An Exploration of Police Violence as a Determinant of Adolescent Health

A Dissertation

SUBMITTED TO THE FACULTY OF THE UNIVERSITY OF MINNESOTA

BY

J'Mag Karbeah

IN PARTIAL FULFILLMENT OF THE REQUIERMENTS

FOR THE DEGREE OF

DOCTOR OF PHILOSPHY

Rachel Hardeman, PhD, MPH

August 2022

ACKNOWLEDGEMENTS

This dissertation and my PhD journey would not have been possible without a tremendous amount of support, encouragement, and love from so many people. I would like to start by thanking both the University of Minnesota School of Public Health's Division of Health Policy and Management. Next, I would be remiss if I didn't thank the Minnesota Population Center (MPC). I entered the MPC Population Health Studies Program as a rising 2nd year student and was immediately embraced into one of the most welcoming and dynamic academic institutes on campus, if not in the country. Not only did the MPC provide me with training that made me a population health scientist, they also treated me like a valued researcher from day one. As a trainee I was given the opportunity to meet with preeminent scholars in demography weekly and pepper them with endless questions as I worked through my dissertation and other research projects. These experiences were invaluable and greatly shaped my development as a researcher and as a scholar.

I would of course like to thank my committee members for all of their support and guidance throughout this process. Drs. Katy Backes Kozhimannil, Donna McAlpine, Elizabeth Wrigley-Field, Michelle Phelps and Rachel Hardeman—my advisor. There simply aren't enough words to describe how meeting Rachel Hardeman has impacted my life. When I showed up, rather unprepared for a job interview to be a summer TA in May of 2016, I had no idea how my life was about to change. It has been an honor to work along side and be mentored by such a thoughtful, kind and supportive person. When I asked Rachel if she thought it was a good idea to apply to PhD program a few months after we began to work together, without hesitation she said, "Yea, I think you should go for it." Not only did she encourage me to apply to programs, but she has also supported me every step of the way. Rachel, I am so grateful for your mentorship and guidance.

This journey would not have been possible without the support of my family, both biological and chosen. Endless thanks to Odichinma Akosinou De-Souza, Cydney McGuire, Grace Lyden, Dimpho Orionzi, Cynthia Pando, and Naomi Thyden for being my community and my friends throughout this journey.

I'd also like to thank my dog Zeke, who didn't know and didn't care that I was in a PhD Program. Sometimes all you need is someone in your life, even if they're just a dog, who just wants to go on a walk with you.

Lastly, I would like to thank my husband Benjamin Nicla, for his kindness and generosity. I mentioned to Ben on our first date that I had plans to apply to PhD programs and he believed in me instantly and continued to do so every day since. Thank you for walking through my whiteboard lectures, thank you for making me get enough sleep, and thank you for always making time to proof-read slides and give feedback. I love you dearly and am so grateful to be your wife.

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction

Persistent racial inequities in child and adolescent health have been documented within the public health literature. Much of the research on child and adolescent health shows that non-Hispanic Black children report lower overall self-rated health and are more likely to have chronic conditions like asthma, and also more likely to report severe allergies and behavioral health issues than their white peers (Mehta, Lee, and Ylitalo 2013). These inequities are associated with environmental and social exposures in childhood (Boyce and Hertzman 2018; Elder 1998).The higher incidence of adverse health often means that Black children are more likely to miss school due to poor health (Meng, Babey, and Wolstein 2012; Szefler et al. 2019) and these absences, in addition to other structural drivers of education inequity (Mizrav 2021), can often mean poor educational outcomes and stunted educational and professional trajectories(Allen, Diamond-Myrsten, and Rollins 2018; Ansari, Hofkens, and Pianta 2020). Similar to persistent racial inequities in adult health, an emerging body of research suggests that these inequities persist due to structural inequities within our society rather than individual or biological differences (Boyd, Ellison, and Horn 2016; Mehta et al. 2013).

Racism is a social system, in which member of a dominant racial group rely on ideologies of inferiority to categorize individuals into hierarchical social groups called "races" and allocate opportunities and resources based on group membership (Jones 2000; Williams, Lawrence, and Davis 2019). Within this social system, individuals of African descent, those racialized as Black are often seen as occupying the lowest levels within this hierarchy and are often subjected to greater disadvantage within this racial social system (hooks 1999).This is often referred to as anti-Black racism (hooks 1999).

Racism operates at multiple levels in various forms and although there are some differences in definitions and the specific number of levels, this dissertation relies on four forms of racism to understand it's impact on health: internalized, interpersonal, structural, and institutionalized (Jones 2000; Williams et al. 2019). Internalized racism, referred to as cultural racism by some scholars, is defined as the acceptance of narratives about racial superiority and inferiority that are touted by cultural agencies. The internalization of these narratives leads to the creation of beliefs about the abilities and intrinsic worth of individual based on their racial group. These internalized beliefs influence how individuals are treated by others. This treatment according to your racial identity referred to as interpersonal or personally mediated racism by scholars. The fact that established racial hierarchies are such a fundamental part of our society and influences how many aspects of our society function is known as structural racism. This structured system of racism interacts with various social institutions that are shaped and reshaped to perpetuate, justify and reinforce dominant narratives about racial groups and their place within the established hierarchy. These institutions interact with each other in dynamic ways that ultimately allow racism to influence both material conditions and access to power within our society (Jones 2000; Williams et al. 2019). Racial discrimination refers to the treatment individuals received based on their perceived position within this social system and is a social exposure that has been shown to significantly impact the health and well-being of non-white individuals (Ahmed, Mohammed, and Williams 2007; Krieger 2003). While public health theories have explored the impact of interpersonal racism, few researchers have explicitly named racism as a structural determinant of health and little research explored how specific institutions, normative practices, and policies reinforce

create environments that allow for structural racism to persist (Jones 2002; Sanders-Phillips et al. 2014; Williams and Collins 2016). Despite the wealth of studies documenting the impact of racial discrimination, little research exists that examines the prevalence of discriminatory experiences during childhood and their impact on later life health. Additionally, studies that have attempted to trace the impact of racism through the life course are often retrospective and call on adults in middle or late life to recall every potential experience of racism during their early childhood (Cave et al. 2020; Cuevas et al. 2019)—a herculean task.

Chapter 2: Review of Literature

Within public health, there is a growing and dynamic body of literature that has begun to explore how structural racism—the totality of ways in which societies foster racial discrimination—contributes to and exacerbates racial health inequities (Bailey et al. 2017). Unlike most of the prior literature on the impact of discrimination on health, researchers examining the impacts of structural racism attempt to empirically measure the intentional and unintentional ways in which the anti-Black racial hierarchies that undergird our cultural norms, intuitional practices, and normalized policies contribute to racial inequities in health outcomes. Within the study of structural racism's impact on health, we've seen a recent growth in research aimed at understanding and operationalizing how one form of structural racism, disparate policing, impacts the health and wellbeing of Black people in the United States (Alang et al. 2021a; Alang, McAlpine, and McClain 2021b; Alang et al. 2021c; Alang et al. 2017; Alang, McAlpine, and Hardeman 2020; Bor et al. 2018; Edwards, Esposito, and Lee 2018; Hardeman et al. 2021; Hardeman, Medina, and Kozhimannil 2016). This research led health services researchers to consider the multitude of ways that anti-Black racism is embedded within the institution of policing and impacts health and wellbeing. Unfortunately, like the existing research on the impact of racism in all its forms, this research has focused almost exclusively on the experiences of adults and has not yet explored the role that police play in the lives of children and adolescents. By leveraging interdisciplinary frameworks grounded in population health sciences, sociology, and public health, I examine both the life course implications of structural racism in adolescence and the potential pathways through which disparate policing and police contact influence adolescent health. To

explore these pathways, I connect four strands of theoretical and empirical literature that I are critical to expanding our understanding of potential health implications of police contact during adolescence. Life course theory suggests that adolescence and emerging adulthood are critical periods within the lives of individuals. This theory suggests that exposures that occur during this period can alter the trajectory of an individual's life in various ways including but not limited to their health behaviors. A thorough understanding of life course theory is critical for understanding why focusing explicitly on the effects of police contact on adolescents (Cave et al. 2020; Gee, Walsemann, and Brondolo 2012; Wood et al. 2018). Pearlin's stress theory asserts that exposure to acute and chronic stressors like being stopped by law enforcement can lead to biological dysregulation or trigger maladaptive health behaviors (Lewis et al. 2006; Paradies et al. 2015; Priest et al. 2013). The last two bodies of literature I examine, adverse childhood experiences (ACEs), and the connection between racism and the health of young people are critical to understanding how stressors, especially racialized stressors like police contact influence adolescent and child health outcomes (Bernard et al. 2020; Priest et al. 2013; Sanders-Phillips 2009; Sanders-Phillips et al. 2009).

Health services research (HSR) primarily focuses on health care access and perceptions of racism during the clinical encounter when examining inequities in child health (Pachter and Coll 2009). In contrast, my overarching argument is that Black children experience of interpersonal and structural racism outside of the medical system very early in their lives that negatively impact their health and well-being. I argue that these children experience unique adverse childhood experiences which influence their developmental and health trajectories. While this dissertation focuses specifically on

police contact as a product of structurally discriminatory practices, similar analyses could be done that examine the education system or the child welfare system. To understand the connections between institutional practices, racism, and health across the life course we must expand our approaches to examining health inequities to specifically explore how law enforcement contact can be conceptualized as a unique racism-informed stressor in lives of Black youth that impacts not health across multiple domains including but not limited to overall well-being, health behaviors, and health care service utilization. I do this by briefly explaining the relationship between life course theory, stress theory and ACEs. Next, I explore how and why experiences of racialized stress in adolescence impact health and wellbeing. Finally, I look at police contact as a specific form of racialized stress that serves as a unique ACE in the lives of Black children.

Life Course Theory

Life course developmental theory, also known as life course theory, offers a multidisciplinary lens through which researchers can consider how individual lives are influenced by structural and social contexts (Jones and Pierce 2020). The developmental component of this theory suggests that individual experiences and outcomes in childhood influence developmental trajectories and health outcomes in adolescence and adulthood. This theoretical approach asserts that contemporary biomedical and disease focused approaches to health are limited and to do not fully capture the range of social and environmental events that influence development and health (Elder 1998). Additionally, this theory highlights how an individual's health can impact their social, economic, and political trajectory (Halfon and Forrest 2018; Larson et al. 2018). Life course health development (LCHD) a term coined by Halfon and colleagues, attempts to better

understand how health is the result of exposures that impact developmental trajectories rather the result of acute exposures (Halfon and Hochstein 2002; Halfon et al. 2014). LCHD represents the marriage of life course sociology and lifespan human developmental psychology. Early research identified seven core principles within this framework that explain why and how exposures influence health: health development, unfolding, complexity, timing, plasticity, thriving and harmony (Arnesen and Forsdahl 1985; Forsdahl 1977).

This dissertation's focus on racism-related exposures in adolescence relates most specifically to the concept of timing. Timing references the empirically documented fact that health status and health development are "sensitive to the timing and social structuring of environmental exposures and experiences" (Halfon and Forrest 2018). This principle asserts that there are sensitive periods throughout an individual's life and that exposures can have different effects on a child's later-life health if they occur during these sensitive periods. Although a limited amount of empirical research has been conducted that investigates time-sensitive nature of biological development (Boyce and Kobor 2015; Hanson and Gluckman 2014), a growing body of literature suggests that exposure to social adversity may be a time-sensitive phenomenon that impacts later-life health (Boyce and Hertzman 2018; Larson et al. 2018). Additionally, research has identified adolescence as a critical period for later-life health (Wood et al. 2018).

According to Wood et al (2018) emerging adulthood, ages 16-18, is a critical period in the life course because adolescents are developing the skills necessary to take on more adult roles and responsibilities. This period is filled with opportunities for social growth through employment, relationship formation, and education as well as brain

development (Spear 2000; Wood et al. 2018). Emerging adulthood can be influenced by factors in an individual's social environment such as the quality of parent-child relationships in early-life, socioeconomic status, family supports, and neighborhood environment (Wood et al. 2018). Indeed, substantial research supports this claim: exposure to low quality education, unstable family structures, exposure to violence and victimization all impede successful transitions out of emerging adolescence into adulthood (Jackson, Posick, and Vaughn 2019b; Kim et al. 2016; Macmillan and Hagan 2004) .

Stress Theory and the Life Course

Exposure to negative events, strains and traumas impact health and well-being through stress pathways that lead to the activation of biological mechanisms that increase biological aging, inflammation and later life risk of chronic disease (Geronimus et al. 2006; Pearlin et al. 2005; Williams and Mohammed 2013).Stress theory suggests that some adverse childhood exposures like limited socioeconomic resources and lower neighborhood safety are the result of social stratification that contribute significantly to health inequities(Pearlin et al. 2005). There are three core processes through which the relationship between stress and life course development can be understood: pathways to status attainment, health-related hardships, and the processes of stress proliferation(Pearlin et al. 2005).

The first process asserts that the social position of an individual's family of origin predicts the stressors that they will be exposed to throughout their life course(Pearlin et al. 2005). For example, a child born to highly educated parents who live in a wealthy suburban community will be exposed to stressors throughout their life course that are

significantly different than a child born to a family with parents who have only completed high school and receive public assistance for food and utilities (Uhlenberg and Mueller 2003). The neighborhoods and schools that these two children experience are so different that the potential stressors and adverse experiences that could occur are completely different. In short, an individual's family of origin determines to some extent the universe or subset or stressors to which they could be exposed during their life. Individual's born into higher social and economic status are not immune to stressors, but their starting point puts them on a path to achieve much more socially and economically than their peers born into disadvantage.

The impact of unbroken and repeated hardships such as economic strains and discriminatory experiences is a critical process through which stress impacts life course development. Stressors associated with ascribed social status like race or gender determine an individual's access to rights and opportunities within society and threaten an individual's ability to assume other social identities. The stressors associated with these identities are continuous and repeated in ways that increase the risk of biological dysregulation because of a constant need to respond to hardship (McEwen and Seeman 1999). This process plays out in the lives of children who experience uninterrupted childhood poverty. Individuals who experience continuous poverty for the first 18 years of their lives were more likely to report economic, physical, and mental health difficulties than those who only experienced intermittent poverty(Lynch, Kaplan, and Shema 1997; McLeod and Shanahan 1996). Another relevant example would the experience of individuals with minoritized racial, ethnic, or gender identities. Generally, individuals live with these identities for their entire lives and interpersonal, institutional, and

structural inequities throughout their life course(Pearlin et al. 2005). The embedded nature of social hierarchies means that individuals have to experience discrimination in multiple aspects of their lives for their entire lives which often forces individuals to live in a constant state of vigilant anticipation which causes some level of persistent psychological distress (Williams et al. 1997).

The third process that can be used to understand the relationship among stress, health, and the life course is stress proliferation. Stress proliferation suggests that there may contemporaneously clusters of clusters to which individuals are being exposed to for long periods of time (Pearlin et al. 2005). There are three examples that highlight stress proliferation's impact on the life course: early life trauma, the timing and sequencing of transitions, and disruptions in roles or statuses. Theoretically, exposure to early life trauma lead to secondary stressors that may lead to other traumas. For example, children who enter the child protection system due to abuse in their homes have been found to be significantly more likely to have been exposed to subsequent deleterious life events which supports the proliferation hypothesis(Horwitz et al. 2001). Experiences of childhood maltreat have also been shown to impact an individual's academic performance (Slade and Wissow 2007), ability to maintain supportive relationships (Zamir 2021), and decision-making process (Islam et al. 2022).

Stress proliferation is also evidenced through studies examining the health and wellbeing of individuals forced to undergo involuntary or undesired transition events. Transitions like a forced transition out of formal education into the workforce and teen parenthood are forced transitions that are difficult to alleviate and irreversible. These deviations from the normative sequencing of roles and status often limit an individual's

access to a myriad of opportunities which influence health status (Pearlin, Aneshensel, and LeBlanc 1997). Unfortunately, youth who are more likely to make these disordered transitions if they come from economically or socially disadvantage families, suggestion a continuation of the disadvantages present in their family of origin (Pearlin et al. 1997).

A final type of stress proliferation involves circumstances that change and individual's established roles and status in ways that cause stressful changes in how they structure their lives. Often the unexpected event that causes this change centers around loss and can proliferate in the form of new stressors within or outside of the domain of the initial stressor. During a divorce the organization of an individual's life is drastically changed. Often this initial stressor is associated with reduced economic resources, increased financial problems, greater parental strains, and increased isolation due to a loss of one's social networks (Pearlin and Johnson 1977). The proliferation of the stress caused by an unexpected event into secondary stressors can also be seen among individuals who experience involuntary job loss. When someone loses their job, this stress may lead to increased family conflict, changes in social connectedness, and even lead to a delay in the transition into retirement(Merton and Merton 1968; Moen et al. 2000) .

Through this myriad of examples spanning the three core perspectives used to explain the potential pathways through which stress impacts both health and the life course we see can see how any stressor, but specifically a stressor like police contact that is patterned by social identities such as socioeconomic status and race, can impact the health and well-being of adolescents. Although robust, for a more in-depth understand of

the biological processes through which stressors lead to poor health, stress theory cannot be divorced from population health theories like Geronimus's weathering hypothesis.

Chronic stress, which may be due to any of the number of pathways identified by Pearlin's stress theory (Pearlin 1989) and subsequent proliferation hypothesis(Pearlin et al. 1997; Pearlin et al. 2005; Pearlin and Skaff 1996), harms health because it weakens our body. These repeated exposures to adversity—much like wind, rain, and ice that assault the face of a mountain ranges—erodes away at our body's ability to respond to stress and strain— through a process known as weathering (Geronimus 1992). When and individual is exposed to external stressors the body's stress response systems, the sympathetic nervous system (SNS) and hypothalamic-pituitary-adrenal (HPA) axis are triggered. The SNS initiates the "fight-or-flight" response while the HPA increases cortisol levels in the body(Geronimus et al. 2010; Sapolsky 1998). The production of cortisol by the HPA has anti-inflammatory effects that minimize the impact of the by-products produced by SNS activation. Chronic stress exposure leads to the weakening of these responses—specifically the anti-inflammatory effects of cortisol—which leads to increase inflammation and oxidative stress (Khansari, Shakiba, and Mahmoudi 2009; McEwen and Seeman 1999). Increased inflammation is directly associated with immune dysfunction and increased cardiovascular risk and potentially other adverse outcomes such as diabetes, carcinogenesis, and accelerated aging(Geronimus et al. 2010). The biological implications of stress are grave and demonstrate why it's important to not only acknowledge that adolescent contacts with police as a unique stressor, but also suggests that additional research is need to understand the various mechanisms through which this stressor may lead to poor health.

Adverse Childhood Experiences

The importance of stress in early life has been focused on the importance of adverse childhood experiences. In a novel CDC-Kaiser collaboration in 1998, Feletti and colleagues showed that health behaviors and outcomes in adulthood can be linked to exposures to adverse events in early childhood such as violence, abuse, death of a family member, substance abuse within an individual's home environment, parental mental health issues, parental separation or incarceration (Centers for Disease Control and Prevention 2021; Felitti et al. 1998). This ground breaking adverse childhood experiences (ACE) study demonstrated that negative early childhood experiences were associated with increased risk of mental illness, lower self-rated health, and an increased likelihood of engaging in risky health behaviors (Felitti et al. 1998). This framework has been utilized within social and health service organizations with the understanding that interventions that prevent ACEs could result in improved later-life health for large swaths of the population (Felitti 2009). While the understanding of ACEs has been extremely beneficial for public health and social service professionals, this framework has not been broadened to include other structural factors that influence health during childhood and throughout the life course. Specifically, few studies examining ACEs have considered how experiences of racism—via both interpersonal discrimination and structural mechanisms—represent extremely influential adverse childhood experiences.

Racism as an ACE

The literature on ACEs has shown the significance of early childhood exposure on later life health and the lasting impact of physical and emotional trauma (Centers for Disease Control and Prevention 2021; Hughes et al. 2017; Kalmakis and Chandler 2015;

Oh et al. 2018). To date however, this framework and research that relies upon it has not critically analyzed the role of interpersonal or structural racism. Existing studies have shown that Black youth are more likely than their white peers to report multiple ACEs and have worse health outcomes due to these experiences (Maguire-Jack, Lanier, and Lombardi 2020; Merrick et al. 2018; Mersky et al. 2021). However, researchers studying ACEs have rarely investigated what social or structural phenomenon may be contributing to these observed inequities.

The experiences of Black youth do not necessarily fit squarely into the traditional ACE categories used by most researchers (Wade et al. 2014). Black youth have unique experiences of racial discrimination, community violence, and interactions with criminal justice and child welfare systems—experiences that are less common for their white peers. When more expansive ACE approaches that include discrimination and community-level exposures are utilized, racial minority adults and Black youth are more likely to report more ACEs when compared to their white counterparts (Cronholm et al. 2015; Elkins et al. 2019; Maguire-Jack et al. 2020) . In fact, when explicitly asked about their experiences, Black youth note that racial discrimination and racism-related experiences are salient stressors that they must negotiate and navigate throughout their development (Jones et al. 2020; Priest et al. 2013).

This unique exposure has been shown to be associated with increased anxiety, depression, suicidality, as well as behavioral health problems for Black youth (Assari, Moghani Lankarani, and Caldwell 2017; Brody et al. 2006; Carter 2007; Gibbons et al. 2018). These findings coupled with existing literature highlighting racism as a social determinant of ACE exposure, have led researchers to develop novel ACE frameworks

(Bernard et al. 2020).These frameworks attempt to conceptualize the traumatic and pervasive impact of racial discrimination and its impacts through the life course. Unlike the existing literature on the impact of racial discrimination across the life course, this research emphasizes the need to think about racism within historical and ecological frameworks.

Bernard et al (2020) offer a conceptual model that attempts to incorporate the historical impacts of racism alongside social and biological frameworks that highlight racisms ever present impact on the lives of Black children (see Appendix A). The authors note that racism's impact on Black children's health begins in utero. They note that the hypothalamic-pituitary-adrenal (HPA) axis that triggers the creation of excess cortisol in Black birthing people is often triggered by experiences of racialized stress. It has been well documented that abnormal cortisol levels can lead to developmental stunting and leads to increased risk of prematurity. This model also outlines the interplay of social disadvantage and bio-physiological predispositions that lead Black youth to be exposed to and affected by ACEs. The authors note the effects of historical trauma and the epigenetics of racialized stress. Specifically, the experiences of one generation, such as experiences of enslavement or residential boarding schools impact both the local context and social conditions of subsequent generations. These contexts and conditions directly impact the likelihood of exposure to other ACEs such as physical abuse or witnessing interpersonal violence that may lead to disruptions in neurodevelopment. However, the parts of Bernard and colleagues' conceptual model that are most relevant to my research are the identification of racism-informed stressors and their impact on Black children. This model suggests that the impacts of racism on health transcend interpersonal

experiences of racism and suggest that there are a multitude of other exposures in a child's life that are patterned by their racialized social positions. The authors identify the importance of structural racism and social devaluation in the biopsychosocial pathways that increase risk of ACE exposure and subsequent adverse health in Black youth. This framework, combined with the existing literature examining how structural racism impacts health, suggest the need for additional research aimed at better understanding the myriad of ways institutions and practices contribute to disproportionate ACE exposure for Black youth.

Police Violence as a Racialized ACE

Research shows that police contact and fear of police violence is such a constant feature in the lives of Black Americans that for Black parents preparing their children for potential encounters with law enforcement is a critical part of their upbringing (Brunson and Weitzer 2011; Harris and Amutah-Onukagha 2019; Whitaker and Snell 2016). Despite their parent's attempts to prevent these interactions, Black youth are much more likely than their peers to have law enforcement contact and also to be physically injured by law enforcement (Carbado and Rock 2016; Staggers-Hakim 2016). A large body of sociological research has explored vehicle stops as a racializing event for Black adults, and emerging literature suggests that youth experience street stops in the same way.(Epp, Maynard-Moody, and Haider-Markel 2014; Sewell, Jefferson, and Lee 2016). For example, Sewell and colleagues find that neighborhood level exposure to aggressive police stops, specifically neighborhood-level frisking and use of force is associated with higher levels of non-specific psychological distress among males in their 2009-2011 New

York City Stop Question and Frisk dataset. Black male adolescents often report feeling undue suspicion from law enforcement due to their racial identity and perceived deviance (Brunson 2007; Fine et al. 2003). Additionally, these encounters are often associated with increased anxiety and lower self-reported health in youth who are experience street stops (Geller 2021; Jackson et al. 2021a).

To date, a limited number of empirical studies have attempted to explore police contact as a form of victimization or violence exposure in the lives of African American and Latino youth. Geller (2017, 2021) uses data from the Fragile Families and Child Wellbeing Survey (FFCWS) to investigate the impact that police contact has on the health and wellbeing of adolescents in the sample. Geller finds that 25% of her sample has had personal contact with the police, with African American and Latino youth being more likely to have had contact with police. The adolescents who report experiences with police were also significantly more likely to report adverse mental health (Geller 2017). Sewell and Jefferson report similar findings in their 2016 analysis of New York City SQF data, finding that neighborhood stop rates and use of force were correlated to higher levels of psychological distress, specifically increased levels of self-reported anxiety (Sewell et al. 2016).

This dissertation attempts to advance this literature by exploring additional mechanism through which police contact impacts the life course. Specifically, the aims of this dissertation look at the impact of youth police contact on overall wellbeing, a concept that has been shown to influence the development of health behaviors, determination, and an individual's ability to thrive in both the short and long-term.

Conceptual model

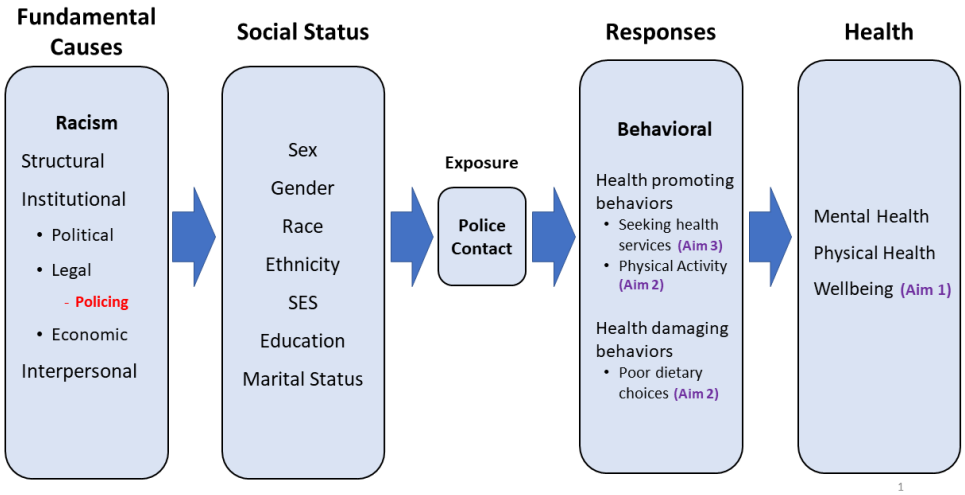
Figure 1 details the conceptual model (adapted from the work of Bernard and colleagues 2020) linking racism to a type of stressor – police contact - through health outcomes. dissertation This model borrows heavily from existing models that explain the relationship between structural racism and health inequities, which can be found in the appendix (Bernard et al. 2020; Harrell et al. 2011; Williams and Mohammed 2013). In this model, I focus on racism as a fundamental cause of health of social status (Phelan and Link 2015), although I acknowledge that there are other systems of oppression such as patriarchy, ableism, heteronormativity that shape and are shaped by social institutions and ideology(Jones 2000). Racism, the structuring of opportunities based on an individual's phenotypic appearance, occurs in three primary forms. Institutional racism, the ways through which racial hierarchies are embedded through the practices and policies of social institutions is the most relevant to the aims of this dissertation. The policies and practices within legal systems, specifically policing are influenced by existing racist notions and influence which individuals are more or less likely to interact with police officers and the treatment they receive during these interactions. Social status or positions reflects where one sits on social hierarchies defined by differences in power, prestige, and access to material and psychological resources. Examples include sex, gender, race, ethnicity, socioeconomic status, formal education level, and marital status. These markers of social status are presented in the second box on the conceptual model. These markers of social status in position, determine how an individual experiences policing, and ultimately their likelihood of experience a police stop or contact.

An adolescent's response to police contact, like other stressors is mediated by a variety of factors including but not limited to those discussed in the earlier parts of this

model. The stress process model tells us that this exposure will result in a cognitive appraisal or evaluation of the stressor that can yield a variety of emotional and behavioral responses(Anshel 2000; Lazarus and Folkman 1984; Pearlin 1989). How an adolescent perceives an encounter dictates the coping response that results from this exposure. This dissertation focuses on behavioral responses to these interactions, specifically focusing on the health promoting or health damaging behaviors youth may adapt to cope with police interactions. Aim 2 focuses on both health promoting behaviors such as physical activity as well as potentially health damaging behaviors such as poor dietary choices (i.e. skipping breakfast, sugary drink consumption, fast food, etc.). Aim 3 looks at health care service utilization as a health promoting behavior that may be impacted by youth experiences of police stops. The psychological and physiological responses observed will likely mirror those activated in response to other forms of racialized stress (Clark et al. 1999; Geronimus 1992; Harrell et al. 2011), but are not the focus of this dissertation. Existing research has shown that some health outcomes association with youth-police contact include increased depression and anxiety symptoms—especially for Black youth (Sewell and Jefferson 2016). Similarly, research suggests that racialized stress may lead to decreased quality and duration of sleep (Hicken et al. 2013). These stress responses have both proximate and life course impact on both self-rated health (SRH) and other health outcomes including chronic disease and mental health outcomes (Myers 2009). This dissertation attempts to further this body of literature by examine another more holistic measure of health: wellbeing. Aim 1 explores the impact of police contact on overall adolescent wellbeing and functioning. This measure of health has been shown to impact an individual's ability to cope with and recover from adversity throughout their

life course. If police contact leads to marked reductions in adolescent wellbeing, this could result in delayed life course transitions or even an inability to achieve goals and milestones that contribute to improve health in adulthood such as completing high school, finding a passion, and forming successful social and romantic relationships.

Figure 1:Conceptual Model



The hypothesized pathways are explored in greater detail throughout this dissertation. The population level impacts of policing, specifically the increased mental distress caused by incidents of police brutality, have been well documented (Alang et al. 2021b; Bor et al. 2018). This dissertation attempts to build on that body of research in addition to social science research that has identified the mental and physical harms youth experience when interacting with police(Geller 2017; Sewell et al. 2020; Sewell and Jefferson 2016) by highlighting other potential pathways through which police contact impacts adolescent health and its life course implications.

In Aim 1, I explore police contact as an adverse childhood experience that impacts adolescent functioning and overall wellbeing. This aim seeks to understand the

overall impact of police contact on adolescent development. While this aim will not identify causality, it can be used to determine whether an association exists between police contact during adolescence and self-reports of well-being and overall functioning. I hypothesize that police contact, both direct and vicarious, is associated with lower adolescent functioning. In Aim 2, to further investigate the potential pathways through which racism-informed stressors in general and police contact in childhood more specifically may impact health outcomes, I investigate whether police contact is associated with changes in youth health behaviors such as breakfast consumption, sweetened beverage consumption, and exercise. This leverages stress proliferation and coping theories to examine changes in health behaviors as a potential pathway through which police contact impacts health. Lastly, I explore the potential impacts that youth-police interactions might have on health service avoidance and increased incidence of unmet health care needs within this population. This aim hopes to build upon a growing body of health services research that has found an association between police brutality and health (Alang et al. 2021b; Alang et al. 2021c) by exploring whether this relationship exists for youth experiencing police contact.

The overall goal of this dissertation to expand HSR's understanding of police contact as an exposure that has both immediate and life course implications for adolescents. Additionally, the aims of this dissertation investigate lesser studied pathways and mechanisms through which youth respond to and cope with vicarious and direct police interactions. By using a large longitudinal dataset, these analyses hope to enrich existing conversations focusing on police contact as an often racialized determinant of population health.

Chapter 3: Data and Methods

Data come from the Fragile Families Child and Wellbeing Study (FFCWS), which is a prospective study of 4,898 children enrolled at birth between 1998 and 2000 in large U.S. cities. Information is collected about the child as well as their parents or primary caregivers. The goal of this study was to better understand the capabilities of unmarried parents, the nature of the relationship between these parents, and how policies and environmental conditions affect families and children (Geller, Jaeger, and Pace 2015; Waldfogel, Craigie, and Brooks-Gunn 2010).

The FFCWS utilized a stratified sampling design, recruiting unmarried couples in twenty large US cities. This study oversamples Black and Hispanic families which allows for researchers to have sufficient sample sizes to focus specifically on the experiences of these groups. Children were eligible to be enrolled in the study if the study team was able to contact and interview both parents, a mother was 18 or older, parents did not plan on putting the child up for adoption, and the mother of the child was an English or Spanish speaker. The study, while not nationally representative does offer valuable insights into the experiences of children born to unmarried parents living in large urban cities. Sample weights can be applied to reflect the rates of children born to unwed parents in each of the 20 cities sampled, or to reflect national trends.

Six waves of data have been collected so far, at child ages: birth (Birth), age 1 (Y1), age 3 (Y3), age 5 (Y5), age 9 (Y9), and age 15 (Y15), with the next wave of data collection beginning in 2020 to capture respondents at age 22. At each wave, mothers and fathers were interviewed about their relationships, parenting behavior, demographic characteristics, economic status, neighborhood characteristics, and welfare program

participation. Parents are also asked about their child's behavior and engagement in school. Children were interviewed directly at ages 9 and 15. Teachers were surveyed at age 9 and age 10. Of particular importance to this dissertation are the many questions that the survey asks youth about their experiences of police

contact. The initial enrollment numbers of this study are presented in Table 1.

Table 1: Study Population	
	Wave 1 (Birth)
Total	4,898 (100%)
Hispanic	1,322 (27%)
Black or African American	2,326 (47%)
White	1,028 (21%)

Demographic Variables

Sex

At recruitment, parents were asked to report the biological sex of the focal child.

Race

Interviewers asked youth an open-ended question "What is your race and ethnicity?" and entered verbatim responses. These responses were then coded into the six established U.S. Census categories for race and ethnicity. To capture as much of the detail provided in the open-ended question, additional variables were added. A new variable was created for respondents who identified as "mixed", "multi-racial" or "bi-racial". For this analysis, I used the constructed race variable that was constructed from the coding of the open-ended responses. Youth were coded as White if they self-identified as white or Caucasian, but not Hispanic or of multiple racial identities. Youth were coded as Black/African American if they self-identified as Black or African

American, but not Hispanic or of multiple racial identities. Youth were coded as Hispanic if they self-identified as Hispanic, Latino/a, or with a related nationality. Youth coded as Hispanic could be of multiple racial identities. The category of Other was reserved for youth who identified as another racial identity group, but not Hispanic or of multiple racial identities. This category included youth who identified as American Indian or Alaska Native Asian, and Native Hawaiian or Pacific Islander. If youth identified as one or more of these groups, they were coded as multi-racial. Youth were coded as Multi-racial if they responded with more than one racial category but not Hispanic.

Delinquency

Youth self-reported delinquency was measured through thirteen survey items adopted from the National Longitudinal Study of Adolescent Health that ask youth about how often they engaged delinquent behavior. The peer delinquency items asked youth how often they engaged in the following activities: (1) painted graffiti or signs, (2)deliberately damaged property that didn't belong to them, (3) taken something from the store without paying for it, (4) gotten into a serious physical fight, (5) gotten into a serious physical fight, (6) hurt someone badly enough to need bandages or medical care, (7) stolen something worth more than $50, (8) gone into a house or building to steal something, (9) used or threaten to use a weapon to get something, (10) sold marijuana or other drugs, (11) stolen something worth less than $50, (12) taken part in a group fight, and (13) were loud, rowdy, or unruly in a public place. Response options ranged from never (1), 1 or 2 times (2), 3 or 4 times (3), 5 or more times (4).

Peer-delinquency was measured using eleven survey items asking how often their friends engage in delinquent behaviors. Youth were asked how often their friends: (1)

smoked an entire cigarette, (2) drank alcohol more than two times without their parents, (3) friends tried marijuana, (4) tried other drugs to get high, (5) asked to go drinking with them, (6) given or sold marijuana to you, (7) deliberately damaged property that did not belong to them, (8) stole something worth more than $50, (9) used or threatened to use a weapon to get something, (10) sold marijuana or other drugs, (11) stole something worth less than $50. Response options were often (1), sometimes (2), never (3).

Mother's Education

Mother's education is measured using a constructed variable in the year 9 survey. This is the most recent record of mother's education. Mother's education status was not asked in the year 15 survey. Mother's education levels ranged from less than high school to college or graduate.

Parent's Relationship Status

A constructed variable, created in year 9 was used to determine the focal child's mother has with the child's father. This question was not asked in year 15 so I use the most recent record of this relationship. Response options ranged from Married (1), Cohabitating (2), Romantic involved, living apart (4), Separated, divorced, or widowed (5), Friends (6), No relationship (7), or Father unknown (8). Mothers who report living with the father of the focal child "all or most of the time" were recorded as cohabitating with the child's father. Mothers who report being romantically involved with the father of their children but only living with them "rarely", "never', or "rarely/never" were considered to be romantically involved and living apart.

Household Poverty Ratio

The household poverty ratio is the ratio of total household income to the official poverty thresholds established by the U.S. Census Bureau. Because this ratio varies by

year and household composition, each year that interviews were conducted, the prior year thresholds from the Census Bureau were used. Household poverty ratio response ranged from 0-49% (1), 50-99% (2), 100-199% (3), 200-299% (4), 300%+ (5).

Neighborhood Collective Efficacy

The year 15 survey includes two sets of survey items in the primary caregiver survey that when combined measure neighborhood collective efficacy. The first set of questions is designed to measure informal social control. The five informal social control questions ask id respondents felt that their neighbors would get involved in the following scenarios: (1) “if children were skipping school”; (2) “if children were spray-painting buildings with graffiti “; (3)” if children were showing disrespect to an adult”; (4) “If a fight broke out in front of a house or building “; (5)” if the fire station closest to the neighborhood was threatened”. The second set of questions, the neighborhood cohesion/trust measure includes five survey. The survey items are: (1) “People around here are willing to help their neighbors”;(2) “This is a close-knit neighborhood”; (3) “People in this neighborhood generally don’t get along with each other”:(4) “People in this neighborhood generally don’t get along with each other”; (5) “ People in this neighborhood do not share the same values”. Response option ranged from strongly agree (1) to strongly disagree (4). Before scoring the scale, the last two surveys are reverse coded (4=1 to 1=4). The items are then summed to yield a neighborhood collective efficacy score. Higher scores correspond to lower neighborhood collective efficacy.

Table 2 presents the descriptive statistics of all demographic variables available in the year 15 sample of the FFCWS. This wave of the study includes a total of 3,578 youth, compared to the initial 4,898 who were initially enrolled. The average age in this sample

is 15.6 years old. Over half (52.5%) of respondents identify as male and 49% of the sample identities as Black or African American. Nearly two-thirds (61.1%) of the parents in this sample remain unmarried and are not cohabitating. The mothers in the sample come from diverse educational backgrounds with about a fifth (22%) reporting less than a high school graduation, the same proportion reporting that they had completed high school (21.9%), and 40% who report some level of college education. Thirty percent of sample reports an income level that is 0-100% that of the federal poverty level. Half of the sample reports having had a father that had spent some time in jail. Less than 10% of youth report being a victim of a crime but over a third (3.9%) report that they have witnessed a crime.

Table 2:Descriptive statistics of fragile families year 15 sample

Variable	Full sample (N=3,578)
	%/ mean (SD; range)
Age	15.6 (0.78;14-19)
Male	52.2
Youth Race	
White	18.1
Black	49.0
Hispanic	24.9
Other	2.6
Multiracial	5.4
Parental relationship	
Mom married to biological father	29.5
Mom cohabiting with biological father	9.4
Other relationship	61.1
Mom's education	
Less than high school	22.0
High School	21.9
Some College	41.1
College+	15.0
Poverty ratio	
0-49%	13.4
50-99%	17.2
100-199%	28.3
200-299%	14.8
300%+	26.3
Delinquency	0.11 (0.20;0-2.1)
Peer Delinquency	0.24 (0.40;0-3)
Neighborhood collective efficacy	14.3 (9.0;0-28)
Paternal incarceration	50.0
Victimization	8.7
Witnessed a crime	33.9

Chapter 4: Examining the Influence of Police Stops on Positive Adolescent Functioning

Introduction

Adolescence is period marked by considerable cognitive and social changes. Historically, adolescence was thought to be a period of "storm and stress", a diversion from normative development (Freud 1969; Hall 1905). This period is marked by profound physiological changes such changes in the prefrontal cortex, increasing connectivity in various regions of the brain, and increases in dopamine levels that encourage risk seeking behaviors(Steinberg 2010). This period is also marked by many social changes that correlate with the development of a stronger sense of self-identity(Mascalo and Fischer 2015), increased independence, and the development of social relational skills (Ricco and Overton 2011). Executive functioning, strategic thinking, and the development of skills that can be used to acquire resource that allow an individual to full their purpose are also skills and behaviors developed during this period(Gestsdottir and Lerner 2008). In addition to goal-setting, developmentally, adolescence is also when individuals develop the skills necessary to readjust and reorient themselves when they fail to accomplish goals—a skill that determines how well they can handle adversity in later life (McClelland et al. 2015). Although this period is characterized by so many developmental, behavioral, and social changes, scholars have only recently developed models of normative adolescent development(Hoyt et al. 2012). The conceptualization as positive adolescent development as more than the absence of negative health outcomes and as a period during which young people develop skills and resources that contribute to their later life success is relatively new(Larson 2000). The development of positive youth development (PYD) models provided a more holistic

definition of adolescent health focused on traits, that when promoted and properly developed, allowed for healthy and positive development(Larson 2000; Lerner et al. 2018). The PYD framework relies largely on existing well-being frameworks and aims to see adolescence as period in which individuals can develop skills that allow them to thrive throughout the life course.

Well-Being Theory

The concept of well-being emphasizes the importance of understanding good functioning as more than the absence or mental illness but instead as an individual's ability to deal with problems and rely on their own personal strengths when they encounter adversity(Kern et al. 2016). This definition, unlike traditional definitions of mental health, aims to encompass positive mental functioning (Rose et al. 2017). The World Health Organization's definition of mental health reflects this more holistic approach to mental health and states that mental health is "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" (World Health Organization 2005). Although there is not one universally recognized definition for well-being or positive functioning, many models exist that aim to measure mental functioning. One of the most cited models that attempt to capture this richer definition of psychological functioning, often referred to as flourishing was the PERMA model developed by Seligman (Rose et al. 2017). In this model, flourishing is defined in terms of five pillars: positive emotion, engagement, relationships, meaning and accomplishment (Seligman 2012).

Within public health, the positive youth development (PYD) framework relies on similar concepts as those used to describe flourishing (Larson 2000; Lerner et al. 2021; Seligman 2012). Existing literature on PYD and well-being have identified five core domains: engagement, perseverance, optimism, connectedness, and happiness(Kern et al. 2016). These domains are similar the five pillars of well-being with positive emotion in the PERMA scale has been translated into happiness within the PYD literature. Engagement remains constant in both models and relationships in the PERMA model become connectedness. The pillar meaning becomes optimism and accomplishment is correlated with perseverance (Kern et al. 2016). Adolescent engagement is directly associated with greater educational attainment and lower rates of arrest in early adulthood (Kern et al. 2015; Waters, Loton, and Jach 2019). Youth who report high levels of perseverance are more likely to graduate from high schools, stay in employed, and remain married compared to peers who score lower in this domain (Eskreis-Winkler et al. 2014). Youth who report greater levels of optimism also report fewer depressive symptoms and other forms of psychological distress, report better physical health, and have lower rates of cardiovascular disease in later life (Carver, Scheier, and Segerstrom 2010). Adolescent social connectedness has been shown to be associated with greater adult well-being (Olsson et al. 2013). Finally happiness during adolescence, is associated with better self-rated health and fewer risky health behaviors in early adulthood.

Well-being, broadly defined, has been shown to be associated with improved cardiovascular health, immune health, neuroendocrine function, and even longevity (Danner, Snowdon, and Friesen 2001; Dockray and Steptoe 2010; Steptoe, Wardle, and

Marmot 2005). Emerging research suggests that aspects generally considered to be part of well-being and positive functioning such as positive emotions and self-esteems may play an important role in stress biology and contribute to a reduction in the HPA(Dockray and Steptoe 2010; Lyubomirsky, King, and Diener 2005; Steptoe et al. 2005). Other research suggests that in addition to potential psychobiological impacts, positive well-being may also be associated with more physical activity, better sleep quality, and fewer risky and health-compromising behaviors(Hoyt et al. 2012; Lyubomirsky et al. 2005; Steptoe et al. 2008) .

Adolescence, is a developmental period that can considerably impact an individual's life course development and ability to successful transition into other life stages and roles(Halfon and Forrest 2018). The increased autonomy and decision-making ability associated with this developmental stage allows youth to make their own health-compromising or health promoting behaviors. This developmental period, and the accompanying life course transition into early adulthood is when youth being to make decisions for themselves that will define the health trajectories for their adult lives(Hoyt et al. 2012; Lerner et al. 2018). For this reason, developmental psychologists have developed many strengths-based PYD frameworks and strategies aimed at developing well-being traits in adolescents that encourage youth support adult flourishing, as defined by Seligman's PERMA model (Seligman 2012).

Although, adolescent well-being models have existed for some time, only recently have scholars acknowledged how social stressors like race, sex, and, gender identity may impact an individual's ability to achieve positive well-being (Lerner et al. 2021; Spencer and Spencer 2014). Existing literature suggests that specific stressors like

involvement with the criminal justice system, or any interactions with police may significantly impact aspects of adolescent well-being in ways that dramatically influence the life course(Testa et al. 2021). The current study attempts to build upon this body of literature by further exploring the impact of police-contact on adolescent well-being using the EPOCH-scale of positive adolescent functioning.

Police Contact and Well-being During Adolescence

Significant changes within the criminal justice system over the past 50 years has resulted in dramatic increases in both the size and the overall impact of the institution in the lives of Americans (Fagan et al. 2010). During the 1960s policing I the United States began to shift its focus to two main aims: (1) improving community relationships; and (2) being more proactive in dealing with crime(Tyler, Jackson, and Mentovich 2015). To build community relationships departs employed community-oriented policing strategies. The second aim, proactive policing was the result of recent shifts in the goals of U.S. policing. During the 19960s, instead of focusing on solving crimes that had already been committed, police departments became interested in proactive strategies aimed at deterring future crimes(Tyler et al. 2015; Weisburd and Majumder 2018). Proactive policing, which focuses on preemptive stops, arrests, and searches to prevent crime has resulted in an increase in the frequency of youth-police interactions (Fagan and Tyler 2005; Geller and Fagan 2019). This practice has changed the nature of police-civilian interactions significantly. The police, under proactive policies are now tasked with approaching members of the public whom they deem to be suspicious or criminal (Tyler

et al. 2015). Studies have also shown that proactive policing has changed the relationship between criminality and police contact in the US.

In a national survey of two adolescent cohorts in the National Longitudinal Survey of Youth (NLSY), 1979 and late 1990s, Weaver and colleagues find a decoupling of law-abidingness and state discipline (Weaver, Papachristos, and Zanger-Tishler 2019). Individuals moving through adulthood when the US incarceration rate was its highest report much more contact with legal authorities although the earlier 1979 cohort reports much higher rates of criminal offending. By the late 1990s a marked in increase in the number of individuals reporting no criminal offense who have been arrested dramatically increases with Black men being much more likely to report arrests without committing any illegal activity (Weaver et al. 2019). Even when scholars account for differences in individual-level delinquency, crime involvement, and criminal history, racial disparities still exist. These findings suggest a policing environment wherein we see a departure from the criminal offender who is defined by their engagement in criminal behavior and the "custodial citizen" who is defend by their relationship to the state—a relationship that is more predicated on an individual's identity than their actions (Lerman and Weaver 2014). This transition results in the characterization of crime as minor or perceived transgressions (Sampson and Raudenbush 2004). Arrest is then not evidence of guilt, but rather petty offenses that are often racial or reflect social vulnerability (Natapoff 2011). Research has shown that this decoupling, and the racialization of police stops and arrest, has lead to the aggressive targeting of Black and Hispanic adolescents (Brunson and Weitzer 2009).

Encounters with police, specifically the stop, question, and frisk stops that have become a staple of urban policing, is associated with adverse individual and neighborhood-level health outcomes for youth(Sewell and Jefferson 2016; Sewell et al. 2016). While there are reports of physical harm being a feature of some police-youth interactions, more alarming is the impact that these interactions have on the mental functioning and well-being of this population (Feldman et al. 2016; Jindal et al. 2021). Contact with police has found an increased trauma and anxiety symptoms among young men who report frequent stops by police (Geller et al. 2014). The frequency of these interactions leave individuals in a constant heightened state of vigilance wherein they worry about future interactions. Individuals also often report feeling frustration, resentment, and hopeless due to these stops that are often unwarranted and usually intrusive (Dottolo and Stewart 2008; Jones 2014). This hypervigilance and unfairness is associated with marked declines in mental well-being and even self-rated health (Brunson and Miller 2006; Cooper et al. 2004; Kessler, Mickelson, and Williams 1999; Unnever and Gabbidon 2011). The exposure to the chronic stress associated with police stops triggers biophysiological responses and has been associated with changes in the hippocampus, prefrontal cortex, and amygdala—regions that play important roles in the incidence of anxiety and depression(McEwen 2004). Analysis of young people subject to policies like New York's stop, question, and frisk policy have found that these stops are associated with increased rates of non-specific psychological distress, specifically in men (Sewell et al. 2016). Individuals report increased feelings of nervousness and worthlessness(Sewell et al. 2020; Sewell et al. 2016). In addition to the clear impacts on

mental health, evidence also exists suggesting that these interactions, in addition to the acute mental distress they cause, also impacts the life course in a multitude of ways.

Youth-Police Contact and the Life Course

Consistent with life course developmental theory, it is plausible to envision police contact as a "turning point" in the life of adolescents (Elder 1998; Sampson and Laub 1990). These turning points, according to this theory, can lead to shifts in behaviors and potentially change the trajectory of an individual's life. In addition to events like marriage, military service, employment and parenthood, criminologists also suggest that criminal justice contact may also be a turning point during adolescent development (Pyrooz, McGloin, and Decker 2017; Sampson and Laub 1990; Uggen 2000). Research suggests that early formal police interaction can affect not only later-life criminal behavior but also many other noncriminal outcomes (Kirk 2008; Laub and Sampson 2020; Lopes et al. 2012; Novak 2018; Unnever and Gabbidon 2011). Critical literature suggests that police contact may the life course outcomes of adolescents significant ways and that this turning may drastically impact later life health behaviors and health outcomes (Laub and Sampson 2020; Sampson and Laub 1990; Sampson and Raudenbush 2004). Contact with police in adolescent can also impact the life course trajectories of young people that influence their health and health status in later life(Turney and Wakefield 2019).

There are many hypothesized mechanisms through which police contact can influence adolescent well-being and negatively impact youth development. First, because

youth-police contacts are often salient negative experience, induce trauma for youth and ultimately alter both their positive sense of self and their ability to see themselves creating a life that is free from this trauma that they have experienced (Dennison and Finkeldey 2021; Nordberg et al. 2018). Another potential pathway is that these encounters serve as a socialization event for youth and shape their future expectations (Testa et al. 2021; Turney, Testa, and Jackson 2022b). Specifically, the power and status differences present during these encounters leave youth feeling disadvantaged (Geller, Fagan, and Tyler 2017). Because adolescent visions of adulthood are greatly influenced by interpersonal interactions, youth may feel that their adult lives may also be marked by disadvantage and powerlessness—feelings that dictate the types of health behaviors youth may choose to engage in (Merrill, Waters, and Fivush 2016). Literature on the relationship between criminal legal contact and health suggest that stigma, both anticipatory and perceived stigma lead individuals to engage health depleting behaviors while also leading them to avoid health promoting situations and services. The stigma associated with police contact may manifest as criticism or judgement from family and friends and youth may even internalize and blame themselves for any unjustified action taken by officers. These events may cause youth to feel like they have few social connections, are less capable or valuable and therefore unlikely to successfully achieve future milestones or events (Corrigan, Larson, and Ruesch 2009; DeVylder, Fedina, and Link 2020). The hopelessness and despair that may arise alongside the stigma of police encounters could potentially pattern youth health behaviors in ways that impact later life health and well-being(Bolland 2003).

The third potential mechanism for this relationship, which has been gaining attention, is that these encounters can be stigmatizing and cause youth to internalize the police contact in ways that ultimately erode at their overall well-being and sense of future orientation(Testa et al. 2021; Turney, Geller, and Cowan 2022a). Future orientation—an individual's ability to have clear goals, planning ability, and the ability to overcome obstacles—has been shown to be strongly associated with the probability of criminal offending later in life(Anderson, Weiss, and Oselin 2020; Johnson, Blum, and Cheng 2014). This concept, which captures the aims of the EPOCH domain optimism (Kern et al. 2016), is positively associated with positive health, occupational, and educational outcomes for young people. Increased future orientation levels may allow adolescents to overcome the stressful environments(Nurmi 2005; Seginer 2009). Research shows that youth with a well-developed sense of future orientation allows for a successful transition to young adulthood and allows them to make health promoting social and health-related decisions(Alm and Låftman 2016). Youth with negative future orientation were more likely to be arrested (Anderson et al. 2020; Ostaszewski and Zimmerman 2006; Piquero 2016). In another study by Jaynes et al. (2021) and colleagues found that youth with a low sense of future orientation valued obtaining a good education, career, or family life because they viewed these goals as less rewarding than youth with a more developed sense of future orientation. More recent studies, focusing specifically on the relationship between future orientation and youth-police contact and health suggest that both direct and vicarious contact can reduce youth future orientation(Testa et al. 2021; Turney et al. 2022b).

Study Contributions

This chapter builds upon prior research exploring the impacts of the criminal legal system on adolescent health. By examining the impact of youth-police contact on adolescent well-being, I argue that these contacts may erode various domains of perceived well-being and lead adolescents to feel less able to manage future life adversity. This reduction in sense of self-efficacy may limit how youth imagine their future and their ability to achieve significant milestones such as completing college or getting married. This reduced sense of self-efficacy and lower well-being may also lead youth to engage in health compromising behaviors. Recent scholarship has begun to explore the impact of youth-police contact one specific domain of adolescent well-being, future orientation—often referred to as optimism in established adolescent well-being scales. This chapter uses a survey of US youth to test these potential associations using youth self-report of police contact overall well-being.

Building on existing criminology literature that has shown that certain features of police stops can impact the mental wellbeing of youth, this chapter analysis the potential impact of four different stop features (Geller 2017). Existing research suggests that there may be racial/ethnic differences in the stress consequences of police contact. The "prejudice hypothesis" asserts that because individuals with minoritized racial/ethnic identities are more likely to have previous experience of police mistreatment at the individual or population level, the negative impacts of future encounters are amplified (McFarland, Geller, and McFarland 2019; Slocum and Wiley 2018). Other hypothesis, like the "experience of the expected" hypothesis suggests that this relationship might be the opposite. The hypothesis suggests that previous exposures of police mistreatment may

lead folks with minoritized identities to be less impacted by future encounters. Additional empirical analysis is needed to explore which of these hypotheses may be more accurate(Geller 2017). This chapter attempts to test the prejudice hypothesis by testing whether youth self-reported views of procedural justice moderate the relationship between police contact and wellbeing.

Existing research suggests that changes to positive youth functioning and well-being may be one potential mechanism through which police contact influence the life course outcomes of youth.(Lopes et al. 2012; Testa et al. 2021) .The goals of the analysis in this chapter are twofold: (1) to investigate the impact of youth-police contact on wellbeing; (2) examine whether stop-related features like views about procedural justice, stop intrusiveness, and stop-related stigma moderate any associations that might exist between police stops and wellbeing.

Methods

Dataset

This study uses the Fragile Families Child and Wellbeing Study (FFCWS) which is a nationally representative survey of urban families in the US. The FFCWS is a cohort study of approximately 5,000 children born in 20 large US cities between 1998-2000 and their families. This study uses the most recent wave of data collection, collected approximately fifteen years after families were recruited (referred to as Y15). The FFCWS sample systematically oversampled non-marital births and contains high proportions of Black and Hispanic families as well as families that are socioeconomically disadvantaged and have a high rates of paternal criminal justice system involvement (Geller et al. 2015). In the Y15 wave of the study, youth were asked specifically about

their experiences of police contact in addition to survey questions about their overall well-being.

Police Contact

I measured youths' experiences with police based on self-reports at the Y15 interview. Youth were asked whether they had "ever been stopped by the police while on the street, at school, in a car or some other place?" Youth who responded Yes (coded as 1) were considered to have had experienced direct police contact. Youth were also asked three questions about their experiences of vicarious police contact: "Have you ever seen someone personally who has been stopped by the police?", "Have you ever seen someone stopped by the police in your neighborhood?", and "Have you ever seen someone stopped by the police in your school?" Response options included Yes (coded as 1) and No (coded as 0). A vicarious contact variable for all youth and those who responded yes to any of the three items were assigned a value of 1 and were considered to have had experienced vicarious police stops. Because of some overlap between vicarious and direct exposures, I only consider a youth to have had vicarious contact if they report having never experienced direct contact. Youth who report neither direct nor vicarious contact were coded as having no history of police stops.

Stop Intrusiveness

Youth who reported that they had been directly stopped or had witnessed someone else being stopped by police were asked a series of questions about the events that occurred during the encounter. If they had experienced or witnessed multiple encounters they were asked to respond about the "most memorable incident. Youth were

asked, “Did the officer: 1. Frisk them or pat them down?, 2. Search their bags or pockets?, 3. Use harsh language?, 4. Use racial slurs?, 5. Threaten physical force?, 6. Use physical force?” Responses were coded as binary responses Yes (=1) or No (=0) and items were summed to create a final intrusiveness score ranging from 0-6 (α=0.71), this coding is consistent with other studies using this data (Jackson et al. 2021a).

Procedural Justice

To understand if youth felt that their stops, or the stops they witnessed were justified we used information gathered by three questions that were asked to youth who reported either personal or vicarious contact about their experience: (1) How often police clearly explained why they stopped [them]; (2) How often police treated [them] with dignity and courtesy; and (3) How often police respected [their] rights. Responses ranged from 1(“never”) to 3 (” often”) and were reverse coded such that a higher score indicated higher levels of perceived procedural injustice (α=0.71).

Stigma

Youth who reported either direct contact were asked a series of questions about the incident that was most salient in their minds. These items, which were intended measured how youth thought they were perceived after these stops and any potential stigma. Perceived stigma is measured by a 10-item subscale that is adapted from a previous conceptualization of mental health stigma (Geller 2021; Link et al. 2004). Youth were asked about the experiences they’ve had since being stopped by the police and if they felt: (1) People have avoided [them] since [their] experience with the police, (2)

People have used your experience with the police to hurt your feelings, (3) People have been less willing to help [them] since their experience with the police; (4) [They] avoid people because [they] think [others] might look down on you because of your experience with the police; (5) People are more uncomfortable around [them] because of [their] experience with the police; (6) You sometimes hide your experience with the police from friends and family; (7) You think it's a good idea to keep your experience with the police a secret; (8) You would advise a friend stopped by the police not to tell others about it; (9) You wait until you know someone well to tell them about your experience with the police; and (10) You would be less likely to apply for a job if the employer knew about your experience with the police. Responses option were either "agree", coded as 1 or "disagree" or coded as 0. Responses to each item summed to create a stigma index (α=0.71).

EPOCH Measure of Adolescent Well-being

Adolescent well-being was measured using 20 items adapted from the EPOCH Measure of adolescent well-being intended to reflect positive adolescent function.(Kern et al. 2016) This measure is comprised of five dimensions of well-being: engagement, perseverance, optimism, connectedness, and happiness. Each dimension is composed of four questions that ask respondents how much they agree with each item. Responses range from, strongly agree (1) to strongly disagree (4). Because these items were modified from the original EPOCH scale, all items are reverse coded as follows: (4=1), (3=2), (2=3), (1=4). This is consistent with recommendations provided in the FFCWS user guide. In addition to a total wellbeing score (α=0.66), a subscale score was also created for each respondent using the mean score of the respective subscale items.

- Engagement (α=0.59) captures an individual's capacity to become absorbed in and focused on what one is doing, as well as involvement and interest in life activities or tasks. This factor is measured by the following items:
    1. When I do an activity, I enjoy it so much that I lose track of time.
    2. I get completely absorbed in what I am doing.
    3. I get so involved in activities that I forget about everything else.
    4. When I am learning something new, I lose track of how much time has passed.
- Perseverance (α=0.70) refers to the ability to pursue one's goals to completion, even in the face of obstacles.
    1. I finish whatever I begin.
    2. I keep at my schoolwork until I am done with it.
    3. Once I make a plan to get something done, I stick to it.
    4. I am a hard worker.
- Optimism (α=0.56) is characterized by hopefulness and confidence about the future, a tendency to take a favorable view of things and an explanatory style marked by evaluating negative 3vents as temporary, external, and specific to situation.
    1. I am optimistic about my future.
    2. In uncertain times, I expect the best.
    3. I think good things are going to happen to me.
    4. I believe that things will work out, no matter how difficult they seem.

- Connectedness (α=0.61) refers to the sense that one has satisfying relationships with others, believing that one is cared for, loved, esteemed, valued, and providing friendship and support to others.
    1. When something good happens to me, I have people who I like to share the good news with.
    2. When I have a problem, I have someone who will be there for me.
    3. There are people in my life who really care about me.
    4. I have friends that I really care about.
- Happiness (α=0.74) is conceptualized as steady states of positive mood and feeling content with one's life, rather than momentary emotion.
    1. I feel happy.
    2. I have a lot of fun.
    3. I love life.
    4. I am a cheerful person.

Covariates

To reduce spurious correlation in our examination of the relationship between youth experiences of police contact and potential changes in well-being, we controlled for a series of covariates at the individual, family, and neighborhood level. At the individual level we control for youth age, self-reported race, youth sex (male=1), youth delinquency and peer delinquency. We control for delinquency because it is likely linked to increased odds of police contact, although we know that delinquency is not driving the observed increases in contact (Weaver et al. 2019).

We also control for whether youth report having ever been a victim of a crime or witnessing a crime via two survey items that asked if youth had "ever been victim of a crime", and if they had "ever witnessed a crime or known about a crime?". Response options were yes (1), or no (2). We controlled for family background by controlling for mothers' educational attainment, parents' relationship at time of birth (i.e., married, unmarried but cohabitating, or living a part), paternal incarceration (father ever or currently incarcerated; Y9), and household poverty-ratio. Because neighborhood level factors may contribute to police interactions, we also control for low neighborhood cohesion (Sewell et al. 2016).

Analysis

We first conduct bivariate analyses to estimate the relationship between police stops and wellbeing by looking first at overall wellbeing score and then each domain. We continue our analysis with an ordinary least squares (OLS) regression to estimate the relationship between adolescent police stops and each of the five dimensions in the EPOCH scale of positive adolescent functioning and wellbeing. We present three models: (1) an unadjusted model, (2) adjusted for covariates, and (3) a third model that adjusts for youth factors that may be associated with police stops such as delinquency and if they had ever used or consumed tobacco, alcohol, marijuana or any other illicit substances. We also estimate the potential relationship between police stops and adolescent well-being separately for race/ethnicity and sex subgroups.

Next, we use OLS regression models to estimate the relationship between adolescent police stops and wellbeing using three features of police stops: intrusiveness, perceived procedural injustice, and stigma from the stop. This analysis is limited to youth

who report direct stops, because they are most equip to answer the survey items related to stigma (N= 871). In these analyses, we estimate, for example, if there is an association between stop intrusiveness and youth overall-being. The equation below details this analysis further.

$$\text{EPOCH Total} = \beta_0 + \text{Stop Intrusiveness}_1 + \beta_2 \ldots \beta_n + \varepsilon$$

The associations are also estimated by race/ethnicity and sex groups as well.

Results

The primary analytic sample includes 3,248 youth who reported measures of adolescent function and responded to survey items about their experiences with police contact. The descriptive characteristics of this sample are provided in Table 1a. Slightly over half of sample is male (55.3%) and although youth reporting direct stops are more likely (69.2%) to be male than female, there is no statistically significant difference in the gender composition of youth who report having been directly stopped by police and those who report only vicarious stops or no stops. Our sample is racially diverse with nearly half our sample (49%) identifying as Black, a quarter as Hispanic (24.5%), and 18.1% white. A large proportion of the youth in our sample (45.1%) have parents who are neither married nor cohabitating. Youth who report vicarious or direct contact are more likely to have parents who are not married or cohabitating (59.3% and 66.8% respectively) but this difference is not statistically significant. Across the different types of contact types, we see no statistically significant difference in maternal education level, poverty level, personal delinquency, peer delinquency, neighborhood efficacy, paternal incarceration history, or having witnessed a crime. We do find that youth who report having been directly stopped by police are more likely to report having been the victim of

a crime than those who report no contact (18.6% vs 2.6%). Table 1b presents total EPOCH score and mean score for each wellbeing domain by contact type. Youth who report having been directly stopped by law enforcement have a lower reported wellbeing score (17.0) than those who report only vicarious contact or no contact history (17.2 and 17.4 respectively). This difference is statistically significant. Youth who report any form of police contact score lower in the perseverance , optimism, connectedness, and happiness domains. However, youth reporting vicarious and direct stops score higher in the engagement domain. Differences across contact type is statistically significant for all domains.

The results of the bivariate analysis can be found in Appendix 4. We find that when compared to youth with no police contact, individuals who report having experienced vicarious or direct contact had wellbeing scores that were 0.23 and 0.40 points lower respectively. This relationship was only statistically significant for youth who reported vicarious contact. However, when we look at each domain of the wellbeing scale, we find that mixed results. The engagement domain appears to be positively associated with stop status with youth who report vicarious and direct stops having slightly higher engagement scores than those with no police contact. Youth who report vicarious contact have an engagement score that is 0.09 points higher than those who report no contact. Direct contact is associated with a 0.17 point increase in engagement score. These relationships are statistically significant for both vicarious ($p<0.01$) and direct ($p<0.001$) contact. Vicarious and direct police contact are associated with decreased scores in the perseverance, optimism, connectedness and happiness domains in our bivariate analysis. These associations are all statistically significant.

Results of our complete OLS regression model are presented in Appendix 4. Abbreviated results are shown in Table 5. This table shows that compared to youth with no history of police stops, there is no statistically significant difference in self-reported overall EPOCH score for youth with a history of vicarious contact only. However, compared to youth who report no stop history, having been directly stopped by police is associated with a 0.25 point decrease in overall epic score, and this difference is statistically significant ($p<0.05$). Vicarious contact is associated with a 0.09 point increase in engagement score when youth are compared to their peers with no history of contact ($p<0.01$). This result suggest that vicarious contact leads youth to be more engaged in hobbies, projects, and other interests. Youth who report direct contact also report engagement scores that are 0.13 points higher than peers with no police stop history ($p<0.001$). Compared to those with no history of police contact, youth who have experienced vicarious contacts have perseverance scores that are 0.06 points lower ($p<0.05$), optimism scores that are 0.07 points lower ($p<0.01$), and happiness scores that are 0.08 points lower ($p<0.01$). These results suggest that simply being exposed to police stops can be deleterious to the wellbeing of adolescents. Direct police stops appear to be associated with a 0.11 point decrease in youth perseverance ($p<0.001$), a 0.12 point decrease in optimism ($p<0.001$), and a 0.12 point decrease in happiness ($p<0.001$) when these youth are compared to their peers without a history of police stops. The analyses find no statistically significant association between police stop history and reports of connectedness in this population.

Tables 6 and 7 below show the regression results for our analyses in subsamples of Black and white youth respectively. In table 6 there appears to be only one statistically

significant relationship, the negative association between direct police stops and happiness. These results suggest that for white youth, happiness is the only wellbeing factors impacted. Additionally, these results suggest that only direct experiences of police contact impact white youth. Shifting to table 7 we see a different pattern in the association between police contact history and wellbeing factors. For Black youth with a history of vicarious contact, when compared to peers without any past stop history, statistically significant negative associations exist for total EPOCH score (0.32 points lower), perseverance (0.09 points lower), optimism (-0.14) , and happiness (0.14 points lower). All associations were significant at the $p<0.01$ level or the $p<0.001$ level. Vicarious contact was associated with a 0.13 point increase in engagement score and this association was significant at the $p<0.01$ level. Black youth reporting direct stops have a total EPOCH score that is 0.21 points lower than their same race peers who report no history of stops ($p<0.05$). These youth also report a 0.19 point increase in overall engagement score ($p<0.01$). Negative statistically significant associations are also existed for optimism, connectedness, and happiness scores. The difference in the associations in these subgroups suggests that the impact of police stops on adolescent wellbeing is stronger for Black youth than white youth. This may be because Black youth live in a society that already inundates them with negative narratives about their racial identity and worth. It is possible that police stops further reinforce these negative themes in a way that cause more harm to Black youths' sense of self.

Table 8 presents the results from our regression models that control for features of police stops that the wellbeing in a subsample of youth who report direct stops. The model examining the association between stop intrusiveness and wellbeing yields a

statistically significant result for only one domain: perseverance. In this model we find that with each additional form of intrusiveness, youth who've experienced a police stop report a 0.05 point increase in their perseverance score. The next analysis examines the association between procedural justice and police stops. Across all six of our outcomes (total score and each of the five domains), we find two statistically significant relationships. First, each unit increase in perceived procedural injustice is associated with a 0.10 point decrease in engagement score ($p<0.01$). We also find that in this subpopulation, increased procedural justice is associated with a 0.05 point decrease in connectedness ($p<0.05$). The final set of analyses conducted examined the association between perceived stigma and wellbeing. Results indicate that there is a positive statistically significant association between stigma and youth-self reported engagement and perseverance. Perceived stigma, according to our results is associated with a 0.02 unit increase in reported engagement. Similarly, stigma is associated with a 0.03 unit increased in reported perseverance I this population.

Discussion

These findings are mixed and require additional theoretical and analytic considerations to better understand how police contact may impact adolescent functioning and wellbeing. Of particular interest is the statistically significant positive association between both forms of police contact and the engagement factor. One potential hypothesis is that youth may choose to focus more on hobbies or task that bring them joy rather than dwell on the negative emotions they have associated with the police stop they witnessed or experienced. A second hypothesis, is that although youth feel mistreated or that their identities are undervalued as a result of these experiences, they are

inspired to act. This action may take the form of increased social or political participation in their schools and communities. Future research should explore whether youth who experience vicarious police contact have increased reports of social or political participation. The negative associations seen across all other factors are consistent with the initial hypothesis that contact may impact how youth think about their future, their relationships, and their overall satisfaction or happiness.

Another finding that may require additional investigation is the role that stop features play in the association between police stops and wellbeing. The factor most impacted by stop features in this analysis appears to be perseverance. Our findings suggest a positive statistically significant association between direct police contact and perseverance as stop intrusiveness increases. A similar relationship exists as level of perceived stigma increases. Future qualitative analyses are needed to understand whether youth conceptualize these interactions as events they have to overcome or if these events are serving as positive life course transitions similar to the role that military involvement has been shown to play in past research (Elder 1998). These findings also highlighted that there are racial differences in the association between police contact and wellbeing when looking at subsamples of white and Black youth. These differences that show many more negative statistically significant associations, suggest that police contact may play a different role in the lives of white and Black adolescents. These findings support previous data that highlights racial disparities in youth stops and searches(Alegria 2014; Del Toro et al. 2019).

Conclusion

This study expands the body of research that explores the potential life course implications of youth-police interactions. By looking at the association between police contact and wellbeing, this study explores an understudied mechanism through which police stops may lead to adverse health outcomes in later life. Although the findings of this analysis were mixed and included null results for many domains, this work does highlight the need for additional scholarship on this topic. This study informs emerging scholarship that explores how police contact impacts the life course trajectory of adolescents(Lopes et al. 2012; Testa et al. 2021{Schmidt, 2015 #3398)}. Adolescence is a critical period in the life course and exposures that lead to diminished adolescent functioning have important implications for health and development over the life course(Geller et al. 2015; Wood et al. 2018).

Table 3:Descriptive Statistics Defined by History of Police Stops+

Variable	Total Sample (N=3,248)	No history of stops (N=696)	Vicarious stops only (N=1681)	Direct stops (N=871)
	%/mean (SE)	%/mean (SD; range)	%/mean (SD; range)	%/mean (SD; range)
Age	15.2 (0.41)	15.6 (0.78;14-19)	15.5 (0.74;14-19)	15.7 (0.77;14-18)
Male	55.3	45.3	43.3	69.2
Race				
White	18.1	19.8	19.1	14.7
Youth Black	49.0	42.7	47.6	56.8
Youth Hispanic	24.9	28.5	26.0	20.1
Other	2.7	4.6	2.4	1.6
Multiracial	5.4	4.5	5.0	6.8
Parental relationship				
Married	49.7	33.7	31.8	24.0
Cohabitating	5.3	9.3	8.9	9.3
Other relationship	45.1	57.0	59.3	66.8
Mom's education				
Less than high school	17.1	19.1	20.8	21.3
High School	21.5	17.6	22.6	23.4
Some College	32.6	42.7	40.7	44.3
College+	28.7	20.6	16.0	11.0
Poverty ratio				
0-49%	8.7	10.1	13.1	16.5
50-99%	13.7	16.1	15.6	19.5
100-199%	21.4	28.4	29.0	28.4
200-299%	15.5	15.6	14.0	14.2
300%+	40.7	30.0	28.3	21.3
Delinquency	0.8 (0.01)	0.04 (0.09;0-0.8)	0.08 (0.14;0-1.2)	0.23 (0-2.1)
Peer Delinquency	0.2 (0.3)	0.1 (0.23;0-2)	0.2 (0.4;0-2.6)	0.4 (0.5;0-3)
Low neighborhood efficacy	18.6 (1.5)	17.5 (6.7;0-26)	18.6 (5.2;0-28)	18.1 (5.8;0-27)
Paternal incarceration	33.8	41.7	49.0	58.8
Victimization	5.1	2.6	6.1	18.6
Witnessed a crime	30.6	15.6	34.5	47.2
[+]These are weighted estimates based on city-level weights specific to the year 15 FFCWS youth survey.				

Table 4:Descriptive statistics of EPOCH domains defined by history of police stops+

Variable	Total Sample (N=3,248)	No history of stops (N=696)	Vicarious stops only (N=1681)	Direct stops (N=871)	Significance
	% /Mean (SD; range)	Mean (SD; range)	Mean (SD; range)	mean (SD; range)	
Total EPOCH Wellbeing Score	17.1 (0.09)	17.4 (1.5;8.5-20)	17.2 (1.6;8-20)	17.0 (1.7;9.8-20)	***
Engagement	3.0 (0.09)	2.9 (0.65;1-4)	3.0 (0.6;1-4)	3.1 (0.6;1-4)	***
Perseverance	3.4 (0.04)	3.5 (0.5;1.3-4)	3.4 (0.5;1.3-4)	3.4 (0.5;1.5-4)	***
Optimism	3.4 (0.03)	3.5 (0.5;1.5-4)	3.4 (0.5;1-4)	3.4 (0.5;1.3-4)	***
Connectedness	3.8 (0.08)	3.8 (0.3;1.8-4)	3.8 (0.4;1-4)	3.7 (0.4;1.5-4)	***
Happiness	3.6 (0.04)	3.7 (0.4;1-4)	3.6 (1.25-4)	3.5 (1.25-4)	***

+These are weighted estimates based on city-level weights specific to the year 15 FFCWS youth survey.

Note: All models control for age, sex, parents' baseline relationship status, mothers' baseline education, household poverty ratio , self-reported delinquency (Y15), low neighborhood efficacy, paternal incarceration, ever having been a crime victim (Y15), and ever having witnessed a crime (Y15). *p<0.05, ** p<0.01, *** p<0.001

Table 5: OLS regression coefficients from models examining the association between adolescent wellbeing and history of police stops (N=3,248)

Variable	No history of stops	Vicarious stops	Direct stops
	coeff. (SE)	coeff. (SE)	coeff. (SE)
Total EPOCH Wellbeing Score	ref.	-0.14 (0.08)	-0.25* (0.10)
Engagement	ref.	0.09** (0.03)	0.13*** (0.04)
Perseverance	ref.	-0.06* (0.02)	-0.11*** (0.03)
Optimism	ref.	-0.07** (0.02)	-0.12*** (0.03)
Connectedness	ref.	-0.02 (0.02)	-0.04 (0.02)
Happiness	ref.	-0.08** (0.02)	-0.12*** (0.03)

+These are weighted estimates based on city-level weights specific to the year 15 FFCWS youth survey.

Note: All models control for age, sex, parents' baseline relationship status, mothers' baseline education, household poverty ratio , self-reported delinquency (Y15), low neighborhood efficacy, paternal incarceration, ever having been a crime victim (Y15), and ever having witnessed a crime (Y15). Standard errors in parentheses. *p<0.05, ** p<0.01, *** p<0.001

Table 6: OLS regression coefficients from models examining the association between adolescent wellbeing and history of police stops in a subsample of white youth (N=519)

Variable	No history of stops	Vicarious stops	Direct stops
	coeff. (SE)	coeff. (SE)	Coeff. (SE)
Total EPOCH Wellbeing Score	ref.	0.09 (0.20)	-0.21 (0.24)
Engagement	ref.	0.10 (0.07)	0.06 (0.09)
Perseverance	ref.	0.02 (0.06)	-0.08 (0.07)
Optimism	ref.	-0.03 (0.06)	-0.06 (0.08)
Connectedness	ref.	0.04 (0.04)	0.02 (0.05)
Happiness	ref.	-0.03 (0.06)	-0.15* (-0.07)

[+]These are weighted estimates based on city-level weights specific to the year 15 FFCWS youth survey.

Note: All models control for age, sex, parents' baseline relationship status, mothers' baseline education, household poverty ratio , self-reported delinquency (Y15), low neighborhood efficacy, paternal incarceration, ever having been a crime victim (Y15), and ever having witnessed a crime (Y15). Standard errors in parentheses. *p<0.05, ** p<0.01, *** p<0.001

Table 7:OLS regression coefficients from models examining the association between adolescent wellbeing and history of police stops in a subsample of Black youth (N=1,402)

Variable	No history of stops	Vicarious stops only	Direct stops
	coeff. (SE)	coeff. (SE)	coeff. (SE)
Total EPOCH Wellbeing Score	ref.	-0.32** (0.12)	-0.21* (0.14)
Engagement	ref.	0.13** (0.05)	0.19** (0.06)
Perseverance	ref.	-0.09** (0.03)	-0.14** (0.04)
Optimism	ref.	-0.14*** (0.03)	-0.18*** (0.04)
Connectedness	ref.	-0.08** (0.03)	-0.06* (0.03)
Happiness	ref.	-0.14*** (0.04)	-0.13** (0.04)

[+]These are weighted estimates based on city-level weights specific to the year 15 FFCWS youth survey.

Note: All models control for age, sex, parents' baseline relationship status, mothers' baseline education, household poverty ratio, self-reported delinquency (Y15), low neighborhood efficacy, paternal incarceration, ever having been a crime victim (Y15), and ever having witnessed a crime (Y15). Standard errors in parentheses. *p<0.05, ** p<0.01, *** p<0.001

Table 8:OLS Regression coefficients from models examining the association between positive adolescent function and police stops when adjusting for stop features in a subsample of youth who've experienced direct contact

Variables	EPOCH Total	Engage-ment	Persever-ance	Optimism	Connected ness	Happi-ness
Stop Intrusivenes s	0.03 (0.04)	-0.02 (0.02)	0.05*** (0.01)	0.02 (0.01)	-0.01 (0.01)	-0.001 (0.01)
Procedural Justice	-0.15 (0.11)	-0.10** (0.04)	0.03 (0.03)	0.02 (0.03)	-0.05* (0.02)	-0.05 (0.03)
Stigma	0.04 (0.03)	0.02* (0.01)	0.03** (0.01)	0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Note: All models control for age, sex, parents' baseline relationship status, mothers' baseline education, household poverty ratio, self-reported delinquency (Y15), low neighborhood efficacy, paternal incarceration, ever having been a crime victim (Y15), and ever having witnessed a crime (Y15). Standard errors in parentheses. *p<0.05, ** p<0.01, *** p<0.001						

Chapter 5: Police Stops and Eating and Exercise Behaviors among Youth

Introduction

Within the last 50 years the size and reach of the criminal justice system has increased dramatically(Travis, Western, and Redburn 2014). Most significantly, this expansion is marked by the adoption of proactive policing policies that increasingly rely on police civilian interactions to prevent crime (Harrell and Davis 2020; Kubrin et al. 2010; Weisburd and Majumder 2018). These policies has shifted the goal of policing from responding to crime to a new era wherein officers are charged with preventing crime. This practice encourages police officers to view civilians with suspicion in order to thwart any potential criminal behavior. Notably, these policies have augmented the frequency of police youth interactions(Geller and Fagan 2019)—interactions that can be life altering.(Testa et al. 2021) Youth, due to the expansion of proactive policing and police presence in schools, are now more likely to experience both direct and vicarious police encounters.(Brunson and Weitzer 2009; Geller 2021) . Geller (2021) finds that, in one sample of urban adolescents, over a quarter (26%) report direct contact. Also in this sample, 39% Black boys and 14% of Black girls adolescents report being stopped and/or frisked by police(Geller 2021). Youth-police encounters can dramatically impact the life course because these encounters are often the first- and only-time type of interactions that youth have with the criminal legal system (McFarland et al. 2019; Sewell and Jefferson 2016).

A strong and enduring relationship exists between early life exposures to adversity and trauma and numerous health outcomes including increased risk of

emotional difficulties, increased HIV-risk behaviors and increased risk of injury (Cave et al. 2020; Kalmakis and Chandler 2015; Petruccelli, Davis, and Berman 2019). Research has shown that various forms of contact with the criminal legal system (i.e. parental incarceration or personal experiences of police contact) during early childhood and adolescence can impact mental health, alcohol use, physical activity, risk of obesity, diabetes risk, incidence of heart disease, and overall poor self-rated health (Hughes et al. 2017; Travis and Waul 2003). The Adverse Childhood Experiences (ACEs) literature tells us that the conditions in a child's environment can undermine their sense of safety and stability (Meldrum et al. 2020). As this body of research expands, the need to incorporate additional potentially traumatic experiences—specifically, experiences unique to youth from racial and ethnic groups that have been systematically disenfranchised—has become clear (Anderson, Heard-Garris, and DeLapp 2021; Bernard et al. 2020). Research exploring youth-police contact as an ACE has shown that this exposure significantly impacts the life course by increasing life time risk of offending(Testa et al. 2021) and causes significant increases in adverse mental health experiences (Jackson et al. 2019a; Testa et al. 2021).

Stress and Coping

Stress process theory suggests that exposures to adverse experiences can lead to adverse health outcomes through the activation of physiologic responses that increase allostatic load and contribute to overall 'wear and tear' through a process known as "weathering"(Arline et al. 2006; Pearlin 1989; Pearlin et al. 2005). A large body of research exists withing psychology that suggests that how individuals decide to handle the stressors they encounter(Lazarus and Folkman 1984). A variety of coping

mechanism exist, and the mechanisms that individuals choose in response to stressors may expose them additional stressors. Individual responses to stress can be extremely varied and range from problem-solving, avoidance, or the adoption of potentially health compromising or health promoting behaviors which can impact health and wellbeing (Zimmer-Gembeck et al. 2018). Youth generally engage in either problem-focused (PF) or avoidant emotion-focused (AEF) coping strategies when faced with ACEs (Lazarus and Folkman 1984). PF coping strategies focus on addressing problems and are often associated with increased self-efficacy whereas AEF coping is characterized by strategies aimed at reducing the negative emotions that an individual associate with adverse experiences. Research suggests that AEF coping strategies are negatively associated with well-being(Mayordomo-Rodríguez et al. 2015) and positively associated with increased report of adverse mental and physical health symptoms in adolescents (Boals, Vandellen, and Banks 2011).

Studies have shown that adolescents experiencing both direct and vicarious contact tend to internalize and the negative emotions and stigma associated with these interactions which suggests that youth may be engaging in AEF strategies in response to police stops(Geller et al. 2017; Jackson et al. 2019a). This chapter hopes to advance the public health literature, by expanding the knowledge base that explores how youth respond to stressors like police contact. Although the public health literature has focused on the potential impacts of stress, more literature is needed to understand the role of coping behaviors. As research investigating the impact of youth-police interaction as a unique life course stressor, coping mechanisms, specifically AEF approaches, must also be investigated.

Emotional Eating and Physical Activity as Coping mechanisms

Emotional eating, the process of overeating in response to negative emotional states has often been identified as a non-adaptive coping mechanism that individuals may engage in to deal with stressful life events.(Heatherton and Baumeister 1991; Raspopow et al. 2013) Over time this coping behavior may lead to increased risk of (Kazmierski et al. 2021) obesity and cardiovascular disease (Cavanagh and Obasi 2021). A large body of research has shown a positive relationship among youth experiences of stress, depressive symptoms, and unhealthy eating behaviors (Spoor et al. 2007; Young and Limbers 2017). Another body of literature suggests that youth may also engage in health promoting behaviors like moderate or vigorous physical activity in as part of AEF coping.(Goodwin, Haycraft, and Meyer 2012) To date, no research has explored whether police contact is associated with an increase in either emotional eating or increased physical activity in youth. Prior research has shown that people from minority racial groups may engage in emotional eating to cope with stress ((Hoggard et al. 2019; Kazmierski et al. 2021). Given that youth police contact is a racialized stressor(Del Toro et al. 2019; Geller 2021) young people from minoritized racial groups may be more likely to engage in emotional eating behaviors to cope with stress (Hoggard et al. 2019; Kazmierski et al. 2021). Hoggard and colleagues leverage the environmental affordances model to investigate the role that emotional eating plays in the relationships between racial discrimination, mental health, and physical health (Hoggard et al. 2019).This literature suggests, that youth, specifically minority youth may tend to unhealthy eating behaviors to cope with stress associated with racial discrimination (Lee et al. 2022).

Research Question

Leveraging the rich data on youth-police contact from the Fragile Families Child and Wellbeing Study (FFCWS), this chapter aims to understand how youth experiences of direct and vicarious contact with police potentially impact health behaviors such as unhealthy food behaviors and physical activity. In addition to the detailed measures of police contact offered in this longitudinal survey, this dataset also includes detailed information health behaviors such as diets and physical activity. Our primary research question examined in this analysis is: Is there an association between police stops and diet and physical activity in US adolescents?

Methods

Data Set

This study uses data from the Fragile Families and Child Wellbeing Study (FFCWS)—a national longitudinal study with an original birth cohort of 4,898 youth born between 1998 and 2000 in 20 U.S. cities (Wagmiller Jr 2010). This longitudinal study contains six waves of data that have been collected from family members at birth, Year 1, Year3, Year 6, Year 9 and, Year 15. In Year 15 youth were asked directly about their health behaviors as well as their experiences with police contact. Demographic information from Year 1 and parent information from Year 9 are used as covariates in analyses.

Police Contact

We measured focal youths' experiences with police based on self-reports at the Y15 interview. Youth were asked whether they had been stopped by the police as well as a series of questions about if they had ever witnessed someone else being stopped by the police or if they knew anyone who had been stopped by the police. Youth who report

ever witnessing or knowing of someone who had been stopped by police were categorized as having experienced vicarious stops. We categorize youth as having experienced direct contact if they report ever having been stopped by police. Youth who report neither direct nor vicarious contact were coded as having no history of police stops. We prioritize experiences of direct contact and categorize all individuals who report both vicarious and indirect contact into the direct contact category, in order to make mutually exclusive categories.

Dependent Variables: Diet and Physical Activity

Breakfast Consumption

Breakfast consumption was measured through a single survey item asked to focal children in the year 15 survey that asks, "How many days in a typical school week do you eat breakfast? Do not count the weekend." Response options ranged from 0-5 days. Existing literature that youth who eat breakfast at least 71% of the week are at reduced odds of becoming overweight (So et al. 2011). Because our survey item is limited to five days a week rather than the whole week, we estimate that youth would need to consume breakfast at least four days a year to potentially receive the associated health effects (Mathew, Hale, and Chang 2020). Because this chapter focuses on potentially health depleting behaviors, a dichotomized "skipping breakfast" variable that records youth as having skipped breakfast (1) if they report skipping breakfast four or more days during the school week. Youth who report skipping breakfast fewer than four days a week were coded as not skipping breakfast (0).

Fruit and Vegetable consumption

Fruit and vegetable consumption was measured using a single survey item from the year 15 survey that asked, “In a typical week, how many days do you eat at least some green vegetables or fruit?” Responses ranged from 0-7 days a week. In addition to using the continuous variable, responses were dichotomized based on the United States Department of Agriculture’s fruit and vegetable recommendation: respondents who reported eating a green vegetable or fruit every day of the week were coded as 1 and those who reported less than daily consumption were coded as 0 (US Department of Health Human Services 2019).

Fast-food Consumption

Fast food consumption was measured using a single survey it that asked, “How many days in a typical week do you eat from a fast-food restaurant, such as McDonald’s, Burger King, Wendy’s, Arby’s, Pizza Hut, Taco Bell, etc. Response options ranged from 0-7. Because most respondents reported consuming fast food at least once in the past week (84.5%), frequency of fast-food consumption was dichotomized as high (1) if the adolescent reported eating fast food ≥ 2 days per week (48.3%) consistent with prior research (Mathew et al. 2020).

Sweetened drink consumption

Sweetened drink consumption was measured using one survey question that asked, “In a typical day, how many regular, non-diet sweetened drinks do you have? Include regular soda, juice, drinks, sweetened tea or coffee, energy drinks, flavored water, or other sweetened drinks.” Sweetened drink consumption was dichotomized into two categories: odds of consuming ≥ 2 sweetened drinks daily compared to those who consumed fewer than 2 drinks a day. This cutoff was based on existing literature which suggests that

adolescent consumption of two or more sweetened drinks per day has been associated with weight gain (Mathew et al. 2020).

Physical Activity

Physical activity was measured as moderate activity (i.e. sustained physical activities that lead to breathing hard at least some of the time) and vigorous activity (i.e. activities that left you feeling out of breath) physical activities. These two measures of physical activity were constructed using youth responses to two survey questions: (1) “In a typical week, how many days do you engage in physical activity that lasts 30 min or more?” and (2) “In a typical week, how many days per week do you participate in vigorous physical activity?” that is activity that is strenuous enough to make you sweat, your heartbeat fast, or to make you out of breath?” We use the American Heart Association’s (AHA) recommendations for moderate and vigorous daily exercise to create dichotomous variables for both physical activity categories that we referred to as inadequate moderate and inadequate vigorous. Youth who report not engaging in moderate physical activity daily were coded as 1 or “yes” for the inadequate variable and youth who report fewer than three days of vigorous physical activity were coded 1 for the inadequate vigorous variable.

Other Covariates

Additional individual, family, and neighborhood covariates were included in our multivariate models. Sex (male=1), age, race/ethnicity, prior delinquency, peer delinquency, parental education, family structure, poverty ratio (a proxy for socioeconomic status), neighborhood social cohesion, and paternal incarceration were included in all models.

Analysis

We first created an analytic dataset of participants who had complete information for all eating behaviors and police contact variables of interest. Case-wise deletion is used to remove cases that are missing police contact information as well as information about dietary and exercise health behaviors of interest (N=3,322). Next, we analyzed the association between police contact (and various health behaviors across all three forms of contact (i.e. no contact, vicarious contact only, and direct contact) found in our sample. This analysis included adjusted Poisson and logistic regressions. Poisson regression was used to examine the number of days youth reported engaging in each health behavior and logistic regression was used to examine binary outcomes (e.g., insufficient fruit and vegetable consumption, or excess sweetened beverage consumption). The second set of analysis sought to explore how the racialized inequities inherent to police contact impacted outcomes for Black youth compared to white youth. Analyses were conducted that examined the association between police contact and the health behaviors of interest on a subsample of youth who identify as Black and a subsample of youth who identify as white. The final analysis in this chapter explores whether there was a dose response between the number of vicarious or direct stops youth experienced and health behavior. This analysis looked at differences in each health behavior based on whether youth reported no contact, exposure to only one vicarious contact incident, exposure to multiple vicarious contact incidents, one experience of direct contact, or multiple experiences of direct contact. All analyses were conducted using STATA 15.1.

Results

Table 9 shows the demographic characteristics of the full sample and compares differences in characteristics by type of police contact. Twenty-one percent of youth in this sample report never experiencing vicarious or direct police contact. Over half (51.6%) of youth in the sample report having experienced some form of vicarious police contact and over a quarter (26.9%) report having been directly stopped by police. The majority of youth who report direct contact are male (69.9%) with a more even gender distribution in the vicarious and no contact groups (43.7% and 42.5% respectively). The majority (56.5%) of the youth reporting direct contact identify as Black. Youth with married biological parents were less likely to report direct contact (24.3%) than those who reported vicarious (32.3%) or no contact (34.0%). Youth reporting police contact are more likely to be from households experiencing poverty. More than one in three (36.4%) youth who report direct contact also belong to households that have a poverty ratio that falls below the federal poverty line compared to 28.6% and 26.6% of youth reporting vicarious contact and no history of contact respectively.

Table 10 examines differences in health behaviors by type of police contact. Consistent with other studies that have examined physical health behaviors like sleep and self-rated health in youth with a history of police exposure or contact (Jackson et al. 2020; Jackson and Turney 2021; McFarland et al. 2019), this study shows a general trend that experiences of both vicarious and direct police contact are associated with increased reports of health depleting behaviors. In our sample, youth reporting experiences of direct police contact report skipping breakfast an average of two days during the school week, a rate that is higher than their peers who report only vicarious contact (1.8) or no contact (1.4). We see similar results when we look at the number of days report not eating fruits

and vegetables, number of sugary drinks consumed daily, and weekly fast-food consumption. Almost half (47.7%) of youth who report no history of police contact fail to consume breakfast every day during the school week with youth skipping breakfast an average of 1.4 days per week. Individuals with a history of only vicarious contact report skipping breakfast an average of 1.8 days during the school week and 48.7% of these youth fail to consume breakfast at least once during the school week. 52.9% of youth reporting direct contact skip breakfast at least once a week and on average youth in this group report skipping breakfast an average of two days per week. Statistically significant differences also exist across contact type for fruit and vegetable consumption with youth reporting no history of stops reporting 2.2 days without fruit and vegetable consumption while youth reporting vicarious contact experience 2.4 days on average without fruit and vegetable consumption and youth with a history of direct contact experience 2.6 days on average. A large percentage of youth across all three categories, no contact, vicarious contact, and direct contact exceed the daily recommended amount of sugar sweetened beverages (29.1%, 32.6%, and 46.3%). Youth with a history of direct police contact report consuming an average of nearly 3 (2.7) sugar sweetened beverages a day. Youth reporting direct contact were also more likely to report consuming fast food more than two days a week (27.2%) compared to 23.8% of peers who report vicarious contact and 17.2% of those reporting no history of police contact. However, when we do find that youth who report direct contact report fewer days without both moderate (2.8 vs 3.2 and 3.0) and vigorous (3.4 vs 3.9 and 3.8) physical activity when compared to those reporting no contact and vicarious contact.

The results of the multivariate analyses can be seen on Table 11. Tables of the full models can be found in the appendix. Looking first at the models that examine the number of days youth engaged in each health behavior we find statistically significant results for many health behaviors. On average youth with a history of vicarious contact report 1.3 more days ($p<0.001$) during the school weeks that they do not eat breakfast, compared to their peers with no history of police stops. Youth with a history of direct police stops also report skipping breakfast 1.3 more days during the week than those with no history of police stops. This analysis finds no statistically significant association between the number of days youth report not consuming fruit and vegetables and having experienced vicarious contact. However, youth with a history of direct contact report not consuming fruit and vegetables at a rate that is 1.1 times greater when compared to youth who have no stop history. There was not a statistically significant difference in the rate of sugary drink consumption for youth with a history of vicarious contact when compared to youth with no history of contact. However, there is a statistically significant ($p<0.001$) difference in the rate of daily sugary drink consumption for youth who have experienced direct contacts that is 1.2 times that of youth with no prior police contact. When compared to youth who report no history of police contact, vicarious and direct contacts were associated with a rate of fast-food consumption that was 1.1 times higher. For both groups this difference was statistically significant ($p<0.01$). The analysis of the association between history of police contact and physical activity found a statistically significant differences in the number of days youth with histories of police contact spent engaging in both moderate and vigorous physical activity. Youth with a history of vicarious contact reported a not engaging in physical activity at a rate that was 0.92 times

lower than their peers with no history of police contact. This association was statistically significant at the $p<0.01$ level. When compared to youth without any stop history, the average number of days youth who had experienced direct stops reported not engaging in at least thirty minutes of exercise was 0.92 times lower and statistically significant at the $p<0.05$ level. These findings are consistent with existing literature about increased physical activity in avoidant emotion-focused youth coping.

Table 12 presents the results of our logistic regression models. The first model examines whether the number of days youth skipped breakfast was above or below threshold (i.e. skipping breakfast only once during the school week) identified in previous literature. The results show that youth with a history of police contact are 1.4 times more likely to skip breakfast one more days during the school week compared to youth with no history of police stops. This difference is statistically significant at the $p<0.01$ level. Similarly, when compared to youth with no history of stops, youth who have been directly stopped the odds of skipping breakfast one or more days during the school week is 1.7 times higher and statistically significant ($p<0.001$). The second regression model looked at whether youth consumed fruit and vegetables daily, as recommended by the USDA. We find no statistically significant difference in the likelihood of youth meeting this dietary guideline based on history of police contact. The next model looked at sugary drink consumption and whether youth exceeded the recommended two sugar sweetened beverages per day limit. The difference in the likelihood of exceeding this limit between youth with previous vicarious contact and youth with no contact was not statistically significant. When compared to youth with no history of contact, direct contact individuals were 1.3 times more likely to consumer more than two sugar sweetened beverages per

day. This difference was statistically significant at the $p<0.05$ level. When examining whether youth consumed fast food more than the two days during the week—the current dietary guideline—we find that youth who have experienced vicarious contact are 1.4 time more likely to consume fast food at a rate that is above the recommended guideline ($p<0.05$). The difference in the likelihood of fast food consumption more than two days a week was not significant between direct stop youth and those with no stop experience. The regression results looking at the association between history of police contact and physical activity did not yield statistically significant results. Across the three contact groups, there was no difference in whether youth engaged in moderate physical activity as recommended by the AHA. Similarly, there were no statistically significant differences in the likelihood of youth engaging in at least three days of vigorous physical activity per week based on police contact history.

The next set of analyses explored how police contact, a racialized exposure differentially impacted Black and white youth. The results of these analyses can be seen in Tables 13-16. Black youth reporting only vicarious experiences of police contact reported skipping breakfast at a rate that was 1.2 times greater than Black youth reporting no contact—a difference that was significant at the $p<0.001$ level. However, for white youth experiencing vicarious contact, there appears to be no statistically significant association. For Black youth direct contact is associated with significant differences in the number of days direct contact youth report not consuming fruit and vegetables, but no such association exists for white youth. Statistically significant differences in the rate of sugary drink consumption exists for Black youth experiencing any form of police contact, but only for white youth experiencing direct contact. Another difference in these two

groups appears to be exercise behavior with white youth with histories of vicarious and direct contact experiencing fewer days without moderate exercise, whereas for Black youth, no such relationship exists. Logistic regression results show that white youth who have experienced direct police contact are more likely (1.4 times versus 2.4 times) to skip breakfast during the school week when compared to peers of the same race who have not had police contact. Similar the association between consuming more than two sugary drinks per day and direct police contact. White direct contact youth are 2.2 times more likely to consume more than two drinks per day when compared to same race peers without contact histories compared to Black direct contact youth who are only 1.3 times more likely. White who have experienced both vicarious and direct contact are also less likely to report moderate and vigorous exercise behavior that falls below AHA guidelines when compared to their peers who have not had police contact than Black youth who have experienced direct police contact.

Tables 17 and 18 show the results of our Poisson and logistic regression analyses examining whether a dose response relationship exists for the association between vicarious police contact and health behaviors. Table 15 shows that when youth with no contact history are compared to those who have experienced multiple forms of vicarious police contact, there is a statistically significant association that suggests an increased rate of fast-food consumed, increased rate of moderate exercise as well as vigorous exercise. Logistic regression results in Table 16 show that for all breakfast consumption, sugary drink consumption and fast food, youth who have experienced multiple forms of vicarious police contact are more likely to engage in behavior that falls below recommended guidelines when compared to youth who had no contact history. Youth

who had experienced multiple forms of vicarious contact were less likely (0.75) to report three or more days without vigorous exercise when compared to no contact peers. This association was significant at the $p<0.05$ level.

Tables 19 and 20 present the results of our analyses examining the impact that the number of direct police stops have on youth health behaviors. In Table 17 we see that while the difference in the number of days youth with one direct contact experience report not eating fruit and vegetables when compared to youth with no history of contact is statistically significant, this relationship does that exist for youth reporting multiple direct contact experiences. It is also worth noting that for sugary drink consumption and fast food, having multiple direct contacts is associated with a statistically significant difference while a single contact is not. Table 18 examines whether the likelihood of a youth falling below recommended dietary or physical guidelines is impacted by the number of direct stops youth experience. These results suggest that the number of direct stops may impact youth likelihood of consuming two or more sugary drinks per day and also days without vigorous physical activity.

Discussion

The potentially traumatic nature of youth-police interactions may lead some youth to develop unhealthy coping behaviors to deal with the stress of these events such as unhealthy eating behaviors. The findings of this study support existing hypothesis suggesting that racism may be associated obesity through the adaption of unhealthy behaviors to cope with the racialized trauma (Hoggard et al. 2019; Vilija and Romualdas 2014). In this sample, young people who experience vicarious or direct police contact are more likely to engage in several unhealthy behaviors such as skipping breakfast, reduced

fruit and vegetable consumption, increased daily sugar sweetened beverage consumption, and fast food consumption, all of which are associated with obesity and poorer health in later life.. We also see that for some eating behaviors, namely fruit and vegetable consumption and sugary drink consumption, there was no statistically significant association between experiences of vicarious police contact and these behaviors. We found that generally, experiences of direct contact were often associated with the number of days youth engaged in potentially health depleting food behaviors. Police contact was also associated with statistically significant negative associations with regard to moderate and vigorous physical activity. A scant body of literature that suggests that excessive exercise may be a maladaptive coping mechanism that some youth adopt in response to traumatic experiences (Berger 1994; Cunningham et al. 2020; Goodwin et al. 2012). Further examination is necessary to better understand if youth experiencing police contact are engaging in this form of coping. These findings are supported by other studies that have examined the relationship between various interaction with the criminal legal system (i.e. through parental incarceration) and adverse health behaviors like prescription drug abuse and increased number of lifetime sexual partners. (Heard-Garris et al. 2018; Park and Iacocca 2014). Further investigation is needed to determine the potential mechanisms that contribute to these associations.

A growing body of research has begun to explore police-contact as an adverse childhood experience (Geller 2021). Recent scholarship calling for the identification of racialized stressors coupled with an understanding of youth-police contact as an adverse childhood exposure support the findings of this study(Anderson et al. 2019; Bernard et al. 2020; Geller 2021). The adverse health impacts of the criminal legal system are vast including

but not limited to the academic and mental health consequences of parental incarceration(Haskins and McCauley 2019; Sewell et al. 2016). This study explored the impact of police contact on health behaviors rather than mental or academic health outcomes and found evidence of avoidant emotion focused coping in this population.

This study has limitations. First, the available measures for eating behaviors in adolescents are very limited and likely do not capture all the variation or dimensions of adolescent eating behaviors. Secondly, due to the cross-sectional nature of the data, we cannot accurately determine if the differences in eating behaviors are a direct result of interactions with police. The cross-sectional nature of this study limits our ability to make any causal claims about the identified associations. Additionally, this survey is limited in the type of measures used, for example, it has been well documented that self-reported measures of physical activity are often not correlated with more objective measures of physical activity. Lastly, our analysis did not measure how distressing or stressful youth found these interactions with police. It is possibly that the nature of stops (i.e. distressing or traumatic) could moderate the association with the health behaviors in this study (Jackson and Turney 2021).

While there are theoretical models that have shown how traumatic exposures in adolescents can impact both cardio metabolic health and lead to an increased risk of obesity and other associated adverse health outcomes(Jiang et al. 2019; Suglia et al. 2018), little research has explored the impact of racialized stressors like police contact. In addition to limited research focused explicitly on the impact of police contact, existing researched has focused almost exclusively on the psychological impacts of this exposure(Geller et al. 2014; Sewell et al. 2016; Turney 2021). Existing literature suggests

that in addition to the emotional impacts of these encounters, there may be some psychosomatic symptoms—such as sleep deprivation-associated with these traumatic interactions.(Del Toro et al. 2019; Jackson et al. 2020; Testa et al. 2021) Few studies how explored the association between police contact and physical health outcomes. This study explores the association of traumatic police encounters with adolescent eating behaviors and physical activity.

Conclusion

Youth-police contact is associated with increased odds of engaging in unhealthy behaviors such as skipping breakfast and sugar sweetened drink consumption. Our findings underscore the importance of understanding the various mechanisms through which traumatic and often racialized experiences like police contact lead to adverse health in adolescents. Although many studies have explored the mental health impacts of police contact, few have attempted to understand the physical health impacts of youth-police contact. The finds of this study suggest that there is an association between eating behaviors and histories of police contact. It is possible that youth adopt food related coping behaviors to deal with the stress of these adverse experiences. It is important to consider the clinical implications of these findings. Providers serving youth populations should make it a priority to ask youth about their experiences of vicarious or direct police contact because these experiences may influence the health promoting or health depleting behaviors that are developed during this life stage.

Table 9:Descriptive statistics of sample defined by history of police stops

Variable	Full sample (N=3322)	No history of stops (N=576)	Vicarious stops (N=965)	Direct stops (N=742)	Sig.
	%/mean (SD; range)	%/mean (SD; range)	%/mean (SD; range)	%/mean (SD; range)	
Age	15.6 (0.76;14-19)	15.6 (0.78;14-19)	15.5 (0.75;14-19)	15.7 (0.78;14-18)	***
Male	51.1	45.6	43.7	69.9	***
Child's race					***
White	18.3	20.2	19.2	15.0	
Black	48.8	42.5	47.3	56.5	
Hispanic	24.8	28.1	26.0	20.0	
Other	2.7	4.7	2.4	1.6	
Multi-racial	5.5	4.4	5.1	7.0	
Parent's relationship status					***
Married	30.5	34.0	32.3	24.3	
Cohabitating	9.1	9.2	8.7	9.8	
Other/non-resident	60.4	56.8	59.0	65.8	
Mother's education					***
Less than high school	20.5	18.4	20.9	21.4	
High School	21.9	18.3	22.5	23.4	
Some College	42.0	42.8	40.7	44.1	
College +	15.6	20.5	15.9	11.0	
Poverty Ratio					***
0-49%	13.4	10.0	13.0	16.9	
50-99%	16.8	16.6	15.6	19.5	
100-199%	28.6	27.8	29.0	28.6	
200-299%	14.4	16.0	14.0	13.7	
300%+	26.8	29.7	28.4	21.3	
Delinquency	0.11 (0.19;0-2.1)	0.03 (0.09;0-0.8)	0.08 (0.14;0-1.2)	0.23 (0.29;0-2.1)	***
Peer delinquency	0.24 (0.40;0-3)	0.08 (0.23;0-2)	0.21 (0.35;0-2.5)	0.41 (0.51;0-3)	***
Paternal incarceration	50.6	41.1	48.0	58.5	***

Table 10: Descriptive statistics of health behaviors defined by history of police stops

Variable	Full sample (N=3322)	No history of stops (N=576)	Vicarious stops (N=965)	Direct stops (N=742)	Sig.
	%/mean (SD; range)	%/mean (SD; range)	%/mean (SD; range)	%/mean (SD; range)	
Days w/o breakfast	1.8 (1.9;0-5)	1.4 (1.8;0-5)	1.8 (1.9;0-5)	2.0 (1.9;0-5)	***
Skip breakfast (yes=1)	47.7	38.6	48.7	52.9	***
Days w/o fruits and vegetables	2.4 (2.1;0-7)	2.2 (2.1;0-7)	2.4 (2.0;0-7)	2.6 (2.2;0-7)	**
Inadequate fruit and vegetable consumption (yes=1)	69.3	65.7	69.7	71.5	*
Sugary drinks per day	2.3 (1.9;0-20)	1.9 (1.7;0-20)	2.2 (1.9;0-20)	2.7 (2.1;0-20)	***
Excess sugary drink consumption (yes=1)	35.6	29.1	32.6	46.3	***
Days with fast food	1.8 (1.4;0-7)	1.5 (1.4;0-7)	1.8 (1.4;0-7)	2.0 (1.4;0-7)	***
Excess fast food consumption	23.3	17.2	23.8	27.2	***
Days w/o moderate physical activity	3.0 (2.2;0-7)	3.2 (2.2;0-7)	3.0 (2.2;0-7)	2.8 (2.3;0-7)	**
Inadequate moderate physical activity	79.6	82.8	81.0	74.6	***
Days of vigorous physical activity	3.7 (2.3;0-7)	3.9 (2.3;0-7)	3.8 (2.3;0-7)	3.4 (2.3;0-7)	***
Inadequate vigorous physical activity	40.7	43.9	42.3	35.0	***

Table 11:Poisson regression models examining the association between history of police contact and health behaviors

Stop Status	Breakfast consumption	Fruit and vegetable consumption	Sugary drink consumption	Fast-food consumption	Moderate physical activity	Vigorous Physical activity
	# days breakfast NOT eaten	# of days NOT eaten	# per day	# days fast food eaten	# days w/o exercise	# days w/o vigorous exercise
	IRR [CI]	IRR [CI]	IRR [CI]	IRR [CI]	IRR [CI]	IRR [CI]
No stops	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Vicarious stops	1.3*** [1.2-1.4]	1.0 [0.98-1.1]	1.1 [0.99-1.3]	1.1** [1.1-1.2]	0.92** [0.87-0.97]	0.95* [0.90-0.99]
Direct stops	1.3*** [1.0-1.1]	1.1** [1.0-1.2]	1.2*** [1.1-1.3]	1.1** [1.0-1.2]	0.92* [0.86-0.99]	0.93* [0.87-0.99]
All models control for sex (male=1), age(in years), race/ethnicity, prior delinquency, peer delinquency, paternal education, family structure (i.e. married, cohabitating, other[ref]), poverty ratio, neighborhood cohesion, and paternal delinquency. N=3,322 *p<0.05, ** p<0.01, *** p<0.001						

Table 12:Logistic regression models examining the association between history of police contact and health behaviors

Police Stops	Breakfast consumption	Fruit and vegetable consumption	Sugary drink consumption	Fast-food consumption	Moderate physical activity	Vigorous Physical activity
	# days breakfast NOT eaten	# of days NOT eaten	# per day	# days fast food eaten	# days w/o exercise	# days w/o vigorous exercise
	OR [CI]	OR [CI]	OR [CI]	OR [CI]	OR [CI]	OR [CI]
No stops	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Vicarious stops	1.4** [1.1-1.7]	1.2 [0.96-1.5]	0.98 [0.79-1.2]	1.4* [1.1-1.8]	0.81 [0.62-1.1]	0.87 [0.71-1.1]
Direct stops	1.7*** [1.3-2.2]	1.3 [0.97-1.6]	1.3* [1.0-1.7]	1.3 [0.97-1.8]	0.74 [0.54-1.0]	0.83 [0.64-1.1]
All models control for sex (male=1), age(in years), race/ethnicity, prior delinquency, peer delinquency, paternal education, family structure (i.e. married, cohabitating, other[ref]), poverty ratio, neighborhood cohesion, and paternal delinquency. N=3,3222 *p<0.05, ** p<0.01, *** p<0.001						

Table 13:Poisson regression models examining the association between history of police stops and health behaviors for Black youth

Police Stops	Breakfast consumption	Fruit and vegetable consumption	Sugary drink consumption	Fast-food consumption	Moderate physical activity	Vigorous Physical activity
	# days breakfast NOT eaten	# of days NOT eaten	# per day	# days fast food eaten	# days w/o exercise	# days w/o vigorous exercise
	IRR [CI]	IRR [CI]	IRR [CI]	IRR [CI]	IRR [CI]	IRR [CI]
No stops	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Vicarious stops	1.2*** [1.1-1.4]	1.1 [0.98-1.2]	1.1* [1.0-1.2]	1.7** [1.0-1.3]	1.0 [0.92-1.1]	1.0 [0.93-1.1]
Direct stops	1.3*** [1.1-1.4]	1.2** [1.1-1.3]	1.2** [1.1-1.3]	1.2* [1.0-1.3]	1.0 [0.93-1.1]	0.94 [0.86-1.0]
All models control for sex (male=1), age(in years), race/ethnicity, prior delinquency, peer delinquency, paternal education, family structure (i.e. married, cohabitating, other[ref]), poverty ratio, neighborhood cohesion, and paternal delinquency. N=1,362 *p<0.05, ** p<0.01, *** p<0.001						

Table 14:Logistic regression models examining the association between history of police stops and health behaviors for Black youth

Police Stops	Breakfast consumption	Fruit and vegetable consumption	Sugary drink consumption	Fast-food consumption	Moderate physical activity	Vigorous Physical activity
	# days breakfast NOT eaten	# of days NOT eaten	# per day	# days fast food eaten	# days w/o exercise	# days w/o vigorous exercise
	OR [CI]	OR [CI]	OR [CI]	OR [CI]	OR [CI]	OR [CI]
No stops	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Vicarious stops	1.2 [0.90-1.7]	1.3 [0.91-1.7]	1.0 [0.74-1.4]	1.6* [1.1-2.3]	0.94 [0.62-1.4]	1.0 [0.73-1.4]
Direct stops	1.3 [0.95-1.9]	1.5* [1.0-2.2]	1.3 [0.93-1.9]	1.5* [1.0-2.3]	0.93 [0.58-1.5]	0.83 [0.57-1.2]
All models control for sex (male=1), age(in years), race/ethnicity, prior delinquency, peer delinquency, paternal education, family structure (i.e. married, cohabitating, other[ref]), poverty ratio, neighborhood cohesion, and paternal delinquency. N=1,362 *p<0.05, ** p<0.01, *** p<0.001						

Table 15:Poisson regression models examining the association between history of police stops and health behaviors for White youth

Police Stops	Breakfast consumption	Fruit and vegetable consumption	Sugary drink consumption	Fast-food consumption	Moderate physical activity	Vigorous Physical activity
	# days breakfast NOT eaten	# of days NOT eaten	# per day	# days fast food eaten	# days w/o exercise	# days w/o vigorous exercise
	IRR [CI]	IRR [CI]	IRR [CI]	IRR [CI]	IRR [CI]	IRR [CI]
No stops	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Vicarious stops	1.1 [0.94-1.4]	1.0 [0.86-1.2]	1.1 [0.92-1.3]	1.0 [0.85-1.3]	0.70*** [0.62-0.8]	0.83** [0.75-0.94]
Direct stops	1.4** [1.1-1.8]	1.0 [0.84-1.3]	1.3** [1.1-1.7]	1.0 [0.82-1.3]	0.74** [0.62-0.88]	0.94 [0.81-1.1]
All models control for sex (male=1), age(in years), race/ethnicity, prior delinquency, peer delinquency, paternal education, family structure (i.e. married, cohabitating, other[ref]), poverty ratio, neighborhood cohesion, and paternal delinquency. N=513 *p<0.05, ** p<0.01, *** p<0.001						

Table 16:Logistic regression models examining the association between history of police stops and health behaviors for White youth

Police Stops	Breakfast consumption	Fruit and vegetable consumption	Sugary drink consumption	Fast-food consumption	Moderate physical activity	Vigorous Physical activity
	# days breakfast NOT eaten	# of days NOT eaten	# per day	# days fast food eaten	# days w/o exercise	# days w/o vigorous exercise
	OR [CI]	OR [CI]	OR [CI]	OR [CI]	OR [CI]	OR [CI]
No stops	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Vicarious stops	1.4 [0.85-2.2]	1.2 [0.73-1.8]	1.4 [0.79-2.5]	0.98 [0.50-1.9]	0.47* [0.26-0.84]	0.52** [0.32-0.84]
Direct stops	2.4** [1.3-4.4]	0.88 [0.48-1.6]	2.2* [1.1-4.3]	0.78 [0.34-1.8]	0.33** [0.16-0.69]	0.88 [0.47-1.6]
All models control for sex (male=1), age(in years), race/ethnicity, prior delinquency, peer delinquency, paternal education, family structure (i.e. married, cohabitating, other[ref]), poverty ratio, neighborhood cohesion, and paternal delinquency. N=513 *p<0.05, ** p<0.01, *** p<0.001						

Table 17:Poisson regression models examining the association between the number of vicarious police contacts and health behaviors among urban youth

Police Stops	Breakfast consumption	Fruit and vegetable consumption	Sugary drink consumption	Fast-food consumption	Moderate physical activity	Vigorous physical activity
	# days breakfast NOT eaten	# of days NOT eaten	# per day	# days fast food eaten	# days w/o exercise	# days w/o vigorous exercise
	IRR [CI]	IRR [CI]	IRR [CI]	IRR [CI]	IRR [CI]	IRR [CI]
Single Form	1.2*** [1.1-1.3]	1.1 [0.99-1.2]	1.0 [0.93-1.1]	1.1 [0.97-1.2]	0.95 [0.89-1.0]	0.98 [.92-1.0]
Multiple forms	1.3*** [1.2-1.4]	1.0 [0.97-1.1]	1.1* [1.0-1.2]	1.2*** [1.1-1.3]	0.88*** [0.83-0.94]	0.92** [0.87-0.97]
All models control for sex (male=1), age(in years), race/ethnicity, prior delinquency, peer delinquency, paternal education, family structure (i.e. married, cohabitating, other[ref]), poverty ratio, material hardship, neighborhood cohesion, and paternal delinquency. N=2,428 *p<0.05, ** p<0.01, *** p<0.001						

Table 18: Logistic regression models examining the association between the number of vicarious police contacts and health behaviors among urban youth

Police Stops	Breakfast consumption	Fruit and vegetable consumption	Sugary drink consumption	Fast-food consumption	Moderate physical activity	Vigorous physical activity
	# days breakfast NOT eaten	# of days NOT eaten	# per day	# days fast food eaten	# days w/o exercise	# days w/o vigorous exercise
	OR [CI]	OR [CI]	OR [CI]	OR [CI]	OR [CI]	OR [CI]
Single Form	1.3 [0.99-1.6]	1.3 [0.98-1.6]	0.78 [0.60-1.1]	1.2 [0.90-1.7]	0.85 [0.62-1.2]	0.98 [0.77-1.3]
Multiple forms	1.3** [1.2-1.8]	1.2 [0.93-1.5]	1.1* [0.89-1.4]	1.5** [1.2-2.0]	0.75 [0.56-1.0]	0.75* [0.60-0.95]
All models control for sex (male=1), age(in years), race/ethnicity, prior delinquency, peer delinquency, paternal education, family structure (i.e. married, cohabitating, other[ref]), poverty ratio, material hardship, neighborhood cohesion, and paternal delinquency. N=2,428 *p<0.05, ** p<0.01, *** p<0.001						

Table 19:Poisson regression models examining the association between the number of direct police contacts and health behaviors among urban youth

Police Stops	Breakfast consumption	Fruit and vegetable consumption	Sugary drink consumption	Fast-food consumption	Moderate physical activity	Vigorous physical activity
	# days breakfast NOT eaten	# of days NOT eaten	# per day	# days fast food eaten	# days w/o exercise	# days w/o vigorous exercise
	IRR [CI]	IRR [CI]	IRR [CI]	IRR [CI]	IRR [CI]	IRR [CI]
Single Form	1.3*** [1.2-1.5]	1.1* [1.0-1.2]	1.1 [1.0-1.2]	1.0 [0.93-1.2]	0.95 [0.87-1.0]	0.98 [0.91-1.1]
Multiple forms	1.3*** [1.2-1.5]	1.1 [0.98-1.2]	1.2*** [1.1-1.4]	1.2** [1.1-1.3]	0.93 [0.85-1.0]	0.92* [0.84-1.0]
All models control for sex (male=1), age(in years), race/ethnicity, prior delinquency, peer delinquency, paternal education, family structure (i.e. married, cohabitating, other[ref]), poverty ratio, material hardship, neighborhood cohesion, and paternal delinquency. N=1,600 *p<0.05, ** p<0.01, *** p<0.001						

Table 20:Logistic regression models examining the association between the number of direct police contacts and health behaviors among urban youth

Police Stops	Breakfast consumption	Fruit and vegetable consumption	Sugary drink consumption	Fast-food consumption	Moderate physical activity	Vigorous physical activity
	# days breakfast NOT eaten	# of days NOT eaten	# per day	# days fast food eaten	# days w/o exercise	# days w/o vigorous exercise
	OR [CI]	OR [CI]	OR [CI]	OR [CI]	OR [CI]	OR [CI]
Single Form	1.5* [1.1-2.0]	1.1 [0.80-1.5]	1.1 [0.78-1.4]	1.1 [0.78-1.6]	0.77 [0.53-1.1]	1.0 [0.74-1.4]
Multiple forms	1.8** [1.3-2.4]	1.4 [0.96-1.9]	1.6** [1.2-2.3]	1.3 [0.9-1.9]	0.77 [0.52-1.1]	0.71* [0.51-0.99]
All models control for sex (male=1), age(in years), race/ethnicity, prior delinquency, peer delinquency, paternal education, family structure (i.e. married, cohabitating, other[ref]), poverty ratio, material hardship, neighborhood cohesion, and paternal delinquency. N=1,600 *p<0.05, ** p<0.01, *** p<0.001						

Chapter 6: Unmet Health Care Needs Among Youth with a History of Police Contact

Introduction

The expansion of the justice system—which encapsulates police but also carceral systems such as jails and prisons—over the last four decades and its adoption of proactive policing strategies has led to an increase in the frequency of citizen interactions with police.(Svensson and Saharso 2015; Weisburd and Majumder 2018) Police contact has become a common facet of American life with more than 25% (nearly 63 million people)(Langton and Durose 2013) of American adults having contact with police each year. One study by Weaver and colleagues shows demonstrates this by looking at two youth cohorts of the National Longitudinal Survey of Youth (NLSY). In the 1979 cohort of 18-25 year old young adults, only 10% of youth report having been arrested by the police, compared to 25% of similarly aged youth in the 1997 cohort(Weaver et al. 2019). The authors find that this difference is not attributable to differences in criminal behavior and due exclusively in increased exposure to police in the 1997 cohort. This rise in police contact has also been seen in younger youth cohorts (Weaver et al. 2019). Over a quarter of urban youth report having personally been stopped by police while an additional 50% report having witnessed a police encounter or knowing of encounters involving family and friends (Geller 2021).

An extensive body of research has shown that police stops are an important life-course event for youth that can affect their immediate and long-term health outcomes (Jackson et al. 2019a; Sewell and Jefferson 2016; Testa et al. 2021). The stops are often associated with increased risk of depressive symptomology as well as self-reported anxiety(Sewell et al. 2020; Sewell and Jefferson 2016) and post-traumatic stress. Youth-

police interactions have also been shown to negatively impact both self-rated health, sleep quality, sleep duration (Jackson et al. 2020), and overall optimism about the future. An emerging research suggest that police contact may also impacts how individuals interact with other social institutions—specifically systems like the health care institution that also represent forms of state surveillance and social control (Brayne 2014). For some, sharing personal identification information to get a job, open a bank account or visit a loved one in the hospital represents an opportunity for the authorities to run a background check and find a traffic or parole violation that could lead to arrest—or worse (Brayne 2014; Carbonaro 2022) Individuals with any previous negative interactions with police or the criminal legal system report avoiding going to hospitals but not only for their health care needs but also during important life events like the birth of a child. The fear of being forced to interact with police officers and potentially being apprehended by law enforcement prevents individuals from feeling comfortable within health care institutions(Goffman 2009). Many individuals see potential interactions with these institutions as a way for the state to monitor their actions, and potentially become aware of past criminal offenses (Brayne 2014; Carbonaro 2022). Emerging research suggest that traumatic and unpleasant experiences with police may lead individuals to develop a general sense of mistrust toward other institutions such as the health care system (Alang et al. 2020). This mistrust often leads individuals to avoid seeking necessary health services and contributes to unmet health care needs (Alang et al. 2020). This association has also been shown to exist for children whose parents have been incarcerated.(Heard-Garris et al. 2018)

Procedural injustice refers to an individuals' perception of unfair treatment in a police encounter that contributes to an overall disbelief about the legitimacy of the law.(Bell 2016) This distrust of the criminal legal system has been shown to be correlated to reduced trust and reduced engagement with other social institutions such as banking and health care systems (Alang et al. 2020; Brayne 2014). In their analysis of the NLSY Brayne (2014)finds that 30% of individuals with a history of police contact report delaying or foregoing needed medical care compared to 20% of those without a history of police contact. Police contact was also associated with 19% increased odds of not having a bank account. Medical mistrust(Williamson, Smith, and Bigman 2019)—the general suspicion of the health care system and beliefs that providers and organizations may not always act in the best interest of patient—may heightened because of negative experiences or perceived injustices experienced during police interactions. To date, research on the relationship between police, medical distrust, and health has focused on adult populations. Emerging research on adolescents suggests that youth-police contacts are associated with increased reports of procedural injustice (McFarland et al. 2019). Despite these findings, little research has explored whether youth-police contacts are also associated with reported delays in needed medical care within this population.

Medical Mistrust and Avoidance

Research has shown that police encounters, which are often highly distressing events can leave individuals feeling isolated, and lead individuals to disengage from formal health resources and institutions. (Brayne 2014; Haskins and Jacobsen 2017) Existing literature on the impact of criminal legal contact and the avoidance of health care institutions suggests that individuals avoid these institutions out of fears that

engaging with these systems makes them more susceptible to police surveillance(Carbonaro 2022; Goffman 2015). Carbonaro (2022) recent examination of the relationship between frequent police stops and health system avoidance in a national longitudinal survey finds that stops are indeed associated with increased likelihood of an individual reporting avoiding medical institutions. Other studies that have looked more broadly at population level concerns about not only police contact, but also fears of police brutality have also found an association between fear of police violence and avoidance of the health care institutions, across racial groups (Alang et al. 2021c; Alang et al. 2020).

Parental response to youth police contact

The stress process provides a theoretical framework through which we can understand how youth-police contact can negatively impact the health of caregivers.(Pearlin et al. 2005) The impacts of youth-police contact are not only for those directly involved, existing research suggests that police stops create significant stress for mothers as well (Jackson and Turney 2021). Researchers have found that both anticipatory fears about youth-police interactions and actually having a child stopped can be distressing and traumatic events for mothers (Jackson and Turney 2021; Jackson, James, and Owens 2017). Youth-police contact has been shown to be associated with increased depression symptoms, lower self-rated health, and increased reports of sleep problems for mothers of those youth with police contact, compared to mothers of children who did not have police contact (Jackson and Turney 2021). Given these findings, it is possible that mothers may engage in some form of medical avoidance in response to this vicarious exposure to police contact. It is also possible that mothers, in attempt to shield

their children from further discomfort or harm, may choose to limit their child's interactions with other surveilling institutions like the health care system.

Clinical relevance

Racial inequities in child and adolescent health care are persistent and may result from a lack of trust or confidence in health care institutions. This mistrust may not always stem directly from interactions within health settings and may be influenced by experiences of mistreatment from other institutions. Because youth-police contact is a frequent part of life for adolescents living in urban settings, it's important to understand if the trauma caused by police interaction also impact health service utilization.

As researchers call for an increase in scholarship that discusses the impact of police contact on the health and wellbeing of pediatric populations, quantitative research is also needed to explore and examine the population level impacts of this unique racialized exposure in the lives of adolescents.

In this paper, the relationship between police contact and health care utilization is explored through several models. First, we test whether there is an association between unmet health care needs and youth with self-reported experiences of being stopped by the police. Our second analysis examines the role of parents in the pathway between youth-police contact and health system avoidance. Previous literature has shown that mothers have increased risk of mental health and physical health problems when they are aware of their child's past contact with police.(Jackson and Turney 2021; Turney 2021) It is possible that these parents, who are likely in charge of their child's health care utilization decisions, may avoid health care visits to minimize future exposure to police contact. The goal of this study was to explore whether there was an association between youth

exposure to police contact and unmet health care needs. Analyses explored both the impact of vicarious and direct contact on unmet health care needs as well as the potential impact of an adolescent's mother being aware of their child experiencing a police stop.

Methods

This study uses the Fragile Families Child and Wellbeing Study (FFCWS) which is a nationally representative survey of urban families in the US. The FFCWS is a cohort study of approximately 5,000 children born in 20 large US cities between 1998-2000 and their families. This study uses the most recent wave of data collection, wave 6 (Y15), collected approximately fifteen years after families were recruited. The FFCWS sample systematically oversampled non-marital births and contains high proportions of Black and Hispanic families as well as families that are socioeconomically disadvantage and have a high rates of paternal criminal justice system involvement. In the Y15 wave of the study, youth were asked specifically about their experiences of police contact in addition to survey questions about their overall well-being. Mothers were also asked about whether their child had ever been stopped by the police.

Police Contact

We measured focal youths' experiences with police based on self-reports at the Y15 interview. Youth were asked whether they had been stopped by the police as well as a series of questions about if they had ever witnessed someone else being stopped by the police or if they knew anyone who had been stopped by the police. Because mothers were only asked about if their child had been directly stopped by police, we create a police contact variable that does not include experiences of vicarious contact. We categorize

youth as having experienced a police stop, coded as "1", if they report ever having been directly stopped by police. Youth who only report knowing someone who had been stopped, witnessing someone who had been stopped, or never being stopped were all coded as "0" and considered to have no personal history of police stops.

Both mothers and youth were asked about youth experiences of police stops during the Y15 interview. Mothers were asked, "Has [Youth] ever been stopped by the police while on the street, at school, in a car, or some other place?" Due to our interest in if and how parents are changing their children's health utilization behavior in response to police contacts, we create a dichotomous variable to measure if mothers are aware of their child's experience. We assign cases a value of 1 when both the mother and youth reported the youth was stopped and a value of 0 to cases where youth report direct stops but their mothers are unaware of their experience. Youth were assigned a missing value if they reported no stops or only vicarious police stops.

Unmet Health Care Needs

To measure unmet healthcare need in this population, we use recommendations from the American Academy of Pediatrics which recommends annual well-child visits and dental check-ups. We use three measures to operationalize unmet healthcare need: if mothers report having a usual source of routine health care for their child (e.g., doctor's office, clinic, hospital emergency room, or emergency care center), or if the child has had an annual check-up-with a doctor, and dental check-up within the past year. Because the goal of this study is a general evaluation of unmet need, we did not differentiate between sources of usual care.

Covariates

This analysis includes several control variables that are associated with police contact as well as unmet healthcare needs in adolescents. Analytic models control for mother's age, education, child's race, parent's relationship status, and the ratio of household income to Federal Poverty Level (FPL)—referred to as the poverty ratio. Type of insurance coverage (i.e. public private, or uninsured), was also included in models because it is a factor that influences and individual's likelihood of accessing health coverage. Additional covariates included in models include youth age, youth sex (male=1), youth self-report of delinquency, youth report of peer delinquency, history of paternal incarceration, fair or poor maternal health, and youth insurance status.

Analysis

We used bivariate logistic regression to examine the association of various forms of police contact and unmet health care needs in this adolescent population. Next, we conducted multivariate logistic regressions to adjust for the sociodemographic characteristics. Our third analysis introduced health insurance coverage status and mother's health status, and youth report if they had ever engaged in delinquent activity such as theft or vandalism as well as the delinquency of their peers. The fourth and final model of this study added a variable that captured whether youth had told their parents about their encounters with police.

We found some missing values in several of our explanatory variables and in order to preserve these observations, we imputed these missing values using multiple chained equation (MICE STATA command) and created 20 datasets. All analyses were conducted using Stata 15 (StataCorp, College Station, TX).

Results

We use multiple imputation methods to account for missing data issues. Our final analytic dataset consists of 3,080 individuals. Descriptive results for this analytic sample are presented in Table 21. In this sample, 6.3% of mothers report that their adolescent does not have a usual source of medical care while 12.5% and 15.7% report that their youth did not have an annual check-up or dental visit in the past year, respectively. Although over a quarter (29.0%) of the youth in our sample report having been directly stopped by police, only 9.2% mothers in our sample were aware that their child had been stopped by police. A large proportion of our sample, 64.2% reports being publicly insured and less than 5% of our sample reports having no form of health insurance.

Figure 1 presents a breakdown of each measure of unmet need by youth race/ethnicity. Approximately one in eight (12.7%) white youth in the sample report not having an annual check-up compared to 9.1% of Black youth and 13.9% of Hispanic youth. Relatively low numbers of each racial group report not having a source of usual medical care. Less than five percent of white (4.8%) and Black (4.4%) youth report no usual source of care compared to 6.9% of Hispanic and Multiracial youth and 8.1% of youth categorized as other. A larger proportion of the sample reports not having a dental visit within the past year. 11.9% of white respondents report not having a dental visit within the past year compared to 17.6% of Black youth, 15.6% of Hispanic youth, 18.9% of multiracial youth, and 11.6% of youth categorized as other.

Table 22 presents estimates from logistic regressions examining the association between youth direct contact with police and unmet health care needs. Because mothers

were only asked if they knew of incidents where their youth were directly stopped by the police, all analyses are limited to youth who reported direct contact (N=918). Our bivariate analyses are presented in model 1. The model of our bivariate model shows that there is no statistically significant difference in the likelihood of youth who report direct police stops not having a place for routine medical care or having a dental check-up within the past year when compared to their peers who have no history of police stops. However, there does appear that direct contact is associated with a 1.6 fold increase in the likelihood of not having had a dental checkup within the past year. This association is significant a the $p<0.001$ level. Model 2 is a multivariate analysis that includes youth and mother sociodemographic characteristics. Similar to our first model, the only statistically significant association is between history of direct stop and mothers reporting that youth had not had a dental visit within the past year. Youth who report having had a direct police stop are more likely to report not having had a dental visit within the past year (OR= 1.4; 95%CI: 1.1-2.0). In our third and final model, when we controlled for youth self-reported delinquency, peer-delinquency, and insurance status, we find no statistically significant associations, and the details of this model are presented in Table 23.

Table 24 presents the results of the analyses that examine whether mother's knowledge of a direct stop is associated with unmet need. This table presents the estimates from logistic regressions examining the relationship between mother's knowing that their child had been stopped by the police and reports of unmet health care need. Across all three models we find no statistically significant relationship between mothers knowing that their child had been stopped by the police and unmet health care needs. These findings suggest that children of mothers who are aware of their child being directly stopped by

police do not have an increased likelihood of not having a usual source of care, not having had an annual check-up or missing annual dental visits.

Discussion

Our results are inconsistent across the various measures of unmet health care need measured in our analysis. We do find an association between youth police stops and an increased likelihood of youth not having a dental checkup within the past year. When we control for youth delinquency, mother's health, and insurance status, these associations are not statistically significant. Our secondary analysis that sought to examine whether mothers' knowledge of stops mediated the relationship between police stops and unmet needs found no statistically significant associations. Other studies have found significant associations between youth disclosures of police stops to their and mental health outcomes and it is possible that disclosure plays an overall protective role in the relationship between youth police stops and health service utilization (Jackson et al. 2021b; Turney et al. 2022a). Perhaps mothers, in attempt to shield their children from interacting with institutions that lead to further interaction with police, choose to forgo clinic or dental appointments.

Existing literature has demonstrated an association between police contact can impact health status through a variety of mechanisms(Carbonaro 2022; Del Toro et al. 2019). One pathway that has only recently begun to be explore suggests that police contact may lead to increased medical mistrust which causes an individual to not engage with the health care system and leaves them with unmet health care need. The results of this analysis find no statistically significant association between youth-police interactions and unmet health care need. Perhaps there is a different, potentially opposite mechanism

at play. Considering the scrutiny that low-income and Black mothers often face, and the threat of losing their children to the state, perhaps they are more attentive to the health needs of their children (Roberts 2009). This alternate mechanism would explain why regardless of an adolescent's history of police contact, the rate of having a usual source of care and annual check-up remain relatively constant.

Limitations

This study has several limitations that could be improved upon in subsequent studies. First our measures of unmet health care needs rely on mothers' recall and does not leverage clinical information. Recall bias may impact our ability to accurately evaluate unmet need within this population. The second limitation of this study is that it uses data that intentionally oversampled unmarried, lower income, urban families. The sampling decisions made in this study may limit the generalizability of our results. These sampling decisions also made our sample more socially and economically vulnerable than the general population. Another important limitation of this study is that we chose to limit our analysis to individuals who report direct stops by police. We know that only a small percentage of mothers whose youth who report direct stops are aware of their child's experience. Although this study offers one of the largest samples of youth who report police contact, the overall sample of youth used in this analysis was small. This analysis was also greatly limited by the lack of information about a child's access to more specific forms of health insurance like dental coverage. The statistically significant results in this analysis could be the result of limited dental coverage rather than our exposure of interest. In order to better understand how police contact impacts youth

health care utilization behavior, additional research using alternative data sets are necessary.

Conclusion

This study explored whether youth who report having been stopped by police are more likely to report unmet dental care needs than youth with no history of police stops and ultimately found no statistically significant associations when controlling for a multitude of covariates. Although our study found no statistically significant association, past research suggests that caregivers, specifically mothers are dramatically impacted by their child's experience of a police stop. Given what we know about police contact's impact of medical mistrust and avoidance of the health care system, it is notable that this study finds no association between police contact and unmet medical care needs, perhaps indicating the value mothers place on access to health care for their children, potentially overcoming fear and mistrust in an effort to protect the health of their children. Additional mixed-method research is needed to understand if and how mothers of youth who experience police contact choose to engage with the health care system. Additionally, it is important for pediatricians and other health care providers to use health visits to address potential mental and physical health consequences of police contact, given that youth with these experiences are regularly using health care.

Table 21: Descriptive Statistics (N=3,080)

Variable	Mean/%	SD	Range
Unmet Health Needs			
No usual source of care	6.3%		0-1
No annual check-up	12.5%		0-1
No dental visit in past year	15.7%		0-1
Youth Police Stop Variables			0-1
Any stops	29.0%		0-1
Single stop	12.4%		0-1
Multiple stops	16.1%		0-1
Mother aware of stops	9.2%		
Stop Intrusiveness			0-1
Intrusive stop	14.9%		0-1
Non-intrusive stop	14.2%		0-1
Covariates			0-1
Child self-reported delinquency (Y9)	0.12	0.2	0-2.1
Child self-reported peer delinquency (Y9)	0.26	0.41	0-3
Child male	53.4%		13-19
Child age	15.9	0.9	13-19
Child Race			0-1
White	17.4%		0-1
Black	49.6%		0-1
Hispanic	25.6%		0-1
Other	2.4%		0-1
Multi-racial	5.1%		23-56
Mother's age	34.1%	6.1	23-56
Mother's Education			0-1
Less than high school	24.2%		0-1
High School	24.1%		0-1
Some College	38.5%		0-1
College +	13.2%		0-1
Mother employed	55.80%		0-1
Mother's Relationship with Child's Father			0-1
Married	26.6%		0-1
Cohabitating	8.9%		0-1
Other/non-resident	64.5		0-1
Household Poverty Ratio			
income-to-poverty-ratio <0.50	12.8%		0-1
income-to-poverty-ratio 0.50-0.99	19.6%		0-1
income-to-poverty-ratio 1.00-1.99	28.5%		0-1
income-to-poverty-ratio 2.00-2.99	16.2%		0-1
income-to-poverty-ratio ≥ 3.00	23.0%		0-1
Paternal Incarceration	49.7%		
Mother poor/fair health	18.2%		0-1
Insurance Status			
Uninsured	4.6%		
Public insurance	64.2%		
Private Insurance	31.2%		

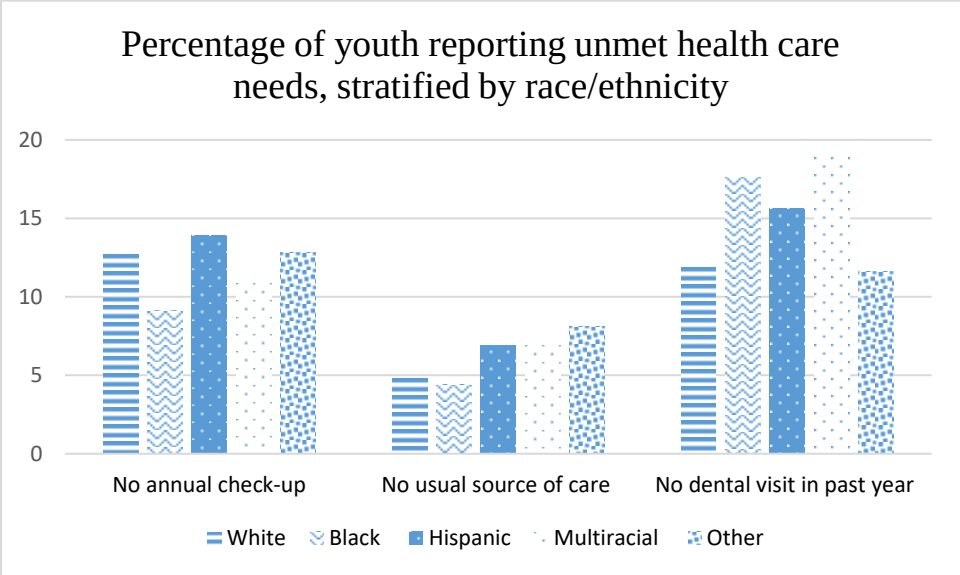


Figure 2: Unmet Health Care Needs by Race and Ethnicity

Table 22: Logistic regression of the association between youth police stop and unmet health care needs

	Model 1 OR (CI)	Model 2 OR (CI)	Model 3 OR (CI)
Does not have a place for routine care	0.94 (0.62-1.4)	0.82 (0.50-1.3)	0.77 (0.43-1.4)
Has not had a regular checkup in past year	0.94 (0.70-1.3)	0.75 (0.52-1.1)	0.72 (0.50-1.1)
No dental checkup in past year	1.6*** (1.2-2.1)	1.4*(1.1-2.0)	1.3(0.96-1.9)

Note: 95% confidence intervals are reported in parentheses. Model 1 is unadjusted. Model2 controls for all the sociodemographic characteristics. Model3 controls for all variables in Model 2, plus poor maternal health, and insurance status. N=918
***p < 0.001 ** p < 0.01. * p < 0.05.

Table 23:Logistic regression of the association between direct police stops and unmet health care needs

Variable	Does not have a place for routine care	Has not had a regular checkup in past year	No dental checkup in past year
	OR (CI)	OR (CI)	OR (CI)
Stop status			
No stop history	Ref.	Ref.	Ref.
Direct stop	0.77 (0.43-1.4)	0.70 (0.47-1.0)	1.3 (0.95-1.9)
Child age	0.98 (0.70-1.4)	0.96 (0.75-1.2)	1.1 (0.89-1.3)
Male	1.3 (0.76-2.2)	2.1*** (1.4-3.1)	1.2 (0.91-1.7)
Child Race			
White	Ref.	Ref.	Ref.
Black	0.56 (0.28-1.3)	0.45** (0.26-0.77)	1.1 (0.66-1.7)
Hispanic	0.77 (0.33-1.8)	0.65 (0.37-1.1)	1.1 (0.63-1.8)
Other	2.1 (0.62-7.0)	0.76 (0.29-2.0)	1.9 (0.80-4.5)
Multi-racial	0.67 (0.16-2.7)	0.56 (0.23-1.4)	1.1 (0.54-2.3)
Mother's age	1.0 (0.98-1.1)	1.0 (0.99-1.1)	0.99 (0.97-1.0)
Mother's Education			
Less than high school	Ref.	Ref.	Ref.
High School	0.27** (0.13-0.58)	0.81 (0.50-1.3)	0.86 (0.56-1.3)
Some College	0.30*** (0.16-0.55)	0.54* (0.34-0.87)	0.82 (0.56-1.2)
College +	0.42 (0.15-1.2)	0.74 (0.36-1.53)	0.68 (0.36-1.3)
Mother employed	1.1 (0.67-1.9)	1.0 (0.71-1.5)	0.92 (0.68-1.2)
Mother's Relationship with Child's Father			
Married	1.1 (0.55-2.3)	1.4 (0.91-2.3)	0.88 (0.59-1.3)
Cohabitating	1.8 (0.77-4.1)	1.5 (0.86-2.7)	0.86 (0.52-1.4)
Other/non-resident	Ref.	Ref.	Ref.
Household Poverty Ratio			
0-49%	Ref.	Ref.	Ref.
50-99%	0.55 (0.27-1.1)	0.39** (0.22-0.68)	0.84 (0.52-1.3)
100-199%	0.34** (0.16-0.72)	0.43** (0.26-0.73)	0.97 (0.62-1.5)

200-299%	0.32* (0.12-0.87)	0.48* (0.25-0.92)	1.1 (0.63-1.8)
300%+	0.23* (0.07-0.71)	0.18*** (0.08-0.40)	0.46* (0.24-0.85)
Delinquency	1.1 (0.27-4.1)	0.52 (0.19-1.4)	0.95 (0.47-1.9)
Peer delinquency	1.1 (0.56-2.3)	1.7* (1.1-2.7)	1.3 (0.92-1.9)
Paternal Incarceration	1.3 (0.75-2.3)	0.68 (0.46-1.0)	0.95 (0.69-1.3)
Insurance Status			
Uninsured	Ref.	Ref.	Ref.
Public insurance	0.7*** (0.03-0.14)	0.26*** (0.13-0.53)	0.29*** (0.15-0.53)
Private Insurance	0.08*** (0.03-0.21)	0.24*** (0.11-0.52)	0.34** (0.17-0.66)
Note: 95% confidence intervals are reported in parentheses. N=918 ***p < 0.001 ** p < 0.01. * p < 0.05.			

Table 24: Logistic regression of the association between mother's knowledge of youth stop and unmet health care needs

	Model 1 (OR)	Model 2 (OR)	Model 3 (OR)
Does not have a place for routine care	0.82 (0.43-1.57)	0.84 (0.41-1.7)	0.72 (0.33-1.53)
Has not had a regular checkup in past year	0.95 (0.61-1.5)	0.86 (0.51-1.45)	0.87 (0.51-1.49)
No dental checkup in past year	1.3 (0.90-1.8)	1.31 (0.90-1.9)	1.29 (0.88-1.90)
Note: 95% confidence intervals are reported in parentheses. Model 1 is unadjusted. Model2 controls for all the sociodemographic characteristics. Model3 controls for all variables in Model 2, plus poor maternal health, and insurance status. ***$p < 0.001$ ** $p < 0.01$. * $p < 0.05$. N=918			

Conclusion

A wealth of research exists detailing the impacts of adverse childhood experiences (ACEs) on later life outcomes. This research has also shown that racial inequities exist in the risk of experiencing ACEs and that these differences contribute to observed racial inequities in later life health. The mechanisms through which ACEs alter life course transitions and access to resources has been well documented. However, discussions about ACEs have not examined the social and structural factors that contribute to these observed inequities in childhood exposures. An emerging body of research suggests that experiences of interpersonal and structural racism contribute significantly to the racial inequities in ACEs. These models suggest that many stressors are racism-informed—that is to say social s stratification influences access to resources and interactions with social institutions, and this influence is mediated by parental choices. This model, coupled with our understanding of how racism affects heath,

suggests that early childhood experiences of discrimination may increase allostatic load and increased biological aging (Ahmed et al. 2007; Geronimus 2001). Whereas a growing body of HSR has begun to explore the impacts of structural racism on health, the ACEs literature has not yet incorporated experiences of interpersonal or structural racism. Currently within HSR, most of the research on the impact of structural racism has focused on adults, however, an emerging body of research suggests that inequities in child health outcomes are also linked to these experiences (Pachter and Coll 2009; Sanders-Phillips et al. 2009). I propose an integration of these two fields in order to better understand how early childhood exposures to structural racism influence child health and health across the life course. I provide a specific example of exposures to police contact in adolescence. Research has shown that there are racial inequities in adolescent experiences of police contact that largely stem from structural racism. Belief about Black criminality and deviance as well as the continued concentration of Black families in under-resourced and over-policed neighborhoods means that Black youth have earlier and more frequent police contacts than their white peers (Assari and Hani 2018; Bailey et al. 2017; Williams and Collins 2001).

The recent disciplinary focus within HSR on the role that structural racism has on the health and well-being of populations is important to achieve health equity. This dissertation advances empirical and theoretical work aimed at incorporating experiences of interpersonal experiences of racism into ACE models. The first aim of this dissertation contributes to this growing area of HSR research by exploring wellbeing as a potential mechanisms through which police contact leads adolescents to adopt potentially health depleting behaviors that may increase risk of adverse health outcomes in later life. Aim 2

looked specifically at the adoption of health promoting and health depleting behaviors as potential forms of coping that develop in response to police contact. This aim contributes to a body of literature that has traditionally only focused on the mental and physical health consequences of youth-police interactions. The final aim of this dissertation explored the direct HSR consequences of police contact. This analysis of the association between direct police stops and unmet health care needs found a statistically significant association between direct contact and unmet dental care needs. Additionally, contrary to existing literature on medical mistrust, this analysis finds that parents who are aware of their child's stop do not have different health service utilization behaviors—a valuable contribution to the literature. The questions asked in this dissertation expand s how HSR's understanding of police contact as a determinant of adolescent health.

Bibliography

Ahmed, A. T., S. A. Mohammed, and D. R. Williams. 2007. “Racial discrimination & health: Pathways & evidence.” Indian Journal of Medical Research 126(4): 318.

Alang, S., R. Hardeman, J. M. Karbeah, O. Akosionu, C. McGuire, H. Abdi, and D. McAlpine. 2021a. “White supremacy and the core functions of public health.” pp. 815-19: American Public Health Association.

Alang, S., D. McAlpine, and M. McClain. 2021b. “Police encounters as stressors: Associations with depression and anxiety across race.” Socius 7: 2378023121998128.

Alang, S., D. McAlpine, M. McClain, and R. Hardeman. 2021c. “Police brutality, medical mistrust and unmet need for medical care.” Preventive medicine reports 22: 101361.

Alang, S., D. McAlpine, E. McCreedy, and R. Hardeman. 2017. “Police brutality and black health: setting the agenda for public health scholars.” American journal of public health 107(5): 662-65.

Alang, S., D. D. McAlpine, and R. Hardeman. 2020. “Police Brutality and Mistrust in Medical Institutions.” Journal of Racial and Ethnic Health Disparities: 1-9.

Alegria, S. 2014. “Constructing racial difference through group talk: an analysis of white focus groups' discussion of racial profiling.” Ethnic and Racial Studies 37(2): 241-60.

Allen, C. W., S. Diamond-Myrsten, and L. K. Rollins. 2018. “School absenteeism in children and adolescents.” American family physician 98(12): 738-44.

Alm, S. and S. B. Låftman. 2016. “Future orientation climate in the school class: Relations to adolescent delinquency, heavy alcohol use, and internalizing problems.” Children and Youth Services Review 70: 324-31.

Anderson, A. T., D. B. Weiss, and S. S. Oselin. 2020. “When I grow up: Exploring the link between furute expectations and criminal trajectories.” Journal of Development and Life-Course Criminology 6(1): 43-66.

Anderson, R. E., N. Heard-Garris, and R. C. DeLapp. 2021. “Future directions for vaccinating children against the American endemic: treating racism as a virus.” Journal of Clinical Child & Adolescent Psychology: 1-16.

Anderson, R. E., S. Jones, N. Anyiwo, M. McKenny, and N. Gaylord-Harden. 2019. “What's race got to do with it? Racial socialization's contribution to Black adolescent coping.” Journal of research on adolescence 29(4): 822-31.

Ansari, A., T. L. Hofkens, and R. C. Pianta. 2020. “Absenteeism in the first decade of education forecasts civic engagement and educational and socioeconomic prospects in young adulthood.” Journal of youth and adolescence 49(9): 1835-48.

Anshel, M. H. 2000. “A conceptual model and implications for coping with stressful events in police work.” Criminal justice and Behavior 27(3): 375-400.

Arline, T. G., T. H. Margaret, E. K. Danya, and B. John. 2006. ""Weathering" and Age Patterns of Allostatic Load Scores Among Blacks and Whites in the United States." American journal of public health.

Arnesen, E. and A. Forsdahl. 1985. "The Tromsø heart study: coronary risk factors and their association with living conditions during childhood." Journal of Epidemiology & Community Health 39(3): 210-14.

Assari, S. and N. Hani. 2018. "Household Income and Children's Unmet Dental Care Need; Blacks' Diminished Return." Dentistry journal 6(2).

Assari, S., M. Moghani Lankarani, and C. H. Caldwell. 2017. "Discrimination increases suicidal ideation in black adolescents regardless of ethnicity and gender." Behavioral sciences 7(4): 75.

Bailey, Z. D., N. Krieger, M. Agenor, J. Graves, N. Linos, and M. T. Bassett. 2017. "Structural racism and health inequities in the USA: evidence and interventions." Lancet (London, England) 389(10077): 1453-63.

Bell, M. C. 2016. "Situational Trust: How Disadvantaged Mothers Reconceive Legal Cynicism." Law & society review.

Berger, B. G. 1994. "Coping with stress: The effectiveness of exercise and other techniques." Quest 46(1): 100-19.

Bernard, D. L., C. D. Calhoun, D. E. Banks, C. A. Halliday, C. Hughes-Halbert, and C. K. Danielson. 2020. "Making the "C-ACE" for a Culturally-Informed Adverse Childhood Experiences Framework to Understand the Pervasive Mental Health Impact of Racism on Black Youth." Journal of Child & Adolescent Trauma: 1-15.

Boals, A., M. R. Vandellen, and J. B. Banks. 2011. "The relationship between self-control and health: The mediating effect of avoidant coping." Psychology & health 26(8): 1049-62.

Bolland, J. M. 2003. "Hopelessness and risk behaviour among adolescents living in high-poverty inner-city neighbourhoods." Journal of adolescence 26(2): 145-58.

Bor, J., A. S. Venkataramani, D. R. Williams, and A. C. Tsai. 2018. "Police killings and their spillover effects on the mental health of black Americans: a population-based, quasi-experimental study." The Lancet 392(10144): 302-10.

Boyce, W. T. and C. Hertzman. 2018. "Early Childhood Health and the Life Course: The State of the Science and Proposed Research Priorities." In Handbook of life course health development, pp. 61-93: Springer, Cham.

Boyce, W. T. and M. S. Kobor. 2015. "Development and the epigenome: the 'synapse'of gene–environment interplay." Developmental science 18(1): 1-23.

Boyd, R. W., A. M. Ellison, and I. B. Horn. 2016. "Police, equity, and child health." Pediatrics 137(3).

Brayne, S. 2014. "Surveillance and system avoidance: Criminal justice contact and institutional attachment." American Sociological Review 79(3): 367-91.

Brody, G. H., Y. F. Chen, V. M. Murry, X. J. Ge, R. L. Simons, F. X. Gibbons, M. Gerrard, and C. E. Cutrona. 2006. “Perceived discrimination and the adjustment of African American youths: A five-year longitudinal analysis with contextual moderation effects.” Child development 77(5): 1170-89.

Brunson, R. K. 2007. ““Police don't like black people”: African-American young men's accumulated police experiences.” Criminology & public policy 6(1): 71-101.

Brunson, R. K. and J. Miller. 2006. “Gender, race, and urban policing: The experience of African American youths.” Gender & Society 20(4): 531-52.

Brunson, R. K. and R. Weitzer. 2009. “Police relations with black and white youths in different urban neighborhoods.” Urban Affairs Review 44(6): 858-85.

Brunson, R. K. and R. Weitzer. 2011. “Negotiating unwelcome police encounters: The intergenerational transmission of conduct norms.” Journal of contemporary ethnography 40(4): 425-56.

Carbado, D. W. and P. Rock. 2016. “What exposes African Americans to police violence.” Harv. CR-CLL Rev. 51: 159.

Carbonaro, R. 2022. “System avoidance and social isolation: Mechanisms connecting police contact and deleterious health outcomes.” Social Science & Medicine: 114883.

Carter, R. T. 2007. “Racism and psychological and emotional injury: Recognizing and assessing race-based traumatic stress.” The Counseling Psychologist 35(1): 13-105.

Carver, C. S., M. F. Scheier, and S. C. Segerstrom. 2010. “Optimism.” Clinical psychology review 30(7): 879-89.

Cavanagh, L. and E. M. Obasi. 2021. “The moderating role of coping style on chronic stress exposure and cardiovascular reactivity among African American emerging adults.” Prevention Science 22(3): 357-66.

Cave, L., M. N. Cooper, S. R. Zubrick, and C. C. Shepherd. 2020. “Racial discrimination and child and adolescent health in longitudinal studies: A systematic review.” Social Science & Medicine 250: 112864.

Centers for Disease Control and Prevention. 2021. “Adverse Childhood Experiences (ACEs).”

Clark, R., N. B. Anderson, V. R. Clark, and D. R. Williams. 1999. “Racism as a stressor for African Americans: A biopsychosocial model.” American psychologist 54(10): 805.

Cooper, H., L. Moore, S. Gruskin, and N. Krieger. 2004. “Characterizing perceived police violence: implications for public health.” American journal of public health 94(7): 1109-18.

Corrigan, P. W., J. E. Larson, and N. Ruesch. 2009. “Self-stigma and the “why try” effect: impact on life goals and evidence-based practices.” World psychiatry 8(2): 75.

Cronholm, P. F., C. M. Forke, R. Wade, M. H. Bair-Merritt, M. Davis, M. Harkins-Schwarz, L. M. Pachter, and J. A. Fein. 2015. “Adverse childhood experiences: Expanding the concept of adversity.” American journal of preventive medicine 49(3): 354-61.

Cuevas, A. G., T. Ho, J. Rodgers, D. DeNufrio, L. Alley, J. Allen, and D. R. Williams. 2019. “Developmental timing of initial racial discrimination exposure is associated with cardiovascular health conditions in adulthood.” Ethn Health: 1-14.

Cunningham, M. L., M. Szabo, R. F. Rodgers, D. L. Franko, K. T. Eddy, J. J. Thomas, S. B. Murray, and S. Griffiths. 2020. “An investigation of distress tolerance and difficulties in emotion regulation in the drive for muscularity among women.” Body Image 33: 207-13.

Danner, D. D., D. A. Snowdon, and W. V. Friesen. 2001. “Positive emotions in early life and longevity: findings from the nun study.” Journal of personality and social psychology 80(5): 804.

Del Toro, J., T. Lloyd, K. S. Buchanan, S. J. Robins, L. Z. Bencharit, M. G. Smiedt, K. S. Reddy, E. R. Pouget, E. M. Kerrison, and P. A. Goff. 2019. “The criminogenic and psychological effects of police stops on adolescent black and Latino boys.” Proceedings of the National Academy of Sciences 116(17): 8261-68.

Dennison, C. R. and J. G. Finkeldey. 2021. “Self-reported experiences and consequences of unfair treatment by police.” Criminology 59(2): 254-90.

DeVylder, J., L. Fedina, and B. Link. 2020. “Impact of police violence on mental health: a theoretical framework.” American journal of public health 110(11): 1704-10.

Dockray, S. and A. Steptoe. 2010. “Positive affect and psychobiological processes.” Neuroscience & Biobehavioral Reviews 35(1): 69-75.

Dottolo, A. L. and A. J. Stewart. 2008. ““Don’t ever forget now, you’re a Black man in America”: Intersections of race, class and gender in encounters with the police.” Sex Roles 59(5): 350-64.

Edwards, F., M. H. Esposito, and H. Lee. 2018. “Risk of police-involved death by race/ethnicity and place, United States, 2012–2018.” American journal of public health 108(9): 1241-48.

Elder, G. H. 1998. “The life course as developmental theory.” Child development 69(1): 1-12.

Elkins, J., H. E. Briggs, K. M. Miller, I. Kim, R. Orellana, and O. Mowbray. 2019. “Racial/ethnic differences in the impact of adverse childhood experiences on posttraumatic stress disorder in a nationally representative sample of adolescents.” Child and Adolescent Social Work Journal 36(5): 449-57.

Epp, C. R., S. Maynard-Moody, and D. P. Haider-Markel. 2014. Pulled over: How police stops define race and citizenship: University of Chicago Press.

Eskreis-Winkler, L., E. P. Shulman, S. A. Beal, and A. L. Duckworth. 2014. “The grit effect: Predicting retention in the military, the workplace, school and marriage.” Frontiers in psychology 5: 36.

Fagan, J., A. Geller, G. Davies, and V. West. 2010. “Street stops and broken windows revisited.” Race, Ethnicity, and Policing: 309-48.

Fagan, J. and T. R. Tyler. 2005. “Legal socialization of children and adolescents.” Social justice research 18(3): 217-41.

Feldman, J. M., J. T. Chen, P. D. Waterman, and N. Krieger. 2016. “Temporal trends and racial/ethnic inequalities for legal intervention injuries treated in emergency departments: US men and women age 15–34, 2001–2014.” Journal of Urban Health 93(5): 797-807.

Felitti, V. J. 2009. “Adverse childhood experiences and adult health.” Academic Pediatrics 9(3): 131-32.

Felitti, V. J., R. F. Anda, D. Nordenberg, D. F. Williamson, A. M. Spitz, V. Edwards, and J. S. Marks. 1998. “Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences (ACE) Study.” American journal of preventive medicine 14(4): 245-58.

Fine, M., N. Freudenberg, Y. Payne, T. Perkins, K. Smith, and K. Wanzer. 2003. ““Anything can happen with police around”: Urban youth evaluate strategies of surveillance in public places.” Journal of social issues 59(1): 141-58.

Forsdahl, A. 1977. “Are poor living conditions in childhood and adolescence an important risk factor for arteriosclerotic heart disease?” Journal of Epidemiology & Community Health 31(2): 91-95.

Freud, A. 1969. “Adolescence as a developmental disturbance.” Adolescence 20(2): 5.

Gee, G. C., K. M. Walsemann, and E. Brondolo. 2012. “A life course perspective on how racism may be related to health inequities.” American journal of public health 102(5): 967-74.

Geller, A. 2017. “Policing America’s children: Police contact and consequences among teens in Fragile Families.”

Geller, A. 2021. “Youth–police contact: burdens and inequities in an adverse childhood experience, 2014–2017.” American journal of public health(0): e1-e9.

Geller, A. and J. Fagan. 2019. “Police Contact and the Legal Socialization of Urban Teens.” RSF: The Russell Sage Foundation Journal of the Social Sciences 5(1): 26-49.

Geller, A., J. Fagan, T. Tyler, and B. G. Link. 2014. “Aggressive policing and the mental health of young urban men.” American journal of public health 104(12): 2321.

Geller, A., J. Fagan, and T. R. Tyler. 2017. “Police contact and mental health.” Columbia Public Law Research Paper no. 14–571.

Geller, A., K. Jaeger, and G. Pace. 2015. “Using the Fragile Families and Child Wellbeing Study in life course health development research.” Handbook of Life Course Health Development Science. New York, NY: Springer. Glaze, Lauren, Danielle Kaeble, Todd Minton, and Anastasios Tsoutis.

Geronimus, A. T. 1992. “The weathering hypothesis and the health of African-American women and infants: evidence and speculations.” Ethn Dis 2(3): 207-21.

Geronimus, A. T. 2001. “Understanding and eliminating racial inequalities in women's health in the United States: the role of the weathering conceptual framework.” Journal of the American Medical Women's Association (1972) 56(4): 133-50.

Geronimus, A. T., M. Hicken, D. Keene, and J. Bound. 2006. ““Weathering” and age patterns of allostatic load scores among blacks and whites in the United States.” American journal of public health 96(5): 826-33.

Geronimus, A. T., M. T. Hicken, J. A. Pearson, S. J. Seashols, K. L. Brown, and T. D. Cruz. 2010. “Do US black women experience stress-related accelerated biological aging?” Human Nature 21(1): 19-38.

Gestsdottir, S. and R. M. Lerner. 2008. “Positive development in adolescence: The development and role of intentional self-regulation.” Human Development 51(3): 202-24.

Gibbons, F. X., M. E. Fleischli, M. Gerrard, and R. L. Simons. 2018. “Reports of perceived racial discrimination among African American children predict negative affect and smoking behavior in adulthood: A sensitive period hypothesis.” Development and psychopathology 30(5): 1629-47.

Goffman, A. 2009. “On the run: Wanted men in a Philadelphia ghetto.” American Sociological Review 74(3): 339-57.

Goffman, A. 2015. On the run: Fugitive life in an American city: Picador.

Goodwin, H., E. Haycraft, and C. Meyer. 2012. “The relationship between compulsive exercise and emotion regulation in adolescents.” British Journal of health psychology 17(4): 699-710.

Halfon, N. and C. B. Forrest. 2018. “The emerging theoretical framework of life course health development.” In Handbook of life course health development, pp. 19-43: Springer.

Halfon, N. and M. Hochstein. 2002. “Life course health development: an integrated framework for developing health, policy, and research.” Milbank Q 80(3): 433-79.

Halfon, N., K. Larson, M. Lu, E. Tullis, and S. Russ. 2014. “Lifecourse health development: past, present and future.” Matern Child Health J 18(2): 344-65.

Hall, G. S. 1905. Adolescence: Its psychology and its relations to physiology, anthropology, sociology, sex, crime, religion and education: D. Appleton.

Hanson, M. a. and P. Gluckman. 2014. “Early developmental conditioning of later health and disease: physiology or pathophysiology?” Physiological reviews 94(4): 1027-76.

Hardeman, R. R., T. Chantarat, M. L. Smith, J. M. Karbeah, D. C. Van Riper, and D. D. Mendez. 2021. “Association of Residence in High–Police Contact Neighborhoods With Preterm Birth Among Black and White Individuals in Minneapolis.” JAMA network open 4(12): e2130290-e90.

Hardeman, R. R., E. M. Medina, and K. B. Kozhimannil. 2016. “Structural Racism and Supporting Black Lives - The Role of Health Professionals.” N Engl J Med.

Harrell, C. J. P., T. I. Burford, B. N. Cage, T. M. Nelson, S. Shearon, A. Thompson, and S. Green. 2011. “Multiple pathways linking racism to health outcomes.” Du Bois review: social science research on race 8(1): 143-57.

Harrell, E. and E. Davis. 2020. “Contacts between police and the public, 2018–statistical tables.” Bureau of Justice Statics Report, NCJ 255730.

Harris, A. and N. Amutah-Onukagha. 2019. “Under the Radar: Strategies Used by Black Mothers to Prepare Their Sons for Potential Police Interactions.” Journal of Black Psychology: 0095798419887069.

Haskins, A. R. and W. C. Jacobsen. 2017. “Schools as surveilling institutions? Paternal incarceration, system avoidance, and parental involvement in schooling.” American Sociological Review 82(4): 657-84.

Haskins, A. R. and E. J. McCauley. 2019. “Casualties of context? Risk of cognitive, behavioral and physical health difficulties among children living in high-incarceration neighborhoods.” Journal of Public Health 27(2): 175-83.

Heard-Garris, N., T. N. Winkelman, H. Choi, A. K. Miller, K. Kan, R. Shlafer, and M. M. Davis. 2018. “Health care use and health behaviors among young adults with history of parental incarceration.” Pediatrics 142(3).

Heatherton, T. F. and R. F. Baumeister. 1991. “Binge eating as escape from self-awareness.” Psychological Bulletin 110(1): 86.

Hicken, M. T., H. Lee, J. Ailshire, S. A. Burgard, and D. R. Williams. 2013. “"Every shut eye, ain't sleep": The role of racism-related vigilance in racial/ethnic disparities in sleep difficulty.” Race and Social Problems 5(2): 100-12.

Hoggard, L. S., V. Volpe, A. Thomas, E. Wallace, and K. Ellis. 2019. “The role of emotional eating in the links between racial discrimination and physical and mental health.” Journal of behavioral medicine 42(6): 1091-103.

hooks, b. 1999. “Feminism, Difference and Identity Introduction Racism and Feminism.” In Theories of Race and Racism: A Reader, edited by L. S. Back, John Routledge.

Horwitz, A. V., C. S. Widom, J. McLaughlin, and H. R. White. 2001. “The impact of childhood abuse and neglect on adult mental health: A prospective study.” Journal of health and social behavior: 184-201.

Hoyt, L. T., P. L. Chase-Lansdale, T. W. McDade, and E. K. Adam. 2012. “Positive youth, healthy adults: does positive well-being in adolescence predict better perceived health and fewer risky health behaviors in young adulthood?” Journal of Adolescent Health 50(1): 66-73.

Hughes, K., M. A. Bellis, K. A. Hardcastle, D. Sethi, A. Butchart, C. Mikton, L. Jones, and M. P. Dunne. 2017. “The effect of multiple adverse childhood experiences on health: a systematic review and meta-analysis.” The Lancet Public Health 2(8): e356-e66.

Islam, M. J., L. Broidy, L. Eriksson, M. Rahman, and N. Mazumder. 2022. “Childhood maltreatment and decision-making autonomy in adulthood: the mediating roles of self-esteem and social support.” Child abuse & neglect 129: 105665.

Jackson, D. B., J. Del Toro, D. C. Semenza, A. Testa, and M. G. Vaughn. 2021a. “Unpacking racial/ethnic disparities in emotional distress among adolescents during witnessed police stops.” Journal of Adolescent Health 69(2): 248-54.

Jackson, D. B., C. Fahmy, M. G. Vaughn, and A. Testa. 2019a. “Police stops among at-risk youth: repercussions for mental health.” Journal of Adolescent Health 65(5): 627-32.

Jackson, D. B., C. Posick, and M. G. Vaughn. 2019b. “New Evidence Of The Nexus Between Neighborhood Violence, Perceptions Of Danger, And Child Health.” Health affairs 38(5): 746-54.

Jackson, D. B., D. C. Semenza, A. Testa, and M. G. Vaughn. 2021b. “Silence After Stops? Assessing Youth Disclosure of Police Encounters.” Journal of research on adolescence.

Jackson, D. B., A. Testa, M. G. Vaughn, and D. C. Semenza. 2020. “Police stops and sleep behaviors among at-risk youth.” Sleep Health 6(4): 435-41.

Jackson, D. B. and K. Turney. 2021. “Sleep problems among mothers of youth stopped by the police.” Journal of Urban Health 98(2): 163-71.

Jackson, F. M., S. A. James, and T. C. Owens. 2017. “Anticipated negative police-youth encounters and depressive symptoms among pregnant African American women: a brief report.” Journal of Urban Health 94(2): 259-65.

Jaynes, C. M., R. K. Moule, J. T. Hubbell, and M. R. Santos. 2021. “Impulsivity or discounting? Evaluating the influence of individual differences in temporal orientation on offending.” Journal of Quantitative Criminology: 1-29.

Jiang, S., L. Postovit, A. Cattaneo, E. B. Binder, and K. J. Aitchison. 2019. “Epigenetic modifications in stress response genes associated with childhood trauma.” Frontiers in psychiatry: 808.

Jindal, M., K. B. Mistry, M. Trent, A. McRae, and R. L. Thornton. 2021. “Police exposures and the health and well-being of Black youth in the US: a systematic review.” JAMA pediatrics.

Johnson, S. R. L., R. W. Blum, and T. L. Cheng. 2014. “Future Orientation: A construct with implications for adolescent health and wellbeing.” Internal Journal of Adolescnet Medicine and Health 26(4): 459-68.

Jones, C. P. 2000. “Levels of Racism: A Theoretic Framework and a Gardener's Tale.(health outcome differences associated with race).” The American Journal of Public Health 90(8): 1212.

Jones, C. P. 2002. “Confronting institutionalized racism.” Phylon (1960-): 7-22.

Jones, M. S. and H. Pierce. 2020. “Early Exposure to Adverse Childhood Experiences and Youth Delinquent Behavior in Fragile Families.” Youth & Society: 0044118X20908759.

Jones, N. 2014. ""The regular routine": Proactive policing and adolescent development among young, poor black men." New directions for child and adolescent development 2014(143): 33-54.

Jones, S. C., R. E. Anderson, A. L. Gaskin-Wasson, B. A. Sawyer, K. Applewhite, and I. W. Metzger. 2020. "From "crib to coffin": Navigating coping from racism-related stress throughout the lifespan of Black Americans." American Journal of Orthopsychiatry 90(2): 267.

Kalmakis, K. A. and G. E. Chandler. 2015. "Health consequences of adverse childhood experiences: A systematic review." Journal of the American Association of Nurse Practitioners 27(8): 457-65.

Kazmierski, K. F., M. L. Gillespie, S. Kuo, T. Zurita, D. Felix, and U. Rao. 2021. "Stress-Induced Eating Among Racial/Ethnic Groups in the United States: a Systematic Review." Journal of Racial and Ethnic Health Disparities 8(4): 912-26.

Kern, M. L., L. Benson, E. A. Steinberg, and L. Steinberg. 2016. "The EPOCH measure of adolescent well-being." Psychological assessment 28(5): 586.

Kern, M. L., L. E. Waters, A. Adler, and M. A. White. 2015. "A multidimensional approach to measuring well-being in students: Application of the PERMA framework." The journal of positive psychology 10(3): 262-71.

Kessler, R. C., K. D. Mickelson, and D. R. Williams. 1999. "The prevalence, distribution, and mental health correlates of perceived discrimination in the United States." Journal of health and social behavior: 208-30.

Khansari, N., Y. Shakiba, and M. Mahmoudi. 2009. "Chronic inflammation and oxidative stress as a major cause of age-related diseases and cancer." Recent patents on inflammation & allergy drug discovery 3(1): 73-80.

Kim, P., C. Neuendorf, H. Bianco, and G. W. Evans. 2016. "Exposure to childhood poverty and mental health symptomatology in adolescence: A role of coping strategies." Stress and Health 32(5): 494-502.

Kirk, D. S. 2008. "The neighborhood context of racial and ethnic disparities in arrest." Demography 45(1): 55-77.

Krieger, N. 2003. "Does racism harm health? Did child abuse exist before 1962? On explicit questions, critical science, and current controversies: an ecosocial perspective." American journal of public health 93(2): 194-99.

Kubrin, C. E., S. F. Messner, G. Deane, K. McGeever, and T. D. Stucky. 2010. "Proactive policing and robbery rates across US cities." Criminology 48(1): 57-97.

Langton, L. and M. R. Durose. 2013. Police behavior during traffic and street stops, 2011: US Department of Justice, Office of Justice Programs, Bureau of Justice ….

Larson, K., S. A. Russ, R. S. Kahn, G. Flores, E. Goodman, T. L. Cheng, and N. Halfon. 2018. "Health disparities: A life course health development perspective and future research directions." In Handbook of life course health development, pp. 499-520: Springer, Cham.

Larson, R. W. 2000. “Toward a psychology of positive youth development.” American psychologist 55(1): 170.

Laub, J. H. and R. J. Sampson. 2020. “Life-course and developmental criminology: Looking back, moving forward—ASC Division of Developmental and Life-Course criminology Inaugural David P. Farrington Lecture, 2017.” Journal of Developmental and Life-Course Criminology 6(2): 158-71.

Lazarus, R. S. and S. Folkman. 1984. Stress, appraisal, and coping: New York: Springer Publishing Company.

Lee, S. Y., V. B. Agocha, P. R. Hernandez, C. L. Park, M. Williams, and L. M. Carney. 2022. “Coping styles moderate the relationship between perceived discrimination and eating behaviors during the transition to college.” Appetite 168: 105699.

Lerman, A. E. and V. M. Weaver. 2014. “Arresting citizenship.” In Arresting Citizenship: University of Chicago Press.

Lerner, R. M., C. D. Brindis, M. Batanova, and R. W. Blum. 2018. “Adolescent health development: A relational developmental systems perspective.” Handbook of life course health development: 109-21.

Lerner, R. M., J. V. Lerner, V. M. Murry, E. P. Smith, E. P. Bowers, G. J. Geldhof, and M. H. Buckingham. 2021. “Positive youth development in 2020: Theory, research, programs, and the promotion of social justice.” Journal of research on adolescence 31(4): 1114-34.

Lewis, T. T., S. A. Everson-Rose, L. H. Powell, K. A. Matthews, C. Brown, K. Karavolos, K. Sutton-Tyrrell, E. Jacobs, and D. Wesley. 2006. “Chronic exposure to everyday discrimination and coronary artery calcification in African-American women: the SWAN Heart Study.” Psychosomatic medicine 68(3): 362-68.

Link, B. G., L. H. Yang, J. C. Phelan, and P. Y. Collins. 2004. “Measuring mental illness stigma.” Schizophrenia bulletin 30(3): 511-41.

Lopes, G., M. D. Krohn, A. J. Lizotte, N. M. Schmidt, B. E. Vasquez, and J. G. Bernburg. 2012. “Labeling and cumulative disadvantage: The impact of formal police intervention on life chances and crime during emerging adulthood.” Crime & Delinquency 58(3): 456-88.

Lynch, J. W., G. A. Kaplan, and S. J. Shema. 1997. “Cumulative impact of sustained economic hardship on physical, cognitive, psychological, and social functioning.” New England Journal of Medicine 337(26): 1889-95.

Lyubomirsky, S., L. King, and E. Diener. 2005. “The benefits of frequent positive affect: Does happiness lead to success?” Psychological Bulletin 131(6): 803.

Macmillan, R. and J. Hagan. 2004. “Violence in the transition to adulthood: Adolescent victimization, education, and socioeconomic attainment in later life.” Journal of research on adolescence 14(2): 127-58.

Maguire-Jack, K., P. Lanier, and B. Lombardi. 2020. “Investigating racial differences in clusters of adverse childhood experiences.” American Journal of Orthopsychiatry 90(1): 106.

Mascalo, M. and K. Fischer. 2015. “The dynamic development of thinking, feeling, and acting: Infancy through adulthood In WF Overton & PCM Molenaar.” Handbook of child psychology and developmental science.

Mathew, G. M., L. Hale, and A.-M. Chang. 2020. “Social jetlag, eating behaviours and BMI among adolescents in the USA.” British Journal of Nutrition 124(9): 979-87.

Mayordomo-Rodríguez, T., J. C. Meléndez-Moral, P. Viguer-Segui, and A. Sales-Galán. 2015. “Coping strategies as predictors of well-being in youth adult.” Social Indicators Research 122(2): 479-89.

McClelland, M. M., G. John Geldhof, C. E. Cameron, and S. B. Wanless. 2015. “Development and self-regulation.” Handbook of child psychology and developmental science: 1-43.

McEwen, B. S. 2004. “Protection and damage from acute and chronic stress: allostasis and allostatic overload and relevance to the pathophysiology of psychiatric disorders.” Annals of the New York Academy of Sciences 1032(1): 1-7.

McEwen, B. S. and T. Seeman. 1999. “Protective and damaging effects of mediators of stress: elaborating and testing the concepts of allostasis and allostatic load.” Annals of the New York Academy of Sciences 896(1): 30-47.

McFarland, M. J., A. Geller, and C. McFarland. 2019. “Police contact and health among urban adolescents: The role of perceived injustice.” Social Science & Medicine 238: 112487.

McLeod, J. D. and M. J. Shanahan. 1996. “Trajectories of poverty and children's mental health.” Journal of health and social behavior: 207-20.

Mehta, N. K., H. Lee, and K. R. Ylitalo. 2013. “Child health in the United States: recent trends in racial/ethnic disparities.” Social Science & Medicine 95: 6-15.

Meldrum, R. C., B. Campion Young, S. Soor, C. Hay, J. E. Copp, M. Trace, J. P. Smith-Darden, and P. D. Kernsmith. 2020. “Are adverse childhood experiences associated with deficits in self-control? A test among two independent samples of youth.” Criminal justice and Behavior 47(2): 166-86.

Meng, Y.-Y., S. H. Babey, and J. Wolstein. 2012. “Asthma-related school absenteeism and school concentration of low-income students in California.” Preventing chronic disease 9.

Merrick, M. T., D. C. Ford, K. A. Ports, and A. S. Guinn. 2018. “Prevalence of adverse childhood experiences from the 2011-2014 behavioral risk factor surveillance system in 23 states.” JAMA pediatrics 172(11): 1038-44.

Merrill, N., T. E. Waters, and R. Fivush. 2016. “Connecting the self to traumatic and positive events: Links to identity and well-being.” Memory 24(10): 1321-28.

Mersky, J. P., C. Choi, C. P. Lee, and C. E. Janczewski. 2021. “Disparities in adverse childhood experiences by race/ethnicity, gender, and economic status: Intersectional analysis of a nationally representative sample.” Child abuse & neglect 117: 105066.

Merton, R. K. and R. C. Merton. 1968. Social theory and social structure: Simon and Schuster.

Mizrav, E. 2021. “Segregate, Discriminate, Signal: A Model for Understanding Policy Drivers of Educational Inequality.” Educational Policy: 08959048211029026.

Moen, P., V. Fields, H. Quick, and H. Hofmeister. 2000. “A life-course approach to retirement and social integration.” Social integration in the second half of life.

Myers, H. F. 2009. “Ethnicity-and socio-economic status-related stresses in context: an integrative review and conceptual model.” Journal of behavioral medicine 32(1): 9-19.

Natapoff, A. 2011. “Misdemeanors.” S. Cal. L. Rev. 85: 1313.

Nordberg, A., M. K. Twis, M. A. Stevens, and S. S. Hatcher. 2018. “Precarity and structural racism in Black youth encounters with police.” Child and Adolescent Social Work Journal 35(5): 511-18.

Novak, A. 2018. “The association between experiences of exclusionary discipline and justice system contact: A systematic review.” Aggression & Violent Behavior 40: 73-82.

Nurmi, J.-E. 2005. “Thinking About and Acting Upon the Future: Development of Future Orientation Across the Life Span.”

Oh, D. L., P. Jerman, S. S. Marques, K. Koita, A. Ipsen, S. Purewal, and M. Bucci. 2018. “Systematic review of pediatric health outcomes associated with adverse childhood experiences (aces).” Am Acad Pediatrics.

Olsson, C. A., R. McGee, S. Nada-Raja, and S. M. Williams. 2013. “A 32-year longitudinal study of child and adolescent pathways to well-being in adulthood.” Journal of Happiness Studies 14(3): 1069-83.

Ostaszewski, K. and M. A. Zimmerman. 2006. “The effects of cumulative risks and promotive factors on urban adolescent alcohol and other drug use: A longitudinal study of resiliency.” American journal of community psychology 38(3): 237-49.

Pachter, M. L. and G. C. Coll. 2009. “Racism and Child Health: A Review of the Literature and Future Directions.” Journal of Developmental & Behavioral Pediatrics 30(3): 255-63.

Paradies, Y., J. Ben, N. Denson, A. Elias, N. Priest, A. Pieterse, A. Gupta, M. Kelaher, and G. Gee. 2015. “Racism as a determinant of health: a systematic review and meta-analysis.” PloS one 10(9): e0138511.

Park, C. L. and M. O. Iacocca. 2014. “A stress and coping perspective on health behaviors: theoretical and methodological considerations.” Anxiety, Stress & Coping 27(2): 123-37.

Pearlin, L. I. 1989. “The sociological study of stress.” Journal of health and social behavior: 241-56.

Pearlin, L. I., C. S. Aneshensel, and A. J. LeBlanc. 1997. “The forms and mechanisms of stress proliferation: The case of AIDS caregivers.” Journal of health and social behavior: 223-36.

Pearlin, L. I. and J. S. Johnson. 1977. “Marital status, life-strains and depression.” American Sociological Review: 704-15.

Pearlin, L. I., S. Schieman, E. M. Fazio, and S. C. Meersman. 2005. “Stress, health, and the life course: Some conceptual perspectives.” Journal of health and social behavior 46(2): 205-19.

Pearlin, L. I. and M. M. Skaff. 1996. “Stress and the life course: A paradigmatic alliance.” The Gerontologist 36(2): 239-47.

Petruccelli, K., J. Davis, and T. Berman. 2019. “Adverse childhood experiences and associated health outcomes: A systematic review and meta-analysis.” Child abuse & neglect 97: 104127.

Phelan, J. C. and B. G. Link. 2015. “Is racism a fundamental cause of inequalities in health?” Annual Review of Sociology 41: 311-30.

Piquero, A. R. 2016. ““Take My License n’All That Jive, I Can’t See… 35”: Little hope for the future encourages offending over time.” Justice Quarterly 33(1): 73-99.

Priest, N., Y. Paradies, B. Trenerry, M. Truong, S. Karlsen, and Y. Kelly. 2013. “A systematic review of studies examining the relationship between reported racism and health and wellbeing for children and young people.” Social Science & Medicine 95: 115-27.

Pyrooz, D. C., J. M. McGloin, and S. H. Decker. 2017. “Parenthood as a turning point in the life course for male and female gang members: a study of within-individual changes in gang membership and criminal behavior.” Criminology 55(4): 869-99.

Raspopow, K., K. Matheson, A. Abizaid, and H. Anisman. 2013. “Unsupportive social interactions influence emotional eating behaviors. The role of coping styles as mediators.” Appetite 62: 143-49.

Ricco, R. B. and W. F. Overton. 2011. “Dual systems Competence←-→ Procedural processing: A relational developmental systems approach to reasoning.” Developmental Review 31(2-3): 119-50.

Roberts, D. 2009. Shattered bonds: The color of child welfare: Civitas Books.

Rose, T., S. Joe, A. Williams, R. Harris, G. Betz, and S. Stewart-Brown. 2017. “Measuring mental wellbeing among adolescents: A systematic review of instruments.” Journal of Child and Family Studies 26(9): 2349-62.

Sampson, R. J. and J. H. Laub. 1990. “Crime and deviance over the life course: The salience of adult social bonds.” American Sociological Review: 609-27.

Sampson, R. J. and S. W. Raudenbush. 2004. “Seeing disorder: Neighborhood stigma and the social construction of “broken windows”.” Social psychology quarterly 67(4): 319-42.

Sanders-Phillips, K. 2009. “Racial Discrimination: A Continuum of Violence Exposure for Children of Color.” Clinical child and family psychology review 12(2): 174-95.

Sanders-Phillips, K., B. Settles-Reaves, D. Walker, and J. Brownlow. 2009. “Social inequality and racial discrimination: risk factors for health disparities in children of color.” Pediatrics 124 Suppl 3: S176-86.

Sanders-Phillips, K., W. Kliewer, T. Tirmazi, V. Nebbitt, T. Carter, and H. Key. 2014. “Perceived racial discrimination, drug use, and psychological distress in African American youth: A pathway to child health disparities.” Journal of social issues 70(2): 279-97.

Sapolsky, R. M. 1998. Why zebras don't get ulcers : an updated guide to stress, stress-related diseases, and coping. New York: New York : W.H. Freeman and Co.

Seginer, R. 2009. Future orientation: Developmental and ecological perspectives: Springer.

Seligman, M. E. 2012. Flourish: A visionary new understanding of happiness and well-being: Simon and Schuster.

Sewell, A. A., J. M. Feldman, R. Ray, K. L. Gilbert, K. A. Jefferson, and H. Lee. 2020. “Illness spillovers of lethal police violence: the significance of gendered marginalization.” Ethnic and Racial Studies: 1-26.

Sewell, A. A. and K. A. Jefferson. 2016. “Collateral Damage: The Health Effects of Invasive Police Encounters in New York City.” Journal of Urban Health 93(1): 42-67.

Sewell, A. A., K. A. Jefferson, and H. Lee. 2016. “Living under surveillance: Gender, psychological distress, and stop-question-and-frisk policing in New York City.” Social Science & Medicine 159: 1-13.

Slade, E. P. and L. S. Wissow. 2007. “The influence of childhood maltreatment on adolescents’ academic performance.” Economics of education review 26(5): 604-14.

Slocum, L. A. and S. A. Wiley. 2018. ““Experience of the expected?” Race and ethnicity differences in the effects of police contact on youth.” Criminology 56(2): 402-32.

So, H. K., E. Nelson, A. M. Li, G. Guldan, J. Yin, P. Ng, and R. Sung. 2011. “Breakfast frequency inversely associated with BMI and body fatness in Hong Kong Chinese children aged 9–18 years.” British Journal of Nutrition 106(5): 742-51.

Spear, L. P. 2000. “The adolescent brain and age-related behavioral manifestations.” Neuroscience & Biobehavioral Reviews 24(4): 417-63.

Spencer, M. B. and T. R. Spencer. 2014. “Invited commentary: Exploring the promises, intricacies, and challenges to positive youth development.” pp. 1027-35: Springer.

Spoor, S. T., M. H. Bekker, T. Van Strien, and G. L. van Heck. 2007. “Relations between negative affect, coping, and emotional eating.” Appetite 48(3): 368-76.

Staggers-Hakim, R. 2016. “The nation’s unprotected children and the ghost of Mike Brown, or the impact of national police killings on the health and social development of African American boys.” Journal of Human Behavior in the Social Environment 26(3-4): 390-99.

Steinberg, L. 2010. “A dual systems model of adolescent risk-taking.” Developmental Psychobiology: The Journal of the International Society for Developmental Psychobiology 52(3): 216-24.

Steptoe, A., K. O'Donnell, M. Marmot, and J. Wardle. 2008. “Positive affect, psychological well-being, and good sleep.” Journal of psychosomatic research 64(4): 409-15.

Steptoe, A., J. Wardle, and M. Marmot. 2005. “Positive affect and health-related neuroendocrine, cardiovascular, and inflammatory processes.” Proceedings of the National Academy of Sciences 102(18): 6508-12.

Suglia, S. F., K. C. Koenen, R. Boynton-Jarrett, P. S. Chan, C. J. Clark, A. Danese, M. S. Faith, B. I. Goldstein, L. L. Hayman, and C. R. Isasi. 2018. “Childhood and adolescent adversity and cardiometabolic outcomes: a scientific statement from the American Heart Association.” Circulation 137(5): e15-e28.

Svensson, J. S. and S. Saharso. 2015. “Proactive policing and equal treatment of ethnic-minority youths.” Policing and society 25(4): 393-408.

Szefler, S. J., M. M. Cloutier, M. Villarreal, J. P. Hollenbach, M. Gleason, C. Haas-Howard, C. Vinick, A. Calatroni, L. Cicutto, and M. White. 2019. “Building Bridges for Asthma Care: Reducing school absence for inner-city children with health disparities.” Journal of Allergy and Clinical Immunology 143(2): 746-54. e2.

Testa, A., K. Turney, D. B. Jackson, and C. M. Jaynes. 2021. “Police contact and future orientation from adolescence to young adulthood: Findings from the Pathways to Desistance Study.” Criminology.

Travis, J. and M. Waul. 2003. Prisoners once removed: The impact of incarceration and reentry on children, families, and communities: The Urban Insitute.

Travis, J., B. Western, and F. S. Redburn. 2014. “The growth of incarceration in the United States: Exploring causes and consequences.”

Turney, K. 2021. “Depressive symptoms among adolescents exposed to personal and vicarious police contact.” Society and Mental Health 11(2): 113-33.

Turney, K., A. Geller, and S. K. Cowan. 2022a. “Disclosure among youth stopped by the police: Repercussions for mental health.” SSM-Mental Health 2: 100089.

Turney, K., A. Testa, and D. B. Jackson. 2022b. “Police Stops and the Erosion of Positive Future Orientation Among Urban Adolescents.” Journal of Adolescent Health.

Turney, K. and S. Wakefield. 2019. “Criminal justice contact and inequality.” RSF: The Russell Sage Foundation Journal of the Social Sciences 5(1): 1-23.

Tyler, T. R., J. Jackson, and A. Mentovich. 2015. “The consequences of being an object of suspicion: Potential pitfalls of proactive police contact.” Journal of empirical legal studies 12(4): 602-36.

Uggen, C. 2000. “Work as a turning point in the life course of criminals: A duration model of age, employment, and recidivism.” American Sociological Review: 529-46.

Uhlenberg, P. and M. Mueller. 2003. “Family context and individual weil-being.” In Handbook of the life course, pp. 123-48: Springer.

Unnever, J. and S. L. Gabbidon. 2011. A theory of African American offending: Race, racism, and crime: Routledge.

US Department of Health Human Services. 2019. "US Department of Agriculture. 2015–2020 dietary guidelines for Americans. December 2015."

Vilija, M. and M. Romualdas. 2014. "Unhealthy food in relation to posttraumatic stress symptoms among adolescents." Appetite 74: 86-91.

Wade, R., J. A. Shea, D. Rubin, and J. Wood. 2014. "Adverse childhood experiences of low-income urban youth." Pediatrics 134(1): e13-e20.

Wagmiller Jr, R. L. 2010. "How Representative Are the Fragile Families Study Families?: A Comparison of the Early Childhood Longitudinal Study-Birth Cohort and Fragile Families Samples." Center for Research on Child Wellbeing Working Paper: 10-01.

Waldfogel, J., T.-A. Craigie, and J. Brooks-Gunn. 2010. "Fragile families and child wellbeing." The Future of children/Center for the Future of Children, the David and Lucile Packard Foundation 20(2): 87.

Waters, L. E., D. Loton, and H. K. Jach. 2019. "Does strength-based parenting predict academic achievement? The mediating effects of perseverance and engagement." Journal of Happiness Studies 20(4): 1121-40.

Weaver, V. M., A. Papachristos, and M. Zanger-Tishler. 2019. "The great decoupling: The disconnection between criminal offending and experience of arrest across two cohorts." RSF: The Russell Sage Foundation Journal of the Social Sciences 5(1): 89-123.

Weisburd, D. and M. A. Majumder. 2018. Proactive policing: Effects on crime and communities: National Academies Press.

Whitaker, T. R. and C. L. Snell. 2016. "Parenting while powerless: Consequences of "the talk"." Journal of Human Behavior in the Social Environment 26(3-4): 303-09.

Williams, D. R. and C. Collins. 2001. "Racial Residential Segregation: A Fundamental Cause of Racial Disparities in Health." Public Health Reports 116(5): 404-16.

Williams, D. R. and C. Collins. 2016. "Racial residential segregation: a fundamental cause of racial disparities in health." Public Health Reports.

Williams, D. R., J. Lawrence, and B. Davis. 2019. "Racism and health: evidence and needed research." Annual review of public health 40: 105.

Williams, D. R. and S. A. Mohammed. 2013. "Racism and Health I: Pathways and Scientific Evidence." The American Behavioral Scientist 57(8): 1152.

Williams, D. R., Y. Yu, J. S. Jackson, and N. B. Anderson. 1997. "Racial differences in physical and mental health: Socio-economic status, stress and discrimination." Journal of health psychology 2(3): 335-51.

Williamson, L. D., M. A. Smith, and C. A. Bigman. 2019. “Does discrimination breed mistrust? Examining the role of mediated and non-mediated discrimination experiences in medical mistrust.” Journal of health communication 24(10): 791-99.

Wood, D., T. Crapnell, L. Lau, A. Bennett, D. Lotstein, M. Ferris, and A. Kuo. 2018. “Emerging adulthood as a critical stage in the life course.” In Handbook of life course health development, pp. 123-43: Springer, Cham.

World Health Organization. 2005. Mental health: facing the challenges, building solutions: report from the WHO European Ministerial Conference: WHO Regional Office Europe.

Young, D. and C. A. Limbers. 2017. “Avoidant coping moderates the relationship between stress and depressive emotional eating in adolescents.” Eating and weight disorders-Studies on anorexia, bulimia and obesity 22(4): 683-91.

Zamir, O. 2021. “Childhood maltreatment and relationship quality: A review of type of abuse and mediating and protective factors.” Trauma, Violence, & Abuse: 1524838021998319.

Zimmer-Gembeck, M. J., E. A. Skinner, K. L. Modecki, H. J. Webb, A. A. Gardner, T. Hawes, and R. M. Rapee. 2018. “The self-perception of flexible coping with stress: A new measure and relations with emotional adjustment.” Cogent psychology 5(1): 1537908.

Appendix

Appendix 1: Bernard et. al (2020) Proposed Model for Understanding Racism as an ACE

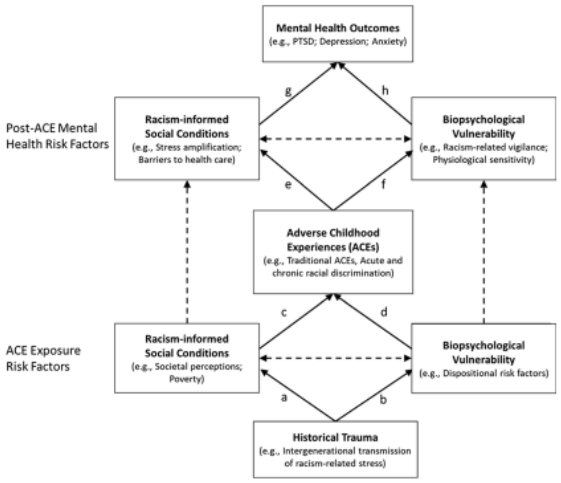


Fig. 1 Culturally informed adverse childhood experiences framework for understanding the pervasive mental health impact of racism on black youth

Appendix 2: Harrell et. al (2011) Proposed Model for Psychological Processes, and Physiological Pathways linking Racism to Health-related Physiological Changes

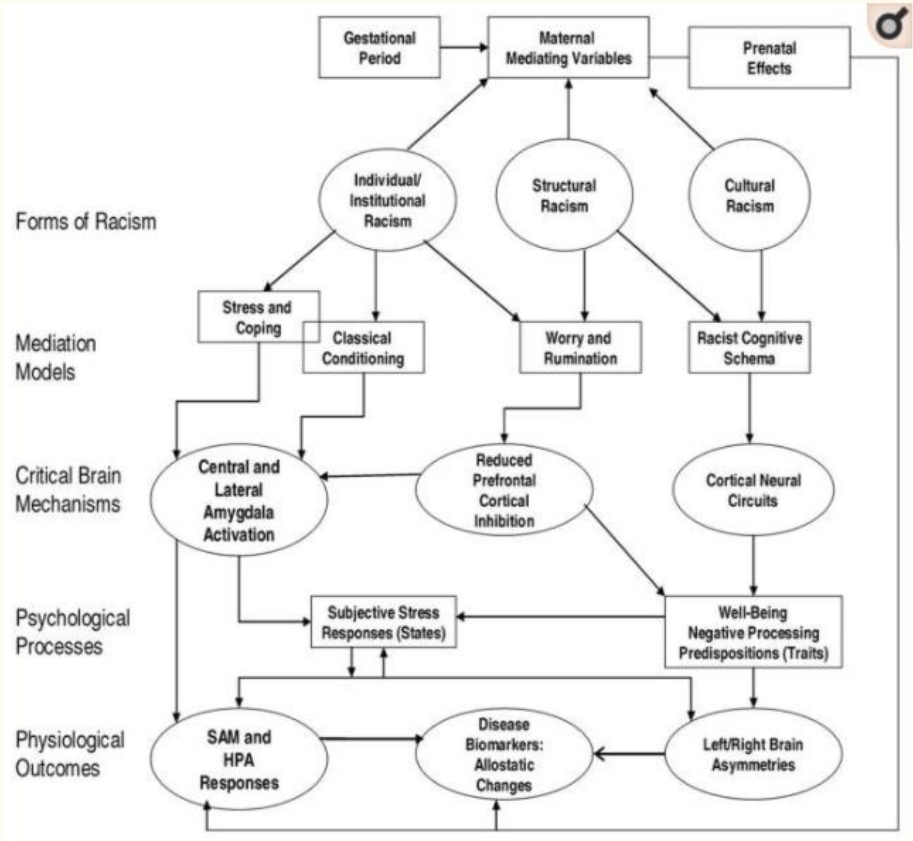


Fig. 1

Proposed models, psychological processes, and physiological pathways that link four forms of racism to health-related physiological changes

Appendix 3: Williams and Mohammad (2013) Conceptual Framework for the Study of Racism and Health

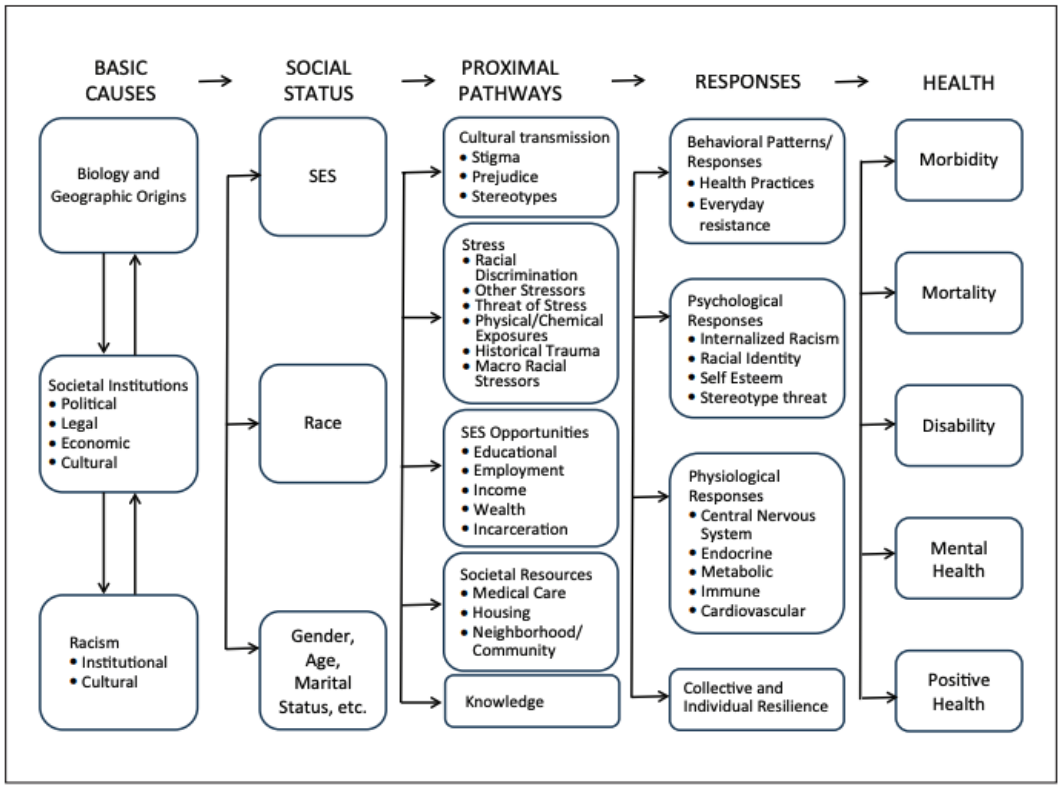


Figure 1. A framework for the study of racism and health.

Appendix 4: Supplemental Tables

Table 25:Bivariate analysis of the association between history of police contact and wellbeing

Variable	No history of stops (N=696)		Vicarious stops only (N=1681)		Direct stops (N=871)	
	coeff.	SE	coeff.	SE	coeff.	SE
Total EPOCH Wellbeing Score	ref.	ref.	-0.23**	0.07	-0.40	0.08***
Engagement	ref.	ref.	0.09**	0.02	0.17***	0.03
Perseverance	ref.	ref.	-0.08***	0.02	-0.15***	0.02
Optimism	ref.	ref.	-0.08***	0.02	-0.14***	0.03
Connectedness	ref.	ref.	-0.03*	0.02	-0.09***	0.02
Happiness	ref.	ref.	-0.12***	0.02	-0.18***	0.03
[+]These are weighted estimates based on city-level weights specific to the year 15 FFCWS youth survey. * p <0.05; ** p<0.01; *** p<0.001						

Table 26: OLS Regression coefficients from models examining the association between positive adolescent function and police stops (full Sample)

Variables	EPOCH total	Engagement	Perseverance	Optimism	Connectedness	Happiness
	coeff. (SE)	coeff.	coeff.	coeff.	coeff.	coeff.
Stop Status						
Vicarious Contact	-0.14 (0.08)	0.09** (0.03)	-0.06* (0.02)	-0.07** (0.02)	-0.02 (0.02)	-0.08** (0.2)
Direct Contact	-0.25* (0.10)	0.13*** (0.04)	-0.11*** (0.03)	-.12*** (0.03)	-0.04 (0.02)	-0.12*** (0.03)
Age	0.02 (0.04)	-0.01 (0.02)	0.03* (0.01)	0.02 (0.01)	0.001 (0.01)	-0.01 (0.01)
Male	0.31*** (0.06)	0.09*** (0.02)	0.04* (0.02)	0.05** (0.02)	-0.02 (0.01)	0.15*** (0.02)
Youth race						
White	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
Black	0.44*** (0.10)	-0.01 (0.03)	0.16*** (0.03)	0.22** (0.03)	-0.01 (0.02)	0.08** (0.03)
Youth	0.21* (0.10)	-0.02 (0.04)	0.11*** (0.03)	0.10** (0.03)	0.00 (0.02)	0.03 (0.03)
Parental relationship						
Mom married to biological father	-0.08 (0.08)	-0.02 (0.03)	-0.04 (0.02)	-0.01 (0.02)	0.01 (0.02)	-0.02 (0.02)
Mom cohabiting with biological father	0.11 (0.11)	0.03 (0.04)	0.02 (0.03)	0.03 (0.03)	0.02 (0.02)	0.01 (0.03)
Mom's education						
High School	0.14 (0.09)	-0.003 (0.04)	0.05 (0.03)	0.04 (0.03)	0.04* (0.02)	0.02 (0.03)
Some College	-0.002 (0.08)	0.01 (0.03)	-0.04 (0.03)	0.001 (0.03)	0.03 (0.02)	-0.00 (0.03)
College+	-0.05 (0.11)	-0.06 (0.05)	-0.05 (0.03)	-0.01 (0.04)	0.02 (0.03)	0.03 (0.04)
Poverty ratio						
50-99%	0.54 (0.11)	-0.03 (0.04)	0.04 (0.03)	0.04 (0.03)	0.03 (0.02)	-0.02 (0.03)
100-199%	-0.01 (0.10)	-0.06 (0.04)	-0.01 (0.03)	0.02 (0.03)	0.04 (0.02)	0.01 (0.03)
200-299%	0.08 (0.12)	-0.03 (0.04)	-0.01 (0.03)	0.06 (0.04)	0.07** (0.03)	0.00 (0.04)
300%+	0.02 (0.22)	-0.09* (0.04)	-0.02 (0.03)	0.04 (0.03)	0.06* (0.02)	0.04 (0.03)
Delinquency	-0.60** (0.19)	0.15* (0.07)	-0.19** (0.06)	-0.19** (0.06)	-0.11* (0.04)	-0.26*** (0.06)
Peer Delinquency	-0.42*** (0.09)	0.001 (0.03)	-0.17*** (0.03)	-0.07* (0.03)	-0.08*** (0.02)	-0.10*** (0.03)

Low neighborhood efficacy	-0.01* (0.004)	-0.001 (0.02)	-0.00 (0.001)	-0.004** (0.001)	-0.001 (0.001)	0.003 (0.001)
Paternal incarceration	0.07 (0.07)	0.01 (0.03)	0.03 (0.02)	0.01 (0.02)	0.02 (0.001)	0.01 (0.02)
Victimization	-0.20 (0.11)	-0.08 (0.04)	0.002 (0.03)	-0.05 (0.03)	-0.03 (0.02)	-0.05 (0.03)
Witnessed a crime	-0.06 (0.07)	0.02 (0.03)	-0.01 (0.02)	0.01 (0.02)	-0.01 (0.01)	-0.07** (0.02)

Table 27: Poisson regression models examining the association between history of police contact and health behaviors (full model)

Stop Status	Breakfast consumption	Fruit and vegetable consumption	Sugary drink consumption	Fast-food consumption	Moderate physical activity	Vigorous Physical activity
	# days breakfast NOT eaten	# of days NOT eaten	# per day	# days fast food eaten	# days w/o exercise	# days w/o vigorous exercise
	IRR [CI]	IRR [CI]	IRR [CI]	IRR [CI]	IRR [CI]	IRR [CI]
No stops	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Vicarious stops	1.3*** [1.2-1.4]	1.0 [0.98-1.1]	1.1 [0.99-1.3]	1.1** [1.1-1.2]	0.92** [0.87-0.97]	0.95* [0.90-0.99]
Direct stops	1.3*** [1.0-1.1]	1.1** [1.0-1.2]	1.2*** [1.1-1.3]	1.1** [1.0-1.2]	0.92* [0.86-0.99]	0.93* [0.87-0.99]
Age	1.3*** [1.0-1.01]	0.96* [0.93-0.99]	0.91*** [0.88-0.95]	1.1** [1.0-1.1]	1.0 [0.99-1.1]	1.0 [0.98-1.0]
Male	0.70*** [0.65-0.73]	1.0 [0.99-1.1]	1.1* [1.0-1.1]	1.0 [0.96-1.1]	0.71*** [0.68-0.74]	0.71*** [0.68-0.74]
Child's race						
White	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Black	1.1 [0.98-1.2]	1.3*** [1.2-1.4]	1.2*** [1.1-1.3]	1.3*** [1.2-1.4]	1.2*** [1.1-1.3]	0.97 [0.91-1.0]
Hispanic	0.98 [0.89-1.1]	1.3*** [1.2-1.5]	1.1 [0.97-1.2]	1.2*** [1.1-1.4]	1.0 [0.96-1.1]	0.93* [0.87-0.99]
Other	0.89 [0.72-1.1]	1.3** [1.1-1.5]	0.90 [0.75-1.1]	0.92 [0.75-1.1]	0.96 [0.82-1.1]	0.94 [0.82-1.1]
Multi-racial	1.1 [0.93-1.2]	1.4*** [1.2-1.6]	1.2** [1.1-1.4]	1.1 [0.96-1.3]	1.1 [0.96-1.2]	0.91 [0.83-1.0]
Parent's relationship status						
Married	0.90** [0.84-0.97]	1.0 [0.96-1.1]	0.90** [0.84-0.96]	0.88** [0.82-0.95]	1.0 [0.95-1.1]	1.0 [0.96-1.1]
Cohabitating	0.88* [0.79-0.98]	1.1 [0.99-1.2]	1.1 [0.98-1.2]	0.99 [0.90-1.1]	0.96 [0.89-1.0]	0.93* [0.86-1.0]
Other/non-resident	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Mother's education						
Less than high school	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.

High School	1.0 [0.96-1.1]	0.93* [0.86-0.99]	1.1* [1.0-1.2]	0.99 [0.90-1.1]	0.94* [0.88-1.0]	0.93* [0.88-0.99]
Some College	1.1* [1.0-1.2]	0.83*** [0.78-0.88]	1.0 [0.96-1.1]	0.93 [0.86-1.0]	0.91** [0.86-0.97]	0.93** [0.88-0.98]
College +	0.94 [0.84-1.1]	0.69*** [0.63-0.76]	0.90* [0.81-0.99]	0.91 [0.81-1.0]	0.82*** [0.75-0.90]	0.89** [0.82-0.96]
Poverty Ratio						
0-49%	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
50-99%	1.1 [0.98-1.2]	0.90* [0.82-0.97]	0.98 [0.89-1.1]	0.94 [0.85-1.0]	0.9 [0.89-1.0]	0.96 [0.89-1.0]
100-199%	1.1 [0.99-1.2]	0.97 [0.90-1.0]	0.93 [0.86-1.0]	1.1 [0.96-1.2]	0.99 [0.92-1.1]	1.0 [0.94-1.1]
200-299%	1.0 [0.93-1.2]	0.89** [0.81-0.97]	1.0 [0.90-1.1]	1.0 [0.92-1.1]	0.90* [0.83-0.98]	0.96 [0.89-1.0]
300%+	1.1 [0.97-1.2]	0.90* [0.82-0.98]	0.91* [0.83-1.0]	1.1 [0.99-1.2]	0.81*** [0.75-0.88]	0.86*** [0.80-0.92]
Delinquency	1.3** [1.1-1.5]	0.95 [0.83-1.1]	1.4*** [1.3-1.6]	1.3** [1.1-1.5]	0.86* [0.75-0.99]	0.94 [0.83-1.1]
Peer delinquency	1.2*** [1.1-1.3]	1.1 [0.98-1.1]	1.1** [1.0-1.2]	1.1* [1.0-1.2]	1.0 [0.97-1.1]	1.1 [0.96-1.1]
Paternal incarceration	1.0 [0.95-1.1]	0.99 [0.94-1.0]	1.0 [0.97-1.1]	1.0 [0.96-1.1]	1.0 [0.99-1.1]	1.0 [0.96-1.1]
N=3,322 *p<0.05, ** p<0.01, *** p<0.001						

Table 28: Logistic regression models examining the association between history of police contact and health behaviors (full model)

Stop Status	Breakfast consumption	Fruit and vegetable consumption	Sugary drink consumption	Fast-food consumption	Moderate physical activity	Vigorous Physical activity
	# days breakfast NOT eaten	# of days NOT eaten	# per day	# days fast food eaten	# days w/o exercise	# days w/o vigorous exercise
	OR [CI]	OR [CI]	OR [CI]	OR [CI]	OR [CI]	OR [CI]
No stops	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Vicarious stops	1.4** [1.1-1.7]	1.2 [0.96-1.5]	0.98 [0.79-1.2]	1.4* [1.1-1.8]	0.81 [0.62-1.1]	0.87 [0.71-1.1]
Direct stops	1.7*** [1.3-2.2]	1.3 [0.97-1.6]	1.3* [1.0-1.7]	1.3 [0.97-1.8]	0.74 [0.54-1.0]	0.83 [0.64-1.1]
Age	1.1 [0.96-1.2]	0.97 [0.86-1.1]	0.83** [0.74-0.94]	1.1* [1.0-1.3]	1.1 [0.96-1.3]	0.98 [0.88-1.1]
Male	0.52*** [0.44-0.61]	1.2* [1.0-1.4]	1.1 [0.93-1.3]	0.98 [0.81-1.2]	0.39*** [0.32-0.49]	0.39*** [0.33-0.45]
Child's race						
White	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Black	1.2 [0.92-1.5]	1.4* [1.1-1.7]	1.6*** [1.2-2.0]	1.7*** [1.3-2.3]	1.2 [0.89-1.6]	1.0 [0.82-1.3]
Hispanic	1.0 [0.78-1.3]	1.7*** [1.3-2.3]	1.1 [0.83-1.4]	1.6** [1.2-2.2]	1.1 [0.78-1.4]	0.85 [0.66-1.1]
Other	0.86 [0.51-1.4]	1.3 [0.77-2.1]	0.95 [0.53-1.7]	1.1 [0.58-2.2]	0.87 [0.50-1.5]	0.91 [0.54-1.5]
Multi-racial	0.96 [0.65-1.4]	1.5 [0.98-2.2]	1.6* [1.1-2.4]	1.3 [0.83-2.1]	0.84 [0.54-1.3]	0.73 [0.49-1.1]
Parent's relationship status						
Married	0.82* [0.67-1.0]	1.1 [0.89-1.4]	0.84 [0.68-1.0]	0.69 [0.54-0.87]	1.0 [0.82-1.3]	1.0 [0.82-1.2]
Cohabiting	0.83 [0.62-1.1]	1.2 [0.91-1.7]	1.1 [0.83-1.5]	1.0 [0.74-1.4]	0.90 [0.63-1.3]	0.74* [0.55-0.99]
Other/non-resident	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Mother's education						
Less than high school	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.

High School	0.99 [0.78-1.3]	0.90 [0.68-1.2]	1.2 [0.94-1.5]	0.88 [0.67-1.2]	0.91 [0.66-1.3]	0.80 [0.63-1.0]
Some College	1.2 [0.99-1.5]	0.61*** [0.48-0.78]	1.0 [0.84-1.3]	0.89 [0.70-1.1]	0.85 [0.63-1.3]	0.74** [0.60-0.93]
College +	0.93 [0.68-1.3]	0.45*** [0.33-0.62]	0.82 [0.59-1.1]	1.0 [0.70-1.4]	0.73 [0.5-1.1]	0.70* [0.51-0.96]
Poverty Ratio						
0-49%	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
50-99%	1.0 [0.76-1.3]	0.90 [0.68-1.2]	0.99 [0.74-1.3]	0.77 [0.55-1.1]	0.93 [0.63-1.4]	0.81 [0.61-1.1]
100-199%	1.1 [0.86-1.4]	0.98 [0.74-1.3]	0.99 [0.76-1.3]	1.2 [0.89-1.6]	1.0 [0.73-1.5]	0.96 [0.74-1.2]
200-299%	1.0 [0.76-1.4]	0.89 [0.64-1.2]	1.0 [0.73-1.4]	1.1 [0.74-1.5]	0.73 [0.49-1.1]	0.90 [0.66-1.2]
300%+	1.0 [0.77-1.4]	0.91 [0.66-1.3]	0.81 [0.60-1.1]	1.2 [0.84-1.6]	0.60** [0.4-0.85]	0.58*** [0.43-0.78]
Delinquency	1.7* [1.0-2.8]	0.71 [0.43-1.2]	2.7*** [1.6-4.4]	1.8* [1.1-3.1]	0.65 [0.37-1.1]	0.68 [0.41-1.1]
Peer delinquency	1.3* [1.0-1.6]	1.1 [0.87-1.4]	1.3 [0.99-1.6]	1.3* [1.1-1.7]	0.95 [0.72-1.3]	1.1 [0.84-1.3]
Paternal incarceration	1.1 [0.89-1.3]	0.92 [0.79-1.1]	1.2 [0.98-1.4]	1.0 [0.85-1.3]	1.1 [0.90-1.4]	1.1 [0.90-1.3]
N=3,322 *p<0.05, ** p<0.01, *** p<0.001						