variance components. Student-level variance was constructed by subtracting the mean school-level rating from each student's score (i.e., the group centered score). School-level variance was constructed based on the mean school-level rating.

School Staff Perceptions of School Climate

Four measures of school climate were taken from the CSCS, using established guidance for scale construction and factor structure (Jain et al. 2015; WestEd n.d.). *High expectations and caring relationship* was constructed based the average of seven items indicating the extent of agreement (on a five point scale) of whether the staff feels that there are adults at the school who want all students to do their best, care about students, etc. *Opportunities for meaningful participation* was constructed based on the average of four items indicating the extent of agreement (on a four point scale) of whether the staff feels that the school provides students with opportunities to decide things, participate in enrichment activities, etc. *Perceived safety* was constructed based on the average of two items indicating the extent of agreement (on a four point scale) of whether the staff felt that the school was safe for students and staff. Finally, *student violence* was constructed based on the average staff rating (on a four point scale) of how much of a problem the six items (e.g., bullying, fighting, vandalism) represented.

A composite measure of staff-reported *school climate* was developed based on the linear combination of the factors loadings provided by the factor analysis, specifying a one-factor structure. Use of a one-factor structure was deemed appropriate based on eigenvalues (factor 1 eigenvalue=1.79, factor 2 eigenvalue=0.03). The composite measures was constructed to have a mean of zero and a variance of one where larger values reflect better ratings of school climate.

Administrative Measures of School Climate

Two administrative measures of school climate included: a) school suspension rate, the number of students who were suspended during the academic year, compared to the enrollment of the school, and b) school truancy rate, the number of students who were classified as truant during the school year, pursuant to California Education Code Section 48260 (absent or tardy from school without a valid excuse for more than 30-minutes on three days), compared to the enrollment of the school (California Department of Education n.d.). Suspension rate was available from CDE for the 2014-2015 school year; truancy rate was only available for 2013-2014.

Student Demographics

Student demographics of gender, grade level, and race/ethnicity were included as control variables in regression models to account for potential confounding (Bradshaw et al. 2014; Thapa et al. 2013). All were taken from the CHKS, using student reports. For race/ethnicity, all students who reported being of “Hispanic or Latino” origin were coded as “Hispanic.” Due to the small number of responses, students who reported “American Indian or Alaska Native,” “Native Hawaiian or Pacific Islander,” or “mixed (two or more races)” were coded as “other”.

School Characteristics

School characteristics, including number of enrolled students, the percent of student who were English language learners, the percent of students who were eligible for free or reduced-price lunch, and the percent of students who were non-Hispanic White, were included as control variables in regression models to account for potential confounding (Jain et al. 2015). All were taken from the CDE 2014-2015 school year administrative records.

Data Analysis

The four dichotomous outcomes (depressive symptoms or suicidal ideation, tobacco use, alcohol use, and marijuana use) were examined using multilevel logistic regression. The one continuous outcome (grade point average) was examined using multilevel linear regression. Four multivariable models were developed to examine the association of each outcome with: 1) student-reported measures of climate (student- and school-level measures of engagement and safety) (model 1); 2) staff-reported measures of climate (model 2); 3) administrative measures of truancy and suspension (model 3); and 4) student-reported, staff-reported, and administrative measures of climate (model 4). All models included the full set of control variables: gender, grade level, race/ethnicity, percent of students who were English language learners, percent of students who were eligible for free or reduced-price lunch, percent of students who were non-Hispanic White, and school enrollment. All analyses were conducted using Stata version 14.1 (*StataCorp LP, College Station, Texas*).

RESULTS

Measures of School Climate

Student-reported measures of school climate were moderate (Table 2.1). The average rating of whether students had meaningful opportunities to participate at school was slightly above a rating of “a little true” (average 2.2, SD 0.84). With regard to perceived safety, the average fell just above students feeling “neither safe nor unsafe” (average 3.6, SD 0.88). Violence perpetration and victimization were not uncommon, with the average student perpetrating one (average 0.72, SD 1.31) and experiencing one and half (average 1.54, SD 1.75) acts of violence in the past year. Staff-reported measures of school climate were more positive. The average rating of the proportion of adults that have high expectations and care about students was slightly above a rating of “most adults” (average 4.2, SD 0.32). Average staff ratings of perceived safety were between “agree” and “strongly agree” (average 3.2, SD 0.40).

Correlations between student-reported, staff-reported, and administrative measure of school climate were low. The correlation between the measures of student- and staff- reported levels of high expectations and caring relationships was 0.08, while the correlation between measures of opportunities for meaningful participation was 0.03. The correlation between student- and staff-reports of perceived safety was larger ($r = 0.15$). Correlations between administrative and student-reported measures of student engagement were close to zero, while correlations between administrative and student-reported measures of school safety were more modest (e.g., r suspension rate and student-reported school safety = -0.15). Correlations were strongest between administrative and staff-reported measures of climate (e.g., r suspension rate and staff-reported climate = -0.30).

School Climate and Student Outcomes

Results from the multilevel models are presented in Table 2.2. Among the models with only student-reported measures of school climate (model 1), higher levels of student engagement and school safety were very strongly associated with lower levels of depressive symptoms or suicidal ideation and tobacco, alcohol, and marijuana use, after controlling for a range of student- and school-level covariates; likewise, higher levels of student-reported engagement and safety were associated with higher grade point average. Student-level variance in engagement was associated with all outcomes; however, school-level variance in engagement was only associated with alcohol and marijuana use. Similarly, student-level variance in safety was associated with all outcomes; school-level variance in safety was associated with all outcomes except grade point average.

Overall, staff-reported (model 2) and administrative measures (model 3) of school climate were not strongly associated with student outcomes. Staff reports of school climate were significantly associated with only one outcome: grade point average (coefficient: 0.11, 95% Confidence Interval [CI]: 0.04, 0.18). Suspension rate was significantly associated with only one outcome: marijuana use (adjusted odds ratio: 6.41, 95% CI: 1.64, 25.07) and truancy rate was not significantly associated with any outcomes.

When considering student, staff, and administrative measures of school climate together (model 4), student-level reports of both engagement and safety were very strongly associated with all five of the outcomes examined. After accounting for other measures of climate, staff-level reports were only associated with one outcome (grade point average), while administrative measures were not associated with any outcomes.

DISCUSSION

This study sought to examine the relationships between student, staff, and administrative measures of school climate in order to understand the extent to which they were associated with mental health, substance use, and academic achievement in a sample of school districts in Los Angeles County. Overall, student, staff, and administrative measures of school climate were weakly correlated. Results showed strong associations between student outcomes and student reports of both engagement and safety, while staff-reports and administrative measures of climate showed limited associations with student outcomes.

Results of the present study support emerging work demonstrating discrepancies in student, staff and administrative measures of school climate (Bosworth et al. 2011; Mitchell et al. 2010). In the present study, almost no association was seen between student-reported measures of engagement and staff and administrative measures of climate. Indicators of student- and staff- reported measures of safety showed only modest correlations. There are many potential reasons for differences in these perspectives, including under-estimation by school staff of student-on-student violence perpetration (Bosworth et al. 2011; Waasdorp et al. 2011) and more positive beliefs among school staff about their ability to foster engagement than students might perceive (Brand et al. 2008; Mitchell et al. 2010). Divergence between administrative measures and student perspectives may be the result of sphere of influence; suspension may reflect an extreme measure of safety and student delinquency, which influences a small percentage of students, and does not, therefore, contribute strongly to the majority of students' experiences with school life.

Results support the notion that student-reports of school climate are central to shaping youth outcomes. Previous studies have emphasized the important role of student perceptions, including the role of perceived safety (Bosworth et al. 2011) and the connections students feel to school staff (Centers for Disease Control and Prevention 2009), in influencing youth outcomes. While objective components of safety, school structures, and teacher behaviors certainly influence student perceptions, the need to explicitly consider how students perceive these facets of school life should be central to school reform efforts. In the present study, both absolute levels of climate (e.g., how safe a school is compared to other schools) and relative levels of climate (e.g., how safe a student feels compared to his peers in the same school) were associated with the outcomes examined. Results align with the current literature on strategies to improve school climate, and enhance school wellness in general, that suggest the need to consider school-wide environmental changes alongside more individual-level approaches (Bonell et al. 2013; Jamal et al. 2013).

Finally, this study adds additional nuance of the importance, and unique contributions, of both student engagement and safety in supporting mental health, health behaviors, and academic achievement. Results support previous qualitative work (Bosworth et al. 2011; Gase et al. 2016) and the U.S. Department of Education's current practice framework (Bradshaw et al. 2014), which encourages practitioners and researchers to consider the inter-related, but unique aspects of engagement, safety, and school environment. Unfortunately, in practice, these domains can sometimes be at odds. School-based zero tolerance policies, which mandate the application of predetermined consequences for school behavior violations, have been widely adopted in an effort to improve safety (one domain of climate) but may have negative impact on other domains

(such as engagement). Such policies can contribute to students – especially students of color – feeling disconnected and dropping out of school (American Psychological Association Zero Tolerance Task Force 2008; Mitchell and Bradshaw 2013; Zimring and Tanenhaus 2014). The present study underscores the importance of further explicating a theory of change for the domains of school climate and expanding efforts to identify and test strategies that can work together to ensure that schools (simultaneously) are safe, foster positive relationships with peers and school staff, and create a place where students want to be.

Limitations

Although this study is one of the first to examine the associations between student outcomes and multiple domains and measures of school climate, it has a number of limitations. First, participation in the CHKS and the CSCS is only required for a limited number of school districts. Selection bias might occur if certain types of districts, schools, students, or staff are selected (or opt) to participate. Previous studies using the CHKS demonstrate high student response rates (Gilreath et al. 2013; Stone et al. 2013) and suggest that estimates of school climate from the CSCS are stable to staff response rates (Jain et al. 2015); however, caution should be taken in interpreting study results. Second, this study was not able to examine school environment as a domain of school climate or parent perceptions of school climate. Third, because the questions used to assess school climate differed between students and staff, this study could not directly compare their level of concordance. Differences between staff and student reports may be the result of different measures, different perceptions, or both. Fourth, because students reported both school climate and outcomes, reverse causality might lead to biased conclusions. Because this is a cross-sectional study, relationships should not be interpreted as causal. Finally, while

results provide insights on the relationship between school climate and student outcomes in a largely low-income Hispanic sample, caution should be taken when generalizing the findings to other contexts.

Implications

Given recent federal-level changes to the Elementary and Secondary Education Act and state-level changes to education funding formulas, both of which place greater emphasis on non-cognitive factors such as school climate (114th Congress 2015; California Department of Education 2016a), a more nuanced understanding of the relationships between the domains and measures of school climate – as outlined in this study - might be particularly timely in informing policy implementation. This study underscores the need to ground school climate measurement and improvement efforts in a multi-dimensional conceptualization of climate that values student perspectives and includes elements of both engagement and safety. A system of school climate indicators that includes measures from multiple domains may help school administrators better examine current challenges and think more holistically about how to structure school-based interventions. One model for such a holistic approach is the School Quality Improvement System, which focuses on academic preparedness, social-emotional skills, and the culture and climate of a school (CORE n.d.). Such a system of indicators provides a foundation by which schools can identify challenges and solutions, prioritize investments, and build the necessary network of resources and partners to advance the holistic wellbeing of students.

TABLES AND FIGURES

Table 2.1. Sample characteristics and indicators of school climate: 112 schools in 18 school districts, Los Angeles County, 2014-2015 ^a

	Number (Percent) or Mean (Standard Deviation)
Student Demographics (n=33,572)	
Grade ^b	
6 th	935 (2.8%)
7 th	8,859 (26.4%)
8 th	1,354 (4.0%)
9 th	10,860 (32.4%)
10 th	973 (2.9%)
11 th	8,775 (26.1%)
12 th	715 (2.1%)
Non-traditional/ungraded	1,101 (3.3%)
Gender	
Male	16,734 (49.9%)
Female	16,838 (50.2%)
Race	
Hispanic/Latino	22,112 (76.4%)
White	3,533 (10.5%)
Black	1,994 (5.9%)
Asian	2,500 (7.5%)
Other/mixed	3,433 (10.2%)
School Characteristics (n=121)	
Percent of students eligible for free or reduced-price lunch	0.71 (0.24)
Percent of English-language learners	0.20 (0.13)
Percent White	0.13 (0.21)
Total enrollment	995.7 (668.6)
Student Reports of School Climate (n=33,572) ^c	
<i>Student Engagement ^d</i>	
High expectations and caring relationships (<i>range 1 to 4</i>)	2.8 (0.79)
Opportunities for meaningful participation (<i>range 1 to 4</i>)	2.2 (0.84)
School connectedness (<i>range 1 to 5</i>)	3.4 (0.84)
Perceived safety (<i>range 1 to 5</i>)	3.6 (0.88)
<i>School Safety ^e</i>	

Violence perpetration (<i>range 0 to 7</i>)	0.72 (1.31)
Violence victimization (<i>range 0 to 6</i>)	1.54 (1.75)
Harassment and bullying (<i>range 0 to 5</i>)	0.42 (0.93)
Substance use on school property (<i>range 0 to 4</i>)	0.15 (0.60)
School Staff Reports of School Climate (n=121) ^f	
High expectations and caring relationships (<i>range 1 to 5</i>)	4.2 (0.32)
Opportunities for meaningful participation (<i>range 1 to 4</i>)	3.1 (0.26)
Perceived safety (<i>range 1 to 4</i>)	3.2 (0.40)
Student violence (<i>range 1 to 4</i>)	1.8 (0.40)
Administrative Measures of School Climate (n=121)	
Truancy rate	0.32 (0.24)
Suspension rate	0.06 (0.07)
Student Outcomes (n=33,572)	
Depressive symptoms or suicidal ideation ^g	11,131 (33.2%)
Tobacco use ^h	1,640 (4.9%)
Alcohol use ^h	5,686 (16.9%)
Marijuana use ^h	3,787 (11.3%)
Grade point average (<i>range 0 to 4</i>)	2.8 (0.95)

^a Analysis sample contains 33,572 students nested within 121 schools; only students with complete student- and school-level variables of interest were included in the present study.

^b The California Health Kids survey is intended for students in grades, 7, 9, and 11, but students were included in this study who reported grades 6-12.

^c Scoring and factor structure of student reports of school climate developed based guidance outlined by Hanson (2012).

^d The composite measure of engagement had a mean of 0, standard deviation (SD) of 0.84, and range of -3.10, 1.97. The student-level (level one) variance component had a mean of 0, a SD of 0.81, and a range of -3.54, 2.48. The school-level (level two) variance component had mean of 0, SD of 0.23, and a range of -0.68, 0.89.

^e The composite measure of safety had a mean of 0.02, a SD of 0.82, and a range of -5.03, 0.92. The student-level (level one) variance component had a mean of 0.02, a SD of 0.81, and a range of -5.06, 2.13. The school-level (level two) variance component had mean of 0, a SD of 0.13, and a range of -1.30, 0.58.

^f Scoring and factor structure of school staff reports of school climate developed based on guidance outlined by WestEd (n.d.) and Jain et al. (2014). The composite measure of staff-reported climate had a mean of -0.08, a SD of 0.53, and a range of -2.06, 0.89.

^g Percentage of students who reported that they ever “feel so sad or hopeless almost everyday for two weeks or more that you stopped doing some usual activities” or “seriously consider attempting suicide” in the past 12 months.

^h Percent who reported any use in the past 30 days.

Table 2.2. Multilevel regression models: association between school climate and student outcomes in 18 Los Angeles County school districts, 2014-2015^a

	Outcome: Depressive Symptoms or Suicidal Ideation^b				Outcome: Tobacco Use^b			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
	<i>Adjusted Odds Ratio (95% Confidence Interval)^d</i>							
Student Reports of School Climate								
<i>Student Engagement</i>								
Student-level ^e	0.71 (0.69, 0.74)**	--	--	0.71 (0.69, 0.74)**	0.74 (0.69, 0.80)**	--	--	0.74 (0.69, 0.80)**
School-level ^f	0.96 (0.71, 1.28)	--	--	0.75 (0.53, 1.04)	0.77 (0.47, 1.26)	--	--	0.68 (0.37, 1.27)
<i>School Safety</i>								
Student-level ^e	0.38 (0.37, 0.40)**	--	--	0.38 (0.37, 0.40)**	0.36 (0.35, 0.38)**	--	--	0.36 (0.35, 0.38)**
School-level ^f	0.44 (0.31, 0.63)**	--	--	0.43 (0.30, 0.60)**	0.29 (0.18, 0.49)**	--	--	0.29 (0.18, 0.48)**
School Staff Reports of School Climate								
<i>School Climate</i>	--	1.03 (0.93, 1.14)	--	1.13 (1.00, 1.27)*	--	0.95 (0.75, 1.20)	--	1.02 (0.82, 1.26)
Administrative Measures of School Climate								
<i>Truancy Rate</i>	--	--	0.88 (0.70, 1.11)	0.97 (0.76, 1.23)	--	--	0.72 (0.44, 1.18)	1.00 (0.66, 1.51)
<i>Suspension Rate</i>	--	--	0.96 (0.42, 2.21)	0.39 (0.15, 1.04)	--	--	1.29 (0.30, 5.65)	0.58 (0.14, 2.44)

Table 2.2 (continued)

	Outcome: Alcohol Use ^b				Outcome: Marijuana Use ^b			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
<i>Adjusted Odds Ratio (95% Confidence Interval)^d</i>								
Student Reports of School Climate								
<i>Student Engagement</i>								
Student-level ^e	0.83 (0.80, 0.86)**	--	--	0.83 (0.80, 0.86)**	0.73 (0.69, 0.76)**	--	--	0.73 (0.69, 0.76)**
School-level ^f	0.60 (0.43, 0.84)**	--	--	0.52 (0.35, 0.79)**	0.42 (0.29, 0.63)**	--	--	0.43 (0.26, 0.71)**
<i>School Safety</i>								
Student-level ^e	0.44 (0.42, 0.46)**	--	--	0.44 (0.42, 0.46)**	0.42 (0.40, 0.44)**	--	--	0.42 (0.40, 0.44)**
School-level ^f	0.33 (0.23, 0.48)**	--	--	0.34 (0.23, 0.48)**	0.31 (0.20, 0.46)**	--	--	0.30 (0.20, 0.46)**
School Staff Reports of School Climate								
<i>School Climate</i>	--	0.86 (0.74, 1.00)	--	0.99 (0.86, 1.14)	--	0.85 (0.69, 1.05)	--	1.07 (0.90, 1.28)
Administrative Measures of School Climate								
<i>Truancy Rate</i>	--	--	0.84 (0.60, 1.17)	0.86 (0.66, 1.13)	--	--	0.97 (0.62, 1.51)	1.16 (0.84, 1.60)
<i>Suspension Rate</i>	--	--	2.18 (0.75, 6.33)	0.53 (0.19, 1.49)	--	--	6.41 (1.64, 25.07)**	1.31 (0.41, 4.22)

Table 2.2 (continued)

	Outcome: Grade Point Average ^c			
	Model 1	Model 2	Model 3	Model 4
	<i>Adjusted Odds Ratio (95% Confidence Interval) ^d</i>			
Student Reports of School Climate				
<i>Student Engagement</i>				
Student-level ^e	0.23 (0.22, 0.24)**	--	--	0.23 (0.22, 0.24)**
School-level ^f	0.17 (-0.00, 0.35)	--	--	0.07 (-0.13, 0.27)
<i>School Safety</i>				
Student-level ^e	0.06 (0.05, 0.07)**	--	--	0.06 (0.05, 0.07)**
School-level ^f	-0.06 (-0.28, 0.16)	--	--	-0.06 (-0.27, 0.15)
School Staff Reports of School Climate				
<i>School Climate</i>	--	0.11 (0.04, 0.18)**	--	0.11 (0.03, 0.18)**
Administrative Measures of School Climate				
<i>Truancy Rate</i>	--	--	-0.02 (-0.19, 0.16)	-0.02 (-0.18, 0.15)
<i>Suspension Rate</i>	--	--	-0.04 (-0.60, 0.53)	0.02 (-0.57, 0.62)

^a Analysis sample contains 33,572 students nested within 121 schools; only students with complete student- and school-level variables of interest were included in the present study.

^b Multilevel logistic regression.

^c Multilevel linear regression.

^d After controlling for student gender, student grade level, student race/ethnicity, the percent of student who were English language learners, the percent of students who were eligible for free or reduced-price lunch, the percent of students who were non-Hispanic White, and total school enrollment.

^e Student-level variance represents level one variation (variance within the school).

^f School-level variance represents level two variation (variance between schools).

* p<0.05; **p<0.01

REFERENCES

- 114th Congress. (2015). *The Every Child Achieves Act of 2015*. Retrieved from:
http://www.help.senate.gov/imo/media/S_EveryChildAchievesActof2015.pdf.
- American Institutes for Research. (2016). *Safe supportive learning: school climate survey compendia*. Retrieved from: <https://safesupportivelearning.ed.gov/topic-research/school-climate-measurement/school-climate-survey-compendium>.
- American Psychological Association Zero Tolerance Task Force. (2008). Are zero tolerance policies effective in schools: an evidentiary review and recommendations. *American Psychologist*. 63(9):852-862.
- Austin, G., Bates, S., & Duerr, M. (2016). *Guidebook to the California Healthy Kids Survey*. Retrieved from: <http://chks.wested.org/>.
- Bosworth, K., Ford, L., & Hernandez, D. (2011). School climate factors contributing to student and faculty perceptions of safety in select Arizona schools. *Journal of School Health*. 81(4):194-201.
- Bradshaw, C.P., Waasdorp, T.E., Debnam, K.J., & Johnson, S.L. (2014). Measuring school climate in high schools: a focus on safety, engagement, and the environment. *Journal of School Health*. 84(9):593-604.
- Brand, S., Felner, R.D., Seitsinger, A., Bums, A., & Bolton, N. (2008). A large scale study of the assessment of the social environment of middle and secondary schools: the validity and utility of teachers' ratings of school climate, cultural pluralism, and safety problems for understanding school effects and school improvement. *Journal of School Health*. 46(5):507-535.

- Bonell, C., Fletcher, A., Jamal, F., Wells, H., Harden, A., Murphy, S., & Thomas, J. (2013). Theories of how the school environment impacts on student health: systematic review and synthesis. *Health & Place*. 24:242-249.
- California Department of Education. (2016a). *Local control funding formula*. Retrieved from: <http://www.cde.ca.gov/fg/aa/lc/>.
- California Department of Education. (2016b.) *Safe and supportive schools*. Retrieved from: <http://www.cde.ca.gov/lr/ss/se/safesupportive.asp>.
- California Department of Education. (n.d.). *Data & statistics*. Retrieved from: <http://www.cde.ca.gov/ds/>.
- Centers for Disease Control and Prevention. (2009). *School connectedness: strategies for increasing protective factors among youth*. Atlanta, GA: U.S. Department of Health and Human Services.
- CORE. (n.d.). *CORE districts: school quality improvement center (waiver)*. Retrieved from: <http://coredistricts.org/school-quality-improvement-system-waiver/>.
- Espelage, D.L., Polanin, J.R., & Low, S.K. (2014). Teacher and staff perceptions of school environment as predictors of student aggression, victimization, and willingness to intervene in bullying situations. *School Psychology Quarterly*. 29(3):287-305.
- Gase, L.N., DeFosset, A., Perry, R., & Kuo, T. (2016). Youth perspective on the reasons underlying school truancy and opportunities to improve school attendance. *The Qualitative Report*. 21(2):299-320.
- Gilreath, T.D., Cederbaum, J.A., Astor, R.A., Benbenishty, R., Pineda, D., & Atuel, H. (2013). Substance use among military-connected youth: the California Healthy Kids Survey. *American Journal of Preventive Medicine*. 44(2):150-153.

- Hanson, T. (2012). *Construction of California's School Climate Index (SCI) for high schools participating in the Safe and Supportive Schools Program*. Los Alamitos, CA: WestEd. Retrieved from: http://surveydata.wested.org/resources/SCI_Methodology071712b.pdf.
- Jain, S., Cohen, A.K., Huang, K., Hanson, T.L., & Austin, G. (2015) Inequalities in school climate in California. *Journal of Educational Administration*. 53(2):237-261.
- Jamal, F., Fletcher, A., Harden, A., Wells, H., Thomas, J., & Bonell, C. (2013). The school environment and student health: a systematic review and meta-ethnography of qualitative research. *BMC Public Health*. 13:798.
- Lewallen, T.C., Hunt, H., Potts-Datema, W., Zaza, S., & Giles, W. (2015). The Whole School, Whole Community, Whole Child Model: a new approach for improving educational attainment and healthy development for students. *Journal of School Health*. 85(11):729-739.
- Michael, S.L., Merlo, C.L., Basch, C.E., Wentzel, K.R., & Wechsler, H. (2015). Critical connections: health and academics. *Journal of School Health*. 85(11):740-758.
- Mitchell, M.M., & Bradshaw, C.P. (2013). Examining classroom influences on student perceptions of school climate: the role of classroom management and exclusionary discipline strategies. *Journal of School Psychology*. 51(5):599-610.
- Mitchell, M.M., Bradshaw C.P., & Leaf, P.J. (2010). Student and teacher perceptions of school climate: a multilevel exploration of patterns of discrepancy. *Journal of School Health*. 80(6):271-279.
- National School Climate Center. (n.d.). *School climate*. Retrieved from: <http://www.schoolclimate.org/climate/>.

- National School Climate Council. (2007). *The school climate challenge: narrowing the gap between school climate research and school climate policy, practice guidelines and teacher education policy*. Retrieved from:
<http://www.schoolclimate.org/climate/advocacy.php/>.
- Stone, S., Whitaker, K., Anyon, Y., & Shields, J.P. (2013). The relationship between use of school-based health centers and student-reported school assets. *Journal of Adolescent Health*. 54(4):526-532.
- Thapa, A., Cohen, J., Guffey, S., & Higgins-D'Alessandro, A. (2013). A review of school climate research. *Review of Educational Research*. 83(3):357-385.
- Waasdorp, T.E., Pas, E.T., O'Brennan, L.M., & Bradshaw, C.P. (2011). A multilevel perspective on the climate of bullying: discrepancies among students, school staff, and parents. *Journal of School Violence*. 10(2):115-132.
- WestEd. (2016). *California School Climate Survey: administer the survey*. Retrieved from:
<http://cscs.wested.org/administer/>.
- WestEd. (n.d.). *Assessing school climate*. Retrieved from: http://kern.org/wp-content/uploads/sites/11/2014/02/CSCHLS_ClimateLCAP-20140203.pdf.
- You, S., O'Malley, M.D., & Furlong, M.J. (2014). Preliminary development of the Brief-California School Climate Survey: dimensionality and measurement invariance across teachers and administrators. *School Effectiveness and School Improvement*. 25(1):153-173.
- Zimring, F.E., & Tanenhaus, D.S. (2014). *Choosing the future for American juvenile justice*. New York, NY: NYU Press.

CHAPTER 3: Understanding Racial and Ethnic Disparities in Arrest: The Role of Individual, Home, School, and Community Characteristics

INTRODUCTION

Contact with the justice system can lead to poor health outcomes, including increased risk for substance abuse, involvement in violence and violent victimization, and exposure to infectious diseases (Brame et al. 2012; Gatti et al. 2009; Hjalmarsson 2007; Lambie and Randell 2013; Massoglia 2008; Turney et al. 2012). Moreover, contact with the justice system can have a range of negative social and economic consequences, damaging social networks and family functioning, decreasing high school graduation and employment rates, and worsening mental health outcomes and long-term life opportunities (Clear 2008; Pridemore 2014). Addressing social needs, including decreasing contact with the justice system, has become an area of focus for health practitioners and researchers in an effort to tackle the root causes of health inequities (Alley et al. 2016; Brame et al. 2012).

Persons of color are disproportionately represented in both the juvenile and criminal justice systems. Among youths, the evidence for racial differences is greatest at the earliest point of contact, particularly at the stages of arrest, referral to court, and placement in secure detention (National Research Council 2013). In 2013, more than one million youths in the United States had contact with the juvenile justice system; Black youths experienced more than twice the rate of arrest than White youths (Puzzanchera and Hockenberry 2015). Despite decreases in the number of youths entering the justice system in the past 20 years, overall reductions have not narrowed the gap. Arrest rates among White youths, for example, have been decreasing at a

faster pace than arrest rates for Black youths (Stevens and Morash 2015). Data among adults show similar patterns; those who are arrested, incarcerated, and put on probation or parole come largely from disadvantaged segments of the population, mainly minority men who are poorly educated, lack work preparation or experience, and/or battle substance abuse disorders (National Research Council 2014).

Despite well documented racial differences in contact with the justice system, reasons for these disparities remain unclear. Researchers have conceptualized racial disparities as potentially stemming from differences in individual behaviors (offending), environmental and social contexts, and/or policies and practices of the criminal justice system (Piquero 2008).

Unfortunately, the vast majority of studies conducted to date have focused on a narrow set of potential predictors and have not been able to fully examine the individual- and system-level characteristics that impact racial/ethnic disparities in justice system contact. The present study sought to help address these gaps by conducting a multilevel, cross-sectional analysis using data from the National Longitudinal Study of Adolescent to Adult Health (Add Health) to simultaneously consider a more robust range of individual, home, school, and community factors in driving racial and ethnic disparities in the first point of contact with the justice system, arrest. Given the wide range of short and long-term detrimental effects associated with justice system contact and its role in influencing inequities (Brame et al. 2012; Schnittker and John 2007), by better articulating the factors driving racial/ethnic disparities in arrests, we can begin to identify leverage points to help shift health, social, and economic trajectories.

Background

There are two prominent explanations for the well-documented disproportionate rates of minority contact with the justice system. The first – the “differential involvement” hypothesis – posits that minorities are overrepresented in the juvenile and criminal justice systems because they commit more crimes, for more extended periods of their lives, and partake in more of the types of crimes that lead to processing in the justice system, such as violence (Piquero 2008). A number of studies using official police records and self-reported data support the notion of differential patterns of offending, particularly for violent behaviors (Piquero 2008). Previous work by Felson and Deane (2007), for example, identified higher rates of violence among Black adolescents, particularly armed violence, even after controlling for demographic factors such as family structure, residence, and socioeconomic status.

A second, alternate explanation for disproportionate minority contact is the “differential selection and processing” hypothesis, the notion that juvenile and criminal justice system protocols and processes lead to more minorities being arrested, convicted, and incarcerated (Piquero 2008). A meta-analysis of data collected at the encounter or suspect level reported that Blacks had an increased likelihood of being arrested as compared to Whites even after controlling for factors such as demeanor, offense severity, quantity of evidence at the scene, prior record of the suspect, and requests to arrest by victims (Kochel et al. 2011). Experimental studies point to the role of unconscious racial stereotyping among law enforcement officials; for example, Graham and Lowery (2004) demonstrated the impact of racial priming on police and probation officer reports of negative traits, culpability, expected recidivism, and in endorsing harsher rates of punishment. Additionally, scholars have pointed to components of the system – including lack of adequate resources for legal counsel, pretrial services, and drug treatment, which disproportionately

impact racial/ethnic minority offenders – as contributing to the recycling of individuals within the system and further exacerbating disparities (Taxman et al. 2005).

The complex nature of factors that drive disproportionate minority contact with the justice system makes it unlikely that either of these explanations provides a full picture. While most scholars have accepted the notion that some sort of mixed model offers the most promise for understanding these issues, there is disagreement about the level of weight to place on each of these explanations (Piquero 2008). While early studies strongly supported the central role of differential offending and some recent sociological-based theories of crime and violence continue to emphasize the differential involvement position, more recent work calls into question reliance on this hypothesis alone (Piquero 2008; Piquero and Brame 2008). Longitudinal studies using data from Denver, Rochester, and Seattle showed that racial differences in police contact remain substantial after controlling for differences in self-reported offending (Huizinga et al. 2007). Likewise, minority youths have been shown to be more likely to be involved with the criminal justice system after controlling for criminal behaviors, substance abuse, and mental health problems (Godette et al. 2011). Given such recent work, which suggests that accounting for delinquent behavioral patterns does not fully explain differences in system involvement, the key question thus remains: what drives racial/ethnic disparities in justice system contact?

Sociological theories provide insights into the ways by which environmental factors might influence disproportionate rates of contact with the justice system. The first class of theories posits that differences in neighborhood racial composition - and thereby differential accesses to economic, social, and political resources - influence criminological behaviors. Social

disorganization theory suggests that conditions of socioeconomic disadvantage and residential instability disrupt social bonds and limit collective activity to maintain social control, thereby increasing the likelihood of deviant behaviors such as violence and child maltreatment (Beyer et al. 2015; Maguire-Jack and Klein 2015; Sampson and Groves 1989). Studies point to the role of residential segregation in influencing structural disadvantage and social isolation, thereby increasing rates of neighborhood violence (Krivo et al. 2009).

A second class of theories suggests a more direct influence of neighborhoods on exposure to crime-control measures. Neighborhoods with a greater concentration of racial/ethnic minorities often have a more law enforcement officials; the reasons for such differential police presence are categorized as stemming from either a “consensus” or “conflict” perspectives (Renauer 2012; Taxman et al. 2005). A consensus perspective suggests that differences in crime-control measures reflect race-neutral, problem-oriented techniques which signal society’s uniform desire for law enforcement to control disorder (Renauer 2012). On the other hand, conflict perspectives view these efforts as a deliberate attempt by the dominant social group to maintain social control and order (Renauer 2012). Conflict-based theories, such as the racial threat perspectives, predict that increasing the population size and economic power of minority groups will result in the expanded use of formal social controls (Renauer 2012). Such theories have a long history of being used to explain macro-level law enforcement behaviors, such as police force size and incarceration rates (Davis and Sorensen 2013; Renauer 2012). To date, findings supporting the racial threat hypothesis on micro-level law enforcement practices have been mixed (Arvanties 2014; Davis and Sorensen 2013; Parker et al. 2005; Petrocelli et al. 2003) and

emerging evidence suggests the relevance of both consensus and conflict perspectives in explaining disproportionate minority contact (Renauer 2012).

A few multilevel studies have helped to shed some light on the relative contributions of individual, community, and system characteristics in influencing rates of disproportionate minority contact; the majority of work has focused the juvenile years. Kirk's (2008) study of Chicago youths points to the importance of unstable family structure, concentrated poverty, and low levels of collective efficacy in influencing disparate arrest rates between Whites and Blacks. In their study, even after controlling for delinquent behaviors as well as other individual, family, and neighborhood-level factors, substantial differences in arrest remained between Black youths and those in other racial groups. Work by Crutchfield and colleagues examining differences in rates of police contact (2012) and arrest (2009) among youths in Seattle illustrated the role of income, parental histories of arrest, delinquent peers, deviant adult networks, and school disciplinary practices in predicting disparities, after controlling for delinquent behaviors. Of interest was the importance of parental and other family criminal involvement which, as the authors concluded, may point to the role of law enforcement paying more attention to families known to be involved in crime. In one of the only studies of a nationally representative sample of youths, Anderson (2015) demonstrated disproportionate rates of arrest between Black and White youths, but not between Hispanic and White youths, after controlling for self-reported delinquency. The study found these disparities to be magnified in predominantly non-Black communities; however, it was only able to consider a limited number of community-level and no school-level factors in its analysis. Overall, there are likely to be a number of important

contextual and individual factors that contribute to differential rates of contact with the justice system, many of which remain unexplored.

The present study sought to address some of the gaps in the current literature by examining a more comprehensive range of community, school, home (family), and individual characteristics to understand reasons underlying racial/ethnic disparities in arrest. To explore these issues, this study used Add Health, which contains measures of a variety of factors, including adolescent self-reported delinquent behaviors, parental perceptions of home environments, and data on school and community characteristics. By using a nationally representative longitudinal data set, this study sought to examine the extent and sources of disparities in arrests during adolescence and young adulthood among Blacks, Whites, and Hispanics in the United States. Specific research questions included: 1) to what extent are there racial/ethnic differences in arrest, and if present, to what extent are they explained by differences in individual-level delinquent behaviors? and 2) what aspects of community and school environments are associated with differences in arrests, after controlling for individual-level delinquent behavior and other individual and family-level characteristics?

METHODS

Conceptual Framework

A conceptual framework - showing hypothesized relationships between race/ethnicity, arrest, and individual, home, and environmental characteristics - was constructed in order to synthesize existing literature and theoretic perspectives and inform the current study analyses (Figure 3.1).

The first pathway (pathway A) represents the “differential involvement” hypothesis. As

previously discussed, this pathway points to the role of delinquent behavior and other individual characteristics, such as school engagement, educational attainment, peer influences, and beliefs and motivations in influencing arrest. This pathway also considers characteristics of the home and family unit, as having a direct impact on both delinquent behavior and the likelihood of arrest. The second pathway (pathway B) represents the “differential selection and processing” hypothesis. This pathway asserts a direct influence of system characteristics on arrest (e.g., protocols, officer behavior), driven by explicit or implicit racial biases. The third pathway (pathway C) considers the upstream determinants of individual behaviors and family structures, namely, school and community characteristics (often termed “social context”). Pathway C posits that individuals are non-randomly “assigned” to these environments, based on their race, for example, through housing practices that promote racial/ethnic segregation (Jargowsky 2015; Williams and Collins 2001). These environments vary dramatically in their quality which, in accordance with established theories (i.e., consensus, conflict, and disorder theories), can influence the behaviors of residents (i.e., youths and families) as well as contribute directly to the likelihood of arrest, for example, through increased crime rates and associated police presence.

The present study used this framework to examine a) the extent of individual and family characteristics (pathway A) in explaining racial/ethnic differences in arrest (study question 1) and, b) after accounting for pathway A, the role of community and school characteristics (pathway C) in influencing disparities in arrest (study question 2). Because no specific data were available on system characteristics, pathway B was not directly examined in this study.

Implicit, although not directly depicted in the framework, is the importance of compounding effects across the life course. Within the framework, there are likely to be inter-relationships that are not explicitly depicted, especially over time. For example, whether someone is arrested at a young age will influence their level of delinquent behavior, educational attainment, employment status, etc. in subsequent years. Likewise, there are likely to be associations between race/ethnicity and some of the other factors, for example, parental characteristics might vary between racial/ethnic groups due to cultural differences in parenting practices and family dynamics. These may also vary over time, for example with greater acculturation as U.S. tenure increases for immigrant families.

Sample

The National Longitudinal Study of Adolescent to Adult Health (Add Health) is a large longitudinal dataset based on a nationally representative cohort of U.S. adolescents. Youths were in grades 7-12 during the first year of administration (conducted from September 1994 through December 1995) (wave I). The cohort has been followed into young adulthood with four in-home interviews, the most recent of which was conducted from January 2008 through February 2009, when the sample was aged 24-32 years old (wave IV).

The data was collected using a school-based, clustered sampling design. A sample of 80 high schools and 52 middle schools from the United States was selected with unequal probability of selection. A school was eligible for the sample if it included an 11th grade and had a minimum enrollment of 30 students. Multiple types of youths were oversampled, including disabled, Blacks from well-educated families, Chinese, Cubans, Puerto Ricans, and twins and siblings. As

described by the survey creators, incorporating systematic sampling methods and implicit stratification into the study design helps ensure that the sample is representative of U.S. schools with respect to region, urbanicity, school size, school type, and ethnicity (Harris et al. 2009).

For this study, a subset of the data was extracted by merging variables from five Add Health files: the wave I adolescent in-home file, the wave I parental in-home questionnaire, the wave I school administrator questionnaire, the wave I contextual file, and the wave IV in-home questionnaire. We chose to use data from only waves I and IV in order to obtain information from the earliest formative years (wave I) and the most complete data on life experience (wave IV). Respondent data were collected in the youth's home during an in-person interview using standardized interview protocols. The majority of questions were asked directly by the interviewer; however, sensitive questions were administered using computer-assisted self-interview. For parental data, the mother (or other female head of the household) of the originally sampled adolescent was asked to participate in an interviewer-administered, paper-and-pencil survey. If the mother did not reside in the household the following list was used to select the next most appropriate respondent: stepmother, other female guardian, father, stepfather, other male guardian (Harris et al. 2009). For school data, an administrator from each school was asked to complete a questionnaire. Finally, the contextual file data elements were developed based on either respondent addresses, GPS readings that allowed for geocoding, or (in a small proportion of cases) ZIP code data.

Measures

Arrest

The outcome, whether an individual was ever arrested, was taken from the wave IV in-home question, “Have you ever been arrested?” To provide context related to the outcome, we conducted descriptive analyses using the following three questions related to arrests: how old a respondent was the first time he/she was arrested (open-ended question, dichotomized for analysis as whether or not the arrest occurred before age 18); how many times a respondent had been arrested (closed-ended question with response options of “once” or “more than once”); and what the respondent was charged with the first time he/she was arrested (closed-ended question with response options of “driving under the influence,” “other alcohol-related offenses,” “marijuana offenses,” “other drug offenses,” “robbery,” “theft,” “forcible rape,” “aggravated assault/intentional manslaughter/murder,” “simple assault,” “fraud, forgery, or embezzlement,” and “other offenses”).

Individual Characteristics

Demographics. All demographic characteristics were taken from the wave I in-home questionnaire. Respondents were asked to identify their race. Response options included: White, Black or African American, Asian or Pacific Islander, American Indian or Native American, or other. In a separate question, respondents were asked whether they were of Hispanic or Latino origin. All individuals who selected Hispanic were able to select one (or more) sub-group from the following: Mexican, Cuban, Puerto Rican, or Central/South American. From these questions, we developed four mutually-exclusive racial/ethnic categories: non-Hispanic White, non-Hispanic Black, Hispanic, and other. If participants selected more than one race, their self-identified category that “best describes their racial background” was used. Due to the small number of those who identified as Asian or Pacific Islander or American Indian or Native

American, these responses were grouped with “other.” Based on the small number of respondents in each of the Hispanic sub-group categories, and results of preliminary analyses, which suggested no differences between Mexicans, Cubans, Puerto Ricans, or Central/South Americans in arrests, Hispanic ethnicities were grouped together.

Age at the time of survey administration was calculated using the respondent’s reported date of birth. Respondents were asked whether they were born in the United States, and if not, when they moved to the United States. These variables were used to calculate the number of years the respondent had been in the United States. Respondents were asked to report how old they were when they moved to their current residence; their age was used to calculate the number of years they had lived in their current residence. The interviewer noted the respondent’s gender.

Delinquent behaviors. A robust set of delinquency measures were constructed from data provided during the waves I and IV in-home questionnaires, including property crime, violent crime, drug crime, youth delinquency (wave I only), school truancy (wave I only), alcohol use, and marijuana use. In accordance with previous studies using Add Health data (Felson and Deane 2007; McNulty and Bellair 2003), items from the property crime, violent crime, drug crime, and youth misbehaviors scales (Appendix 3.1) were re-coded as 1 (yes) or 0 (no) and averaged. Truancy in wave I was constructed using the question “During this school year, how many times have you skipped school for a full day without an excuse?” Categories were defined based on the distribution of response (0, 1-9, or 10 or more) and a category was created for those who reported not currently being in school.

Wave I alcohol use was constructed from three questions asking about the timing and frequency of use; responses were constructed to create four mutually exclusive categories: those who a) had never had a drink of alcohol, b) those who had tried alcohol, but had not consumed any in the past year, c) those who had consumed in the past year, but had never had 5 or more drinks in a row (binge drinking), and d) those reporting binge drinking at least once in the past year. For wave IV, responses were used to identify respondents who: a) had never had a drink of alcohol, b) those who had consumed in the past year, but had never binge drank, c) those who binge drank less than once a month, and d) those who binge drank once a month or more. Marijuana use in wave I was constructed from three questions asking about the timing and frequency of use; responses were constructed to identify those who: a) had never tried marijuana, b) had tried marijuana, but had not used in the past 30 days, and c) had used in the past 30 days. For wave IV, responses were used to identify respondents who had used marijuana in the past year and those who had not.

Educational factors. School connectedness was measured using five items which asked about student perceptions during the current school year, or if it was summer, the previous school year. Items were designed to capture the social belonging dimension of school connectedness (e.g., “you feel close to people at your school”) and have demonstrated acceptable internal consistency (Joyce and Early 2014). Responses, each ranked on a five point scale (ranging from 1 “strongly disagree” to 5 “strongly agree”), were averaged and four categories were created. Educational attainment was constructed using responses to the wave IV in-home questionnaire that asked participants to indicate “the highest level of education that you have achieved to date.”

Responses were categorized as “less than high school,” “high school graduate or GED,” “some college,” or “completed a bachelor’s degree or higher.”

Home Characteristics

All home characteristics were constructed using the wave I parental in-home questionnaire. The number of adults living in the home was defined as one or two. Two adults were counted as living in the home if the parental respondent was married and living with the spouse; married, not living with the spouse, but living in a marriage-like relationship with someone else; or not married, but living in a marriage-like relationship. Parent education level was coded as the highest level of education completed by either adult living in the house. Household income was categorized based on response to the question “about how much total income, before taxes did your family receive.” A separate indicator was constructed to indicate refusals. Finally, parental relationship with youths was constructed by averaging responses to four items on relationship strength and quality (e.g., “you get along well with [child], you make decisions about [child’s] life together”) in accordance with previous studies (Johnson 2013), and dichotomized as weak (1.0 to 4.0) or strong (>4.0) based on the distribution of responses. For all home characteristic variables, because of the large number of respondents (10.6%) for which no in-home questionnaire was completed, an indicator was created to specify that no parental interview was conducted (to retain these respondents in the multivariable analyses).

School Characteristics

All school characteristics were constructed using the wave I school administrator questionnaire. School type was coded as “comprehensive public school (not including magnet school or school

of choice),” “public magnet school or public school of choice,” “area vocational school or other technical or vocational school,” or “religious or non-religious private school.” School size was codes as small (1-400 students), medium (401-1000 students), or large (1001-4000 students), for both middle and high schools. Average daily attendance was constructed using the original scale reported by school administrators – 95% or more, 90% to 94%, 85% to 89%, 80 to 84%, or 75% to 79%. The number of school-based services was constructed by summing the number of 18 services (athletic physical, non-athletic physical, treatment for minor illness and injuries, diagnostic screening, treatment for sexually transmitted diseases, immunizations, family planning counseling, family planning services, prenatal/postpartum health care, drug awareness and resistance education program, drug abuse program, alcohol abuse program, nutrition/weight loss program, emotional counseling, rape counseling program, physical violence program, day care for children of currently enrolled students, physical fitness/recreation center) provided “on school premises.” Finally, school discipline policy was constructed by averaging the number of first time offenses (for cheating, fighting with another student, injuring another student, possessing alcohol, possessing an illegal drug, possessing a weapon, drinking alcohol at school, using an illegal drug at school, smoking at school, verbally abusing a teacher, physically injuring a teacher, stealing school property) that resulted in an “out of school suspension” or “expulsion.”

Community Characteristics

All community characteristics were constructed using the wave I contextual file. Crime rate was the total crime rate per 100,000 population, as obtained from the Uniform Crime Reports; county-level counts of arrests and offenses for the violent crimes of murder, rape, robbery, and violent assault, and the property crimes of burglary, larceny, auto theft, and arson are provided to

the U.S Federal Bureau of Investigation by local agencies. Poverty rate (the proportion of families with income in 1989 below the poverty level), unemployment rate (for the general population), the proportion of individuals who were White, and the proportion of housing units vacant, were derived from the 1990 Census long-form questionnaire. With the exception of crime rate (only available at the county level), all variables were at the census block group level.

Analytic Methods

Bivariate analyses were first conducted to examine the association between race/ethnicity and the other individual, home, school, and community characteristics. To examine the two primary research questions, cross-sectional multilevel logistic regression was conducted using arrest (yes or no) as the dependent variable. Sets of predictor variables – driven by the conceptual framework (Figure 3.1) – were sequentially added to create six versions of the model: 1) model 1, the base model, which included only race/ethnicity; 2) model 2, which included race/ethnicity along with individual characteristics and measures of delinquency; 3) model 3, which included all variables from model 2, plus home characteristics; 4) model 4, which included all variables from model 3, plus school characteristics; 5) model 5, which included all variables from model 3, plus community characteristics; and 6) model 6, which included all individual, home, school, and community characteristics. Across models, individual, home, and community variables were treated as level one variables, while school characteristics (the primary sampling unit) were treated as level two variables.

Multi-degree of freedom tests were conducted in order to examine the significance of categorical variables (with more than two levels) as well as “groups” of home, school, and community

characteristics. To judge magnitude of effects, we computed predicted values and differences using Taylor series standard errors to evaluate significance. All analyses were completed using the individual- and school-level weights provided by the survey developers in order to properly account for the study design. Due to the complexity of the multivariable models, all analyses were performed using cases with complete data for all variables of interest (86.2% of the total sample). All analyses were conducted using Stata version 14.1 (*StataCorp LP, College Station, Texas*). All materials were reviewed and approved by the Los Angeles County Department of Public Health Institutional Review Board.

RESULTS

Descriptive Statistics

More than a quarter of respondents (29.6%) reported having ever been arrested (Table 3.1). There were differences in arrests between racial/ethnic groups ($p = 0.0003$), with 36.8% of Blacks, 30.3% of Hispanics, and 27.9% of Whites having ever been arrested. Among those who had been arrested, 26.1% reported having been arrested before the age of 18 and 50.7% reported having been arrested more than once. The most commonly reported reasons for the first arrest included alcohol or drug-related offenses (46.0%), theft or robbery (12.0%), and violent offenses (e.g., assault, forcible rape) (10.3%).

There were a number of differences among racial/ethnic groups for many of the observed individual, home, school, and community characteristics (Table 3.1). For example, Whites reported the highest level of alcohol use at both wave I and wave IV and marijuana use at wave IV, in comparison to other groups. Similar differences among racial/ethnic groups with regard to

property crime at wave I ($p = 0.0002$) were detected, with Hispanics having higher levels than Whites and Blacks. Both Blacks and Hispanics had higher levels of violent crime than Whites at wave I ($p < 0.00001$). Blacks also reported higher levels of violent crime than Whites at wave IV ($p = 0.0003$). Whites reported the highest levels of educational attainment ($p < 0.00001$), with 33.3% having completed college, compared to 24.3% of Blacks and 19.6% of Hispanics.

White respondents had the highest proportion of parents complete an interview ($p < 0.00001$) and were more likely than other racial/ethnic groups to have two parents living in the house at wave I ($p < 0.00001$). White parents reported having higher levels of educational attainment ($p < 0.00001$) and higher household incomes ($p < 0.00001$), for example, 12.8% of White parents reported an annual household income over \$80,000, compared to 4.9% of Hispanics and 4.7% of Blacks. With regard to schools, Black youths were more likely to go to a school that reported lower levels of average daily attendance ($p < 0.00001$) and more strict suspension policies ($p = 0.0038$), when compared to other racial/ethnic groups. Looking at community characteristics, both Blacks and Hispanics lived in areas with more crime ($p < 0.00001$), greater rates of family poverty ($p < 0.00001$), greater rates of unemployment ($p < 0.00001$), greater rates of vacant housing ($p = 0.0059$), and a lower proportion of White residents ($p < 0.00001$) (Table 3.1).

Multivariable Analyses

To What Extent are Racial/Ethnic Differences in Arrest Explained by Differences in Delinquent Behaviors?

Results of the multivariable analyses suggest that racial/ethnic differences in arrest were not explained by differences in individual-level delinquent behaviors. After controlling for

demographic characteristics, including gender, age, time in the United States, time in current residence, and region, as well as a range of delinquent and criminal behaviors (model 2), there were significant racial/ethnic differences in arrests ($p < 0.0001$). After controlling for these factors, the odds of being arrested increased among Blacks, as compared to Whites, from 1.40 (95% confidence interval [CI] = 1.18, 1.68) (model 1) to 1.58 (95% CI = 1.27, 1.95) (model 2). Other significant predictors associated with increased odds of arrest included male gender, having lived longer in the United States, having lived for a shorter time in one's current residence, and delinquent behavior, including property crime (in wave IV), violent crime (in both waves), drug crime (in both waves), truancy, and drug and alcohol use (in wave IV) (Table 3.2).

Adding home characteristics (model 3) did not significantly alter the association between race/ethnicity and the odds of being arrested. In this model, the association between most of the demographic characteristics, delinquent behaviors, and educational factors and the odds of arrest remained similar in both strength and magnitude. As a group, the parental variables were shown to be associated with the odds of arrest ($X^2 = 2962.0$, $p < 0.0001$). In particular, parent's relationship with their child was a strong predictor of arrest (Table 3.2).

What Aspects of Community and School Environments are Associated with Racial/Ethnic Differences in Arrests?

Multivariable analyses suggest that neighborhood composition (the percent of White residents in the neighborhood) was the primary driver of racial/ethnic differences in arrests. In model 6, for every one percentage point increase in the proportion of individuals in a community who were White, respondents had less than half the odds of being arrested (odds ratio = 0.44, 95% CI =

0.16, 0.69), after controlling for other factors. The predicted probability of arrest among Whites was 0.29 (95% CI = 0.27, 0.31), while the predicted probability among Blacks was 0.30 (95% CI = 0.26, 0.33); this difference was not statistically significant ($p = 0.58$). While other school characteristics (model 4 joint F-test of school characteristics $X^2 = 41.33$, $p < 0.0001$) and community characteristics (model 5 joint F-test of community characteristics $X^2 = 13.78$, $p = 0.0171$) were associated with the odds of being arrested, they were not the primary driver of racial/ethnic disparities (Table 3.2).

The relationship between neighborhood composition and arrest differed by race/ethnicity. Specifically, as the percent of Whites increased, the odds of arrest among Whites (odds ratio = 0.20, 95% CI = 0.08, 0.47) and other races (odds ratio = 0.20, 95% CI = 0.03, 1.42) decreased, whereas the odds of arrest among Blacks (odds ratio = 1.10, 95% CI = 0.53, 2.25) and Hispanics (odds ratio = 0.95, 95% CI = 0.25, 3.63) remained fairly constant. Predicted probabilities of arrest in relation to the percent of White residents in the neighborhood, for Whites, Blacks, and Hispanics, are presented in Figure 3.2.

DISCUSSION

Despite well documented racial/ethnic differences in rates of contact with the justice system, reasons for these disparities remain unclear. This study sought to examine the extent of racial/ethnic differences in arrests among a national sample of adolescents and young adults to better understand the extent to which these differences were influenced by delinquent behavior as well as a range of other individual, home, school, and community characteristics. Overall, analyses showed significantly higher likelihood of having ever been arrested among Blacks,

when compared to Whites, even after accounting for a range of delinquent behaviors.

Importantly, after controlling for racial composition of the neighborhood, these disparities were no longer present, suggesting the importance of neighborhood context in influencing racial/ethnic disparities in arrests.

Results of the present study align with the well-documented disparities in arrests between Blacks and Whites (Puzzanchera and Hockenberry 2015). As expected, both youth and adult delinquent behaviors - including property crime, violent crime, drug use, drug-associated crime, and truancy - were significantly, positively associated with the likelihood of arrest. While rates of delinquent behavior were fairly consistent across racial/ethnic groups, some differences were noted, for example, Blacks reported higher rates of involvement in violent crime in both youth and adulthood, when compared to Whites, supporting previous research (Felson and Deane 2007; McNulty and Bellair 2003). In our study, however, the vast majority of delinquent behaviors did not differ between racial/ethnic groups, and Whites showed higher rates of some forms of delinquency, including alcohol and marijuana use. Results support criticisms raised about the “war on drugs,” wherein racial/ethnic minorities have experienced significantly higher rates of arrests for drug offenses, despite comparable rates of drug possession and sales (Fellner 2009). In the present study, after controlling for delinquent behaviors, the magnitude of the disparity in arrests between Blacks and Whites remained significant, suggesting that observed differences in arrests were not driven by differences in delinquent behaviors. Thus, these results stand in contrast to the “differential offending” hypothesis and instead support the growing body of research demonstrating the importance of contextual variables in driving disproportionate

minority contact with the justice system (Crutchfield et al. 2012; Huizinga et al. 2007; Kirk 2008)

Results of the present study suggest that neighborhood racial composition may be one of the key factors driving racial/ethnic disparities in arrest rates. Historically, people of color have been concentrated into areas that differ vastly in their level of economic, social, and political resources, including the quality of educational and employment opportunities and other neighborhood resources (Krivo et al. 2009; Williams 1997; Williams and Collins 2001). The current level of residential racial segregation and the concentration of poverty in the United States is the product of structural forces, political decisions, and institutional arrangements, many of which continue to operate today (Jargowsky 2015). In the present study, both Blacks and Hispanics tended to live in communities with higher crime rates, poverty rates, and unemployment rates, when compared to Whites. While many aspects of school and community contexts were associated with arrest, results of the present study point to the important role of neighborhood racial composition in influencing racial/ethnic disparities in arrest, above and beyond socioeconomic indicators of poverty, unemployment, vacant housing, or school quality.

Associations between neighborhood racial composition and the likelihood of arrest may reflect differences in criminal justice practices and policies, such as police presence. Previous studies have shown racial composition to be related to police force size (Parker et al. 2005) and police behaviors (Petrocelli et al. 2003; Renauer 2012). In the present study, whether the observed association between neighborhood racial composition and arrest is rooted in a consensus (race neutral) or conflict (social control) theoretical perspective cannot be fully determined; however,

there are two potentially useful indicators. First, the statistically significant association between racial composition and the odds of arrest, after accounting for crime rates, provides some support for the role of social control. If policing practices are driven by a uniform desire to reduce disorder, then controlling for differences in crime rates should decrease the magnitude of racial/ethnic disparities in arrest; however, such results were not seen in the present study. This study is limited, though, in its measures of crime, which was not available at the neighborhood level, where “hot spots” for crime and association problem-oriented policing may be determined. Another potentially useful indicator are the results of the stratified analyses which showed that Whites were more likely to be arrested in areas with fewer Whites. These findings provide support for the “race out of place” perspective, which contends that police officer attention is raised toward individuals or groups who do not fit into neighborhood norms (Renauer 2012). This hypothesis is not supported, however, by results showing that Blacks were equally likely to be arrested, regardless of neighborhood racial composition.

A somewhat unexpected finding was the lack of evidence supporting differences in arrests between Hispanics and Whites. While Hispanics are often considered to be at higher risk for police contact, previous studies have been mixed, finding both positive (Vazsonyi and Chen 2010) and null (Andersen 2015; Tapia 2010) associations. Reasons for these contradictory findings remain unclear, but could be related to the fact that Hispanic ethnicity may not be as readily discernible a characteristic as race by law enforcement officials (Tapia 2010). In addition, Hispanics represent a heterogeneous group of backgrounds and many previous studies have been unable to examine differences among Hispanic subgroups. While the present study did not find differences in arrests among those who reported being of Mexican, Cuban, Puerto Rican, or

Central/South American descent, a more in-depth exploration of these and other Hispanic groups represents an important area for future research. As results of the present and previous studies (Kirk 2008) suggest the potentially protective role of being a recent immigrant, nativity should also be considered. Unfortunately, the small number of recent immigrants included in the present study sample prevented in-depth exploration of these issues.

Although this study is one of the first to examine an expansive range of individual, home, school, and community characteristics in influencing arrests among a national sample of adolescents and young adults, it has a number of limitations. First, data from youths, family members, and school administrators was collected through self-report. While self-reported measures of delinquency are not as ideal as objective measures, previous studies suggest that such methods are still reliable and valid (Thornberry and Krohn 2003) and that self-reporting of arrest does not vary systematically by race (Pollock et al. 2015). Second, because of the small number of respondents, individuals who identified as Asian or Pacific Islander, American Indian or Native American, or other were combined into one category. In addition, information on only a limited number of Hispanic sub-groups was available. Third, because of the complexity of the statistical model, complete case analysis was used. To help address some instances of item-non response, indicators were created for missing values (e.g., for income and whether the youth had a parental interview). To the extent that other variables are not missing at random, then results might be biased. Fourth, while the dataset provided information on a vast array of constructs, some were measured using only a single question (e.g., truancy, drug crime). In addition, no direct measures of law enforcement behaviors and practices were available. Fifth, information from wave I was used as a snapshot of youths' formative years. Some negative exposures may not have been

captured at this time point, especially for younger wave I respondents. Finally, while the use of national-level data provides a generally representative picture, this study could not examine state or city-level variations in the factors most likely to influence disparities in arrest.

Despite these limitations, this study provides insights on an issue that has plagued the U.S. juvenile and criminal justice systems. Disproportionate rates of minority contact are a longstanding problem that has neither been well understood nor effectively addressed. Results underscore emerging research supporting the need to look beyond the role of individual behaviors, to instead target the underlying contextual factors – particularly neighborhood racial composition – that drive racial/ethnic disparities in justice system contact.

The deleterious health, social, and economic consequences created for low-income people of color as a result of contact with the justice system are closely intertwined (My Brother's Keeper Task Force 2015). By looking further upstream to better elucidate the social, economic, and other contextual factors - such as arrest - that drive health disparities, researchers, policymakers, and agency decision-makers can take a more holistic approach. Given its range of negative impacts, additional efforts to reduce disproportionate minority contact with the justice system may provide a potential lever to foster more equitable outcomes among our nation's most vulnerable communities.

TABLES, FIGURES, AND APPENDICIES

Table 3.1. Characteristics of the full sample and characteristics stratified by race/ethnicity

	Full Sample	Non- Hispanic White	Non- Hispanic Black	Hispanic	Other	<i>p</i> -value ^a
<i>Percent or Mean (Standard Deviation)</i> ^b						
Individual Characteristics						
<i>Demographics</i>						
Race/Ethnicity		--	--	--	--	
Non-Hispanic White	65.6	--	--	--	--	
Non-Hispanic Black	17.5	--	--	--	--	
Hispanic	12.0	--	--	--	--	
Other	4.9	--	--	--	--	--
<i>Gender</i>						
Female	49.5	49.1	51.8	49.9	45.9	
Male	50.5	50.9	48.2	50.1	54.1	0.1652
Age (years) ^c	15.4 (1.77)	15.4 (1.60)	15.3 (1.97)	15.5 (2.07)	15.4 (2.21)	0.8854
Time in the United States (years) ^c	15.0 (2.51)	15.3 (1.72)	15.2 (2.25)	13.8 (4.64)	13.1 (5.35)	<0.001
Time in current residence (years) ^c	7.10 (5.64)	7.56 (5.20)	6.48 (6.18)	5.82 (6.11)	6.30 (6.60)	<0.001
<i>Ever Arrested</i>						
Yes	29.6	27.9	36.8	30.3	25.8	
No	70.4	72.1	63.2	69.7	74.2	<0.001
<i>Delinquent Behaviors</i>						
<i>Wave I</i>						
Property crime (range 0 to 1) ^d	0.13 (0.21)	0.13 (0.19)	0.11 (0.20)	0.17 (0.27)	0.15 (0.28)	<0.001
Violent crime (range 0 to 1) ^e	0.13 (0.19)	0.12 (0.17)	0.17 (0.23)	0.17 (0.25)	0.12 (0.25)	<0.001
Drug crime (range 0 to 1) ^f	0.08 (0.27)	0.07 (0.24)	0.08 (0.29)	0.11 (0.35)	0.08 (0.35)	0.2165
Youth delinquency (range 0 to 1) ^g	0.37 (0.30)	0.37 (0.27)	0.35 (0.32)	0.37 (0.35)	0.37 (0.38)	0.4552
<i>Truancy</i> ^h						
Never	72.8	73.9	74.8	65.4	68.6	
1-9 times	21.5	20.4	20.5	27.7	23.4	
10+ times	5.8	5.7	4.7	6.9	8.0	0.014
Alcohol use						<0.001

Never tried	44.3	41.9	53.5	42.7	47.3	
Tried	8.9	8.2	10.9	9.4	10.0	
No binge	20.3	20.1	21.0	19.2	23.1	
Any binge	26.5	29.9	14.6	28.7	19.6	
Marijuana use						
Never tried	72.4	71.7	75.7	70.2	74.6	
Past use >30 days	13.5	13.9	11.5	15.2	11.0	
Past use <30 days	14.2	14.5	12.7	14.6	14.4	0.3849
Wave IV						
Property crime (range 0 to 1) ⁱ	0.03 (0.10)	0.03 (0.09)	0.03 (0.12)	0.03 (0.13)	0.03 (0.13)	0.3475
Violent crime (range 0 to 1) ^j	0.03 (0.10)	0.02 (0.08)	0.04 (0.13)	0.03 (0.10)	0.02 (0.09)	<0.001
Drug crime (range 0 to 1) ^k	0.05 (0.21)	0.05 (0.19)	0.05 (0.25)	0.04 (0.23)	0.04 (0.24)	0.5543
Alcohol use						
Never tried	26.6	22.0	40.5	32.1	26.4	
No binge	24.3	22.8	30.6	23.3	24.8	
Moderate binge	28.2	32.1	15.7	25.7	28.0	
Heavy binge	20.8	23.2	13.2	18.9	20.8	<0.001
Marijuana use						
Past use >1 year	77.0	75.5	79.8	80.8	77.4	
Past use <1 year	23.0	24.5	20.2	19.2	22.6	0.0224
Educational Factors						
Currently in school^c						
Yes	98.3	98.3	98.4	97.6	99.6	
No	1.7	1.7	1.6	2.4	0.4	0.1571
School connectedness^h						
1.0 – 2.0	3.4	3.5	3.6	2.5	4.3	
2.0 – 2.9	18.7	19.3	18.5	17.6	14.9	
3.0 – 3.9	55.7	55.2	55.1	57.9	59.1	
4.0 – 5.0	22.2	22.1	22.9	22.0	21.7	0.6336
Educational attainment						
Less than high school	8.8	7.5	11.0	13.7	6.2	
High school	16.8	16.2	18.9	19.1	13.3	<0.001

graduate						
Some college	43.9	43.1	45.8	47.7	40.0	
College graduate	30.5	33.3	24.3	19.6	40.6	
Home Characteristics						
Any parental interview						
Yes	89.4	91.7	85.5	87.0	78.9	
No	10.6	8.3	14.6	13.0	21.1	<0.001
Adults in home ¹						
One	23.0	17.5	44.0	23.1	25.5	
Two	77.0	82.5	66.0	76.9	74.5	<0.001
Parent education level ¹						
Less than high school	10.7	5.8	14.5	33.1	12.2	
High school graduate	26.2	26.2	31.3	22.9	16.1	
Some college	32.2	34.1	30.4	22.5	27.9	
College graduate	30.9	33.9	23.9	18.5	43.8	<0.001
Household income ¹						
>20K	18.5	8.1	12.3	9.3	11.0	
20-39K	27.5	13.1	33.7	28.1	18.1	
40-59K	22.3	25.7	29.7	35.2	26.5	
60-79K	12.2	25.7	13.0	16.6	20.0	
80K+	10.5	14.6	6.6	6.0	12.9	
Refused	9.1	12.8	4.7	4.9	11.5	<0.001
Relationship with child ¹						
Weak (1.0–4.0)	39.6	40.3	43.4	30.9	37.3	
Strong (>4.0)	60.4	59.7	56.6	69.1	62.7	<0.001
School Characteristics						
Type						
Public	48.4	49.7	45.2	41.5	58.6	
Choice/magnet	36.1	33.8	45.4	41.1	22.0	
Vocational/trade	7.5	7.7	4.9	11.9	4.4	
Private	8.0	8.9	4.5	5.5	8.0	0.2512
Size						
Small	16.8	17.1	19.0	13.7	11.4	
Medium	45.0	47.1	51.5	26.1	39.6	
Large	38.3	35.8	29.5	60.2	49.0	0.0476
Average daily attendance						
95%+	39.6	43.9	31.0	29.4	37.9	
90%–94%	44.2	47.5	34.0	47.6	28.4	
85%–89%	10.4	5.6	16.8	20.8	26.7	
80%–84%	3.8	1.3	13.8	1.9	5.2	
75%–79%	2.0	1.7	4.4	0.3	1.8	<0.001
Number of school services (range 0 to 18) ^m	4.80 (3.14)	4.89 (2.90)	4.04 (2.92)	5.44 (3.97)	4.68 (3.90)	0.1295

Suspension policy (<i>range 0 to 1</i>) ⁿ	0.74 (0.18)	0.73 (0.17)	0.79 (0.14)	0.69 (0.23)	0.77 (0.22)	0.0038
Community Characteristics						
Crime rate (<i>per 100,000 population</i>) ^o	5671.3 (2661.1)	4952.7 (2167.8)	7240.3 (2751.5)	7178.8 (3451.2)	5998.7 (2441.7)	<0.001
Family poverty rate ^p	0.12 (0.13)	0.09 (0.09)	0.23 (0.18)	0.15 (0.15)	0.10 (0.15)	<0.001
Unemployment rate ^p	0.08 (0.06)	0.06 (0.05)	0.12 (0.08)	0.09 (0.07)	0.07 (0.06)	<0.001
Vacant housing ^p	0.08 (0.08)	0.08 (0.08)	0.10 (0.08)	0.08 (0.08)	0.07 (0.09)	0.0059
Proportion White ^p	0.78 (0.29)	0.92 (0.12)	0.38 (0.34)	0.71 (0.27)	0.66 (0.35)	<0.001

^a *p*-values calculated using chi-square tests (categorical variables) or analysis of variance (continuous variables) to examine associations between race/ethnicity and other individual, home, school, and community factors.

^b Weighted percentages or means calculated for the sample with no missing data on any variables of interest (n=12,752).

^c At wave I.

^d Average of seven items (Appendix 3.1).

^e Average of eight items (Appendix 3.1).

^f Measured using one item (Appendix 3.1).

^g Average of three items, including lying to parents and running away from home (Appendix 3.1).

^h Among youths currently in school.

ⁱ Average of five items (Appendix 3.1).

^j Average of five items (Appendix 3.1).

^k Measured using one item (Appendix 3.1).

^l Among youths with a parental interview.

^m Sum of the number of 18 services provided “on school premises.”

ⁿ Average of the number of first time offenses that resulted in an “out of school suspension” or “expulsion.”

^o Measured at the county level.

^p Measured at the census block level.

Table 3.2. Results of multilevel logistic regression: factors associated with ever being arrested among a national sample of adolescents and young adults ^a

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	<i>Odds Ratio (95% Confidence Interval) ^b</i>					
Individual Characteristics						
<i>Demographics</i>						
Race/Ethnicity						
Non-Hispanic White (ref)	--	--	--	--	--	--
Non-Hispanic Black	1.40 ** (1.18, 1.68)	1.58 ** (1.27, 1.95)	1.57 ** (1.24, 1.98)	1.47 ** (1.17, 1.85)	1.11 (0.81, 1.53)	1.09 (0.80, 1.50)
Hispanic	1.27 * (1.03, 1.56)	1.09 (0.83, 1.44)	1.19 (0.89, 1.60)	1.16 (0.85, 1.59)	1.10 (0.79, 1.53)	1.08 (0.77, 1.52)
Other	0.77 (0.50, 1.18)	0.79 (0.49, 1.28)	0.82 (0.51, 1.31)	0.79 (0.50, 1.27)	0.71 (0.43, 1.16)	0.70 (0.43, 1.14)
Gender						
Female (ref)		--	--	--	--	--
Male		3.03 ** (2.61, 3.51)	3.05 ** (2.63, 3.54)	3.06 ** (2.64, 3.55)	3.10 ** (2.68, 3.57)	3.09 ** (2.68, 3.57)
Age (years) ^c		0.94 (0.88, 1.00)	0.94 (0.88, 1.01)	0.94 (0.88, 1.01)	0.94 (0.88, 1.00)	0.94 (0.88, 1.00)
Time in the United States (years) ^c		1.05 * (1.00, 1.09)	1.05 * (1.00, 1.09)	1.05 * (1.01, 1.10)	1.05 * (1.00, 1.09)	1.05 * (1.01, 1.10)
Time in current residence (years) ^c		0.97 ** (0.96, 0.98)	0.97 ** (0.96, 0.98)	0.97 ** (0.96, 0.98)	0.97 ** (0.96, 0.98)	0.97 ** (0.96, 0.98)
Region						
West (ref)		--	--	--	--	--
Midwest		1.40	1.44	1.43 * (1.01, 1.10)	1.56 ** (1.01, 1.09)	1.51 ** (1.01, 1.10)

	(0.96, 2.03)	(0.98, 2.12)	(1.04, 1.97)	(1.11, 2.18)	(1.12, 2.05)
South	1.35 *	1.42 **	1.51 **	1.40 **	1.48 **
	(1.05, 1.73)	(1.10, 1.84)	(1.17, 1.95)	(1.11, 1.77)	(1.16, 1.89)
Northeast	1.32	1.34	1.52 *	1.39 *	1.52 *
	(0.96, 1.82)	(0.98, 1.83)	(1.08, 2.13)	(1.04, 1.86)	(1.09, 2.10)
<i>Delinquent Behaviors</i>					
Wave I					
Property crime (range 0 to 1) ^d	1.59	1.56	1.58	1.58	1.59
	(0.98, 2.59)	(0.95, 2.57)	(0.96, 2.60)	(0.96, 2.62)	(0.96, 2.64)
Violent crime (range 0 to 1) ^e	2.48 **	2.44 **	2.42 **	2.35 **	2.36 **
	(1.56, 3.94)	(1.53, 3.90)	(1.50, 3.89)	(1.47, 3.77)	(1.47, 3.78)
Drug crime (range 0 to 1) ^f	1.44 **	1.41 **	1.42 **	1.41 **	1.42 **
	(1.13, 1.82)	(1.11, 1.79)	(1.12, 1.80)	(1.11, 1.79)	(1.12, 1.81)
Youth delinquency (range 0 to 1) ^g	1.26	1.23	1.25	1.25	1.26
	(0.85, 1.87)	(0.82, 1.86)	(0.83, 1.88)	(0.83, 1.87)	(0.84, 1.88)
Truancy ^h					
Never (ref)	--	--	--	--	--
1-9 times	1.26 **	1.27 **	1.27 **	1.26 **	1.26 **
	(1.10, 1.45)	(1.10, 1.45)	(1.10, 1.45)	(1.10, 1.44)	(1.09, 1.44)
10+ times	1.38 *	1.35 *	1.35 *	1.35 *	1.35 *
	(1.06, 1.80)	(1.03, 1.77)	(1.02, 1.78)	(1.03, 1.79)	(1.02, 1.79)
Alcohol use					
Never tried (ref)	--	--	--	--	--
Tried	1.52	1.53	1.52	1.55 *	1.54 *
	(0.98, 2.37)	(1.00, 2.34)	(0.99, 2.32)	(1.02, 2.38)	(1.01, 2.36)
No binge	1.21	1.19	1.18	1.19	1.18
	(0.96, 1.51)	(0.95, 1.48)	(0.95, 1.46)	(0.96, 1.47)	(0.95, 1.46)
Any binge	1.29 *	1.27	1.28	1.30 *	1.30 *
	(1.01, 1.65)	(0.99, 1.63)	(1.00, 1.63)	(1.01, 1.66)	(1.01, 1.65)
Marijuana use					
Never tried (ref)	--	--	--	--	--

Past use >30 days	1.28 * (1.00, 1.63)	1.25 (0.99, 1.59)	1.25 (0.99, 1.59)	1.24 (0.98, 1.58)	1.24 (0.97, 1.58)
Past use <30 days	1.33 (0.95, 1.87)	1.31 (0.94, 1.84)	1.30 (0.93, 1.83)	1.30 (0.93, 1.81)	1.29 (0.93, 1.80)
Wave IV					
Property crime (<i>range 0 to 1</i>) ⁱ	3.66 ** (1.99, 6.73)	3.72 ** (1.98, 6.99)	3.69 ** (1.97, 6.91)	3.75 ** (2.00, 7.04)	3.71 ** (1.98, 6.94)
Violent crime (<i>range 0 to 1</i>) ^j	11.81 ** (5.39, 25.88)	11.14 ** (5.30, 23.39)	10.83 ** (5.25, 22.36)	10.95 ** (5.26, 22.78)	10.71 ** (5.21, 22.01)
Drug crime (<i>range 0 to 1</i>) ^k	1.57 ** (1.14, 2.16)	1.55 ** (1.13, 2.14)	1.54 ** (1.12, 2.11)	1.55 ** (1.13, 2.13)	1.54 ** (1.12, 2.11)
Alcohol use					
Never tried (ref)	--	--	--	--	--
No binge	0.88 (0.67, 1.14)	0.87 (0.67, 1.13)	0.87 (0.67, 1.14)	0.86 (0.66, 1.12)	0.86 (0.66, 1.13)
Moderate binge	1.26 (1.00, 1.60)	1.25 (0.99, 1.58)	1.25 (0.99, 1.56)	1.25 * (1.00, 1.56)	1.24 (1.00, 1.55)
Heavy binge	2.14 ** (1.69, 2.70)	2.12 ** (1.67, 2.69)	2.12 ** (1.67, 2.68)	2.11 ** (1.69, 2.64)	2.11 ** (1.69, 2.64)
Marijuana use					
Past use >1 year (ref)	--	--	--	--	--
Past use <1 year	2.36 ** (2.04, 2.74)	2.35 ** (2.03, 2.74)	2.38 ** (2.05, 2.76)	2.37 ** (2.04, 2.76)	2.39 ** (2.06, 2.78)
Educational Factors					
Currently in school^c					
Yes	0.54 * (0.31, 0.93)	0.54 * (0.31, 0.93)	0.55 * (0.32, 0.95)	0.55 * (0.33, 0.94)	0.56 * (0.33, 0.96)
No (ref)	--	--	--	--	--
School connectedness^h					
1.0– 2.0 (ref)	--	--	--	--	--

2.1 – 3.0	1.26 (0.82, 1.96)	1.26 (0.81, 1.94)	1.26 (0.81, 1.96)	1.25 (0.81, 1.93)	1.25 (0.81, 1.93)
3.1 – 4.0	1.23 (0.78, 1.94)	1.23 (0.77, 1.94)	1.22 (0.76, 1.94)	1.21 (0.76, 1.92)	1.20 (0.76, 1.91)
4.1 – 5.0	1.07 (0.65, 1.76)	1.08 (0.65, 1.80)	1.07 (0.65, 1.78)	1.08 (0.65, 1.79)	1.07 (0.64, 1.76)
Educational attainment					
Less than high school	3.50 ** (2.48, 4.92)	3.71 ** (2.74, 5.01)	3.67 ** (2.70, 4.98)	3.66 ** (2.71, 4.94)	3.65 ** (2.69, 4.96)
High school graduate	2.69 ** (2.27, 3.19)	2.79 ** (2.27, 3.41)	2.76 ** (2.27, 3.35)	2.76 ** (2.26, 3.37)	2.76 ** (2.27, 3.35)
Some college	2.06 ** (1.58, 2.67)	2.07 ** (1.67, 2.57)	2.06 ** (1.65, 2.56)	2.06 ** (1.65, 2.56)	2.05 ** (1.64, 2.57)
College graduate (ref)	--	--	--	--	--
Home Characteristics					
Any parental interview					
Yes (ref)		--	--	--	--
No		0.94 (0.65, 1.36)	0.95 (0.65, 1.38)	0.98 (0.67, 1.44)	0.99 (0.68, 1.45)
Adults in home¹					
One		1.13 (0.89, 1.45)	1.13 (0.88, 1.45)	1.12 (0.89, 1.42)	1.12 (0.88, 1.42)
Two (ref)		--	--	--	--
Parent education level¹					
Less than high school		0.80 (0.55, 1.17)	0.80 (0.55, 1.17)	0.78 (0.54, 1.14)	0.78 (0.54, 1.15)
High school graduate		0.99 (0.76, 1.30)	1.01 (0.78, 1.32)	0.99 (0.75, 1.29)	1.00 (0.77, 1.30)
Some college		1.21 (0.97, 1.50)	1.21 (0.97, 1.51)	1.18 (0.95, 1.47)	1.19 (0.95, 1.48)
College graduate (ref)		--	--	--	--
Household income¹					
>20K		0.90	0.89	0.86	0.86

	(0.71, 1.13)	(0.70, 1.12)	(0.66, 1.10)	(0.66, 1.11)
20-39K	0.82 (0.60, 1.12)	0.80 (0.59, 1.10)	0.79 (0.57, 1.08)	0.78 (0.56, 1.07)
40-59K	0.92 (0.68, 1.24)	0.91 (0.68, 1.22)	0.90 (0.67, 1.21)	0.89 (0.67, 1.19)
60-79K	1.14 (0.72, 1.78)	1.13 (0.73, 1.76)	1.11 (0.71, 1.73)	1.11 (0.72, 1.71)
80K+ (ref)	--	--	--	--
Refused	0.74 * (0.55, 0.98)	0.73 * (0.55, 0.96)	0.71 * (0.54, 0.95)	0.71 * (0.53, 0.94)
Relationship with child¹				
Weak (1.0 – 4.0)	1.26 ** (1.09, 1.46)	1.26 ** (1.09, 1.45)	1.27 ** (1.11, 1.46)	1.27 ** (1.11, 1.45)
Strong (>4.0) (ref)	--	--	--	--
School Characteristics				
Type				
Public (ref)	--	--	--	--
Choice/magnet	--	1.26 * (1.01, 1.55)	--	1.23 * (1.02, 1.49)
Vocational/trade	--	1.06 (0.70, 1.60)	--	1.04 (0.70, 1.54)
Private	--	1.22 (0.90, 1.66)	--	1.18 (0.88, 1.59)
Size				
Small (ref)	--	--	--	--
Medium	--	0.95 (0.74, 1.21)	--	0.98 (0.79, 1.23)
Large	--	1.00 (0.72, 1.39)	--	1.05 (0.77, 1.43)
Average daily attendance				
95%+ (ref)	--	--	--	--
90%–94%	--	0.85 (0.69, 1.05)	--	0.88 (0.73, 1.07)

85%–89%	1.36 (0.98, 1.88)	1.23 (0.90, 1.68)
80%–84%	1.25 (0.82, 1.90)	1.09 (0.66, 1.78)
75%–79%	1.65 ** (1.26, 2.16)	1.63 ** (1.22, 2.17)
Number of school services (range 0 to 18) ^m	0.99 (0.96, 1.02)	0.99 (0.96, 1.02)
Suspension policy (range 0 to 1) ⁿ	0.81 (0.44, 1.47)	0.76 (0.45, 1.29)
Community Characteristics		
Crime rate (<i>per 100,000 population</i>) ^o		1.00 (1.00, 1.00)
Family poverty rate ^p		1.34 (0.47, 3.82)
Unemployment rate ^p		0.44 (0.05, 3.89)
Vacant housing ^p		2.18 (0.77, 6.20)
Proportion White ^p		0.44 ** (0.28, 0.71)

^a Data from the National Longitudinal Study of Adolescent to Adult Health.

^b Multilevel weighted logistic regression models calculated for the sample with no missing data on any variables of interest (n=12,752).

^c At wave I.

^d Average of seven items (Appendix 3.1).

^e Average of eight items (Appendix 3.1).

^f Measured using one item (Appendix 3.1).

^g Average of three items, including lying to parents and running away from home (Appendix 3.1).

^h Among youths currently in school.

ⁱ Average of five items (Appendix 3.1).

^j Average of five items (Appendix 3.1).

^k Measured using one item (Appendix 3.1).

^l Among youths with a parental interview.

^m Sum of the number of 18 services provided “on school premises.”

ⁿ Average of the number of first time offenses that resulted in an “out of school suspension” or “expulsion.”

^o Measured at the county level.

^p Measured at the census block level.

* $p < 0.05$, ** $p < 0.01$

Figure 3.1. Conceptual framework illustrating the pathways between race/ethnicity and arrest

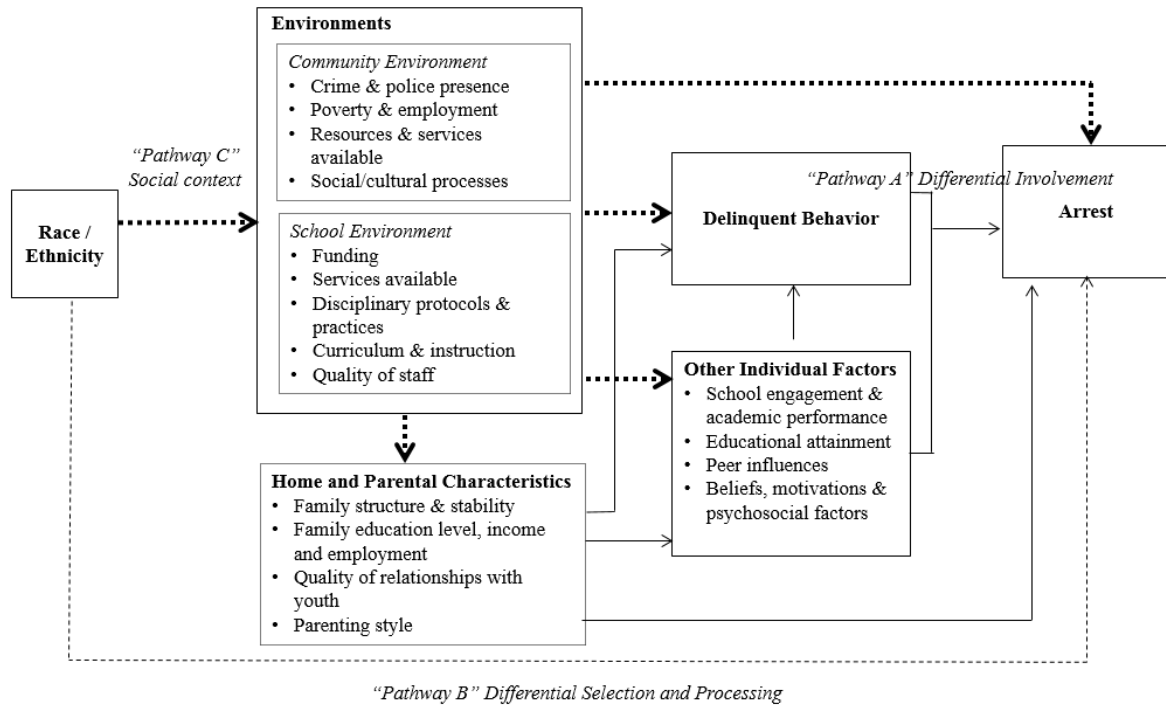
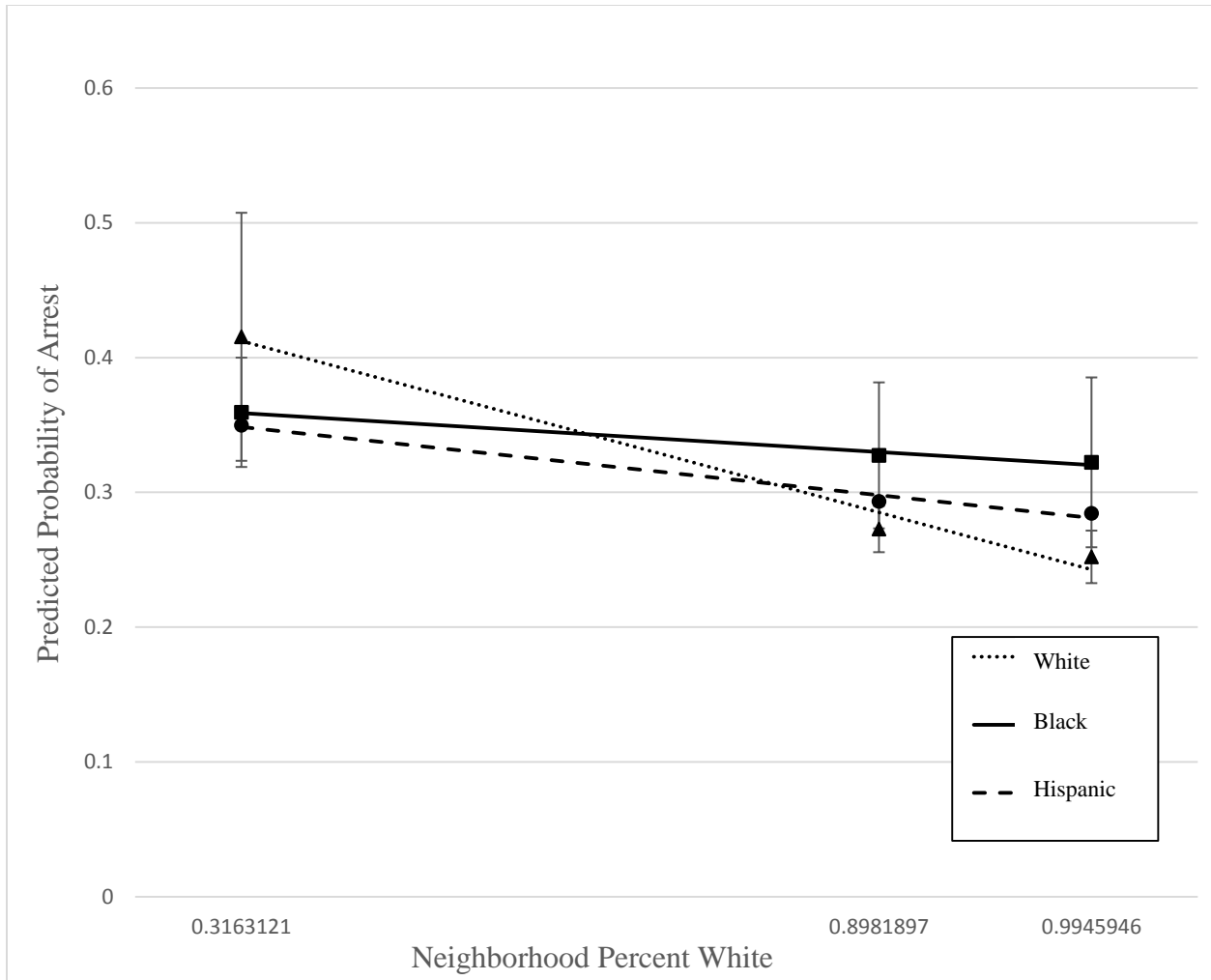


Figure 3.2. Predicted probabilities of arrest in relation to the percent of White residents in the neighborhood, by race/ethnicity ^{a,b}



^a Logistic regression model adjusted for individual (gender, age, time in the United States, time in current residence, region, delinquent behaviors, school enrollment, school connectedness, and educational attainment), home (number of adults in the home, parent education level, household income, and parental relationship), school (type, size, average daily attendance, school services, and suspension policy), and community characteristics (crime rate, family poverty rate, unemployment rate, vacant housing, and proportion White residents), with an interaction term between race and the proportion White residents.

^b Predicted probabilities generated at the 10th, 50th, and 90th percentiles of percent White.

Appendix 3.1. National Longitudinal Study of Adolescent to Adult Health in-home survey

questions used to measure delinquency

Construct	Wave I Items	Wave IV Items
Property crime	<ul style="list-style-type: none"> • In the past 12 months, how often did you paint graffiti or signs on someone else’s property or in a public place? • In the past 12 months, how often did you deliberately damage property that didn’t belong to you? • How often did you take something from a store without paying for it? • How often did you drive a car without its owner’s permission? • In the past 12 months, how often did you steal something worth more than \$50? • How often did you go into a house or building to steal something? • How often did you steal something worth less than \$50? 	<ul style="list-style-type: none"> • In the past 12 months, how often did you deliberately damage property that didn’t belong to you? • In the past 12 months, how often did you steal something worth more than \$50? • In the past 12 months, how often did you go into a house or building to steal something? • In the past 12 months, how often did you steal something worth less than \$50? • In the past 12 months, how often did you buy, sell, or hold stolen property?
Violent crime	<ul style="list-style-type: none"> • How often did you get into a serious physical fight? • How often did you hurt someone badly enough to need bandages or care from a doctor or nurse? • How often did you use or threaten to use a weapon to get something from someone? • In the past 12 months, how often did you take part in a fight where a group of your friends was against another group? • In the past 12 months, have you ever gotten into a physical fight? • Have you ever used a weapon in a fight? • During the past 12 months, how often did each of the following things happen? You pulled a knife or gun on someone. • You shot or stabbed someone. 	<ul style="list-style-type: none"> • In the past 12 months, how often did you use or threaten to use a weapon to get something from someone? • In the past 12 months, how often did you take part in a physical fight where a group of your friends was against another group? • In the past 12 months, how often did you get into a serious physical fight? • Which of the following things happened in the past 12 months. You pulled a knife or gun on someone? • You shot or stabbed someone?

Drug crime	<ul style="list-style-type: none"> • How often did you sell marijuana or other drugs? 	<ul style="list-style-type: none"> • In the past 12 months, how often did you sell marijuana or other drugs?
Youth delinquency	<ul style="list-style-type: none"> • In the past 12 months, how often did you lie to your parents or guardians about where you had been or whom you were with? • How often did you run away from home? • How often were you loud, rowdy, or unruly in a public place? 	--

REFERENCES

- Alley, D.E., Asomugha, C.N., Conway, P.H., & Sanghavi, D.M. (2016). Accountable health communities: addressing social needs through Medicare and Medicaid. *New England Journal of Medicine*. 374(1):8-11.
- Anderson, T.S. (2015). Race, ethnicity, and structural variations in youth risk of arrest: evidence from a national longitudinal sample. *Criminal Justice and Behavior*. 42(9):900-916.
- Arvanites, T. (2014). Segregation and African American imprisonment rates for drug offenses. *The Social Science Journal*. 51(3):431-437.
- Beyer, K., Wallis, A.B., & Hamberger, L.K. (2013). Neighborhood environment and intimate partner violence: a systematic review. *Trauma, Violence, & Abuse*. 16(1):16-47.
- Brame, R., Turner, M.G., Paternoster, R., & Bushway, S.D. (2012). Cumulative prevalence of arrest from ages 8 to 23 in a national sample. *Pediatrics*. 129(1):21-27.
- Clear, T.R. (2008). The effects of high imprisonment rates on communities. *Crime and Justice*. 37(1):97-132.
- Crutchfield, R.D., Skinner, M.L., Haggerty, K.P., McGlynn, A., & Catalano, R.F. (2012). Racial disparity in police contacts. *Race and Justice*. 2(3):179-202.
- Crutchfield, R.D., Skinner, M.L., Haggerty, K.P., McGlynn, A., & Catalano, R.F. (2009). Racial disparities in early criminal justice involvement. *Race and Social Problems*. 1(4):218-230.
- Davis, J., & Sorensen, J. R. (2013). Disproportionate juvenile minority confinement: a state-level assessment of racial threat. *Youth Violence and Juvenile Justice*. 11(4):296-312.

- Fellner, J. (2009). *Decades of disparity: drug arrests and race in the United States*. Human Rights Watch. Retrieved from:
https://www.hrw.org/sites/default/files/reports/us0309web_1.pdf.
- Felson, R., & Deane, G. (2007). Do theories of crime or violence explain race differences in delinquency? *Social Science Research*. 37(2):624-641.
- Gatti, U., Tremblay, R., & Vitaro, F. (2009). Iatrogenic effect of juvenile justice. *Journal of Child Psychology and Psychiatry*. 50(8):991-998.
- Godette, D.C., Mesfin, S., Mulatu, K., Leonard, J., Randolph, S.M., & Williams, N. (2011). Racial/ethnic disparities in patterns and determinants of criminal justice involvement among youth in substance abuse treatment programs. *Journal of Correctional Health Care*. 17(4):294-308.
- Graham, S., & Lowery, B.S. (2004). Priming unconscious racial stereotypes about adolescent offenders. *Law and Human Behavior*. 28(5):483-504.
- Harris, K.M., Halpern, C.T., Whitsel, E., Hussey, J., Tabor, J., Entzel, P., & Udry, J.R. (2009). *The National Longitudinal Study of Adolescent to Adult Health: research design*. Retrieved from: <http://www.cpc.unc.edu/projects/addhealth/design>.
- Hjalmarsson, R. (2007). Criminal justice involvement and high school completion. *Journal of Urban Economics*. 63(2):613-630.
- Huizinga, D., Thornberry, T., Knight, K., Lovegrove, P., Loeber, R., Hill, K., & Farrington, D.P. (2007). *Disproportionate minority contact in the juvenile justice system: a study of differential minority arrest/referral to court in three cities*. Washington: DC: National Center for Juvenile Justice for the Office of Juvenile Justice and Delinquency Prevention.

- Jargowsky, P.A. (2015). *The architecture of segregation: civil unrest, the concentration of poverty, and public policy*. Issue Brief, The Century Foundation.
- Johnson, M.D. (2013). Parent-child relationship quality directly and indirectly influences hooking up behavior reported in young adulthood through alcohol use in adolescence. *Archives of Sexual Behavior*. 42(8):1463-1472.
- Joyce, H.D., & Early, T.J. (2014). The impact of school connectedness and teacher support on depressive symptoms in adolescents: a multilevel analysis. *Children and Youth Services Review*. 39:101-107.
- Kirk, D.S. (2008). The neighborhood context of racial and ethnic disparities in arrest. *Demography*. 45(1):55-77.
- Kochel, T.R., Wilson, D.B., & Mastrofski, S.D. (2011). Effect of suspect race on officers' arrest decisions. *Criminology*. 49(2):473-512.
- Krivo, L.J., Peterson, R.D., & Kuhl, D.C. (2009). Segregation, racial structure, and neighborhood violent crime. *American Journal of Sociology*. 114(6):1765-1802.
- Lambie, I., & Randell, I. (2013). The impact of incarceration on juvenile offenders. *Clinical Psychology Review*. 33(3):448-459.
- Maguire-Jack, K., & Klein, S. (2015). Parenting and proximity to social services: lessons from Los Angeles County in the community context of child neglect. *Child Abuse & Neglect*. 45:35-45.
- Massoglia, M. (2008). Incarceration as exposure: the prison, infectious disease, and other stress-related illnesses. *Journal of Health and Social Behavior*. 49(1):56-71.
- McNulty, T.L., & Bellair, P.E. (2003). Explaining racial and ethnic differences in serious adolescent violent behavior. *Criminology*. 41(3):709-747.

- My Brother's Keeper Task Force. (2015). *One-year progress report to the president*. Washington, DC: U.S. Government Printing Office.
- National Research Council. (2014). *The growth of incarceration in the United States: exploring causes and consequences*. Washington, DC: The National Academies Press.
- National Research Council. (2013). *Reforming juvenile justice: a developmental approach*. Washington, DC: The National Academies Press.
- Parker, K.F., Stults, B.J., & Rice, S.K. (2005). Racial threat, concentrated disadvantage and social control: considering the macro-level sources of variation in arrests. *Criminology*, 43(4):1111-1134.
- Petrocelli, M., Piquero, A.R., & Smith, M.R. (2003). Conflict theory and racial profiling: an empirical analysis of police traffic stop data. *Journal of Criminal Justice*, 31(1):1-11.
- Piquero, A.R. (2008). Disproportionate minority contact. *The Future of Children*, 18(2):59-79.
- Piquero, A.R., & Brame, R.W. (2008). Assessing the race-crime and ethnicity-crime relationship in a sample of serious adolescent delinquents. *Crime & Delinquency*, 54(3):390-422.
- Pollock, W., Menard, S., Elliott, D.S., & Huizinga, D.H. (2015). It's official: predictors of self-reported vs. officially recorded arrests. *Journal of Criminal Justice*, 43(1):69-79.
- Pridemore, W.A. (2014). The mortality penalty of incarceration: evidence from a population-based case-control study of working-age males. *Journal of Health and Social Behavior*, 55(2):215-233.
- Puzzanchera, C., & Hockenberry, S. (2015). *National disproportionate minority contact databook*. National Center for Juvenile Justice for the Office of Juvenile Justice and Delinquency Prevention. Retrieved from:
http://www.ojjdp.gov/ojstatbb/dmcdab/asp/display.asp?display_in=1.

- Renauer, B.C. (2012). Neighborhood variation in police stops and searches: a test of consensus and conflict perspectives. *Police Quarterly*. 15(3):219-240.
- Sampson, R.J., & Groves, W.B. (1989). Community structure and crime: testing social-disorganization theory. *American Journal of Sociology*. 94(4):774-802.
- Schnittker, J., & John, A. (2007). Enduring stigma: the long-term effects of incarceration on health. *Journal of Health and Social Behavior*. 48(2):115-130.
- Stevens, T., & Morash, M. (2015). Racial/ethnic disparities in boys' probability of arrest and court actions in 1989 and 2000: the disproportionate impact of "getting tough" on crime. *Youth Violence and Juvenile Justice*. 13(1):77-95.
- Tapia, M. (2010). Untangling race and class effects on juvenile arrests. *Journal of Criminal Justice*. 38(3):255-265.
- Taxman, F., Byrne, J.M., & Pattavina, A. (2005). Racial disparity and the legitimacy of the criminal justice system: exploring consequences for deterrence. *Journal of Health Care for the Poor and Underserved*. 16(4 Suppl B):57-77.
- Thornberry, T.P., & Krohn, M.D. (2003). Comparison of self-report and official data for measuring crime. In John V. Pepper, Carol V. Petrie (Eds.), *Measurement problems in criminal justice research: workshop summary*, pp. 43-94. Washington, DC: The National Academies Press.
- Turney, K., Wildeman, C., & Schnittker, J. (2012). As fathers and felons: explaining the effects of current and recent incarceration on major depression. *Journal of Health and Social Behavior*. 53(4):465-481.

- Vazsonyi, A.T., & Chen, P. (2010). Entry risk in to the juvenile justice system: African American, American India, Asian American, European American, and Hispanic children and adolescents. *Journal of Child Psychology and Psychiatry*. 51(6):668-678.
- Williams, D.R. (1997). Race and health: basic questions, emerging directions. *Annals of Epidemiology*. 7(5):322-333.
- Williams, D.R., & Collins, C. (2001). Racial residential segregation: a fundamental cause of racial disparities in health. *Public Health Reports*. 116(5):404-416.

CHAPTER 4: The Impact of Two Los Angeles County Teen Courts on Youth Recidivism: Comparing Two Informal Probation Programs

INTRODUCTION

The juvenile justice system in the United States has massive reach and extensive costs. In 2010, more than one million youths had contact with the system; an estimated half a million were either incarcerated or placed on probation (Knoll and Sickmund 2012; National Center for Juvenile Justice n.d.; Sickmund 2010). In recent years, an increasing number of youths have come to the attention of the justice system by way of schools and child welfare agencies, for example, with the increase in schools' zero-tolerance policies (and associated increases in the number of suspensions, expulsions, and school based arrests) and the referral of status offenses (e.g., truancy, incorrigibility) to the justice system (Bonnie et al. 2013). While the number of youths committed to residential placement has declined over the past decade, estimates suggest that incarcerating youths can cost as much as \$21 billion annually in the United States when considering costs associated with lost educational opportunities and the potentially harmful experiences of young people while confined (Petteruti et al. 2014). Moreover, significant disparities persist, with economically disadvantaged and minority youths being disproportionately represented at every stage of the juvenile justice system (Annie E. Casey Foundation 2013; Bonnie et al. 2013; Piquero 2008).

Processing juvenile offenders in the traditional justice system can lead to a range of negative consequences for youths and their families. Research on adolescent development underscores the differences between adults and adolescents, the latter of which are characterized by increased experimentation and risk taking, a tendency to discount long-term consequences, and heightened

sensitivity to social influences (Bonnie et al. 2013). Youths have needs distinct from adults, and a system which relies heavily on containment, confinement, and control can be harmful, as it removes youths from their families, peer groups, and neighborhoods (Bonnie et al. 2013). In addition, a growing body of literature suggests that contact with the justice system early in the life course can lead to poor social, economic, and health consequences, such as lower high school graduation and employment rates, increased substance abuse, and worse mental health outcomes (Hjalmarsson 2007; Lambie and Randell 2013).

In light of such data, many states and local jurisdictions have begun to develop and implement more developmentally appropriate ways of handling youths who come to the attention of the juvenile justice system (Bonnie et al. 2013). One increasingly popular trend is the use of diversion protocols or policies. While there is no clear consensus on its definition (Wilson and Hoge 2013), diversion is generally structured so that youths avoid or reduce their contact with traditional justice system processing. Diversion programs are often designed to better identify offender needs (i.e., what is driving their behavior) and ways to bring resources to aid in treatment and other needed services. One popular diversion model - specialized or problem centered courts (e.g., drug courts, mental health courts) - has been promulgated within the juvenile justice system because of its ability to focus on each youth's circumstances and provide targeted treatment options (Bonnie et al. 2013). Bringing this "root cause" perspective, diversion programs can have a range of potential benefits, including reduced recidivism and better youth development outcomes such as educational attainment, skill development, behavioral health improvements, and better family functioning (Bonnie et al. 2013; Drake et al. 2009; Seigle et al. 2014). When comparing their costs and benefits, many juvenile offender programs show great

potential to be impactful and cost-effective (Bonnie et al. 2013). However, it is not always clear which diversion programs for juveniles are the most effective. For example, a recent meta-analytic review of drug courts demonstrated consistently large reductions in recidivism among adults, but much smaller effects on juveniles (Mitchell et al. 2012). With decreasing funding for court systems nationally and locally in California (Yarbrough 2013), the importance of identifying cost-effective alternatives may be of particular importance.

Teen Courts, also called youth, peer, or student courts, are one increasingly popular model of juvenile diversion. Similar to other problem-centered court models, Teen Courts generally include two primary intervention components: a hearing (court appearance) and a period of supervision (Gase et al. 2015). Over the past 40 years the number of such programs has grown substantially – in 2010, there were more than 1,000 programs throughout 49 states (National Association of Youth Courts 2015). Teen Court programs vary in their operating structure and processes (e.g., agencies involved in administration, ways in which jurors are trained, participation criteria for offenders); however, the goal of all Teen Courts is to determine a fair and restorative sentence or disposition (National Association of Youth Courts 2015). This is typically accomplished through the involvement of the participating offenders' peers in determining the verdict or sentences and the use of future Teen Court jury service as a primary sanction. Teen Courts are grounded in seven different theoretical perspectives: peer justice, procedural justice, specific deterrence, labeling, restorative justice, law-related education, and skill building (Butts et al. 2002). Teen Courts are thought to be superior over processing in the traditional justice system because of their focus on restorative sentencing (e.g., mandated sentences that include community service, apology letters, family/individual counseling,

academic tutoring, or substance abuse services) that helps meet youths' underlying needs without giving them a formal criminal record. In addition, they are seen as more beneficial than adult-led juvenile diversion because they provide a peer-driven sentencing mechanism that allows youths to take responsibility, to be held accountable, and to make restitution (National Association of Youth Courts 2015). According to theories of peer justice, peer pressure from pro-social peers may propel youths toward law-abiding behavior (Butts et al. 2002). Despite their popularity, a relatively small number of rigorous research studies have examined the effectiveness of Teen Courts. What research is available shows conflicting evidence as to whether and how these programs impact the behavior of participating offenders. Therefore, the goal of this study was to examine the impact of two Teen Courts operating in Los Angeles County on rates of recidivism among a sample of primarily non-White juvenile offenders.

Review of the Literature

Research examining the impact of Teen Courts on juvenile offender outcomes has shown mixed results. The National Research Council (Bonnie et al. 2013) cites numerous examples of positive evaluation results in its description of Teen Courts as a promising model for diversion, but notes the lack of definitive studies about the impact of Teen Courts on juvenile offender outcomes.

Two recent systematic reviews provide useful summaries of the current evidence base. Schwalbe and colleagues (2012) reviewed and summarized evidence from a range of diversion efforts, including seven Teen Court programs. Meta-analyses suggested that diversion programs did not have a significant impact on recidivism; of the five program types, Teen Courts had the smallest effect size. A more recent qualitative review, which focused solely on Teen Courts as a diversion model, synthesized results from 22 experimental or quasi-experimental studies (Gase et al.

2015). Among the 15 studies that assessed statistical significance of the impact of Teen Courts on recidivism, 4 found statistically significant results favoring Teen Courts, 1 found statistically significant results favoring the traditional justice system, and 10 found null results. Most studies provided little detail regarding the structure or approach of Teen Courts under study and varied widely in their research design, composition of the comparison group, and operationalization of recidivism, making it difficult to compare results. Heterogeneity in study results is evident, for example, in the frequently cited work by Butts and colleagues (2002), who examined four Teen Court programs across the country. The authors found that youths who participated in the Alaska youth tribunal court and the Missouri youth judge court had significantly lower rates of six-month delinquency referrals compared to youths processed in the traditional juvenile justice system. However, statistically significant differences in recidivism were not seen for youths in the Tempe and Chandler Justice Courts or the Montgomery County Teen Court in comparison to traditional justice processing (Tempe/Chandler) or an alternative diversion program (Montgomery). A number of other studies have shown no differences in outcomes between youths who participated in Teen Courts and other justice system alternatives, including two studies which used random assignment (Patrick and Marsh 2005; Stickle et al. 2008). Indeed, one quasi-experimental study of a Teen Court program in Maryland found statistically significant findings favoring processing in the traditional justice system (Povitsky 2005) while another study showed trends (although not statistically significant) that suggested that Teen Courts could have a negative impact on male offenders' self-concept, substance use, and delinquent behavior when compared to processing in the traditional justice system (Wilson et al. 2009).

Results of both systematic reviews underscore the substantial gaps present in the current evidence base, including the quality of the research design and methods and the lack of focus on potentially differential program impacts (Gase et al. 2015; Schwalbe et al. 2012). A very limited number of studies have employed designs and methods that allow for an unbiased measure of impact, such as randomization or an adequate comparison group. Observational studies and the use of youths not involved in the Teen Court intervention as the comparison group (e.g., program dropouts, youths not involved in the justice system) are common practice in the evaluation of Teen Court programs (Gase et al. 2015). Additionally, few studies have compared the effectiveness of Teen Courts to other types of diversion programs (Butts et al. 2002; Norris et al. 2011; Patrick and Marsh 2005). However, as jurisdictions move toward diversion models, it is important to examine the effectiveness of Teen Courts in comparison to other forms of juvenile diversion. Furthermore, few studies have considered differential rates of recidivism over time – i.e., looking at recidivism at more than one time point (Nochajski et al. n.d.) - and none have examined differences in program effectiveness by comparing different definitions of recidivism (e.g., arrests versus referrals). The nature and timeframe in which recidivism is judged is likely to have a significant effect on the conclusions made about the impact of Teen Courts. Finally, only a limited number of studies have examined outcomes among primarily non-White youths or offenders with different risk profiles (Norton et al. 2013). Given preliminary evidence for potentially differential impact of Teen Courts (Hissong 1991; Wilson et al. 2009) and the significant racial/ethnic disparities present in rates of juvenile arrest and incarceration (Annie E. Casey Foundation 2013), the need to examine these issues is of central importance.

In order to address many of these and other gaps in the current literature, the present study sought to examine the impact of two Teen Courts operating in Los Angeles County (LAC). The quasi-experimental study hypothesized that youths who participated in the Teen Court program would have lower rates of recidivism than youths who participated in another diversion program used by the LAC Probation Department (the 654 Contract program) because the Teen Court program helps better address youth needs through its peer-driven process and focus on restorative sentencing (National Association of Youth Courts 2015). Our study helps address some of the gaps in the literature by: 1) using a comparison group of offenders similar to those participating in Teen Courts and adjusting for baseline risk level to form a more appropriate counterfactual; 2) comparing the impact of Teen Courts to another diversion program (a practice-based justice system response); 3) using two measures of recidivism (rearrest and court filings) and examining patterns in these outcomes over time using improved statistical methods; and 4) assessing impact on a group of primarily non-White offenders.

METHODS

Background

At the time of study, the Los Angeles Superior Court operated a Teen Court program comprising 24 Teen Courts, located in schools across the region. The Superior Court coordinates all of these Teen Courts, providing guidance to a) schools sites, which house the program (e.g., recruit and train jurors, host the hearings), b) area probation offices, which identify minors eligible for Teen Courts and supervise minors in completing sentences, and c) volunteer judges who preside over hearings. The focus of this study was two Teen Courts operating between January 1, 2012 and June 20, 2014 under the jurisdiction of one probation office serving residents of south and

downtown Los Angeles. To preserve confidentiality, the name and exact location of the courts will not be shared in this article. The courts and period of operation were selected based on input provided by Superior Court staff because they were experiencing high and relatively stable levels of implementation (based on their length of time of operation, use of standardized protocols and guidance, and consistent judge, probation, and school-based personnel). The study sought to compare minors who participated in these Teen Courts and an alternative informal probation program (the 654 Contract program). As best practices for research specify the need to compare the intervention under study to alternatives routinely offered in practice (Berger et al. 2009), the 654 Contract program was selected as the comparison group. The Teen Court and 654 programs enroll roughly the same types of youths (charge severity, risk level, etc.) and Deputy Probation Officers (DPOs) are often able to choose between these two options, based on the factors described below.

Citation Processing

Each of the 16 probation offices in LAC receives referrals for minors arrested or cited under section 652 of the Welfare and Institutions Code (WIC) who live within its zip code jurisdiction. For each referral, a DPO initiates outreach with the minor, conducts a pre-filing investigation, and makes a recommendation within 29 days about how to proceed. The office can take one of four actions (Figure 4.1). First, the case can be closed. Closed cases are often offered referrals to community-based resources. Second, the case can be referred back to the District Attorney with a recommendation to file a petition against the minor. This is usually done because of the serious nature of the offense and/or the occurrence of a subsequent arrest while the case is under review. Third, the case can be placed on informal probation through one of two mechanisms: Teen Court

or 654 Contract. In deciding between Teen Court and 654 Contract, the DPO considers a number of factors, including characteristics of the minor (e.g., age, academic achievement, parental involvement), the alleged offense (e.g., whether it involved physical harm, whether the conduct is in dispute), the potential for the minor to benefit from Teen Court participation, and whether the Teen Court has capacity to hear the case. Specifically, Teen Courts do not accept certain types of offenses, including those that are sexual in nature or gang-related. Furthermore, since Teen Court attempts to address youths who have “outstanding needs” and requires the youth and a parent/guardian to participate, DPOs try to identify youths who will both benefit from the process and appear at the hearing.

Informal Probation Programs

Participation in both the Teen Court and 654 programs is voluntary. Minors and their guardian are given the option to sign a contract in which they agree to participate in an informal probation program in lieu of processing the citation through other mechanisms (i.e., filing with the District Attorney). If the minor complies with the terms of informal supervision, the case does not come to the attention of the District Attorney or the delinquency court; however, if the minor fails to comply, the DPO can refer the case for filing consideration.

The LAC Teen Court program included two key intervention components: a) a hearing at which minors are judged either innocent or guilty by their peers and, if the minor is found guilty, b) issuing of sentences by an adult judge (a court appointed judge who volunteers for the Teen Court) using recommendations from the peer jurors and a six month period of supervision by a DPO. The hearing is conducted using a peer jury model at a high school participating in the Los

Angeles Superior Court's Teen Court Program (i.e., has a teen court in operation at the site). The court is run by a volunteer school-based coordinator who recruits and trains the peer jurors through justice-focused trainings (e.g., classes in the law and public service magnet program). Sentences are often restorative (attempting to meet youth needs and/or provide restitution to victims) and can include: individual or family counseling, substance abuse treatment, curfews, orders not to be in contact with certain individuals, community service, essays, apology letters (to the victim, guardians, etc.), and future Teen Court jury service. Minors are required to meet with their assigned DPO (usually once every two weeks) and complete the sentences over a six month period.

Minors who sign a 654 contract are required to meet regularly with a community- or school-based DPO and comply with the terms outlined by that officer, including obtaining counseling, mental health services, drug treatment, or other community-based resources. The minor's parents or guardians may also be asked to participate in counseling or education programs. By law, contracts can be in place for up to six months. 654 contracts can be monitored by a juvenile supervision DPO (who operates from the area office) or by a school-based DPO (who operates from the minor's school). If a minor attends a school with a school-based officer, then he/she is assigned to school-based supervision. Minors who are supervised by school-based DPOs generally have considerably more contact and supervision. For example, many school-based DPOs have minors sign in every day whereas juvenile supervision DPOs usually see minors once per month. School-based DPOs also have direct access to the school administrators and faculty, class schedules, attendance records and grades, and have smaller caseloads, in comparison to juvenile supervision DPOs.

Sample

The research team, in collaboration with staff from the probation office, abstracted records for all WIC 652 referrals received by the office between January 1, 2012 and June 20, 2014 (census of all WIC 652 referrals received during that time). Cases were identified using the office log, which keeps track of all incoming referrals. For each referral, a limited set of variables were abstracted, including arrest date, date received, gender, race/ethnicity, and action taken (classified as Teen Court, 654 Contract, closed, or referred to the District Attorney). For cases in which the action taken was unclear in the log (e.g., multiple actions or no action noted), the action taken was looked up in the electronic probation system.

From the list of WIC 652 cases, one member of the research team, in collaboration with a supervising DPO, used eight electronic database systems to abstract additional variables for all minors who signed either a Teen Court or 654 contract during the study time period. Information was abstracted based on the minor's unique probation identifier. Data were abstracted on a) the nature of the arrest for which the Teen Court/654 contract process was assigned; b) personal characteristics of the minor; c) program implementation; and d) information on subsequent arrests from both the juvenile and adult systems. Data abstraction was conducted between September 25, 2014 and November 26, 2014. The exact abstraction date was noted for each case.

Variable Construction

Recidivism

The outcome, recidivism, was measured two ways: whether the minor had any subsequent a) arrest(s) (receipt of a citation with or without being detained) and b) case(s) filed with the

District Attorney (a citation referred for processing in court) during the period of time between the date that he/she signed the Teen Court/654 contract and the date the record was abstracted. The decision to file a case is based on the sufficiency of the evidence to prove the charged offense(s) beyond a reasonable doubt and, for juveniles, the minor's prior record. Both aspects of recidivism were considered (separately) as outcomes in order to provide a more holistic perspective of subsequent justice system contact. Information on both juvenile and adult arrests and filings was obtained. The length of follow-up time (time at risk for subsequent justice system contact) was calculated as the number of days between the date the minor signed the contract and the date the record was abstracted.

Program Participation and Completion

A minor was considered to be a participant in the Teen Court or 645 Contract program if he/she signed a contract form between January 1, 2012 and June 20, 2014. In accordance with the "intent to treat" model, if a minor dropped out of the program, he/she was still considered to be in that program group. Program completion was judged based on a review of case notes (i.e., minor satisfied all requirements) and noted as "yes," "no," or "pending" (minor still under supervision). In order to lessen bias, we included individuals who were still under supervision (i.e., were currently enrolled in the program without having acquired a subsequent arrest). For those not currently under supervision, the date which the case was officially closed or the date which the minor dropped out of the program was abstracted and used to calculate length of time in the program.

Risk Level

Risk level was assessed using the Los Angeles Risk and Resiliency Checkup (LARRC), which measures the risk and protective factors of minors and families. The LARRC is completed by the supervising DPO every six months through a semi-structured interview process with the minor using motivational interview techniques. After the interview, the DPO rates 60 items in 12 sections (delinquency risk factors, delinquency protective factors, education risk factors, education protective factors, family risk factors, family protective factors, peer risk factors, peer protective factors, substance use risk factors, substance use protective factors, individual risk factors, individual protective factors). Items are rated as “yes”, “somewhat”, or “no”, and summed to create an overall score which ranges from 0 to 46. The total LARRC score has been shown to be highly predictive of subsequent recidivism in LAC youths (Turner et al. 2005). For the present study, the LARRC score at baseline (during intake) was used. Only the total LARRC score was available; therefore, no details were available on risk/protective factor sub-scales.

Type of Offense

Offense charge codes and descriptions abstracted from the probation files were used to classify each arrest into categories identified in consultation with probation staff: theft, burglary or receiving stolen property; battery or assault; vandalism or arson; possession of a weapon; possession of a controlled substance; threats or conspiracy; resisting arrest or false police report; trespassing, gang-related trespassing, or disturbing the peace; vehicle related (e.g., driving under the influence); or sex related (e.g., prostitution). The primary offense for which the minor was charged was used to classify the offense. When two or more primary offenses were noted, the most serious offense, as outlined in the Bureau of Criminal Statistics hierarchy (State of

California Department of Justice 2015), was used. In addition to these ten offense categories, offenses were also categorized as violent (any arrest for battery or assault) or nonviolent.

Individual Characteristics

Minors were classified as to whether they ever had contact with the LAC Department of Children and Family Services (DCFS). A contact with DCFS at any time point for any reason (e.g., neglect, sexual abuse) was noted as “yes.” Minors were also classified as to whether they had any gang affiliation. This information was obtained during interviews with the minor and noted by the DPO in a section of the electronic record. Any mention of a current or previous gang affiliation was noted as “yes.” Both DCFS history and gang affiliation were thought to represent additional indicators of risk level. Age at the date of offense was calculated during data abstraction by subtracting the minor’s date of birth from the date of the offense. Gender and race, asked of the minor by the DPO, were abstracted from the online system. Race was classified as Hispanic/Latino, Black, or other (which included those who identified as Asian, White, Jewish or other; collapsed based on the small number of respondents and the limitations of the administrative classification system).

Analysis

Analyses were conducted to examine associations between program type (Teen Court, school-based 654 program, and office-based 654 program), a) subsequent arrests, and b) cases that were filed with the District Attorney. For each outcome, both a logistic regression model (to model any event) and a Cox survival regression analysis (to measure time to first event) were

developed. Because the proportional hazard assumption was found to hold, a Cox proportional hazards model using the Efron method to handle tied failures was used.

Two versions of the logistic and survival models were developed: one that included follow-up time, age (continuous), gender, race, and LARRC (continuous) (model 1) and the second which added any DCFS history (model 2); this was done because of the uncertainty about the time point at which the minor's contact with DCFS occurred. For each of the logistic and survival models, two robustness checks were conducted. First, in order to identify potential differential impacts of the program, interactions between program type and (separately) age, gender, race, DCFS status, LARRC, and type of charge (violent or nonviolent) were tested. Second, to examine potential differential effects of the program over time, stratified models (by program year) were examined. All analyses were conducted for cases with complete data for all variables of interest using Stata statistical software (version 13.1). All study protocols including data abstraction tools were reviewed and approved by the Los Angeles County Department of Public Health Institutional Review Board prior to field implementation.

RESULTS

Sample Descriptives

Between January 1, 2012 and June 20, 2014, the probation office received 970 WIC 652 referrals: 113 minors were referred to and participated in Teen Court (12% of all WIC 652 referrals received by the office) and 194 minors were referred to and participated in the 654 Contract program (20% of all WIC 652 referrals received by the office) (Table 4.1). While the administrative database did not provide any information on youths who refused an offer to

participate in the Teen Court or 654 programs, feedback from DPOs suggest that refusal to take part in these diversion programs is rare. After excluding one Teen Court case for which no risk level data were available, analyses were performed on 306 minors (>99%) of the study sample.

The majority of the sample was Hispanic (72%), categorized as low risk (74%), male (67%), and between the ages of 13 and 17. Teen Court and 654 program participants were similar in terms of gender, race/ethnicity, risk level, and gang affiliation; however, both office- and school-based 654 program participants were likely to be younger than Teen Court participants ($p<0.001$) and more likely to have had contact with DCFS ($p<0.001$). The types of offenses for which the contract was signed did not differ across the 10 categories assessed ($p=0.119$), nor did the groups differ with respect to violent versus nonviolent offences ($p=0.451$) (Table 4.2).

Teen Court and 654 program participants had comparable rates of program completion and dropout. The vast majority (>90%) of minors who dropped out of either program did so because they were rearrested, which violated the terms of their contract. Females were more likely than males to complete either program, while Blacks were less likely than other races to complete either program. The average length of time minors spent in the office-based 654 program was significantly shorter than the time individuals spent in Teen Court ($p=0.001$), although the range across both programs was large. For example, Teen Court participation ranged from 0 days (for 5 minors who were found not guilty at the hearing) to 363 days. A greater percentage of Teen Court participants signed their contract in 2012. The average length of follow-up time for the full sample was about 1.4 years (mean: 513 days, standard deviation: 267); follow-up time was longer for Teen Court compared to the office-based 654 (97 days less, $p=0.003$) and school-

based 654 (86 days less, $p=0.073$) programs. To account for these differences, we controlled for length of follow-up in multivariable analyses.

Program Effectiveness

Almost a quarter of the minors in the sample were rearrested. Teen Court program participants were less likely to have any subsequent arrest; 20 Teen Court participants (18%) had any rearrests compared to 38 (25%) office-based and 17 (40%) school-based 654 program participants ($p=0.01$). Differences in whether any of these arrests was for a violent offense was not statistically significant among the three groups ($p=0.08$), but trends suggest that fewer Teen Court participants committed any violent offense (15%) when compared to minors in the office-based 654 program (42%). Similar results were seen for any subsequent filed offense. A fifth of the sample had any case filed; 16 (14%) Teen Court participants had any subsequent offense filed, compared to 34 (22%) office-based 654 and 12 (29%) school-based 654 program participants ($p=0.096$) (Table 4.2).

In multivariable logistic models, program type was associated with arrest. School-based 654 program participants were found to have 3.07 times the odds of being rearrested, compared to Teen Court program participants, after controlling for follow-up time, age, race, gender, and risk level. This effect was statistically significant (95% confidence interval [CI] for the odds ratio: 1.31, 7.18). Office-based 654 program participants did not differ from Teen Court or school-based 654 program participants in the odds of being rearrested (Table 4.3). Predictive margins suggest that, on average, Teen Court participants were 20 percentage points less likely to be rearrested (95% CI: 3.7, 38.4) than school-based 654 program participants, all else being equal.

Teen Court participants were 6 percentage points less likely to be rearrested (95% CI: -3.7, 16.4) than office-based 654 program participants, all else being equal.

Blacks were significantly more likely to be rearrested than Hispanics, after controlling for other factors in the model. This effect was no longer statistically significant after controlling for any history with DCFS. Females were significantly less likely to be rearrested compared to males after controlling for other factors. Finally, for every one point increase on the risk scale, youths had 1.05 times the odds of being rearrested (95% CI: 1.01, 1.09) after controlling for age, race, and gender. In general, similar associations were found after controlling for any history with DCFS (Table 4.3).

In multivariable logistic models, Teen Court, office-based and school-based 654 program participants did not have statistically significant differences in having a case filed, although the trends in odds ratios were similar to those in the arrest models. In the full model (that included DCFS history), Blacks were more likely to have a case filed compared to Hispanics after controlling for other factors in the model, females were less likely to have had a case filed, and those with higher risk levels had greater odds of having a case filed (Table 4.3).

Raw Kaplan-Meier survivor function curves show the proportion of youths rearrested by program over time (Figure 4.2). School-based 654 program participants had a 127% increase in the rate of being rearrested, compared to Teen Court program participants, after controlling for age, race, gender, and risk level. This effect was statistically significant (95% CI for the hazard ratio: 1.16, 4.44). Office-based 654 program participants had a 54% increase in the rate of being

rearrested, compared to Teen Court participants; however, this effect was not statistically significant. In addition, Blacks (compared to Hispanics), those at higher risk level, and males had a significantly greater hazard of being rearrested, after controlling for other factors. After DCFS history was included in the model, these estimates remained of similar magnitude (Table 4.4).

Office and school-based 654 program participants had similar hazards for having a case filed. Office-based participants had a 93% increase in the rate of having a case filed, compared to Teen Court participants, after controlling for age, race, gender, and risk level. This hazard ratio was statistically significant (95% CI: 1.05, 3.55). While slightly larger in magnitude, the hazard ratio for having a case filed was not statistically different for school-based 654 and Teen Court program participants. Once DCFS history was added to the model, statistically significant differences were not seen between any of the programs. As with arrests, Blacks and males both had a significantly greater hazard of having a case filed, after controlling for other factors (Table 4.4).

Across logistic and survival models, no interactions between program and participant characteristics were found to be significant and the associations between program and the odds (or hazard, in survival models) of being rearrested or having a case filed were similar across program years.

DISCUSSION

Current evidence of the impact of Teen Court programs on juvenile offender outcomes is mixed. In order to help inform local decision-making and add to the current evidence base, this study

sought to examine the impact of two Teen Courts in Los Angeles County. Overall, this study found moderate support for differences in recidivism for youths who participated in Teen Courts when compared to participants in another juvenile justice system diversion program. Across models, 654 program participants showed higher rates of subsequent arrests and cases filed than Teen Court participants, after controlling for a range of individual factors. While the magnitude of the program effects were fairly consistent across models, differences in outcomes were not statistically significant in all models. These results align with previous research on Teen Courts which has showed mixed impacts, including some studies that suggest Teen Court participants have lower recidivism compared to traditional justice processing (Butts et al. 2002; Hissong 1991) and other types of juvenile diversion (Forgays 2008) whereas other research has shown no differences between groups (Patrick and Marsh 2005; Stickle et al. 2008). In its design (comparison group of offenders, length of follow-up, comparison condition), this study is most similar to those conducted by Seyfrit et al. (1987) and Nochajski et al. (n.d.) which both reported null results. Of the three studies to date that have used survival analysis, two reported null results (Nochajski et al. n.d.; Norris et al. 2011) and one reported a significant positive impact of Teen Courts on recidivism (Hissong 1991). In terms of study population, we are not aware of any studies to date that have examined the impact of Teen Courts on a predominantly Hispanic group of offenders.

In the present study, while program impacts were generally similar in direction and magnitude across models, there were differences in levels of statistical significance depending on a) which covariates were included in the analysis; b) the use of subsequent arrests or cases filed as the outcome; c) whether the 654 program as a whole or the 654 program locations were used as the

comparison condition; or d) whether logistic or survival modeling was used. Variability in these (and other) factors is ubiquitous in previous research on Teen Courts. While best practices for study design and analysis remain undefined, these findings help illustrate one of the potential reasons for variability in the results of previous studies examining impacts of Teen Court programs across the US. One design option to which this study can contribute is the decision to use program dropouts as a comparison group, which has been done in previous studies (Bright et al. 2013; Norton et al. 2013). In our study, program completers had almost 60 times the odds of being rearrested and 30 times the odds of having a case filed, compared with those who did not complete the program.

In general, minors who participated in a 654 school-based program showed the least promising outcomes. As minors who participate in school-based supervision generally have greater intensity of intervention (e.g., potentially daily contact with a DPO), these results were unexpected. Previous studies that have compared school and office-based supervision in LAC have demonstrated lower rates of recidivism among school-based participants, although this has only been assessed over a period of six months (Fain et al. 2013). There are many potential reasons for this finding. First, while youths who were assigned to office and school-based supervision did not differ on any of the measured variables, including risk level, the groups may have unmeasured differences. The probation office assigns DPOs to schools based on neighborhood characteristics and the volume of minors on formal and informal probation at the school. Youths participating in school-based diversion may have greater exposure to school or community risk factors not captured by the LARRC. Alternately, some features of a school-based diversion program may be harmful. Even though minors are not on formal probation, as a

result of participating in a school-based program they may a) have the opportunity to interact with youths at higher risk levels (who are on school-based formal probation) and/or b) be negatively labeled by their peers or school staff, creating stigma and further perpetuating criminal involvement. A previous systematic review of crime prevention programs suggests that such efforts can produce harmful effects through negative labeling and deviancy training (Welsh and Rocque 2014).

Across models, youths with greater risk levels, males, and Blacks had greater rates of recidivism. These findings align with previous work on the importance of risk level (Fain et al. 2013), gender (Hissong 1991; Norris et al. 2011), and race (Hissong 1991) in predicting recidivism. The large magnitude of racial differences in arrest and filing rates after controlling for risk level is a troubling finding. It is well documented that youths from minority racial and ethnic backgrounds experience higher rates of incarceration and are disproportionately represented in the juvenile justice system (National Center for Juvenile Justice n.d.). While there are likely to be many reasons that underlie these disparities (e.g., structural, family, and individual differences), the pathways through which disparities occur (e.g., conscious or subconscious decisions by DPOs in assigning youths to treatment; racial stereotyping by schools, welfare agencies, or law enforcement; residential segregation and the negative influences of environmental stressors) (Bridges and Steen 1998; Crutchfeld et al. 2012; Feld 1995; Graham and Lowery 2004) and ways to address these disparities warrant further exploration.

Limitations

While this study helps provide important insight on the relationship between Teen Courts and recidivism, it has limitations. First, youths were not randomly assigned to treatment conditions and participation in these programs is voluntary. While efforts were made to make the Teen Court and 654 program participants as similar as possible (i.e., by using measures of risk, age, race, and gender in regression adjustment), participants in the two groups may vary on unmeasured differences which affect recidivism rates (e.g., parental and family involvement, school environment). Therefore, the study may suffer from selection bias; differences in recidivism may be the result of youth characteristics (and not program participation). While information about whether the minor ever had an open case with DCFS might serve as a helpful marker, we were not able to abstract any information on the nature and timing of the open case, limiting our ability to interpret this variable. In addition, as the administrative database did not provide any information about whether minors declined to participate in the Teen Court or 654 programs, we could not examine the extent of this potential source of bias. Second, due to system constraints and time limitations, we were not able to obtain any process measures (e.g., level of contact between officer and youth, number of services accessed, quality of relationship between officer and youth). While we were able to control for supervision site, the study was not able to understand officer-level effects. While length of time spent in the program provides some insight, the measure is limited because it was calculated based on when the case was administratively closed, not when contact with the DPO ended. Future studies should aim to obtain such process as well as short term measures (e.g., changes in youth attitudes and behaviors), from both the DPO and minor's perspective. Third, our sample was relatively small and the outcome was relatively rare, especially for the school-based 654 group. While we attempted to limit the number of covariates in multivariable analyses, the analyses may have

suffered from limited power, especially in analyses exploring differential program impacts (i.e., the impact of the program on high risk offenders, females, etc.). Fourth, study results depend heavily on the quality of the data abstracted. While efforts were made to use consistent abstractors and double check implausible values, some aspects remain unverified, for example, the completeness of the probation log in identifying all youths eligible for WIC 652. Furthermore, changes in the processing of citations in 2014 led to minor errors in case triaging and assignment, including 11 cases that were not eligible being immediately referred back to the District Attorney (see Table 4.1) and two minors in our sample having received a 654 contract twice.

Implications

This study provides modest support for the positive impacts of Teen Courts on rates of youth recidivism. Our study of two Teen Courts in LAC adds to the literature by examining a group of primarily non-White program participants, comparing the performance of Teen Courts to an alternative diversion program, adjusting for potential confounding participant characteristics, and examining two different ways of measuring recidivism. However, in spite of this contribution to the evidence base, much remains unknown about the programmatic elements that mediate juvenile diversion program success or failure.

Fueled by declining court budgets and increasing interest in keeping youths out of traditional justice system processes, use of diversion programs is a widely growing in practice. Given the increasing and routine use of Teen Courts as well as office- and school-based informal probation programs in LAC, additional research is needed to understand how these juvenile diversion

programs can improve youth outcomes. Future studies should consider impact as well as client/family preferences, partner perspectives on implementation (e.g., availability of referral resources, challenges to engaging youth), and time and costs associated with program implementation. Furthermore, methodologically rigorous studies should aim to collect process and short-term impact measures in order to provide greater insights to assist with causal inference, inform theory, and contribute to decision-making and process improvement. By systematically gathering additional information on factors such as variation in program protocols, rates of service referral and utilization, and changes in youth attitudes and knowledge, we will be better able to understand program implementation, short term outcomes, and strategies for refining such efforts to best meet youth and family needs.

TABLES AND FIGURES

Table 4.1. Summary of action taken on Welfare and Institutions Code 652 referrals received by one Los Angeles County probation office, 2012 – 2014

Action Taken	2012 n=378	2013 n =381^b	2014 (January 1 – June 20) n= 211
Teen Court	51 (13%)	48 (13%)	14 (7%)
654 Contract	46 (12%)	97 (25%)	51 (24%)
Referred to district attorney	50 (13%)	28 (7%)	23 (11%) ^c
Closed (with or without referrals) ^a	231 (61%)	207 (54%)	123 (58%)

^a Cases are closed for many reasons, including: incident is isolated or relatively minor, the minor is remorseful/willing to make amends, the minor or parent is non-responsive to outreach from probation staff, the minor does not live within the county, a more serious offense has already been filed with the District Attorney, or the minor is already receiving services from another county or community agency.

^b Action taken could not be identified for one case.

^c Includes 11 cases that were not eligible for informal probation because of prior arrests.

Table 4.2. Characteristics of Teen Court and 654 program participants in one Los Angeles County probation office, January 2012 to June 2014

	Teen Court n=112^a	654 Contract (Office) n=152	654 Contract (School) n=42	p- value^b
Demographics				
Gender				
Male	72 (64%)	104 (68%)	30 (71%)	0.646
Female	40 (36%)	48 (32%)	12 (29%)	
Age (years)	15.6 (1.4)	14.7 (1.7)	14.7 (1.3)	<0.001
Race/Ethnicity				
Hispanic	81 (72%)	114 (75%)	26 (62%)	0.184
Black	20 (18%)	32 (21%)	12 (29%)	
Other	11(10%)	6 (4%)	4 (10%)	
Risk level (<i>continuous, range 1 to 46</i>)	9.3 (8.0)	9.1 (8.1)	9.0 (7.0)	0.976
Risk level (<i>categorical</i>) ^c				
Low	80 (71%)	113 (74%)	34 (81%)	0.835
Medium	28 (25%)	34 (22%)	7 (17%)	
High	4 (4%)	5 (3%)	1 (2%)	
Any history with the Department of Children and Family Services				
Yes	4 (4%)	39 (26%)	8 (19%)	<0.001
No	108 (96%)	113 (74%)	34 (81%)	
Any gang affiliation				
Yes	0 (0%)	2 (1%)	2 (5%)	0.068
No	112 (100%)	150 (99%)	40 (95%)	

Offense for which youth was referred				
Theft, burglary, or receiving stolen property	45 (40%)	55 (36%)	20 (48%)	
Battery or assault	36 (32%)	55 (36%)	11 (26%)	
Vandalism or arson	8 (7%)	6 (4%)	3 (7%)	
Possession of weapon	11 (10%)	8 (5%)	3 (7%)	
Possession of controlled substance ^d	6 (5%)	8 (5%)	1 (2%)	
Threats or conspiracy	2 (2%)	5 (3%)	1 (2%)	
Resisting arrest or false police report	4 (4%)	0 (0%)	1 (2%)	
Vehicle related	0 (0%)	3 (2%)	1 (2%)	
Trespassing, gang-related trespassing, or disturbing the peace	0 (0%)	4 (3%)	1 (2%)	
Sex related	0 (0%)	8 (5%)	0 (0%)	0.119
Program Participation				
Year contract signed				
2012	46 (41%)	38 (25%)	8 (19%)	
2013	44 (39%)	61 (40%)	25 (60%)	
2014	22 (20%)	53 (35%)	9 (21%)	0.002
Program status				
Complete	87 (78%)	113 (74%)	29 (69%)	
Drop out	15 (13%)	20 (13%)	8 (19%)	
Pending	10 (9%)	19 (13%)	5 (12%)	0.745
Time in program (days)^e				
	200.8 (78.7)	166.9 (53.8)	210.3 (119.2)	
	Range: 0 – 363 (n=102)	Range: 20 – 494 (n=133)	Range: 33 – 716 (n=37)	<0.001
Follow-up time (days)^f				
	572.6 (269.5)	475.8 (265.1)	486.9 (242.2)	
	Range: 127 - 988	Range: 78 - 1034	Range: 97 - 1033	0.011
Recidivism				
Number of subsequent arrests				
0	92 (82%)	114 (75%)	25 (60%)	
1	10 (9%)	21 (14%)	11 (26%)	
2	5 (4%)	10 (7%)	2 (5%)	
3	4 (4%)	4 (3%)	2 (5%)	
4	1 (1%)	3 (2%)	2 (5%)	0.146
Nature of subsequent arrests				
Any violent ^g	3 (15%)	16 (42%)	4 (24%)	
All non-violent	17 (85%) (n=20)	22 (58%) (n=38)	13 (76%) (n=17)	0.080

Number of subsequent filings				
0	96 (86%)	118 (78%)	30 (71%)	
1	9 (8%)	24 (16%)	7 (17%)	
2	5 (4%)	6 (4%)	2 (5%)	
3	1 (1%)	4 (3%)	1 (2%)	
4	1 (1%)	0 (0%)	2 (5%)	0.107

^a Excludes one observation with missing risk level data.

^b *p*-values based on results of chi-square test (categorical variables) or ANOVA (continuous variables).

^c Based on the reported risk and protective factors, the minor is classified as low (female: 0-12, male: 0-14), medium (female: 13-25, male: 15-26), or high (female: 26-46, male: 27-46) risk.

^d This included some youths who had been referred for the sale or possession for sale of a controlled substance and/or possession of narcotics at school. They were likely allowed to participate in an informal probation program because there was not enough evidence to file the case.

^e Number of days elapsed from the date the contract was signed until the case was administratively closed. This excludes those individuals who were still under supervision at the time of data abstraction. By law, contracts for the Teen Court and 654 programs can be in place for up to six months.

^f Number of days elapsed from the date the contract was signed until the date that data were abstracted for this study.

^g Violent arrests include any arrest for battery or assault.

Table 4.3. Multivariable logistic regression models of recidivism, Teen Court and 654 program participants in one Los Angeles County probation office, January 2012 to June 2014

	Outcome: Any Subsequent Arrest		Outcome: Any Case Filed	
	Model 1	Model 2	Model 1	Model 2
<i>Odds Ratio (95% Confidence Interval)</i>				
Program				
Teen Court (ref)	--	--	--	--
654: Office	1.50 (0.78, 2.91)	1.32 (0.66, 2.62)	1.80 (0.89, 3.67)	1.49 (0.71, 3.11)
654: School	3.07 (1.31, 7.18)**	2.81 (1.19, 6.65)*	2.28 (0.91, 5.74)	1.95 (0.75, 5.02)
Follow-Up Time				
	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)
Other Characteristics				
Age	0.88 (0.74, 1.05)	0.89 (0.74, 1.06)	0.96 (0.80, 1.16)	0.98 (0.81, 1.18)
Race				
Hispanic (ref)	--	--	--	--
Black	1.95 (1.02, 3.73) *	1.83 (0.95, 3.53)	2.34 (1.19, 4.59)*	2.15 (1.08, 4.27)*
Other	0.50 (0.13, 1.90)	0.56 (0.15, 2.09)	0.45 (0.10, 2.09)	0.52 (0.11, 2.44)
Gender				
Male (ref)	--	--	--	--
Female	0.51 (0.27, 0.98)*	0.50 (0.26, 0.96)*	0.40 (0.20, 0.83)*	0.38 (0.18, 0.80)*
Risk level	1.05 (1.01, 1.09)*	1.05 (1.01, 1.09)*	1.06 (1.01, 1.10)**	1.05 (1.01, 1.09)*
Any DCFS history				
No (ref)	--	--	--	--
Yes		1.74 (0.85, 3.57)		2.23 (1.07, 4.67)*

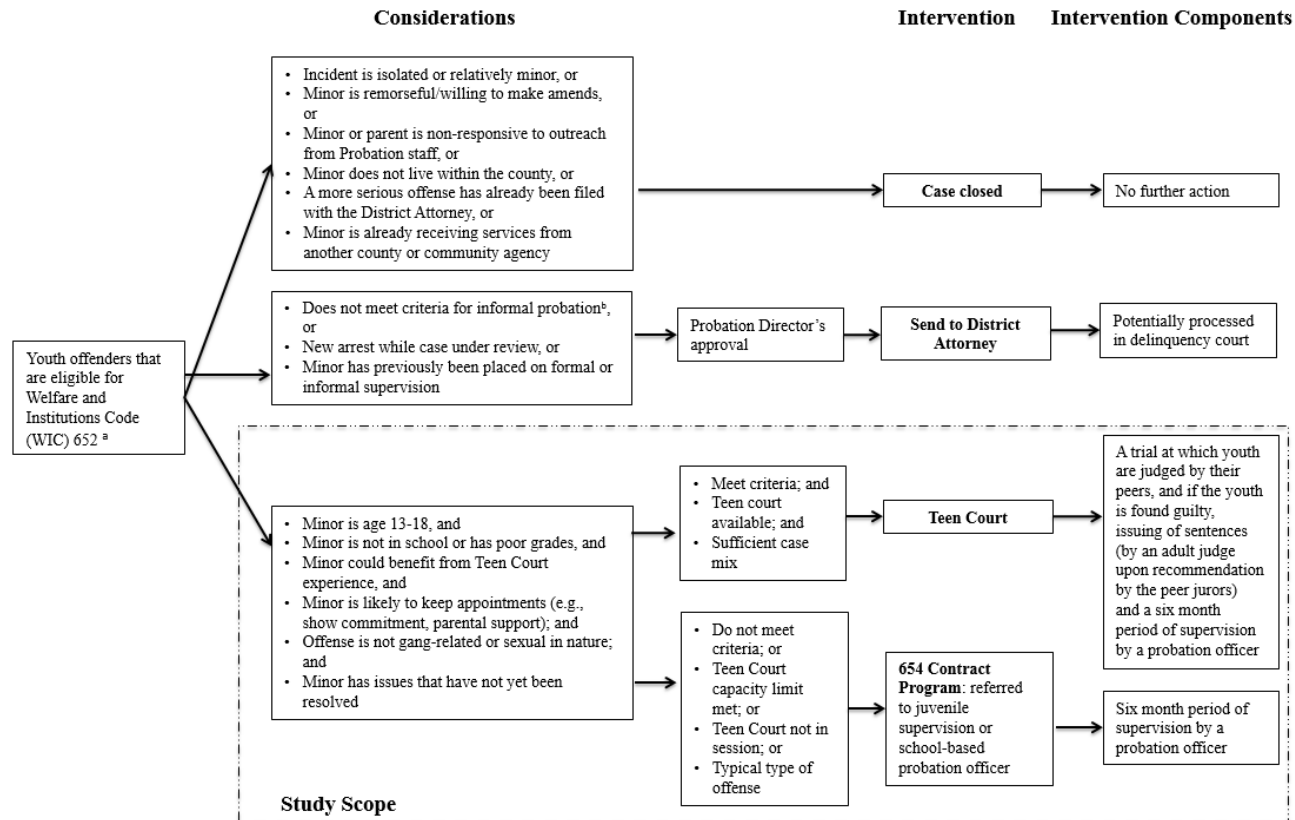
*p<0.05, **p<0.01

Table 4.4. Survival analysis regression models of recidivism, Teen Court and 654 program participants in one Los Angeles County probation office, January 2012 to June 2014

	Outcome: First Subsequent Arrest		Outcome: First Case Filed	
	Model 1	Model 2	Model 1	Model 2
<i>Hazard Ratio (95% Confidence Interval)</i>				
Program				
Teen Court (ref)	--	--	--	--
654: Office	1.54 (0.88, 2.69)	1.41 (0.79, 2.52)	1.93 (1.05, 3.55)*	1.63 (0.86, 3.08)
654: School	2.27 (1.16, 4.44)*	2.04 (1.02, 4.08)*	2.06 (0.96, 4.45)	1.62 (0.72, 3.64)
Other Characteristics				
Age	0.89 (0.77, 1.02)	0.90 (0.78, 1.04)	0.95 (0.81, 1.11)	0.98 (0.84, 1.16)
Race				
Hispanic (ref)	--	--	--	--
Black	1.83 (1.08, 3.07)*	1.73 (1.02, 2.94)*	2.19 (1.26, 3.82)**	2.00 (1.14, 3.53)*
Other	0.58 (0.18, 1.86)	0.63 (0.19, 2.03)	0.52 (0.13, 2.17)	0.60 (0.14, 2.51)
Gender				
Male (ref)	--	--	--	--
Female	0.47 (0.27, 0.82)**	0.45 (0.26, 0.79)**	0.37 (0.20, 0.70)**	0.33 (0.17, 0.63)**
Risk level	1.03 (1.01, 1.06)*	1.03 (1.00, 1.07)*	1.03 (1.00, 1.07)*	1.03 (0.98, 1.06)
Any DCFS history				
No (ref)	--	--	--	--
Yes	--	1.50 (0.85, 2.65)	--	2.13 (1.15, 3.93)*

*p<0.05, **p<0.01

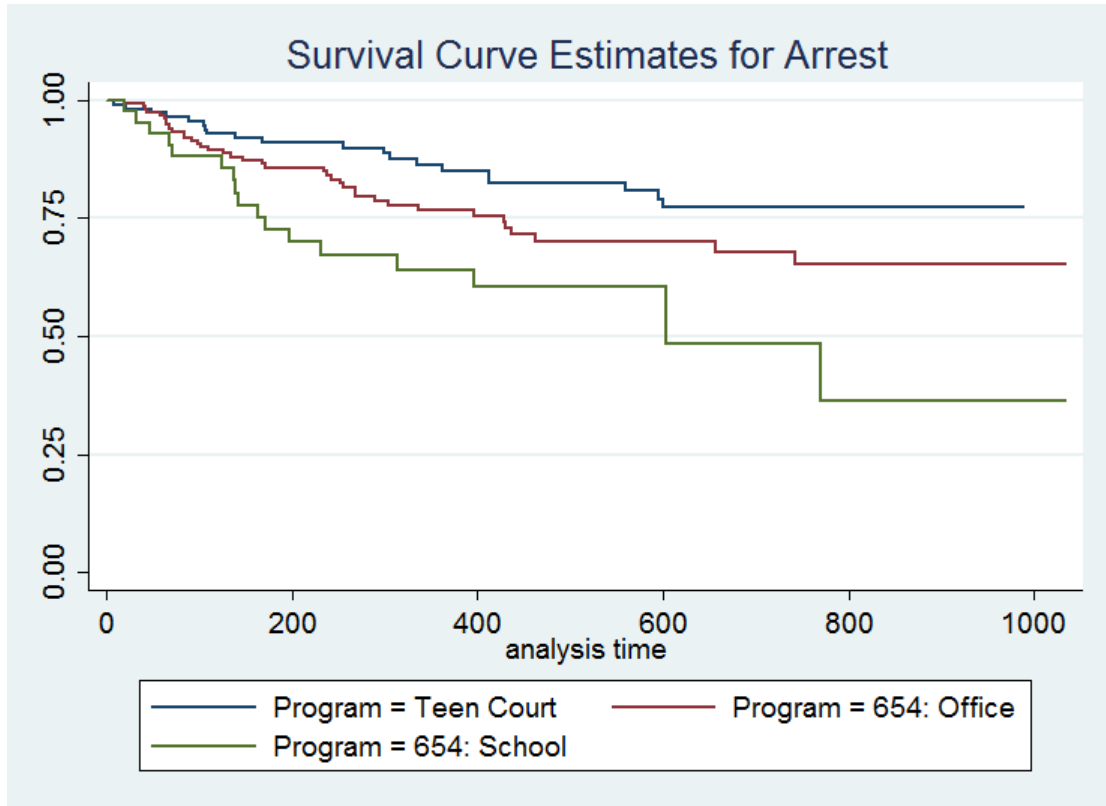
Figure 4.1. Process for assigning youth offenders that are eligible for Welfare and Institutions Code 652 at one probation office, Los Angeles County, 2014



^a After January 2014, all cases start at the central probation office. Prior to this time, cases were first reviewed by the District Attorney.

^b A minor is ineligible for informal probation if he or she was arrested for: sale or possession for sale of a controlled substance, possession of narcotics on school grounds, assault with a deadly weapon upon a school employee, possession of a firearm or weapon at school, a crime listed in WIC 707(b), an offense involving gang activity or requiring restitution in excess of \$1,000 or if the minor has a) previously been placed on informal probation and has committed a new offense, or b) is 14 or older and has been arrested for a felony or is 13 or younger and has a previous felony arrest.

Figure 4.2. Raw Kaplan-Meier survivor function curve of first subsequent arrest, Teen Court and 654 program participants in one Los Angeles County probation office, January 2012 to June 2014



REFERENCES

- Annie E. Casey Foundation. (2013). *Youth incarceration in the United States*. Baltimore: Authors.
- Berger, M.L., Mamdani, M., Atkins, D., & Johnson, M.L. (2009). Good research practices for comparative effectiveness research: defining, reporting and interpreting nonrandomized studies of treatment effects using secondary data sources: the ISPOR Good Research Practices for Retrospective Database Analysis Task Force report-part I. *Value in Health*, 12(8):1044-1052.
- Bonnie, R.J., Johnson, R.L., Chemers, B.M., & Schuck, J. (2013). *Reforming juvenile justice: a developmental approach*. Washington, DC: The National Academies Press.
- Bridges, G.S., & Steen, S. (1998). Racial disparities in official assessments of juvenile offenders: attributional stereotypes as mediating mechanisms. *American Sociological Review*, 63:554-570.
- Bright, C., Morris-Compton, D., Walter, J., Falls, B., & Young, D. (2013). *Multijurisdictional teen court evaluation: a comparative evaluation of three teen court models*. Williamsburg, VA: Administrative Office of the Courts.
- Butts, J.A., Buck, J., & Coggeshall, M.B. (2002). *The impact of teen court on young offenders*. Washington, DC: The Urban Institute.
- Crutchfield, R.D., Skinner, M.L., Haggerty, K.P., McGlynn, A., & Catalano, R. F. (2012). Racial disparity in police contacts. *Race and Justice*, 2(3):179-202.
- Drake, E.K., Aos, S., & Miller, M.G. (2009). Evidence-based public policy options to reduce crime and criminal justice costs: implications in Washington state. *Victims and Offenders*, 4(2):170-196.

- Fain, T., Turner, S., & Greathouse, S.M. (2013). *Los Angeles County Juvenile Justice Crime Prevention Act, fiscal year 2012–2013 report*. Santa Monica, CA: RAND Corporation.
- Feld, B.C. (1995). The social context of juvenile justice administration: racial disparities in an urban juvenile court. In K. Kempf-Leonard, C. Pope & W. Feyerherm (Eds.), *Minorities in juvenile justice* (66-97) Thousand Oaks, CA: Sage.
- Forgays, D.K. (2008). Three years of teen court offender outcomes. *Adolescence*. 43(171):473-484.
- Gase, L.N., Schooley, T., DeFosset, A., Stoll, M.A., & Kuo, T. (2015). The impact of teen courts on youth outcomes: a systematic review. *Adolescent Research Review*. 1(1):51-67.
- Graham, S., & Lowery, B.S. (2004). Priming unconscious racial stereotypes about adolescent offenders. *Law and Human Behavior*. 28(5):483-504.
- Hissong, R. (1991). Teen court: is it an effective alternative to traditional sanctions? *Journal for Juvenile Justice and Detention Services*. 6(14):14-23.
- Hjalmarsson, R. (2007). Criminal justice involvement and high school completion. *Journal of Urban Economics*. 63(2):613-630.
- Knoll, C., & Sickmund, M. (2012). *Delinquency cases in juvenile court, 2009*. Juvenile Offenders and Victims National Report Series.
- Lambie, I., & Randell, I. (2013). The impact of incarceration on juvenile offenders. *Clinical Psychology Review*. 33(3):448-459.
- Mitchell, O., Wilson, D.B., Eggers, A., & MacKenzie, D.L. (2012) Assessing the effectiveness of drug courts on recidivism: a meta-analytic review of traditional and non-traditional drug courts. *Journal of Criminal Justice*. 40:60-71.

- National Association of Youth Courts. (2015). *Facts and stats*. Retrieved from:
http://www.youthcourt.net/?page_id=24.
- National Center for Juvenile Justice. (n.d.). *Easy access to juvenile court statistics: 1985-2010*. Retrieved from: <http://www.ojjdp.gov/ojstatbb/dmcdm/asp/sources.asp>.
- Nochajski, T.H., Hayes, E., Kramer, L., Michaels, T., Hill, B., Schreck, L., . . . Dingman, M. (n.d.). *Hillside Children's Center: Livingston County youth court and community services evaluation*. New York, NY: State University of New York at Buffalo. Retrieved from:
http://www.globalyouthjustice.org/uploads/Livingston_County_Youth_Court_Evaluation.pdf.
- Norris, M., Twill, S., & Kim, C. (2011). Smells like teen spirit: evaluating a midwestern teen court. *Crime & Delinquency*, 57(2):199-221.
- Norton, M.H., Gold, E., & Peralta, R. (2013). *Youth courts and their educational value: an examination of youth courts in Chester, Pennsylvania*. Research for Action. Retrieved from: http://www.researchforaction.org/wp-content/uploads/publication-photos/1187/Norton_M_Youth_Courts_and_their_Educational_Value.pdf.
- Patrick, S., & Marsh, R. (2005). Juvenile diversion: results of a 3-year experimental study. *Criminal Justice Policy Review*, 16(1):59-73.
- Petteruti, A., Schindler, M., & Ziedenberg, J. (2014). *Sticker shock: calculating the full price tag for youth incarceration*. Washington, DC: Justice Policy Institute.
- Piquero, A.R. (2008). Disproportionate minority contact. *The Future of Children*, 18(2):59-79.
- Povitsky, W.T. (2005). Teen court: does it reduce recidivism? (Unpublished master's thesis). University of Maryland, College Park. Retrieved from:
<http://drum.lib.umd.edu/bitstream/1903/3274/1/umi-umd-3102.pdf>.

- Schwalbe, C.S., Gearing, R.E., MacKenzie, M.J., Brewer, K.B., & Ibrahim, R. (2012). A meta-analysis of experimental studies of diversion programs for juvenile offenders. *Clinical Psychology Review*. 32(1):26-33.
- Seigle, E., Walsh, N., & Weber, J. (2014). *Core principles for reducing recidivism and improving other outcomes for youth in the juvenile justice system*. New York: Council of State Governments Justice Center.
- Seyfrit, C.L., Reichel, P.L., & Stutts, B.L. (1987). Peer juries as a juvenile justice diversion technique. *Youth & Society*. 18(3):302-316.
- Sickmund, M. (2010). *Juveniles in residential placement, 1997 – 2008*. Office of Juvenile Justice and Delinquency Prevention Fact Sheet.
- State of California Department of Justice. (2015) *Law enforcement codes and tables: Offense codes*. Retrieved from: <http://oag.ca.gov/law/code-tables>.
- Stickle, W.P., Connell, N.M., Wilson, D.M., & Gottfredson, D. (2008). An experimental evaluation of teen courts. *Journal of Experimental Criminology*. 4(2):137-163.
- Turner, S., Fain, T., & Sehgal, A. (2005). *Validation of the risk and resiliency assessment tool for juveniles in the Los Angeles County probation system*. Santa Monica, CA: RAND Corporation.
- Welsh, B.C., & Rocque, M. (2014). When crime prevention harms: a review of systematic reviews. *Journal of Experimental Criminology*. 10(3):245-266.
- Wilson, A.H., & Hoge, R.D. (2013). Diverting our attention to what works: evaluating the effectiveness of a youth diversion program. *Youth Violence and Juvenile Justice*. 11(15):313-331.

Wilson, D.M., Gottfredson, D.C., & Stickle, W.P. (2009). Gender differences in effects of teen courts on delinquency: a theory-guided evaluation. *Journal of Criminal Justice*. 37(1):21-27.

Yarbrough, A. (2013). Budget cuts jeopardize health of nation's court systems. *California Bar Journal*. Retrieved from:
<http://calbarjournal.com/September2013/TopHeadlines/TH9.aspx>.

CHAPTER 5: Conclusion

SUMMARY OF FINDINGS

This dissertation applied a social determinants of health perspective to examine the relationships between health, academic, and juvenile justice-related structures, interventions, and outcomes among at-risk youths in the United States. The three papers provide insights that public health can use to work with partners in the education and juvenile justice systems to address some of the core factors that influence the health and wellbeing of youths and their families.

The first paper, *Relationships between Student, Staff, and Administrative Measures of School Climate and Student Health and Academic Outcomes*, sought to examine associations between student, staff, and administrative indicators of school climate and students' academic and health outcomes. This study combined data from the California Healthy Kids Survey, the California School Climate Survey, and administrative data from the California Department of Education. A multilevel regression model was constructed to examine the association between the domains and measures of school climate and each of five outcomes of student wellbeing: depressive symptoms or suicidal ideation, tobacco use, alcohol use, marijuana use, and grades. Results showed student, staff, and administrative measures of school climate to be weakly correlated. Strong associations were found between student outcomes and student-reports of engagement and safety, while staff-reports and administrative measures of school climate showed limited associations with students' outcomes. Results underscore the need to ground school climate measurement and improvement efforts in a multi-dimensional conceptualization of climate that values student perspectives and includes elements of both engagement and safety.

The second paper, *Understanding Racial and Ethnic Disparities in Arrest: The Role of Individual, Home, School, and Community Characteristics*, sought to identify characteristics of youths and young adults who were more likely to become involved in justice-based punitive systems. Multilevel cross-sectional logistic regression analyses were conducted using data from waves I and IV of the National Longitudinal Study of Adolescent to Adult Health. Results showed significantly higher likelihood of having ever been arrested among Blacks, when compared to Whites, even after controlling for a range of delinquent behaviors, suggesting that differences in arrest were not driven by differential involvement in delinquent or criminological behavior. Notably, racial/ethnic disparities in arrest were no longer present after accounting for racial composition of the neighborhood, supporting the growing body of research demonstrating the importance of contextual variables in driving disproportionate minority contact with the justice system. Results support the need for increased attention to the upstream, environmental factors that drive disproportionate minority contact with the justice system.

The third paper, *The Impact of Two Los Angeles County Teen Courts on Youth Recidivism: Comparing Two Informal Probation Programs*, sought to assess a juvenile justice system diversion program being implemented in Los Angeles County to understand its impacts on youths' outcomes and identify opportunities to better meet youths' needs. Logistic and survival models – constructed using administrative data abstracted from the Los Angeles County Probation Department – examined differences in recidivism between youths who participated in Teen Court and another probation-led diversion program. Results showed Teen Court participants to have lower rates of recidivism than comparison group participants, after controlling for age, gender, race/ethnicity, and risk level. The magnitude of program effects was

fairly robust to different model specifications (e.g., which covariates were included in the analysis; whether subsequent arrests or cases filed was used as the outcome; whether logistic or survival modeling was used). Results provide modest support for the positive impact of Teen Court, but point to the need for additional research to better understand how juvenile diversion programs can improve youths' outcomes.

Together, the three papers illustrate opportunities for intervention within both the juvenile justice and education systems to improve the health and wellbeing of youths. It is well documented that contact with the justice system can lead to poor health and social outcomes, including substance abuse and mental health problems, involvement in violence and violent victimization, exposure to infectious diseases, and decreased high school graduation and employment rates (Brame et al. 2012; Clear 2008; Gatti et al. 2009; Hjalmarsson 2007; Lambie and Randell 2013; Pridemore 2014). The third dissertation paper begins to explore how the juvenile justice system might be structured to better identify and meet the needs of youths (i.e., understand what is driving their behavior and how to bring resources to aid in needed services). While results of the third paper suggests that Teen Courts may be one promising model to reduce recidivism, additional work is needed to understand how diversion programs and policies can best be designed to meet youths' health and social needs. Unfortunately, in the present study of Teen Court, no data were available on offenders' health needs or outcomes. To identify programs and policies that maximize youths' holistic wellbeing, additional efforts are needed to integrate health, education, and justice-focused data to facilitate research and evaluation that examines the impacts of programs on a more comprehensive set of outcomes (Gase et al. 2013).

Both the second and third dissertation papers underscore the vast racial/ethnic disparities that exist in contact with the justice system, even after controlling for behavioral risk factors. The second dissertation paper adds to the literature by providing insights into the reasons underlying such disparities – pointing to the powerful role of neighborhood racial composition in driving Black/White differences in arrest, above and beyond socioeconomic indicators of poverty, unemployment, vacant housing, or school quality. Such associations between neighborhood racial composition and the likelihood of arrest may reflect differences in criminal justice practices and policies, such as police presence. Given its range of negative impacts, additional efforts to reduce disproportionate minority contact with the justice system may provide a potential lever to foster more equitable health and social outcomes. Results of this paper underscore the potential value of shifting more focus toward environmental approaches to reduce disproportionate minority contact with the justice system – a sole focus on youths’ behaviors will not be enough.

Efforts to improve the education system – addressed primarily in the first paper – focused on gaining an understanding of what goes into making a healthy school. Promoting positive school climate, an integral part of a comprehensive approach to school wellness, is one approach to fostering academically engaged, resilient, and healthy youths (Lewallen et al. 2015). School climate is associated with a range of positive outcomes, including improved self-esteem, mental health, and learning motivation and decreased substance abuse, aggression and violence, and harassment and bullying (Thapa et al. 2015). The importance of school climate is underscored in the first paper, which showed student perceptions of both engagement and safety to be strongly associated with students’ mental health, substance use, and academic achievement.

The first paper adds to the literature by emphasizing the importance of student-centered perspectives in designing measurement and quality improvement systems aimed at improving school climate. The study also points to the unique contributions of two domains of school climate - engagement and safety - in influencing youths' behaviors. Unfortunately, in practice, these domains can sometimes be at odds. School-based zero tolerance policies, which mandate the application of predetermined consequences (e.g., suspension, school-based arrest) for school behavior violations, have been widely adopted in an effort to improve safety. However, such policies can contribute to students – especially students of color – feeling disconnected and dropping out of school, and have been implicated as contributing to the “school to prison pipeline” whereby youths are “pushed out” of school, leading to patterns of delinquent behavior, negative peer associations, and further criminal activity (American Psychological Association Zero Tolerance Task Force 2008; Zimring and Tanenhaus 2014). The first dissertation paper underscores the need to identify and test strategies that can work together to ensure that schools (simultaneously) are safe, foster positive relationships with peers and school staff, and create a place where students want to be. School climate is a public health issue; by cultivating student feelings of engagement and safety, we can help foster healthy behaviors and improve short- and long-term health outcomes.

IMPLICATIONS FOR PRACTICE AND FUTURE RESEARCH

Taken together, the three dissertation papers have a number of implications for policy and program development. A social determinants of health perspective tells us that the health and wellbeing of youths is influenced by their experiences with the education and juvenile justice systems. Results of this dissertation identify some concrete opportunities to enhance these

systems to maximize the holistic wellbeing of youths and families. In particular, results highlight the need for an increased focus on at-risk youths, who are more frequently faced with adverse circumstances, have greater health burden, and are disproportionately represented in punitive systems. Given its orientation toward population health, public health researchers and practitioners may be in a strategic position to work with the education and justice systems to increase their capacity to promote youth wellbeing and to foster further alignment between sectoral goals.

There are emerging examples of how public health can support partners in the education and juvenile justice systems. Results and lessons learned from this dissertation are being used by the Los Angeles County Department of Public Health (DPH) in its work with law enforcement and legal system partners, school districts, and youth-serving organizations. DPH is leading efforts to identify, scale, and spread evidence-based models for juvenile diversion that address the underlying factors driving youths' problem behaviors. Juvenile diversion efforts are a key component of DPH's place-based approach to reduce violence and improve community safety. Moreover, DPH is exploring ways to work with schools to advance a comprehensive approach to school wellness that considers traditional aspects of health (e.g., nutrition, physical activity, school-based health services) alongside approaches to improve school connectedness and school climate and position schools as community resource hubs. These efforts are being facilitated, in part, by increased focus in the county on integrating health, public health, and mental health services (County of Los Angeles 2015a) and addressing the underlying factors driving racial/ethnic disparities in health and social outcomes (County of Los Angeles 2015b).

There are also emerging models for how health care organizations can work to address the social determinants of health, some of which focus on supporting partnerships with the education and justice systems. Through its Accountable Care Communities, the Centers for Medicare & Medicaid Services' Innovation Center is investigating models to foster collaboration among medical care, social services, public health, and community-based organizations, including identifying sustainable payment models to support such partnerships (Alley et al. 2016). The Los Angeles County Department of Mental Health's Health Neighborhoods initiative is working to advance a place-based approach to coordinate care among health, mental health, substance use, and public health care providers and build linkages with community-based organizations to drive community change, including enhancing justice system diversion and reducing homelessness (County of Los Angeles Department of Mental Health n.d.). A final example is Alameda County's Center for Healthy Schools and Communities. A part of the County's Health Care Services Agency, the initiative recognizes the inseparable link between health and education and aims to foster fair, just, and equitable conditions for health and learning to ensure that every child is healthy and able to learn (Center for Healthy Schools and Communities n.d.). Strategies include increasing access to comprehensive school-based and school-linked services, fostering safe and positive school climate, and building opportunities for youth leadership and family involvement.

Despite these successes, additional research and practice-based examples are needed to further explicate the ways in which the education and justice systems can support youth wellbeing - and the ways in which public health and health care partners can bolster these efforts. On the juvenile justice side, additional work is needed to identify policies and programs that can be used to

effectively address youths' health and social needs when they are identified by the juvenile justice system. Specifically, more work is needed to understand how health and social services can be structured to address youths' needs in ways that avoid formal justice system involvement, especially among racial/ethnic minorities. More in-depth assessment of potentially promising juvenile justice system diversion models to examine their impacts on a wider-range of academic, health, and justice-focused short and long-term outcomes may be a promising starting place.

On the education side, additional research should explore how school structures, policies, and partnerships can be transformed to promote the holistic wellbeing of youths. Such efforts should be grounded in existing mandates and well-established models for collaboration, including school-based health centers, school wellness policies, and the community schools model. Researchers and practitioners should aim to identify successful applications of a comprehensive approach to school wellness and gain a better understanding of how to create the leadership and financial systems needed to scale effective practices.

The work presented in this dissertation provides a research-grounded approach for how public health might apply its population health frame to support a more holistic vision for health and wellness within the education and juvenile justice systems. Moving forward, research and practice efforts to address the social determinants of health will require an expanded definition of what it means for youths to be "healthy," greater willingness among researchers and practitioners to focus on multi-component/multi-system interventions, more meaningful communications and alignment between systems, and a more explicit focus on identifying factors that can facilitate successful policy and program implementation.

REFERENCES

- Alley, D.E., Asomugha, C.N., Conway, P.H., & Sanghavi, D.M. (2016). Accountable health communities: addressing social needs through Medicare and Medicaid. *New England Journal of Medicine*. 374(1):8-11.
- American Psychological Association Zero Tolerance Task Force. (2008) Are zero tolerance policies effective in schools: an evidentiary review and recommendations. *American Psychologist*. 63(9):852-862.
- Brame, R., Turner, M.G., Paternoster, R., & Bushway, S.D. (2012). Cumulative prevalence of arrest from ages 8 to 23 in a national sample. *Pediatrics*. 129(1):21-27.
- Center for Healthy Schools and Communities. (n.d.). *Alameda County Health Care Services Agency*. Retrieved from: <http://achealthyschools.org/index.html>.
- Clear, T.R. (2008). The effects of high imprisonment rates on communities. *Crime and Justice*. 37(1):97-132.
- County of Los Angeles. (2015a). *Motion by Mayor Michael D Antonovich: health agency*. Retrieved from: <http://priorities.lacounty.gov/wp-content/uploads/2015/10/Health-Agency-Motion-081115.pdf>.
- County of Los Angeles. (2015b). *Motion by Supervisors Hilda L. Solis and Mark Ridley-Thomas: My Brother's Keeper community challenge*. Retrieved from: <http://file.lacounty.gov/bos/supdocs/93075.pdf>.
- County of Los Angeles Department of Mental Health. (n.d.). *Health Neighborhoods: status report fiscal year 2014-15*. Retrieved from: http://file.lacounty.gov/dmh/cms1_232402.pdf.

- Gase, L.N., Pennott, R., & Smith, K. (2013). "Health in all policies": taking stock of emerging practices to incorporate health in decision-making in the United States. *Journal of Public Health Management and Practice*. 19(6):529-540.
- Gatti, U., Tremblay, R., & Vitaro, F. (2009). Iatrogenic effect of juvenile justice. *Journal of Child Psychology and Psychiatry*. 50(8):991-998.
- Hjalmarsson, R. (2007). Criminal justice involvement and high school completion. *Journal of Urban Economics*. 63(2):613-630.
- Lambie, I., & Randell, I. (2013). The impact of incarceration on juvenile offenders. *Clinical Psychology Review*. 33(3):448-459.
- Lewallen, T.C., Hunt, H., Potts-Datema, W., Zaza, S., & Giles, W. (2015). The Whole School, Whole Community, Whole Child Model: a new approach for improving educational attainment and healthy development for students. *Journal of School Health*. 85(11):729-739.
- Pridemore, W.A. (2014). The mortality penalty of incarceration: evidence from a population-based case-control study of working-age males. *Journal of Health and Social Behavior*. 55(2):215-233.
- Thapa, A., Cohen, J., Guffey, S., & Higgins-D'Alessandro, A. (2013). A review of school climate research. *Review of Educational Research*. 83(3):357-385.
- Zimring, F.E., & Tanenhaus, D.S. (2104). *Choosing the future for American juvenile justice*. New York, NY: NYU Press.