ABSTRACT

Title of Dissertation:	EVALUATING IMMIGRANT-SPECIFIC ADVERSE CHILDHOOD EXPERIENCES AS A SOCIAL DETERMINANT OF HEALTH AMONG LATINO IMMIGRANT FAMILIES
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Research consistently demonstrates the critical role of Adverse Childhood Experiences (ACEs), traditionally defined as exposure to abuse, neglect, and household risk factors, in shaping overall health and well-being throughout life and even across generations. However, our current conceptualization and measurement of ACEs are based on items initially examined in a primarily white, middle-class, highly educated sample. This strategy may provide a limited understanding of childhood adversity within marginalized groups. This study aimed to examine the relationship between ACEs (both traditionally studied ACEs and immigrant-specific ACEs) and the psychological well-being of Latino immigrant adolescents. The relationship between parental experiences of ACEs, child ACEs, and child psychological well-being was also explored. Data comes from a community sample of 338 Latino immigrant adolescents. These youth completed an 11-item measure of traditional ACEs (ACE-T), a novel 13-item measure of immigrant-specific ACEs (ACE-I), the Strengths and Difficulties Questionnaire, and health risk

behavior items as part of the intake process for a positive youth development program. Data on parent ACEs was available for a subsample (n = 112). Structural equation modeling was used to examine the relationship between the ACEs measures and the psychological and health risk outcomes. Immigrant youth, on average, reported more adversities on the ACE-I measure than the ACE-T measure (3.6 vs. 1.6). Both ACE-T and ACE-I scores were positively related to increased emotional issues (standardized coefficients were .24 and .25, respectively). Only ACE-T scores were related to increased conduct problems and peer relationship problems. There was no relationship between adolescents' ACE-T or ACE-I scores with prosocial or health risk behaviors. The parent's ACE-T scores were positively related to the child's ACE-T scores (b = .18). These findings suggest that essential early adverse experiences for immigrants, which have not been considered, impact adolescents' psychological well-being. Broadening our conceptualization and measurement of ACEs among immigrant populations could provide valuable insight into social determinants of health and avenues for intervention for immigrant adolescents and families.

EVALUATING IMMIGRANT-SPECIFIC ADVERSE CHILDHOOD EXPERIENCES AS A SOCIAL DETERMINANT OF HEALTH AMONG LATINO IMMIGRANT FAMILIES

by

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Chapter 1 Introduction

During rallies for Donald Trump's 2016 presidential campaign, chants of "build the wall" could often be heard. Such a simplistic and reactionary approach to unauthorized immigration foreshadowed the Trump administration's approach to immigration policy. As a result, the humanity of the Trump administration's actions on immigration policy was often called into question. For example, the 2017 "zero tolerance" policy, which separated immigrant children from their parents as they crossed the border into the US (Department of Justice, 2018), created a national outcry about the psychological trauma that such family separation causes for children (Ayón, 2018; Bouza et al., 2018). Additionally, the Trump administration's decision that immigrants' (authorized or not) use of public assistance programs could bar them from citizenship, raised fears that the administration was putting the physical health of immigrants and their families at risk (IRC, 2018). The continuing national debate about immigration and the impacts of immigration policies highlights the need for an increased understanding of the factors that influence the health and well-being of this marginalized group.

Much of the Trump administration's policies and rhetoric specifically targeted immigrants from Mexico and Latin America. For example, the "build the wall" chant popular at Trump campaign rallies referred to Trump's strategy for curbing unauthorized immigration at the southern border. In the United States, the Latino[1] population currently accounts for approximately 18% (59.9 million) of the population, and this number is

[1] There are ongoing conversations about the most appropriate terms to use to refer to Hispanic/Latinx/Latino communities. Here I have elected to use the term Latino as that is the term used by our community partner, and the term by which the study sample self-identified.

expected to grow to over 28% (or 119 million) of the US population by 2060 (US Census Bureau, 2017). While most of the Latino population in the US are US-born individuals, foreign-born Latinos account for about 34% of the US population (Lopez et al., 2018). Although Mexican immigrants still represent a large proportion of the immigrant population, the percentage has decreased over the past two decades, from 29% of the US foreign-born population to 25% in 2017. At that same time, the US foreign-born population from Central America grew from 6.5% in 2000 to 7.9% (about 3.5 million) in 2017 (Radford & Noe-Bustamante, 2019). The number of unauthorized Mexican immigrants has also diminished. In contrast, the number of unauthorized immigrants from Central America, particularly those from the 'Northern Triangle' nations (El Salvador, Honduras, & Guatemala), has grown from about 1.5 million in 2007 to about 1.9 million in 2017 (Krogstad et al., 2019). There are indications that the recent slowdown of unauthorized immigration may not continue. US border authorities reported that, in the fiscal year 2019, there was an 88% increase in arrests of migrants along the US-Mexico border (Miroff, 2019).

The Health of the US-Latino Population

The diverse and changing nature of the Latino population in the US has made it difficult for researchers to describe the health of this population reliably. As a result, it presents significant challenges in identifying potential health inequalities within this group (Romero & Umaña-Taylor, 2018). Often, there is limited information about immigration status or country of birth, so researchers rely on ethnicity categories that lump potentially unique populations under the term Hispanics. US-born Latinos and Latino immigrants are disadvantaged concerning income, education, opportunities for

employment, access to health care, and discrimination (Isasi et al., 2016). These factors are key drivers of health disparities, systemic differences among disadvantaged groups across multiple health outcomes (Braveman et al., 2011). However, US-born Latinos, as an aggregated group, are often found to have better overall physical and mental health and lower early mortality than non-Latino Whites (Ruiz et al., 2016). In addition, foreign-born Latinos fare even better on health outcomes than US-born Latinos (Kandula et al., 2004). However, there is evidence that the health of Latino immigrants deteriorates over time (and generations) in the US. Eventually, the distinguishable differences between the US and foreign-born Latinos disappear altogether (Kaplan et al., 2004). These phenomena, termed the *Hispanic mortality paradox* and the *healthy immigrant-paradox,* have been the subject of significant research and often confound researchers investigating health inequalities in these groups.

Still, significant health inequalities exist for both US-born Latino and Latino immigrant populations. For example, Latinas are more likely to be diagnosed and die from cancer (Corcoran & Crowley, 2014). In addition, Latino children are more likely to be overweight when compared with white peers (Isasi et al., 2016), and this difference can be seen in children as young as kindergarten (Ogden & Flegal, 2015). Latino adolescents are at increased risk for developing depressive and anxiety disorders over their lifetimes (Isasi et al., 2016; Merikangas et al., 2011). Data from the National Comorbidity Survey found that Latino adolescents were 1.4 times as likely to meet the criteria for a mood disorder diagnosis than non-Latino white adolescents (Merikangas et al., 2010).

The mental health of Latino immigrants remains less well explored, especially among youth, and existing research presents mixed results. For example, some studies have shown that foreign-born Latino youth had fewer depressive symptoms when compared with native-born peers (Potochnick & Perreira, 2010). However, other studies have noted the increased stress level related to migration, acculturation, and discrimination faced by Latino immigrants and point to the established relationship between such stressors and decreased psychological well-being (Isasi et al., 2016). In addition, several studies have found that Latino immigrant youth exhibit high rates of hypervigilance and stress, particularly concerning their own or their family members' documentation status (Brabeck & Qingwen Xu, 2010; Dreby, 2015; Rubio-Hernandez & Ayón, 2016). These findings highlight the role that exposure to childhood adversity may play in the Latino population's health and well-being, an important yet underexplored area of research.

Childhood Adversity and Health Inequalities

The significant impact childhood adversity can have on an individual well into adulthood has long been accepted in psychology. Freud wrote about how experiences in infancy can shape psychology in adulthood way back in 1905 (Freud & Brill, 1920). However, it was not until Felitti and colleagues published the landmark Adverse Childhood Experiences (ACE) study in 1998 that public and population health researchers took notice. Findings from this study, and the subsequent literature, show that exposure to ACEs significantly increased an individual's risk for a growing list of risky health behaviors and poor health outcomes in adulthood, including heart and lung disease, cancer, smoking, alcoholism, drug abuse, depression, anxiety, suicide attempts,

diabetes, and stroke (Edwards et al., 2003; Felitti et al., 1998; Gilbert et al., 2015). In addition, more recent research has provided evidence for ACE's intergenerational influence, as parents who report exposure to ACEs are more likely to have offspring with physical and mental health problems (Myhre et al., 2014; Plant et al., 2017).

ACEs and trauma are related but distinct concepts, and, as we consider adversities' impact, it is important to elucidate these distinctions. There is an ongoing discussion within the literature about the best definition for trauma (see Krupnik, 2019 for a thorough review). However, definitions of trauma consistently identify the individual's reaction as a critical component. Often this reaction includes a fear of death or injury or "a breakdown in the capacity to regulate internal states" (van der Kolk, 2005, p. 403). For an event to be considered a trauma, the individual's response needs to be known. Adversity, as used in ACEs studies, on the other hand, is not concerned with the individual's response. ACEs are simply a list of potentially stressful events. ACEs may be traumas for some and not others (Krupnik, 2019). Still, traditionally ACEs research has focused on an individual's exposure to these experiences, not their responses.

Limitations of ACEs Research Among Latino Immigrants

A few studies have examined ACEs in a Latino immigrant population. Such studies illuminate some of the criticism of the original ACEs study and the subsequent ACEs research. McEwen and Gregerson (2019) identified four limitations of the original and current ACEs research, the first two of which are particularly relevant when examining ACEs in the Latino immigrant population:

> (1) the 10-item ACE index fails to include many dimensions of childhood adversity derived from social inequalities and thus underrepresents the presence of adversity among patients and in communities, (2) [ACEs research] highlights

> adult health and behavioral outcomes but underplays the effects of adversity throughout childhood and across generations (p. 790)

The limitations identified by McEwen and Gregerson are exceptionally relevant when critiquing the only large studies to date that examined ACEs among Latino immigrants. These studies showed that children in Latino immigrant families had lower odds of experiencing ACEs than native-born US Latino children. However, the authors come to a similar conclusion as McEwen and Gregerson. They warned that these results might not represent a true health advantage for Latino immigrants, as traditional ACEs may not adequately capture the adversities faced by this group (Caballero, Johnson, et al., 2017; Loria & Caughy, 2018).

Initial ACEs data in a sample of 716 Latino immigrant youth (from the same community partner providing data for the current study) showed that Latino immigrant children experienced parental separation via traditionally identified ACEs (divorce/separation, incarceration, death) at comparable or lower rates than at the state and national level (see Table 1.1). However, a majority (67%) of these youth reported experiencing separation from one or both parents due to immigration issues (Conway et al., 2021). There is no reason to believe that family separation resulting from immigration would impact a child any less than the traditionally studied ACEs related to parent-child separation.

Table 1.1

Rates of Traditionally Studied ACEs in Three Populations

Reason for Parent-Child Separation	Community Sample	Maryland	US
Parental Divorce/Separation	29%	20%	24%
Parental Incarceration	1%	4%	8%
Parental Death	7%	2%	4%

Note: Maryland & US data comes from the National Survey of Children's Health 2016-2017

Unexplored ACEs Among Latino Immigrants

Youth often leave their homes in Central America due to heightened political, domestic, and community violence (Jaycox et al., 2002; Kaltman et al., 2011). Large numbers of Latino immigrant youth experience a traumatic event during migration (de Arellano et al., 2018). These events may include sexual assault or kidnapping (Kaltman et al., 2011), high-risk decisions in modes of travel to the US border, or abuse at the hands of coyotes paid to escort youth (Fulginiti, 2008; Markham, 2017). After arriving in the US, Latino immigrants continue to face significant adversities, including fear of deportation of themselves or family members (Abrego et al., 2017; Ayón, 2018), acculturation stress, discrimination (Golash-Boza & Hondagneu-Sotelo, 2013), and increased stigmatization about their documentation status (Abrego, 2011).

The accumulation of traumatic experiences across the immigration process leads to higher rates of depression and anxiety, and other mental health disorders in adolescents that continue as youth become adults (American Psychological Association., 2012; Familiar et al., 2011; Levers & Hyatt-Burkhart, 2012; Salas et al., 2013). In addition, youth who experienced trauma before or during the migration process are at greater risk for academic, social, behavioral, and mental health issues (Delva et al., 2013; Gulbas et al., 2016; Perreira & Ornelas, 2013).

These findings strongly suggest the experiences specific to Latino immigrants are related to health risk behaviors shown to be drivers of health inequalities and therefore are relevant childhood adversities to study. By sticking to the original items and categories used in the 1998 ACEs study, researchers are likely overlooking relevant and salient childhood experiences that impact the well-being of diverse populations. Expanding our conceptualization of what constitutes ACEs has proven beneficial in previous studies. The inclusion of peer victimization, social-economic status, and community violence exposure as ACEs added significantly to predicting mental and physical health symptoms for youth (Finkelhor et al., 2015). Studies using ACEs measures that reflect the experiences faced uniquely by Latino immigrants are needed to understand better their role in health inequalities faced by this population.

Effects of ACEs among Latino Immigrant Youth

McEwen and Gregerson's second critique of the ACEs literature points out the inherent limitation of focusing primarily on adult health outcomes. By doing so, researchers ignore the influence of ACEs in childhood and across generations. Some studies have sought to address this limitation by looking at outcomes in those periods. Exposure to ACEs may alter the allostatic system, the biological systems (nervous, endocrine, and immune) that maintain physiological stability in times of increased internal or external stressors. The allostatic system is very effective at helping the body deal with threats. However, in the presence of the chronic stress associated with ACEs, this system may not shut off to allow the body to normalize. This constant overactivation of the allostatic system can be particularly damaging in childhood and adolescence. The

body's biological systems, including the brain, are not yet fully developed, potentially leading to physical and psychological health issues (Danese & McEwen, 2012).

Studies have found evidence that the influence of ACEs can be seen biologically and behaviorally in children. Exposure to ACEs has been linked with increased hypervigilance, peer problems, emotional problems, and health risk behaviors in adolescents (A. Cook et al., 2017; Danese & McEwen, 2012; Potochnick & Perreira, 2010; Saluja et al., 2004). We also know that a strong, positive parent-child relationship serves as a primary factor protecting adolescents from negative health-related outcomes (Sieving et al., 2017). Among Latino samples, studies have shown that a positive parent-child relationship is associated with decreased adolescent alcohol use (Mogro-Wilson, 2008) and depressive symptoms (Crean, 2008; Roche et al., 2019). However, exposure to potentially immigrant-specific adversities may disrupt this relationship. For example, a sample of Latino immigrant youth (Conway et al., 2021) found that independent of covariates, youth who reported immigration-related separation from their mother were 4.71 times as likely to report poor relationship quality with their mother. Those reporting separation from their father were 3.43 times as likely to report poor relationship quality with their father. Additionally, youth who experienced the immigrant-specific ACE of 'separation from a parent due to immigration' were 1.6 times as likely to report at least one other traditional ACE.

Intergenerational Impact of ACEs

Most studies investigating the intergenerational impact of ACEs have focused on mothers and young children using individual ACE items. Findings from these studies show that maternal experience of childhood abuse is linked with increased internalizing

and externalizing behaviors in offspring (Myhre et al., 2014; Plant et al., 2017; A. L. Roberts et al., 2015). Fewer studies investigated the influence of parental ACEs on adolescent offspring, but findings do indicate a relationship. For example, Roberts and colleagues (2015) found that maternal childhood exposure to abuse corresponded to disparities in adolescent offspring's depressive symptoms as early as age 12. Similar studies found that maternal childhood abuse was associated with a greater likelihood that the child will start smoking before the age of 18 (Pear et al., 2017). However, no studies have examined the relationship between Latino parental ACEs exposure and their adolescent offspring's psychological well-being. Results from an analysis of a sample of Latino immigrants 440 parents in 2018 showed high rates of ACEs, with 71% endorsing at least one traditional ACE in their childhood and 29% reporting three or more traditional ACEs (Conway & Lewin, 2018).

Current Study's Theoretical Foundation

McEwen and Gregerson's (2019) critique calls for ACEs researchers to consider what constitutes an ACE in diverse populations and when the effects of ACEs are identifiable across the lifespan. In order to simultaneously address both of these issues, a conceptual framework is needed that considers the individual's unique experience, the influence of family, societal, and cultural values, the threats to health, and relevant health outcomes that change across the life course.

When examining the impact of documentation status on adolescents' health and well-being, Suárez-Orozco and colleagues (2011) created such a framework by applying a developmental lens to ecological systems theory. The current study seeks to build on this conceptualization by applying this framework to examine ACEs' influence (both

traditionally studied ACEs and novel immigrant-specific ACEs). The current study also seeks to expand the application of the developmental lens by distinguishing between the established outcomes of ACEs in adulthood and the behavioral and psychological health risk outcomes seen in adolescence, which ultimately influence health in adulthood. This framework allows us to identify and examine previously untested ACEs that may be specific and relevant to the Latino immigrant population while also examining the varying influence that ACEs have across the life course, specifically in adolescence. This framework also offers a theoretical foundation to examine the potential intergenerational influence of ACEs.

The Current Study

Without understanding the role of ACEs in Latino immigrants' physical and mental health, it will be challenging to develop culturally relevant interventions that address health inequalities in these vulnerable families. The proposed study will be the first to investigate immigrant-specific ACEs and their individual and intergenerational association with health risk indicators in a Latino immigrant population. By understanding the ACEs that are uniquely salient for this group and identifying their relationship to psychological health and health risk behaviors, we will be better able to develop novel interventions that disrupt this pathway and ultimately lead to fewer health inequalities in adulthood.

Insufficient research on Latino immigrant youth is partly due to their understandable distrust of authorities. A long-term partnership with a local, well-established, and trusted community organization that serves Latino youth and their families, has been established to address this issue. This community partner collected the

data for this study. We will analyze data from Latino adolescents and their parents who immigrated to the US from Central America in order to investigate the following three research questions:

Research Question 1. What are the rates of traditional and immigrant-specific ACEs in a sample of Latino immigrant adolescents?

Hypothesis 1.1: Immigrant-specific adversities will be more prevalent than traditionally studied ACEs.

Hypothesis 1.2: Confirmatory factor analysis of the traditional ACEs measure will show two underlying factors, Abuse, and Household Dysfunction, as identified in Figure 3.2.

Exploratory Hypothesis 1.3: There will be underlying factors of the immigrant-specific ACEs measure.

Research Question 2. What are the relationships between traditional and immigrant-specific ACEs and adolescents' health risk behaviors and psychological health?

Hypothesis 2.1: Greater exposure to traditional ACEs will be positively associated with greater difficulty in psychological well-being.

Hypothesis 2.2: Greater exposure to immigrant-specific ACEs will be positively associated with greater difficulty in psychological well-being.

Hypothesis 2.3: Greater exposure to traditional ACEs will be associated with more health risk behaviors.

Hypothesis 2.4: Greater exposure to immigrant-specific ACEs will be associated with more health risk behaviors.

Research Question 3. What are the associations between parental exposure to traditional and immigrant-specific ACEs and their adolescent offspring's psychological health?

Hypothesis 3.1: Greater parental endorsement of traditional ACEs will be positively associated with greater youth endorsement of traditional ACEs.

Hypothesis 3.2: Greater parental endorsement of traditional ACEs will be positively associated with greater difficulty in the youth's psychological well-being.

Hypothesis 3.3: Greater parental endorsement of immigrant-specific ACEs will be positively associated with greater youth endorsement of immigrant-specific ACEs.

Hypothesis 3.4: Greater parental endorsement of immigrant-specific ACEs will be positively associated with greater difficulty in the youth's psychological well-being.

Chapter 2 Literature Review

This chapter sets up the rationale for the proposed project by exploring the current literature and describing the identified theoretical framework. First, I discuss the context necessary to orient us to the state and scope of health inequalities in the Latino immigrant population and the Latino population in the United States. Next, I provide a critical review of the literature on the drivers of health inequalities, including social determinants of health, and the role of childhood adversity, with particular attention paid to the research on adolescents and immigrants. This review highlights potential sources of health inequalities that remain unexamined in the Latino immigrant population. Finally, the theoretical underpinnings of the proposed study are discussed, and the theoretical framework that I used to understand how specific adverse childhood events impact Latino immigrants' health and health behaviors is presented.

Demographics of the Latino and Latino-Immigrant Population in the US

The Hispanic, or Latino, population is the largest and fastest-growing ethnic minority group in the US. In 2008 the Hispanic population accounted for approximately 15% (46.8 million) of the US population. In 2018 it had risen to 18% (59.9 million). This increase accounts for over half (52%) of the growth in the US population during those ten years (A. Flores et al., 2019). These numbers are expected to grow to 119 million or 28.6 % of the US population by 2060 (US Census Bureau, 2017). In Maryland, 9.5% of the State's population is Latino, with approximately 35% of Latino Marylanders residing in Montgomery County and 27% residing in Prince Georges County (Leggett & Ahluwalia, 2016). Latinos are also the youngest major racial or ethnic group in the US, with 61% being 35 or younger in 2016 (Lopez et al., 2018).

A majority of the Latino population is US-born. In 2016, 34% of the Latino population was foreign-born (Lopez et al., 2018). Nevertheless, young, foreign-born Latinos still make up a sizeable group in the United States. In 2016, 19% of Latinos under 35 were foreign-born (Lopez et al., 2018). In 2017, of the 45 million foreign-born population, 10.5 million, or 3.2% of the total US population, were unauthorized immigrants (Chang, 2019). Still, unauthorized immigration dominates the national conversation about immigration. While the overall rate of unauthorized immigration has slowed, the number of immigrants from Central America, particularly the 'Northern Triangle' nations (El Salvador, Honduras, & Guatemala), has grown. In 2017, 1.9 million unauthorized immigrants from Central America were living in the US, up from 1.5 million in 2007 (Krogstad et al., 2019). Additionally, children from the Northern Triangle nations account for a majority of the unaccompanied children entering the US. In 2014, when the number of unaccompanied children peaked, approximately 77% of the children apprehended at the Southwest border were from one of the three Northern Triangle nations. Locally, in Montgomery County, MD (the site for the proposed study sample), 54.5% of foreign-born Latinos come from Central American countries, with 39% coming from El Salvador (Leggett & Ahluwalia, 2016)

While there seemed to be an overall slowdown in migration at the end of the last decade, recent data suggest that this pattern may not continue. US border authorities reported that, in the fiscal year 2019, there were more than 975,000 arrests of migrants along the US-Mexico border, an 88% increase from the prior year (Miroff, 2019). Additionally, while most migrants were single men in the past, many family units with children have been crossing into the US (Kandel, 2017).

Health Inequalities

Through its Healthy People 2020 (now 2030) initiative, the US government identifies an overarching goal to "achieve health equity, eliminate disparities, and improve the health of all groups" (U.S. Department of Health and Human Services, 2008, p. 6). Healthy People 2020 defines health disparities (or inequalities) as the social, economic, or environmental disadvantages closely linked with differences in health outcomes (U.S. Department of Health and Human Services, 2008). Health inequities or disparities refer to systemic differences among disadvantaged groups across multiple health outcomes, including health status, access to health care, and social determinants of health (Ramírez García, 2019). A more expansive definition states that "[health] disparities are systematic, plausibly avoidable health differences according to race/ethnicity, skin color, religion, or nationality; socioeconomic resources…, gender, sexual orientation, gender identity, age, geography, disability, illness, political or other affiliation; or other characteristics associated with discrimination or marginalization" (Braveman et al., 2011, p. S150) which adversely affect socially disadvantaged groups. Ultimately, health disparities may reinforce social disadvantage and vulnerability for minority populations (Braveman et al., 2011).

Health Inequalities in the US-Latino Population

Latinos living in the United States experience a range of health inequalities related to health status, access to health care, and experiencing social determinants of health. In the introduction to a special issue of *The Journal of Latina/o Psychology* (now *The Journal of Latinx Psychology*) dedicated to Latinos' physical health, the editors note that, even though Latinos are the largest racial/ethnic minority group in the US, less is

known about their physical health in comparison to other minority groups. Moreover, what is known is often paradoxical (Ruiz et al., 2016).

It is consistently found in the literature that Latinos are significantly disadvantaged concerning key social determinants of health, including income, education, opportunities for employment, access to health care, and increased exposure to discrimination. Paradoxically though, Latinos, as a group, are often found to have better overall physical and mental health, lower early mortality (Ruiz et al., 2016), and the average life expectancy for Latinos is 81.8 years, 3.3 years greater than the life expectancy of non-Hispanic Whites (Kochanek et al., 2019). Such seemingly contrary findings are consistent within the literature, and this phenomenon has been named the *Hispanic mortality paradox* (Ruiz et al., 2016). Why Latinos exhibit better health outcomes in the face of greater exposure to health risk factors remains unclear. Some researchers point to the potential that Latinos' lower prevalence and mortality related to cardiovascular disease and cancer may be a key driver of longer life expectancy. Others point to the moderating effects of Latino cultural values, but this hypothesis remains less well examined (Perez & Cruess, 2014). However, as Ruiz and colleagues (2016) point out, "these data reflect relative advantages, not optimal outcomes." Thus, the outcomes are objective (i.e., Latinos live longer), but much less is known about the quality of life for Latinos.

Physical Health. Even in the presence of the Hispanic mortality paradox, there remain important health inequalities in the Latino population related to health status outcomes. For example, cancer is the leading cause of death for Latinos, and they have a higher mortality rate than other racial/ethnic groups. National Vital Statistics data shows that for

Latino women (Latinas), the cancer mortality rate per 100,000 was 298 versus 155 for Whites and 181 for Blacks (Paz & Massey, 2016). In Maryland, Latinos are more likely to be diagnosed and die from chronic and infectious diseases than non-Latino white individuals (Leggett & Ahluwalia, 2016).

Among Latino youth, obesity and the risk of developing diabetes are significant issues. From 2011 to 2014, 22% of Latino youth aged 2 to 19 years were obese, significantly different from the 15% of non-Hispanic white youth. There was no significant difference in the obesity rates compared with non-Hispanic Blacks (20%). However, male Hispanic youth had higher rates than their male peers, regardless of race. In children aged six to 11, obesity among Latinos is twice that of white children and four times that among children two to five (Isasi et al., 2016). In Montgomery County, MD, 21% of the Latino population is obese, and in the whole state of Maryland, Latinos are 41% more likely to develop diabetes than non-Hispanic Whites (Leggett & Ahluwalia, 2016). Current literature points to disparities in the amount of physical activity Latino youth receive (Paz & Massey, 2016). A study from South Texas compared the percent of individuals receiving the recommended amount of physical activity in a sample of 398 Latinos (primarily Mexican American) with national averages. This study showed that approximately 56% of Americans do not meet the weekly recommended amount of physical activity nationally. However, a greater proportion (about 68%) of Latinos did not meet this recommendation (Bautista et al., 2011).

Mental Health. Latino youth are at particular risk of developing mental health issues and mental health diagnoses. Studies have shown that Latino youth report higher rates of depression symptoms compared to their peers and the rates of depression symptoms in

Latino youth are rising (Mikolajczyk et al., 2007). In 2019, 40% of Latino adolescents reported they felt sad or hopeless (a key symptom of depression) almost every day for at least two consecutive weeks, an increase compared to the 34% who reported these same feelings in 2017 (CDC, 2019). One national study found that 22% of Latinos reported depressive symptoms compared to 18% of white youth (Saluja et al., 2004). Compared to their non-Hispanic white peers, Latino adolescents are at greater risk of developing clinical depression and anxiety disorders (Isasi et al., 2016; Merikangas et al., 2011). Studies have found Latino adolescents at increased risk for substance use disorders compared to African American peers (R. E. Roberts et al., 2007). Nationally representative data showed that Latino adults were more likely to binge drink than the national average (Ramírez García, 2019).

Some studies focused on Puerto Rican youth have identified potential mental-physical health comorbidities, finding significant relationships between physical health outcomes (asthma and obesity) and mental health diagnosis (anxiety and depressive disorders; Isasi et al., 2016). There is evidence that Latinos are at a greater risk of comorbid mental and medical health issues in adulthood. Findings from the 2012 National Behavioral Risk Factor Surveillance System indicate that Latino adults are significantly more likely to report psychological distress comorbidly with diabetes and angina than non-Hispanic Whites. This increased risk remained even when the influence of age, income, education, sex, and health insurance status were controlled (Ahmed & Conway, 2020). Some studies point to adult Latinos having better mental health than non-Latino Whites. However, Latinos are much less likely to receive appropriate treatment, worsening mental health over time (Cuevas et al., 2016).

Access to Health Care. Disadvantages in access to health care remain a significant health inequity experienced by Latinos. For example, even though cancer is the number one cause of death in Latinos, Latinas are less likely to receive regular cancer screenings, including mammograms and pap tests (Paz & Massey, 2016). Currently, Latinas in the US have the highest incidence of cervical cancer. They are twice as likely to die from it compared to white women, yet this group has significantly lower rates of cervical cancer screenings (Corcoran & Crowley, 2014; Paz & Massey, 2016). In addition, a study analyzing how the Affordable Care Act reduced health inequities found that the rates of physician visits (for any reason) have increased among Latinos. However, they remain the lowest of any racial/ethnic groups included in the study, and Latinos remained more likely to be uninsured than Whites (Chen et al., 2016).

Langellier and colleagues (2016) found that Latino children were significantly less likely than white children to have a usual source of care or preventive care visits. Latinos were also more likely to have delayed health care. Notably, this study utilized an analytic technique that allowed the researchers to parse out the portion of this health inequity related to race/ethnicity and that portion related to sociodemographic characteristics. The researchers found that even if Latino children had the same sociodemographic characteristics as Whites and Blacks, this healthcare inequity would remain. Latino immigrants are twice as likely to be uninsured compared to US-born Latinos and have the highest uninsurance rate in the US (Kandula et al., 2004). Authorized or unauthorized immigrants may worry about accessing public health prevention programs, thus worsening this inequity. Issues in access to health care persists in Maryland, where Latinos were more likely than Whites to have never accessed routine

care (9.5% vs. 0.1%) and where 47% of Latinos reported not having a usual source of care (Leggett & Ahluwalia, 2016).

The Immigrant Paradox

Examining health disparities within immigrant populations presents another paradox. Immigrant groups, on average, have better overall health, fewer chronic health conditions, are physically and mentally stronger, and are less likely to have substance abuse problems (Carlisle, 2012; Chang, 2019) than their native-born counterparts. This finding is particularly paradoxical given that immigrants are often at a greater risk of exposure to drivers of health inequalities than the native-born population (Kandula et al., 2004). This finding has been shown in the Latino immigrant population, where foreign-born children do better than native-born Latino children on health indicators, even though they are more likely to live in poverty (Isasi et al., 2016). However, research into the immigrant-paradox consistently shows that this health advantage diminishes and disappears altogether in subsequent generations (Kandula et al., 2004; Marks et al., 2014).

There has been significant research and theory development into the two major questions that the immigrant-paradox raises: 1) why are foreign-born groups so much healthier than native-born groups, and 2) why does this health advantage disappear over time? A thorough review of theorized answers is outside the scope of the current study. However, some widely accepted answers to these questions postulate that foreign-born groups are often healthier given an innate 'health selectivity' that occurs when immigrating. The immigration process can be challenging. It is thought that immigrant groups consist only of those individuals who are the more healthy, motivated, and

resilient of their country's population (Filion et al., 2018). Still, others point to the optimism experienced by many immigrants, especially immigrant-youth, as they leave the harsh and sometimes dangerous conditions of their home country for the relative safety and opportunities provided by the US. This optimism may provide resiliency for these individuals in light of the hardships associated with migration (Potochnick & Perreira, 2010). Regardless of the specific genesis, the immigrant paradox points to strength and resilience among this group.

These health advantages disappear as immigrants assimilate and acculturate to life in the US and thus are more exposed to the impacts of social determinants of health. Over time these groups begin to have health outcomes that resemble the larger native-born population. For example, studies have found that as the length of time living in the US increases, rates of obesity among Latino immigrants increase. Data from adults who participated in the 1998 National Health Interview Survey found that the rate of obesity among foreign-born Latinos living in the US for 0 to 4 years was 9%. However, it ballooned to 24% for individuals living in the US for 15 or more years (Kaplan et al., 2004).

More recent research has begun to critique the immigrant paradox, pointing to differences in the operationalization and documentation of this paradox and the increasingly inconsistent empirical findings within groups based on age, country of origin, race/ethnicity, and developmental domains (Marks et al., 2014; Teruya & Bazargan-Hejazi, 2013). Such inconsistencies are seen in reviewing the health disparities among Latino immigrants, particularly related to mental health and health behaviors. For example, some studies have shown that foreign-born Latino youth had fewer depressive

symptoms when compared with native-born peers (Potochnick & Perreira, 2010). However, other studies have shown that such differences disappear when controlling for socio-demographic characteristics (B. Cook et al., 2009; Filion et al., 2018). Still, other studies point out that Latino immigrant youth are more likely to report high rates of hypervigilance and stress (Brabeck & Qingwen Xu, 2010; Dreby, 2015; Rubio-Hernandez & Ayón, 2016). In addition, some researchers have found that Latino adolescent immigrants are at greater risk than US-born Latino youth for later substance use disorders (Kandula et al., 2004), which can be indicators of underlying mental health concerns.

Other immigrant groups also exhibit health outcomes that run counter to the immigrant-paradox. For example, refugee populations are often at the highest risk for developing mental health disorders due to the trauma prior to and during migration. Studies have shown that refugees report high rates of post-traumatic stress disorder, depression, and anxiety (Kandula et al., 2004). In addition, there is increasing literature to suggest that youth with unauthorized status have worse mental health outcomes than those with an authorized status. For example, findings from a study of 909 young adults attending undergraduate institutions with undocumented or unauthorized status from across 34 states showed that they reported significantly higher rates of clinical anxiety (29% of males, 37% of females) compared to the general population (4% of males, 9% of females; Teranishi et al., 2015). More research is needed to identify the mechanisms of risk and resiliency in the immigrant paradox. For example, by examining within-group variation based on ethnicity, country of origin, exposure to adversity, age, and

documentation status, the immigrant paradox may be better understood (Marks et al., 2014; Teruya & Bazargan-Hejazi, 2013).

Childhood Adversity as a Driver of Health Inequalities

There has been a significant amount of research investigating the causes behind health inequalities for minority populations. Much of this research focuses on understanding social determinants of health. Social determinants of health encompass non-medical factors related to health outcomes, including poverty, education, and the environment (Chang, 2019). Some researchers point to social determinants of health as accounting for up to 50% of the population's health (Ramírez García, 2019; Remington et al., 2015). Latino immigrants in the United States, particularly undocumented individuals, are significantly impacted by social determinants of health, including poverty, limited educational attainment, and healthcare access barriers (Chang, 2019). In addition, the impact of childhood adversity may represent another social determinant of health and potentially a significant driver of health inequalities in the Latino immigrant population.

In 1998 the Adverse Childhood Experiences (ACE) study changed how public health researchers understand childhood adversity and its critical role in health and well-being across the lifespan. In this landmark study, Felitti et al. (1998) surveyed 9,508 adults enrolled in a large HMO about adversities experienced in childhood. Participants were asked about their childhood and if they experienced physical, psychological, and sexual abuse and their exposure to household dysfunction, including living with substance abuse, mental illness, criminal behavior, and witnessing domestic violence. The results of this measure were then compared to the participants' medical histories as

extracted from their medical records. This study indicated that the prevalence and risk for smoking, obesity, depression, and suicide attempts increased as ACEs increased. Those individuals with four or more ACEs were 4.6 times as likely to report depressed mood, 1.6 times as likely to be severely obese, and 12.2 times as likely to report attempting suicide compared with individuals reporting no exposure to ACEs. Health risk factors including drug use, alcoholism, and risky sexual behavior also showed a significant gradient relationship with the increased endorsement of ACEs. Adult health was also strongly and consistently associated with ACEs exposure. For example, those endorsing four or more ACEs were 2.2 times as likely to be diagnosed with ischemic heart disease, 1.9 times as likely to have cancer, and 2.4 times as likely to have had a stroke.

Researchers continued to build on the 1998 study by exploring the far-reaching impacts of ACEs and their pathways of influence on adult health, well-being, and mortality. For example, studies have found that greater exposure to ACES leads to dramatically increased risks for a range of mental and physical health problems in adulthood, including heart and lung disease, cancer, smoking, alcoholism, drug abuse, depression, anxiety, suicide attempts, diabetes, and stroke (Edwards et al., 2003; Felitti et al., 1998; Gilbert et al., 2015).

ACEs studies often used adult samples and reported associations between ACEs exposure and age-related diseases, but the influence of ACEs can be seen biologically and behaviorally in children. Data from the 2016 National Survey of Children's Health analyzed the responses of 45,287 respondents. They found that among the nine ACEs

tested[2], economic hardship (23%) and parental separation or divorce (22%) were the most common (Crouch et al., 2019). Other studies have shown that exposure to ACEs is associated with increased hypervigilance, peer problems, emotional problems, and health risk behaviors in adolescents (A. Cook et al., 2017; Danese & McEwen, 2012; Potochnick & Perreira, 2010; Saluja et al., 2004).

Exposure to ACEs is thought to alter the allostatic system, the collection of biological systems (nervous, endocrine, and immune) that maintain physiological stability in times of increased internal or external stressors. In the presence of a threat, the allostatic system can activate the flight or fight response to get us out of danger, trigger an immune response (inflammation) to prevent infection, and stimulate the hypothalamic-pituitary-adrenal (HPA) axis to mobilize stored energy (Danese & McEwen, 2012). The allostatic system's ability to impact many biological systems makes it effective at dealing with threats. However, in the presence of chronic threats or adversity, this system can become overactive, leading to physical and psychological health issues. This overactivation is particularly relevant in childhood, as these biological systems are not fully matured and thus are at risk for abnormal development (Danese & McEwen, 2012).

Exposure to ACEs is even shown to have an impact across generations. Maternal exposure to ACEs is associated with risk factors for negative birth outcomes, as well as increased internalizing and externalizing behaviors in young children (Diesel et al., 2016; Moog et al., 2016; Myhre et al., 2014; Plant et al., 2017; Ranchod et al., 2016; R. Roberts

[2] The nine ACE examined were: parental separation or divorce, parental death, witnessing household violence, witnessing neighborhood violence, household mental illness, household incarceration, household substance abuse, racial/ethnic mistreatment, and economic hardship.

et al., 2004; Toepfer et al., 2017). Research has shown that maternal exposure to ACEs is associated with pre-pregnancy obesity and gestational weight gain (Diesel et al., 2016; Ranchod et al., 2016). Both are risk factors for negative birth outcomes and increase placental-fetal stress (Moog et al., 2016; Toepfer et al., 2017). All of these outcomes can negatively influence the future health and development of the child. Additionally, maternal experience of childhood abuse has been associated with increased internalizing and externalizing behaviors in offspring at three years of age (Myhre et al., 2014; Plant et al., 2017). Maternal childhood sexual abuse was associated with hyperactivity, conduct problems, peer problems, and emotional problems in offspring (R. Roberts et al., 2004).

There are far fewer studies investigating the influence of parental ACEs on adolescent offspring's psychological health or health risk behaviors. Using longitudinal samples, a study of 8,882 women and 11,402 of their offspring found maternal childhood exposure to physical, psychological, or sexual abuse corresponded to disparities in offspring's depressive symptoms as early as 12 years of age. This study also found that greater severity of abuse related to a greater prevalence of depression in offspring (A. L. Roberts et al., 2015). Another study of 2,999 mothers and 6,596 of their offspring found that maternal ACEs exposure was associated with a 39% increase in the likelihood that the woman would smoke during pregnancy and a 20% increase in the likelihood that her offspring would start smoking before the age of 18 (Pear et al., 2017). The research found that this risk was greater for Latina mothers.

The mechanisms by which ACEs influence subsequent generations are not yet fully understood, but there is evidence that both biological (Toepfer et al., 2017; Voncina et al., 2017) and psychological (Choi et al., 2017; Fuchs et al., 2015; Murphy et al., 2014)

pathways, particularly parenting behaviors, are impacted. This evidence supports the hypothesis that parental ACEs exposure is related to adolescent offspring's psychological health and health risk behaviors.

Childhood Adversity in the Latino Population

Within the original 1998 ACEs study sample, 4.8% of the sample was identified as Black and only 5.4% as Hispanic (Felitti et al., 1998), limiting researchers' ability to examine potential variability in exposure and impact of ACEs between racial and ethnic groups. Much of the ACE research that followed continued to rely on predominantly white, middle-class samples. The Philadelphia Urban ACEs Study, conducted in 2013, was designed to better understand the prevalence of ACEs in racial minority populations. This study showed that Black adults were more likely to endorse exposure to ACEs than white adults (Public Health Management Group, 2013). Despite the greater prevalence of ACEs in this population, studies report that the relationship between ACEs exposure and subsequent health issues is weaker for Black adults (Monnat et al., 2015). Studies examining ethnic minorities tend to produce equally novel results. For example, in a sample of 5,117 adult Latinos in the US, Llabre and colleagues (2016) found a high prevalence of ACEs exposure (77.2% endorsed one or more ACEs). However, while there was an association between ACEs exposure and depressive symptoms, smoking, alcohol use, cancer, and heart disease, there was no association between exposure and asthma, diabetes, or stroke, as found in studies of white adults. An examination of the impact of incarceration of a household member (a common ACE) showed that, in a Latino population, exposure to this ACE was associated with greater odds of smoking or drinking in adulthood but not with increased risk for obesity. In contrast, these

associations differed for Whites (Gjelsvik, 2013).

Only one large study has examined ACEs in the Latino immigrant population. Using a sample of 12,162 Hispanic children from the National Survey of Children's Health, Caballero and colleagues (2017) found Hispanic children from immigrant families (the child's nativity was not reported) had lower odds of endorsing ACEs than native-born US Hispanic children. However, the authors point out that these results may not represent a health advantage for Hispanic immigrants and call for future research to investigate the potential for ACEs unique to the immigrant experience.

Critiques of the original ACEs study and of the subsequent literature that was born out of it have noted that the original 10 ACEs categories fail to capture "many dimensions of childhood adversity derived from social inequalities and thus underrepresents the presence of adversity among patients and in communities" (McEwen & Gregerson, 2019, p. 790). Critics also point out that the focus on health outcomes in adulthood ignores adversity's influence in childhood and across generations (McEwen & Gregerson, 2019).

Before migration, as many as one-half of immigrant Latino youth experience trauma in their home countries (Li, 2016). Currently, youth leave communities in Central America due to heightened political, domestic, and community violence (Jaycox et al., 2002; Kaltman et al., 2011). Large numbers of Latino immigrant youth also experience a traumatic event during migration (de Arellano et al., 2018). These events may include sexual assault or kidnapping (Kaltman et al., 2011), high-risk decisions in modes of travel to the US border, or abuse at the hands of those paid to escort youth (Fulginiti, 2008; Markham, 2017). Even after arriving in the US, Latino immigrants continue to face

significant adversities, including fear of deportation of themselves or family members (Abrego et al., 2017; Ayón, 2018), acculturation stress, discrimination (Golash-Boza & Hondagneu-Sotelo, 2013), and increased stigmatization and shame about their documentation status (Abrego, 2011). The accumulation of traumatic experiences across the immigration process has been linked to higher rates of depression, anxiety, and other mental health disorders in adolescents, that continue as youth become adults (American Psychological Association., 2012; Familiar et al., 2011; Levers & Hyatt-Burkhart, 2012; Salas et al., 2013). Youth who experienced trauma before or during the migration process are also at greater risk for academic, social, behavioral, and mental health issues (Delva et al., 2013; Gulbas et al., 2016; Perreira & Ornelas, 2013). An examination of traumatic exposure among Latino immigrant youth found that in a sample of 131 participants 30% reported experiencing a traumatic event during their immigration process, and 21% reported that the immigration process itself was a traumatic experience in that the individual feared potential death or grave injury of themselves or a loved one (de Arellano et al., 2018).

These findings strongly suggest that experiences specific to Latino immigrants may be related to health risk behaviors and could be drivers of health disparities. Trauma is a complex, multi-dimensional phenomenon, but its effects on immigrant Latino youth in the US who experience unique historical and ongoing adversities are poorly understood. Expanding our conceptualization of ACEs has proven beneficial in previous studies. For example, peer victimization, social, economic status, and community violence exposure as ACEs added significantly to the prediction of mental and physical health symptoms for youth (Finkelhor et al., 2015). Therefore, ACEs that reflect the experiences faced

uniquely by Latino immigrants are needed to understand their role in the inequities faced by this population.

Theoretical Underpinnings

This project encompasses multiple domains (behavioral and sociocultural environment) and levels of influence (individual, interpersonal, and societal). Thus it is grounded in Bronfenbrenner's ecological systems theory (Bronfenbrenner & Morris, 1998). Urie Bronfenbrenner was a developmental psychologist interested in better understanding child development. Working in the early second half of the 20th century, Bronfenbrenner developed ecological systems theory to capture the impact of the environment on a child's development. He proposed a theory that recognized multiple levels of influence on a child's development, from the most proximal individual level up through society's more distal cultural norms. The influences of these levels or systems, and a child's interactions with them, work to shape a child's development (Bronfenbrenner, 2009). Bronfenbrenner notes that interactions between these systems are bi-directional, and the individual is impacted by and impacts these systems (Bronfenbrenner, 2009).

The different levels of the ecological systems theory are as follows: At the center is the individual, encompassing personality, biological, and genetic influences. The microsystem is the environment in which an individual has direct contact. It consists of family, friends, and school. The mesosystem is the interconnections between the different environments within the microsystem. The exosystem represents larger and more remote systems that an individual does not interact with but continues to influence development (Bronfenbrenner, 1986). The macrosystem is the cultural norms and values of society.

The final system in Bronfenbrenner's model is the chronosystem, which accounts for the impact of transitions that occur over the lifespan, both at the individual level and the family level (Bronfenbrenner, 1986).

The recognition of the family as an integral component of child development is one of the most relevant aspects of ecological theory. Theoretical frameworks that fail to recognize the role a family plays in the child-wellbeing are poor foundations on which to base studies of child health and well-being. Garciá-Coll and colleagues (1996) highlight the usefulness of engaging ecological theory in studies of minority children. However, these authors used the ecological model to develop an integrative model that highlights the importance of accurately conceptualizing the influence of the larger systems (exosystem and macrosystem) on minority children. For non-minority children (and in Bronfenbrenner's original description), these systems do not directly interact with children. Instead, they exert influence via the meso and microsystems. However, for minority children, these systems directly influence their lives through racism, discrimination, and oppression. Ultimately, the social structures of society limit access to resources and thus impact the developmental trajectory of minority youth (García-Coll et al., 1996).

In their 2011 article *Growing up in the shadows: The developmental implications of unauthorized status,* Suarez-Orozco et al. built on Garciá-Coll's integrative model. By applying the ecological system theory within a developmental framework, the authors sought to explain how the development of immigrant children is uniquely impacted by an undocumented immigration status (Suárez-Orozco et al., 2011). The authors state that "developmentally specific experiences are shaped by various ecological contexts,

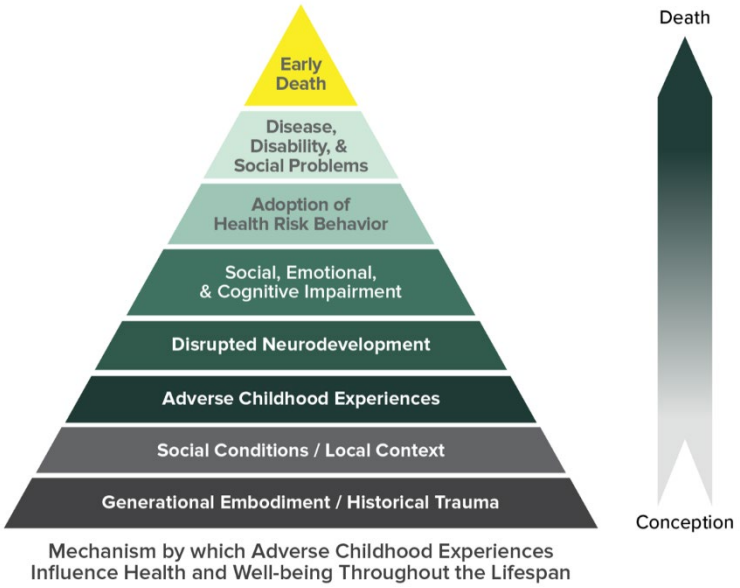
systems, and processes, which will have implications for the developmental outcomes of children and youth growing up under the shadow of unauthorized status" (p 444; see figure 2.1). In the literature exploring the impacts of unauthorized status, much of the research has focused on adolescents and young adults while ignoring children in early and middle childhood. Given the different developmental tasks associated with different developmental periods, the authors note that unauthorized status will likely relate to different outcomes. Different social-ecological environments will have "distinct experiential and developmental implications at each specific developmental period" (p. 450). Suarez-Orozco et al. postulate that an unauthorized status can interrupt the typical developmental experience leading to negative impacts on young people's healthy development across outcomes (e.g., health, social-emotional development, educational achievement, civic engagement, employment). Therefore, recognition of the developmental period of the individual is essential to understanding and interpreting findings. This framework is valuable for identifying potential risk factors associated with an unauthorized status, but it also allows for the identification of potential protective and resiliency factors.

Theoretical Model

The conceptual model for the current study expands Suarez-Orozco et al.'s ecological-developmental conceptualization in two ways. First, it includes multiple structural aspects of childhood adversity. It incorporates aspects of life course by including outcomes expected in childhood that may lead to outcomes seen in adulthood or in offspring. This comes from the ACE pyramid (figure 2.2), which details how ACEs influence adult health. The ACE pyramid postulates that exposure to ACEs disrupts

healthy neurodevelopment, leading to social, emotional, and cognitive impairment, thus increasing the likelihood of health risk behaviors and, ultimately, disease, disability, social problems, and early death. In the current model, this path is extended to include intergenerational influences. More recently, the conceptual framework for the ACE Study has been expanded by adding the bottom two steps to the pyramid (generational embodiment/historical trauma and social conditions/local context). The conceptual model for the current study also includes these factors, though aligning more with the framework proposed by Suarez-Orozco et al. and the ecological model.

Figure 2.1
Conceptual Framework for the ACE study, from CDC. 2019



The model developed for this study (see figure 2.3) illustrates the long-term goals of this research. It shows how the current study (outlined in a dotted red line in figure 2.3) builds the foundation for future research to explore different outcomes and potential moderating influence. The study model shows that childhood adversity impacts the

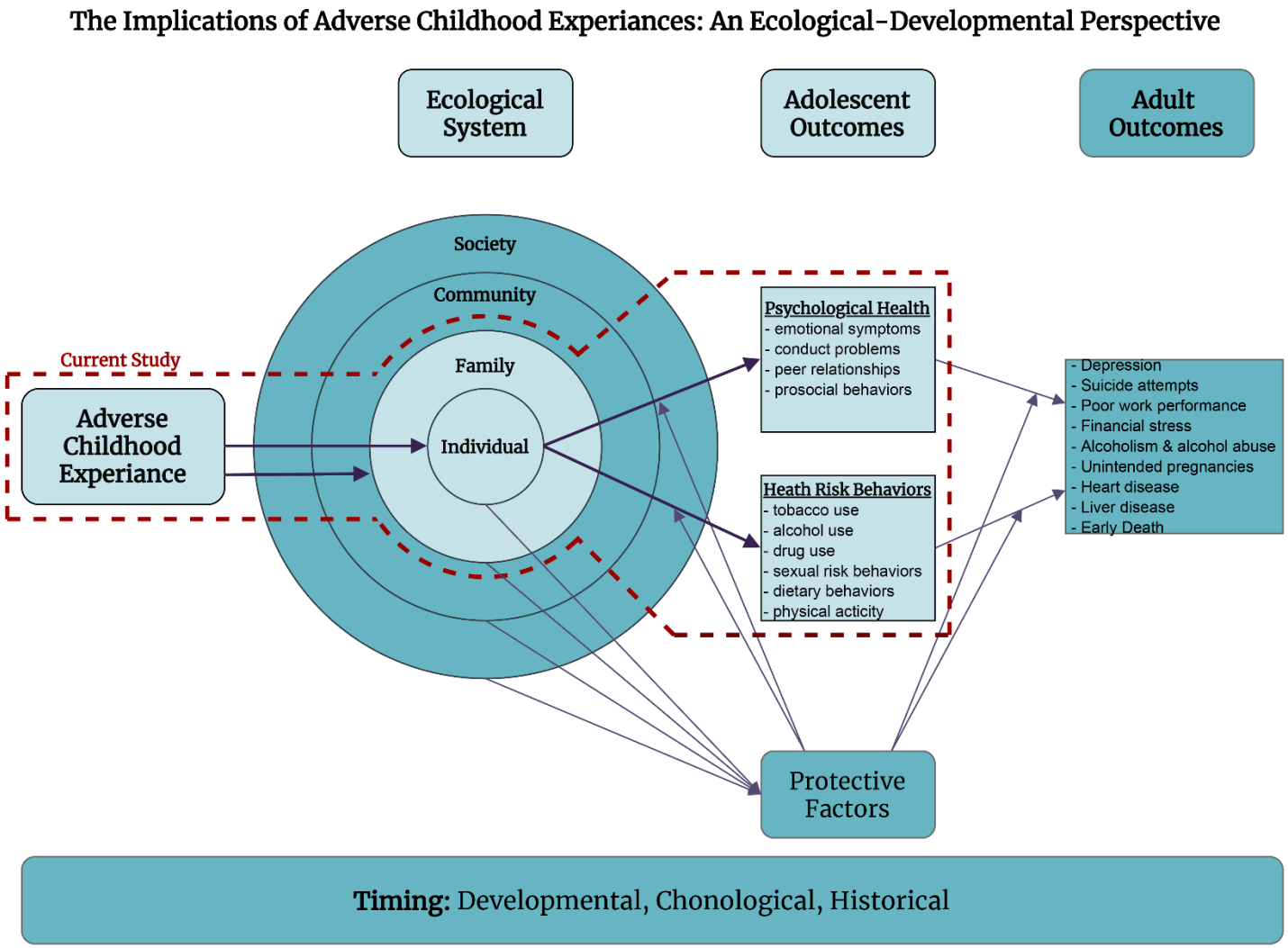
family and individual, resulting in poor physical and psychological health. The model separates the outcomes seen in childhood and those seen in adulthood. This model also includes potential protective factors that come from different domains and may mitigate the impact of ACEs. Finally, the model contextualizes this process in time, which includes the individual's developmental period, historical and chronological time.

The long-term goal is to develop a body of research that examines early adversities among Latino immigrants, the pathways by which these ACEs have an individual and intergenerational influence on health, and ultimately to identify the protective and resiliency factors that can interrupt the negative influence of ACEs. This conceptual framework allows for exploring risk and protective factors across various social-ecological environments and developmental pathways.

The current study focuses on building the foundation for this body of research by establishing the underlying relationship of ACEs (from multiple ecological levels) on adolescents' psychological well-being and health risk behaviors. Future research will then examine the mechanisms by which ACEs influence outcomes (again at multiple ecological levels), protective factors (at multiple ecological levels) that interrupt the influence of ACEs, and ultimately identify and develop potential interventions to target these protective factors. This research will provide practitioners, researchers, and policy makers with vital information for developing targeted interventions to address this social determinant of health.

Figure 2.2

Conceptual Model for Current Study



Chapter 3 Methods

Study Design

Due to the exploratory nature of the research questions, the descriptive goals of the proposed study, and the availability of appropriate data, I designed a non-experimental cross-sectional study. Obvious ethical issues preclude an experimental design, and the length of time required for longitudinal research would delay disseminating potentially informative findings. Cross-sectional studies present some limitations, but the benefits of this type of design outweigh those limitations. Cross-sectional studies allow for relatively quick data gathering from a large sample. A cross-sectional study will not inhibit the investigation of the relationship between the study variables, but it will impact our eventual discussion of causality. However, as all causal relationships are based on theoretical conceptualization, there should be the opportunity to make some inferences about potential causality.

Sample Size & Power Analysis. A sample size of 250 dyadic pairs will provide sufficient power for the proposed analysis. A sample of 250 individuals allows for the detection of moderate effect sizes (0.5) with a power of .99 or small effect sizes (0.3) with a power of .92, using a two-sided independent t-test with a p-value of 0.05 (Cohen, 1988). When designing a study to test a structural equation model, there are two considerations related to power, overall model fit and power to detect anticipated path coefficients. Regarding model fit indices, I need a sample size that minimizes the root-mean-square error of approximation's (RMSEA) confidence interval, so it lies within the region of close fit (i.e., <.05) at the chosen power level (MacCallum et al., 1996). The proposed model has approximately 315 degrees of freedom. To reject 'not close fit'

regarding the quality of data-model fit, assuming a .02 level of non-centrality (conservative) and a power level of .8, a minimum sample size of 105 is recommended (Hancock & Freeman, 2001).

In order to estimate the power of the proposed sample size to detect potential moderate or small path coefficients, I conducted a Monte Carlo simulation. In this simulation, the two independent variables (traditional ACEs score and immigrant-specific ACEs score) were treated as measured variables, as was the behavioral risk score dependent variable. In addition, the four subscales of the Strengths and Difficulties Questionnaire (SDQ) measuring psychological risk (emotional symptoms, conduct problems, peer relationship problems, pro-social behavior) were included as latent constructs, with the five items as the measured variables. Finally, hypothesized loadings for the items and the correlations between the four subscales were derived from existing literature reporting on the psychometrics of the SDQ among adolescents (He et al., 2013). The Monte Carlo simulation results indicate that a sample of 250 individuals provides sufficient power (1- β above .8) to estimate standardized path coefficients with a beta of .2.

Data Collection Procedures

As a researcher who is not a member of the Latino immigrant community, I would face many barriers to recruiting and collecting data on this population (Zayas et al., 2017). Additionally, accurately interpreting results would be limited. Therefore, I collaborated with a community partner who brings access to this population and cultural expertise regarding their needs and experiences. Identity, Inc. is a non-profit organization in Montgomery County, MD that provides positive youth development programs to

Latino youth and their families. Identity built solid ties and trust within the local Latino immigrant community over 20 years. Identity regularly gathers program evaluation data from the youths and families receiving services through their programs. These data include demographics, psychological and physical health indicators, ACEs, health risk behaviors, and personal beliefs.

Identity collected the data for the current study as part of their intake assessment from all youth receiving services from their programs. Identity staff members obtained informed consent from the parent and assent from the youth prior to collecting data. Self-report data are then collected from youth participants by Identity's trained staff. Participants indicated the language (English/Spanish) they want to use to complete the survey. Youth are provided with a survey form that has been prepopulated with their name, date of birth, and the date. To address any literacy concerns, Identity staff read the survey aloud to the youth (in a group setting), and they privately marked their answers on their survey form. Staff members later reviewed specific items on the completed surveys to look for indicators of potential risks and followed up clinically as necessary. Identity complies with all Maryland mandated reporting laws (Maryland Family Law 5-704), as outlined in the consent/assent documents and explained to participants and families. Identity collects parent data during home-based individual intake meetings with trained Identity staff members. Survey items and response options are read aloud to the parents, who then marked their answers privately on paper.

Data from the intake measures are subsequently entered into Identity's data management system by Identity staff. The research team supported Identity in developing appropriate data measures and data collection methods. In order to maintain the

confidentiality of program participants, the research team did not engage in the data collection, and there was a firewall between Identity and the research team, whereby no identifiable information was transferred from Identity to the research team. This firewall ensured the research team had no access to any identifiable information and protected the participants' privacy and confidentiality.

Confidentiality. After collection by Identity Staff, the data are stored on encrypted servers and only available to Identity staff. Before transferring data to the research team, Identity completely de-identified the data by removing any personally identifiable information (as defined in NIST Special Publication 800-122 and HIPPA).

All parties, including the University's Export Compliance Officer, signed a data use agreement outlining the protections to maintain participants' anonymity and confidentiality. As a result, this study was granted an expedited review under category five by the University of Maryland IRB (1565706-1). Additionally, a waiver of consent and assent was granted under 45CFR46.116(f)(3)/45CFR46.408(c)/45 CFR 46.408(a).

Participants

Participants were middle and high-school Latino immigrant youth participating in Identity's positive youth development programs for the first time. Table 4.1 reports the baseline characteristics of the sample. A slight majority (59%) of the sample was male, and the mean age of participants was 15.8 years (*SD* = 1.9 years, range 10 to 20). Most youth (87%) were born in one of the three nations of the Northern Triangle of Central America (El Salvador, Honduras, and Guatemala). However, the sample also included youth from multiple Latin American countries, including the Dominican Republic (4%) and Ecuador (2%). A small percentage of youth in the sample (less than two percent per

country) were born in Peru, Mexico, Bolivia, Colombia, Venezuela, Brazil, or Nicaragua. A large majority of the youth (89%) elected to complete the intake survey in Spanish. Approximately 40% of youth reported living in the US for less than one year, and approximately 68% arrived in the US in the last three years.

Measures

Traditional Adverse Childhood Experiences (ACE-T)

There is currently no official method or measure for assessing ACEs in a population. The original ACEs study was constructed using previously validated scales, including the Conflict Tactics Scale and the 1988 National Health Interview Survey (Felitti et al., 1998). The original ACEs survey included 28 questions on seven topics of child adversity, with participants reporting whether they experienced the event prior to age 18. Since that time, studies examining the impact of ACEs on health have used various constellations of items, topics, and response types (yes/no, many times/once/never). Cumulative scores are calculated on most ACEs scales with an endorsement of the item corresponding to a score of 1 and non-endorsement with 0. A thorough analysis of the ACEs items used on the National Survey of Children's Health (NSCH) found internal and external predictive validity using a cumulative score method via confirmatory factor analysis, latent construct analysis, and structural equation modeling (Bethell et al., 2017). Other studies show similar reliability and validity (Meinck et al., 2017; Wingenfeld et al., 2011). Cumulative and cutoff ACE scores are commonly used in ACEs studies and are considered valid and reliable (Bethell et al., 2017; Meinck et al., 2017; Wingenfeld et al., 2011).

For the current study, adolescents indicated if a specific event ever happened to

them (0 = *no*, 1 = *yes*) on 11 items. Of the 11 items (see appendix A), three items assess exposure to abuse ("Did your parents or other adults in your home ever hit you so hard that you had marks or were injured?"). One item assesses neglect ("Did you often or very often feel that you did not have enough to eat, had to wear dirty clothes, or had no one to protect you?"). Furthermore, seven items assess household dysfunction ("Did you ever live with a household member who was a problem drinker or alcoholic or used illegal drugs?"). These items come from the original ACEs study and the NSCH scale and assess the domains of child adversity used in the original ACEs study. These items are validated as discussed above.

Economic hardship. A proxy item was identified to measure economic hardship to be more in line with the NSCH 9-item ACE scale. Youth were asked if they receive Free and Reduced Meals at School (FARMS) (0 = *no*, 1 = *yes*, 2= *I don't know*). I recoded this so that "I don't know" was treated as a null response (0). FARMS is an appropriate proxy for economic hardship. It is a needs-based program for children and families living at or below the Federal Poverty Line.

I calculated summed ACE scores (0 to 11) for each youth. Larger total scores indicated a higher number of traditional adverse experiences. The ACE-T measure was completed by both adolescents and their parents, reporting information on their own experiences. However, Identity only collected eight of the 11 ACE-T items from parents.

For the current study, the psychometric properties of this measure (Cronbach's alpha, *H*-coefficient, and confirmatory factor analysis) are reported. These results guided how the measure was utilized in the structural models for research questions two and three.

Immigrant-Specific Adverse Childhood Experiences (ACE-I)

A primary goal of research question one is developing validated measure of immigrant-specific ACEs (ACE-I), as there is currently no such measure. Researchers have acknowledged the need to investigate the usefulness of including such items in studies (Allem et al., 2015; Caballero, Johnson, et al., 2017; Llabre et al., 2016). A 14-item draft of potentially traumatic events specific to the immigrant community was developed for this study (see Appendix B). Items were identified using the current literature about migration stress (e.g., Fazel et al., 2005; Pumariega et al., 2005), consultation with an expert in the field, and formative qualitative investigations I conducted with our community partner. Items include reasons for forced relocation, documentation status, witnessing state or police violence, witnessing gang violence, and the perceived safety of the individual's journey to the US. Items begin with the prompt, "when thinking about the first 18-years of your life."

As with the traditional ACE measure responses, all items are yes/no. First, three items asked the respondent to report on immigration-related family separation. The participant is asked if they were ever separated from their mother or father (asked separately) because of immigration issues. Participants are further asked if "any family member has ever been arrested or detained by police or ICE for immigration reasons." If yes, who that person was (self/ mother/ father/ sibling/ grandparent/ other). Three items assessed potential reasons for leaving one's birth country ("Were you ever forced to leave your birth country because of war, political violence, or unrest/ gang violence/ natural disaster"). Five items assessed the potentially traumatic events that occurred during the journey to the US ("During your journey to the US, did you lack food and water?"). Next,

exposure to violence was assessed with two items asking the participant, "did you ever see a family member, friend, or any other person killed or beaten up by [soldiers or police/gang members]." If participants responded "yes" to this item, they were asked where this occurred (in my country of birth (other than the US)/on my journey to the US/in the US)." Finally, two items assessed the experience of living in the US as an immigrant. One item asked, "did you ever live in a country where you were considered an undocumented immigrant?" and a separate item asked, "Regardless of your immigration or citizenship status when you were under the age of 18, did you often or very often worry that you, a family member, or a close friend could be deported?"

This measure was completed by both the adolescent and the parent, reporting on their own experiences. However, Identity only collected 12 of the 14 ACE-I items from parents. For the current study, the psychometric properties of the ACE-I were assessed using Cronbach's alpha, *H*-coefficient and confirmatory factor analysis. These results guided how the measure was the structural models for research questions two and three.

Psychological Health

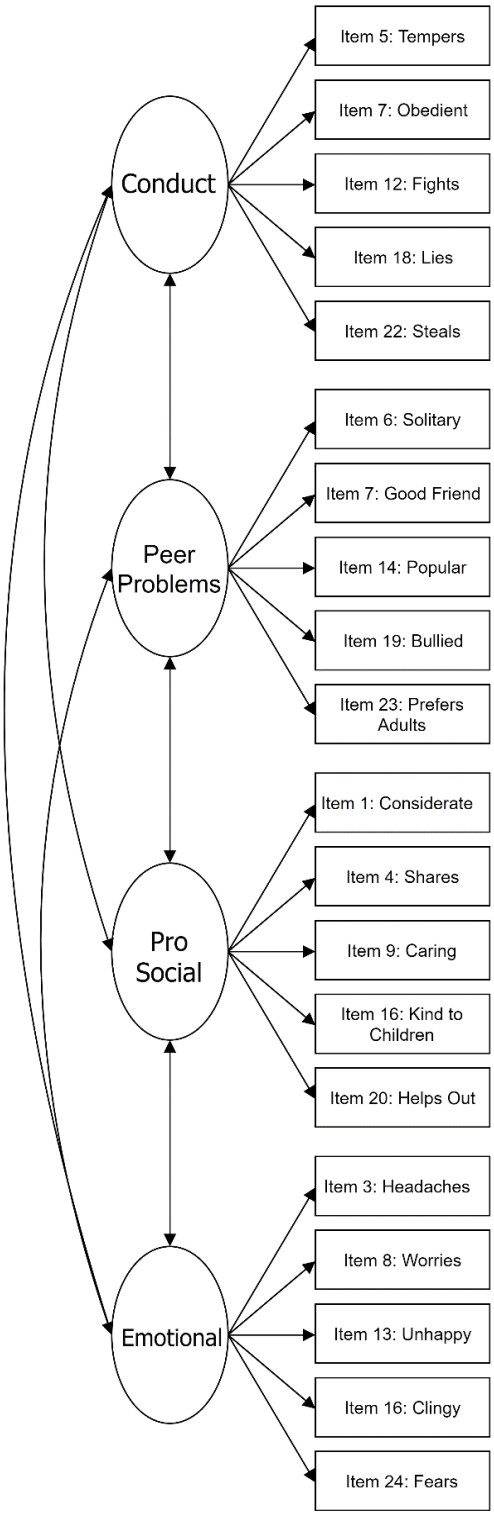
The youth completed the Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001), a brief behavioral and mental health screening questionnaire for 3 to 18-year-olds, to measure current internalizing and externalizing behavior problems (see Appendix C). The SDQ consists of 25 items divided into five subscales (emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems, pro-social behavior). In the current study, only four subscales were included in the data gathered by the community partner. The items from the hyperactivity/inattention subscale were not collected. For each item, respondents were presented with a descriptive stem

(e.g., I get very angry and often lose my temper, other people my age generally like me,' I worry a lot) and asked to indicate how accurate the item is for themselves using a 3-point scale (0 = *not true*, 1 = *somewhat true*, and 2 = *certainly true*). Items phased in the positive (e.g., I have one good friend or more) are reverse coded so that higher values indicate more difficulties.

The SDQ allows the total and subscale scores to be divided into four categories, identifying the severity level (close to average, slightly raised/slightly lowered, high/low, very high/very low). Alternatively, scores can be treated as continuous. The SDQ is shown to function as well as longer assessment tools including the Child Behavior Checklist (Mason et al., 2012). The total difficulties score of the SDQ is shown to be reliable with Cronbach alpha ranging from .80 to .87, and the subscales have also been shown to be reliable (α = .60 to .88), as is retest stability after 4 to 6 months (0.62 on average; Goodman, 2001). The measure is one of few tested and validated in diverse populations, specifically Latino immigrant populations. A Spanish version of the SDQ is available. It has been found to be valid (total difficulties score α = .84, subscales ranging between α = .75 and .78; Caballero, DeCamp, et al., 2017; Ortuño-Sierra et al., 2018).

In the current study, the five items of each subscale are treated as an observed variable that load onto the underlying subscale factor (see figure 3.2). This approach allows for the maximum utility of all data without relying on imputation. The reliability coefficients (*H*- coefficient), standardized loadings, and the fit indices from the confirmatory factor analysis are reported. The prosocial scale was examined separately due to sample size and model fit.

Figure 3.1
SDQ Measurement Model



Health Risk Behaviors

Six selected items from the Youth Risk Behavior Surveillance System (CDC, 2019) ask adolescents to report: tobacco use, alcohol use, other drug use, sexual risk behaviors (currently sexually active, condom use), and physical fights (see Appendix D). These items have negative relationships with health outcomes later in life (Vagi et al., 2015; Vivolo-Kantor et al., 2016) and are reliable measures of adolescent health risk behaviors (Brener et al., 2002). Then, these items will be used to calculate a behavioral risk composite outcome variable that dichotomizes each behavior (0 = *low risk* = 0 vs. 1 = *high risk*) and sums the adolescent's overall number of health risk behaviors.

Similar risk composite indices have been used extensively in adolescent research and are valid (Alves et al., 2015; Flisher et al., 2000). The validity of the proposed behavior risk index will be tested by analyzing the measure's psychometric properties, including via the confirmatory factor analysis process. Depending on the results of the CFA, the composite risk index (range 0 to 7) may be used as a measured or latent variable in the structural equation models for research questions two and three.

Sociodemographic Variables

In addition to the measures discussed above, demographic data were collected from the adolescents and parents. These potential covariates include age, gender, race/ethnicity, country of birth, level of education, year immigrated to the US, occupation, health insurance status, and household income.

Analysis

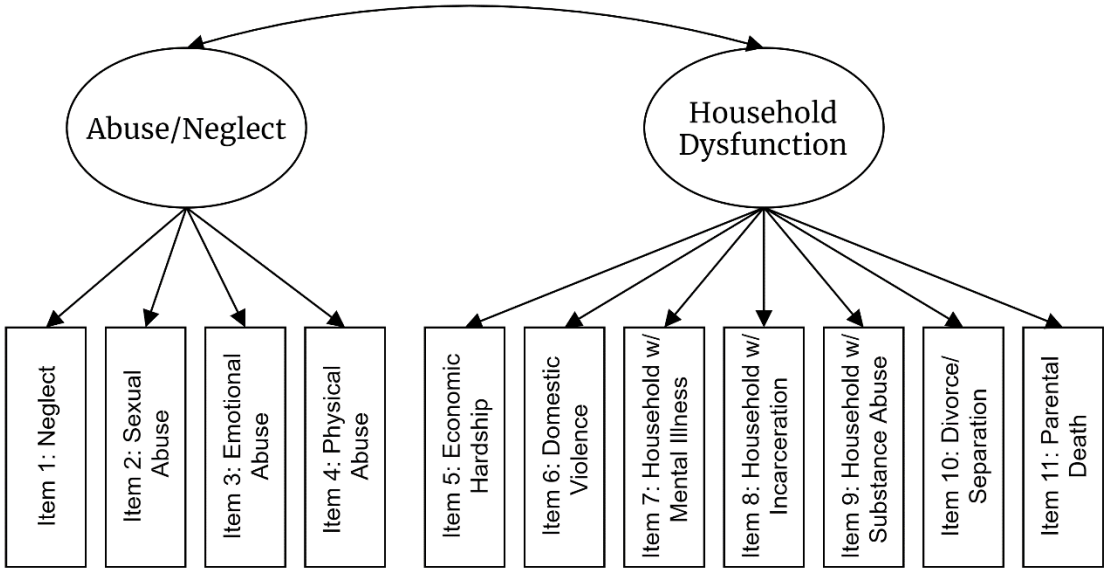
Research Question One

I described the sample of youth by reporting sociodemographic variables. Mean,

mode, standard deviation, and range statistics will be reported for the total ACE-T and ACE-I measures. Additionally, I report the prevalence of each ACE item. Potential subgroup differences (e.g., by gender, age) will be explored using independent t-tests.

The validity of the ACE-T and ACE-I measures were investigated by determining the psychometric properties of the two measures via Cronbach's alpha, confirmatory factor analysis (CFA), and *H*-coefficient. As the ACE-I measure is untested, the factor structure will be identified by examining the prevalence of items and through initial exploratory factor analysis. Alternatively, the ACE-T measure is established, and I have developed an *a priori* hypothesis related to the groupings of items. A CFA will allow for testing a two-factor structure (Figure 3.2). I then use the chi-squared difference test to determine if the two-factor model is significantly better than a one-factor model. The results of these analyses will aid in determining the most appropriate way to utilize the two ACE measures in the subsequent analysis of research questions two and three (e.g., using total or item-level scores, items to retain or delete).

Figure 3.2
Proposed CFA for ACE-T measure.

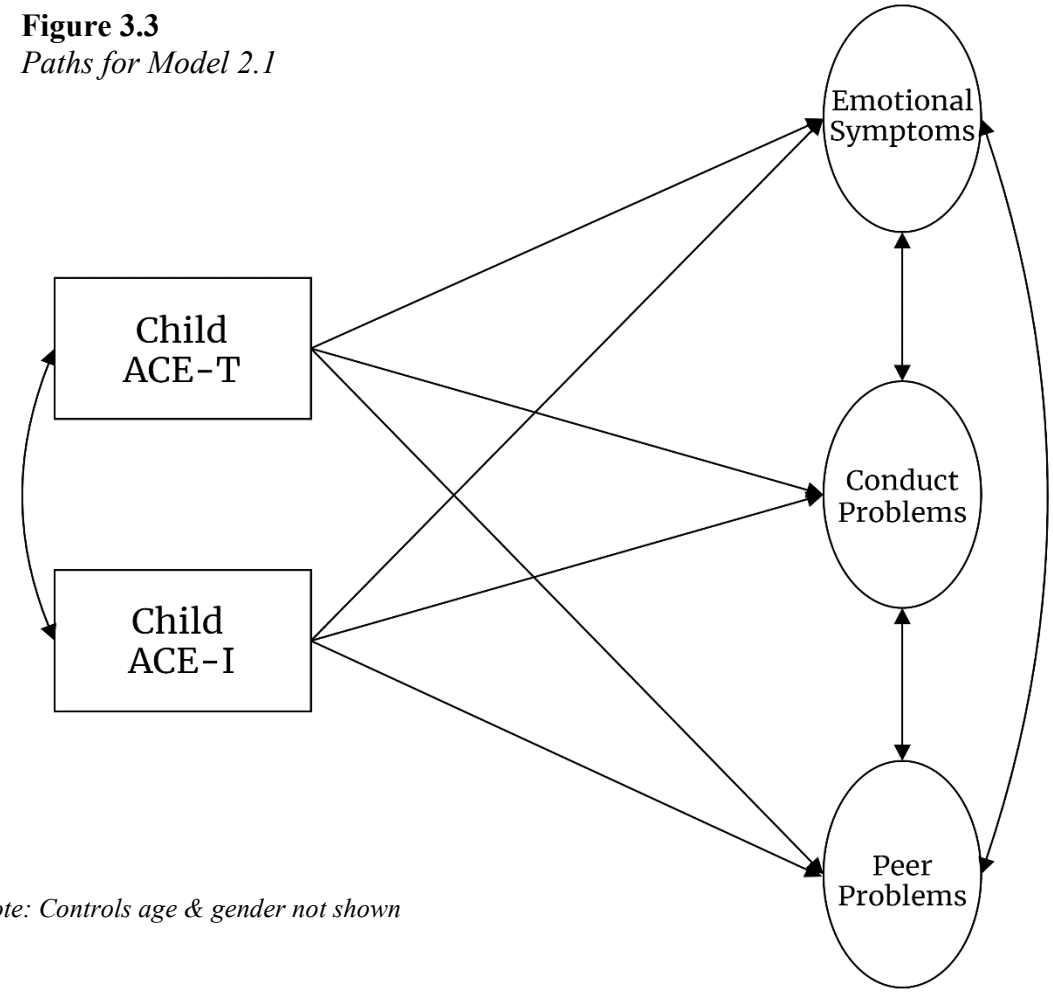


Research Question Two

First, I obtained descriptive and correlational results for all study variables. I then conducted CFAs for the outcome variables and modified those measures as required. Next, I reported bivariate statistics, including correlations and independent t-tests, to examine potential differences in ACE scores between groups based on demographic characteristics (gender, age, length of time in the US). As the ACE scores were not normally distributed, the effect sizes of group differences were calculated using Cohen's *d* with bootstrapping (500 draws). Finally, I used structural equation modeling to examine the relationship between ACEs, psychological well-being, and health risk behaviors.

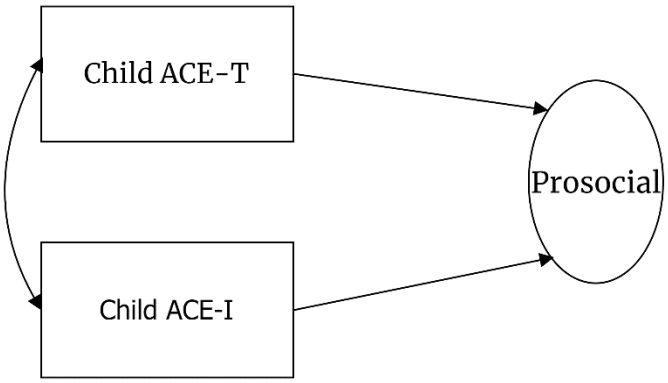
How the ACE-T and ACE-I variables are included in the final structural model (e.g., as latent constructs, sum scores, factor scores, cutoff scores) will be based on sample size, sufficient variability in response patterns, and results of the CFA. Total and subscale scores can be calculated for the selected measure of psychological health (SDQ). However, the limited testing within the Latino population (and thus the potential unique relationships between items and factors), and the structure of the SDQ, make utilizing a latent variable path analysis model an appropriate option (Palmieri & Smith, 2007; Roy et al., 2008). All reversed items were covaried. I made additional SQD CFA model re-specifications based on the data-model fit and the Lagrange multiplier tests (modifications indices). I then conducted latent variable path analysis to examine the study models. Sample size and model fit required that psychological well-being, prosocial skills, and health risk behaviors be examined in three separate models (see figure 3.3 thru 3.5).

Figure 3.3
Paths for Model 2.1



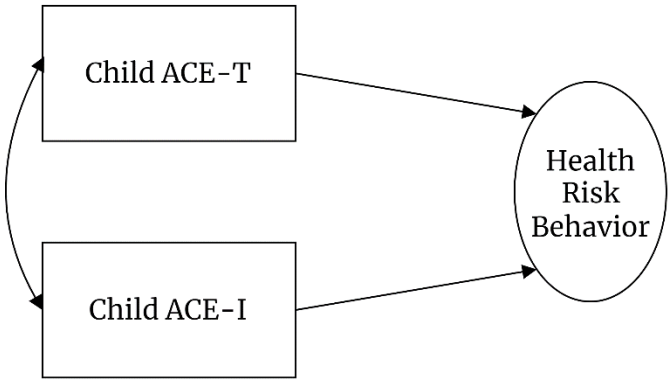
Note: Controls age & gender not shown

Figure 3.4
Paths for Model 2.2



Note: Controls age & gender not shown

Figure 3.5
Paths for Model 2.3



Note: Controls age & gender not shown

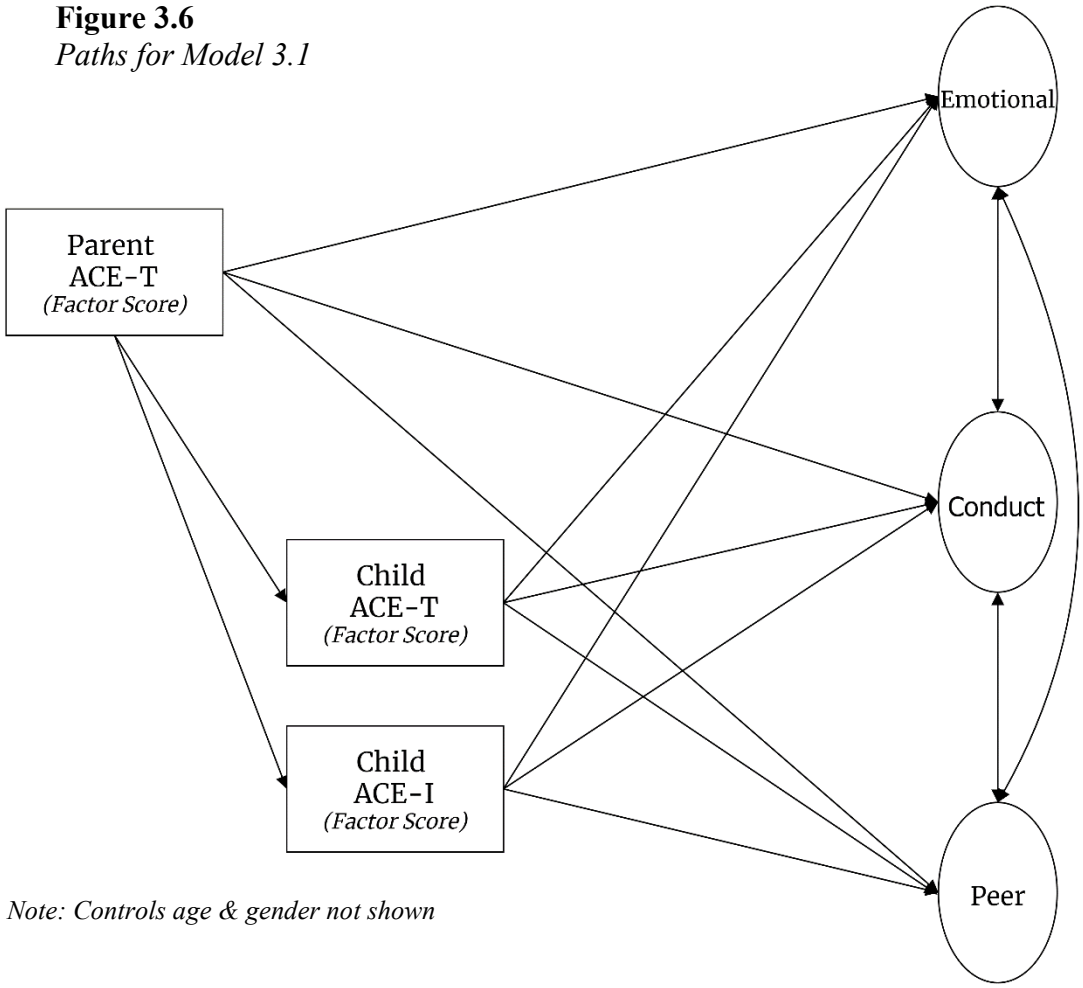
Research Question Three

The process outlined for the analysis of research question two was used to test question three, but the independent variables were parental ACE scores. The dependent variable was the adolescent's psychological well-being. The adolescent's ACEs scores were included in the model as a potential mediator between the parent's ACEs factors and the dependent variables (see Figures 3.6 & 3.7). Both direct effects from parent ACE scores and indirect effects (through the adolescent's ACEs scores) were estimated. Latent variable path analysis was used to test the models for research question three. Bootstrapping (5,000 draws) was used to estimate the indirect effects.

Estimator and Assessing Model Fit

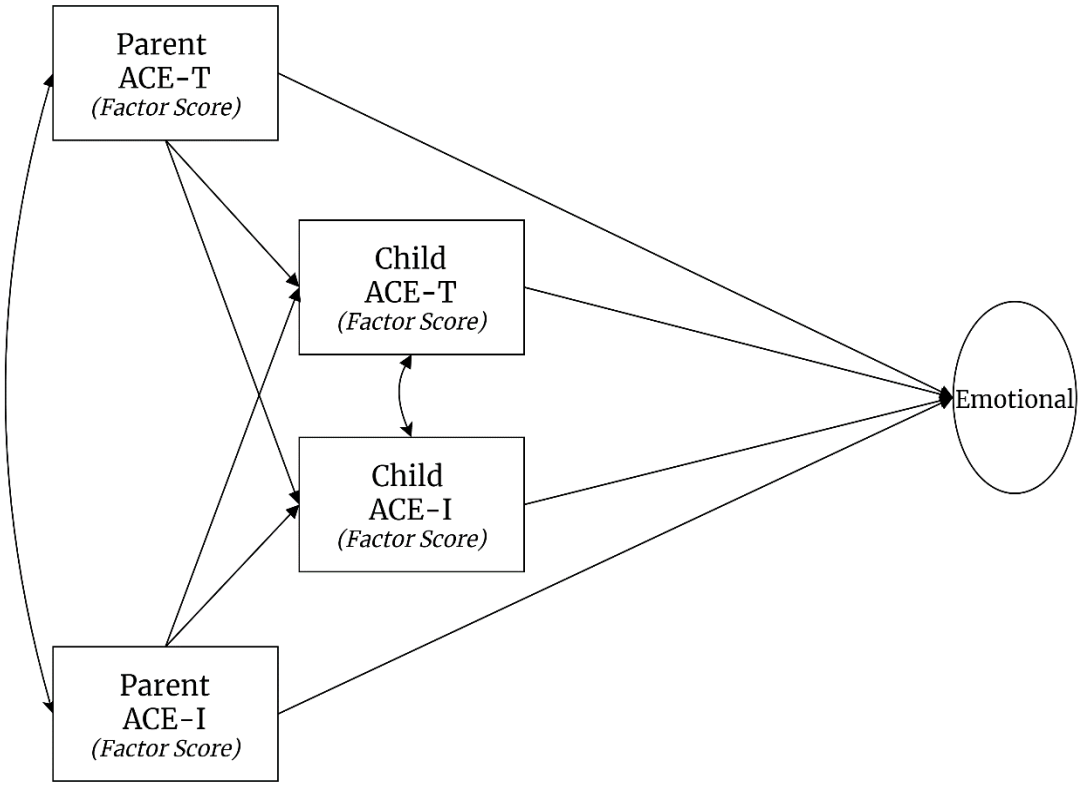
As the measured items from the ACE-T, ACE-I, SDQ, and health behavior risk index are categorical, the weighted least squares (WLSMV) estimation method was used (Hox et al., 2010; Muthén, 1984). The WLSMV is useful when modeling ordered data as it is a robust estimator and does not assume normality (Brown, 2015). Acceptable model fit for the CFAs and structural model was assessed using the following guidelines: a non-significant $\chi 2$, or a $\chi 2$/df ratio of less than 3:1 (Barrett, 2007), Confirmatory Fit Index (CFI) > .95, Root Mean Square Error of Approximation (RMSEA) < .06, and Standardized Root Mean squared Residual (SRMR) <.08 (Hu & Bentler, 1999). I used Stata version 17.0 to conduct descriptive, univariate, and bivariate analyses and Mplus version 8.6 for the CFAs and structural equation models.

Figure 3.6
Paths for Model 3.1



Note: Controls age & gender not shown

Figure 3.7
Paths for Model 3.2



Note: Controls age & gender not shown

Chapter 4 Results

The three research questions organize the results of the analysis. I start by describing the sample of Latinx immigrant adolescents used for research questions one and two. I then move into the analysis for research question one. First, I report descriptive statistics of the two ACE measures and the confirmatory factor analysis results. I then describe the final versions of the ACEs measures. The results of research question two begin by examining the outcome measures, including descriptive, reliability, and confirmatory factor analysis results. I then describe the results of the structural models used to test research question two. Finally, the results for research question three begin with a description of the samples of Latinx immigrant adolescent-parent pairs. I then report descriptive statistics and the CFAs for the independent variables among parents. Lastly, I report on the results of the two structural models tested.

Adolescent Sample Used in RQ1 & RQ2

Participants were middle and high-school students participating in Identity's positive youth development programs. This local organization has partnered with our research team to develop and implement this study. Identity provided de-identified data for all first-time middle and high-school program participants ($N = 608$) collected between July 2019 and May 2020. I identified the population of interest for the current study (i.e., Latino immigrant youth) by selecting youth who identified both their ethnicity as "Hispanic/Latino" and reported being born outside of the US ($n = 340$). Two youth reported their country of birth as Puerto Rico and were removed from the sample. Puerto Ricans are US citizens and do not experience the same immigration-related challenges as other groups. This process resulted in a final sample of 338 Latino immigrant youth.

Youth in the final sample came from four middle schools and four high schools. Table 4.01 presents the demographic data for the adolescent sample used in RQ1 and RQ2.

Table 4.1
Demographic Characteristics of Youth Sample Used in RQ1 and RQ2

Baseline characteristic	Full sample *(n = 338)*	
	n	%
Gender [a]		
Female	138	40.8
Male	199	58.9
Current Education Level		
Middle School	52	15.4
High School	286	84.6
Preferred Language		
Spanish	299	88.5
English	36	10.7
Other [b]	3	0.9
Country of Birth		
El Salvador	176	52.1
Honduras	69	20.4
Guatemala	50	14.8
Other	43	12.7
Years in US		
Less than 1	140	41.4
Between 1 and 2.9	91	26.9
Between 3 and 4.9	73	21.6
5 or more	34	10.1
Documentation Status		
Secure [c]	88	26.0
Insecure [d]	250	74.0

Note: Participants were on average 15.8 years old (SD = 1.9)
[a] One youth identified as transgender but did not identify a gender identity there for we are unable to include them in analysis that examine gender differences.
[b] Includes French and Portuguese
[c] Includes naturalized US citizens and those with a green card
[d] Includes youth reporting: temporary protected status, Deferred Action for Childhood Arrivals (DACA), undocumented, and 'other' status.

Research Question One

I first present the univariate and bivariate statistics for the two ACE measures. I then present the results of the confirmatory factor analysis (CFA) for both ACE measures.

Traditional ACEs (ACE-T)

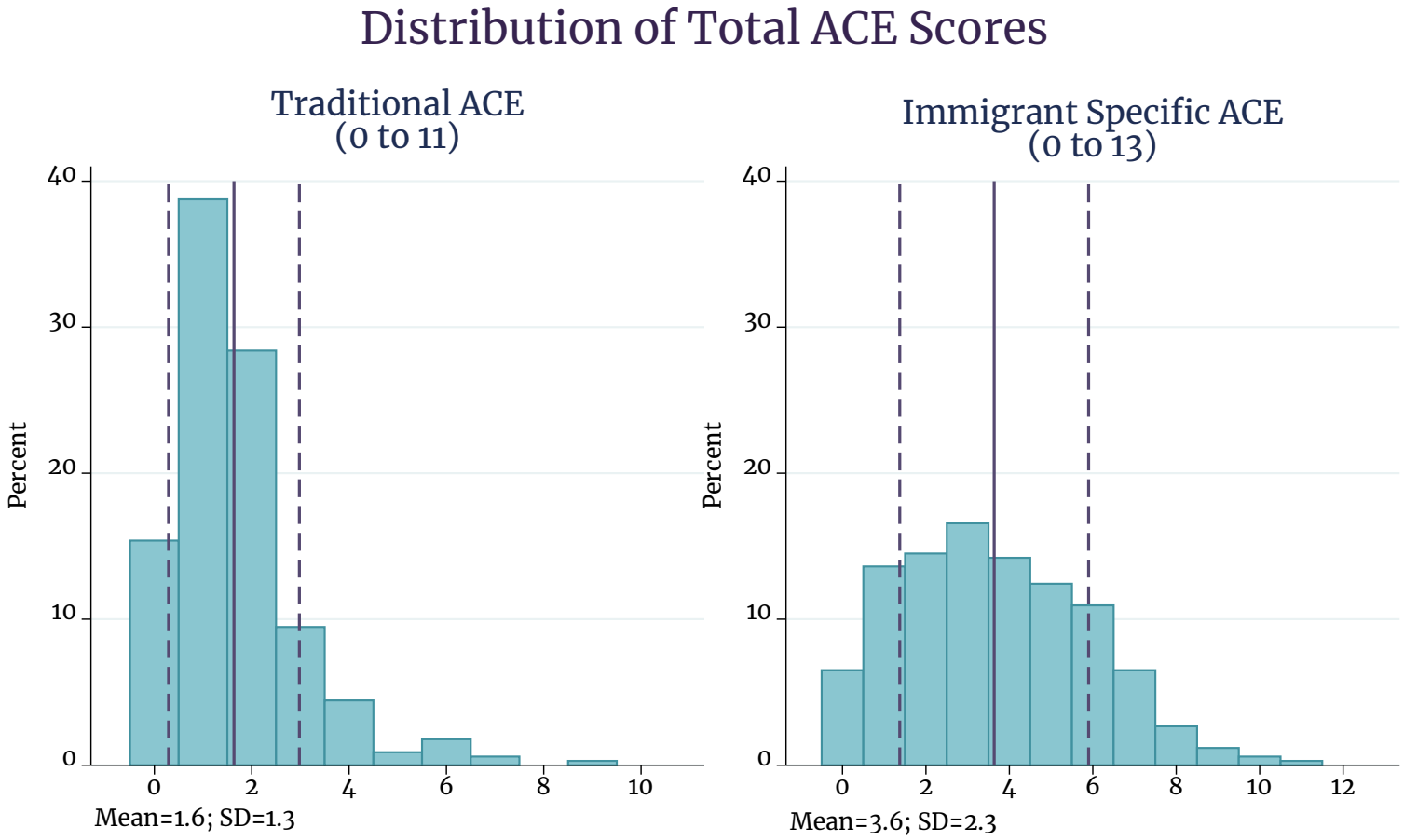
Univariate Statistics. On average, the Latino immigrant youth in the sample reported experiencing 1.64 traditional ACE (ACE-T) items (*SD* = 1.3, *Mode* = 1, possible range: 0 to 11). Only 15% reported experiencing no ACE-T items, and approximately 46% reported two or more (see Figure 4.01). Experiencing economic hardship was the most prevalent of the ACE-T items (64%). Parental divorce was the second most commonly reported ACE-T item, with 35% of the sample endorsing this item. Sexual abuse and a parent's death were the least common (4% and 5%, respectively; see Table 4.02).

Table 4.2
Prevalence of ACE-T Items Among Latinx Immigrant Adolescents

	Prevalence
	n = 338
Traditional ACEs Item	*% (n)*
1. Neglect	7% (23)
2. Sexual abuse/assault	4% (15)
3. Emotional abuse	7% (24)
4. Physical abuse	8% (28)
5. Economic hardship	64% (216)
6. Witnessed domestic violence	9% (31)
7. Household member with a mental illness	8% (27)
8. Household member was incarcerated [a]	7% (24)
9. Household member with substance abuse issue	9% (31)
10. Parents divorced/separated/never together	35% (118)
11. Parent death	5% (16)

[a] Does not include arrests or incarceration related to immigration reasons

Figure 4.1
Distributions of ACE-T & ACE-I Scores



Bivariate Statistics. Independent t-test revealed no differences in the total ACE-T scores for boys versus girls ($t(335) = 1.63$, $p = .103$, $d = .11$), for youth living in the US for less than one year versus those living her for a year or more ($t(336) = 1.32$, $p = .187$, $d = .10$) or by middle versus high school ($t(336) = 1.81$, $p = .071$, $d = .16$).

Table 4.3
Fit Indices of the One and Two Factor ACE-T CFA

Model	χ2	*df*	p-value	CFI	RMSEA (90% CI)	SRMR
1- Factor	49.73	44	.256	.974	.020 (.000, .043)	.104
2-Factor	43.15	43	.465	.999	.003 (.000, .037)	.097

Note: FSE Financial Self-Efficacy; *CFI* Comparative Fit Index; *RMSEA* Root Mean Square Error of Approximation; *CI* Confidence Interval; *SRMR* Standardized Root Mean Square Residual.

Confirmatory Factor Analysis. A one-factor CFA was initially fit to the data, and then the hypothesized two-factor solution CFA was fit to allow for a comparison of the fit indices of the ACE-T measure (see Figure 3.02). Fit indices for the one-factor model indicated acceptable fit (see Table 4.04). Standardized loadings ranged from .41 to .83. However, three items (economic hardship, parental divorce, and parental death) had low (range -.09 to .15) and insignificant loadings. The *H*-coefficient for the one-factor solution was .89

The fit indices for the two-factor solution were slightly better (see Table 4.03). The SRMR for both CFAs was above the recommended cutoff of .08 (.104 and .097). Standardized loadings for the two-factor solution ranged from .45 to .87. However, the same three items (economic hardship, parental divorce, and parental death) continued to have low (range -.05 to .18) and insignificant loadings. The *H*-coefficient for the abuse factor was .88 and was .82 for the household factor.

Table 4.4
Standardized Loadings of One and Two Factor ACE-T CFA

	1-Factor Solution	2-Factor Solution	
Traditional ACEs Item	Uni- Factor	Abuse	Household Disfunction
Factor 1: Abuse			
1. Neglect	.41** (.13)	.45** (.13)	
2. Sexual assault/abuse	.61** (.11)	.64** (.12)	
3. Emotional abuse	.83** (.08)	.87** (.08)	
4. Physical abuse	.82** (.10)	.87** (.09)	
Factor 2: Household Disfunction			
5. Economic hardship	.05 (.12)		.05 (.13)
6. Witness domestic violence	.69** (.10)		.74** (.11)
7. Household member with a mental illness	.60** (.11)		.64** (.11)
8. Household member was incarcerated [a]	.55** (.11)		.59** (.11)
9. Household member with substance abuse issue	.75** (.08)		.82** (.09)
10. Parents divorced/separated/never together	.15 (.10)		.18+ (.10)
11. Parent death	-.09 (.12)		-.10 (.21)
Coefficient-H	.89	.88	.82

Note: Standard errors presented in parentheses

Correlation between factors in two factor solution $r = .75$

[a] Does not include arrests or incarceration related to immigration reasons

+ $p \leq .10$ * $p \leq .05$; ** $p \leq .01$

I compared the $\chi 2$ of the two solutions using the *DIFFTEST* option from Mplus to see if the one-factor solution was significantly better than the two-factor solution. The two-factor model had a χ^2 that was significantly smaller than the one-factor model ($\Delta\chi^2$ [*df*]= 4.41 [*1*], $p = .036$), indicating that the two-factor solution had a better fit to the data. However, this difference was slight in terms of the χ^2 and factor loading differences.

All the item loadings of the abuse factor were significant. The loadings of item 5 (economic hardship), item 9 (parental divorce/separation), and item 10 (parental death)

did not load significantly onto the household factor (standardized loadings ranged from -.02 to .18). However, they were retained given the consistency with which these three items are used as part of ACE measures in other studies. The correlation between the two factors was large and significant (r = .75). The factor scores from the one-factor model were used as the measured variable in the structural models for research questions two and three.

Immigrant-Specific ACEs (ACE-I)

Univariate Statistics. The Latino immigrant youth in the sample reported a higher number of immigrant-specific ACE (ACE-I) items (M = 3.64, SD = 2.3, *Mode* = 3, possible range 0 to 13).[3] Only 6.5% (n = 22) of the youth reported experiencing no ACE-I items, while 80% (n = 270) reported experiencing two or more. Living with insecure documentation status was the most prevalent ACE-I item measured (74%, n = 250). Separation from a parent due to immigration was also prevalent, with over half of the sample endorsing this item (54%, n = 183). Three other items were endorsed by at least 40% of youth. From the sample, 40% (n = 134) of youth reported they were forced to leave their home country because of gang violence; 42% (n = 142) reported being very afraid that they may be lost during the journey to the US; and 40% (n = 136) reported they often or very often worried that they, a family member, or a close friend could be deported. Being forced to leave one's home country due to a natural disaster and experiencing physical abuse during the immigration journey were the least prevalent ACE-I items, with only 3% of the sample endorsing them (see Table 4.05 for details).

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[3]Item 8, "During your journey to the US, did you lack food and water?" was removed from the ACE-I measure based on the CFA as discussed below. The univariate results presented here reflect that decision.

Table 4.5
Prevalence of ACE-I Items Among Sample

	Prevalence
	n = 338
ACE-I Item	% (n)
Separated from parent b/c immigration	54% (183)
Self or family arrested or detained for immigration reasons	26% (89)
Forced to leave b/c war, or political violence/unrest	21% (70)
Forced to leave b/c of gang violence	40% (134)
Forced to leave b/c of a natural disaster	3% (11)
En route: threatened with physical harm	6% (20)
En route: physically harmed on purpose	3% (9)
En route: lacked food and water	64% (215)
En route: afraid that you might die	33% (112)
En route: very afraid that you might be lost	42% (142)
Insecure citizenship status	74% (250)
Saw person killed or beaten up by soldiers/police	12% (39)
In birth country	9% (31)
On journey to US	0% (0)
In the US	1% (2)
Saw person killed or beaten up by gang members	13% (44)
In birth country	12% (42)
On journey to US	1% (2)
In the US	1% (2)
Often or very often worry that self, family, friend may be deported	40% (136)

Bivariate Statistics. Independent t-test revealed no differences in the total ACE-I scores for boys versus girls ($t(335) = 0.58$, $p = .566$, , $d = .11$), for youth living in the US for less than one year versus those living her for a year or more ($t(336) = 1.17$, $p = .243$, $d = .11$) or by middle versus high school ($t(336) = 1.94$, $p = .053$, $d = .13$). The ACE-I and the ACE-T measure showed a small but significant correlation ($r = .16$, $p = .003$).

Development of the Factor Structure. After analyzing the univariate results, I conducted an exploratory factor analysis (EFA) with items from the ACE-I. The model recommended by the EFA was not directly implemented. However, the univariate statistics and the EFA were used to inform the creation of the final latent factors. For example, the EFA results seemed to point to a factor that included items indicating danger or unrest in the youth's birth country (items 1 thru 3).

Additionally, there was a low prevalence of youth endorsing witnessing violence committed by gang members or soldier/police outside of their birth country (≈ 1%). Therefore, I decided to reconceptualize these items as: "*in your birth country*, did you ever see a family member, friend, or any other person killed or beaten up by [soldiers/police | gang member]." Subsequently, only those participants indicating that they experienced the item in their birth country were positively coded for these items.[4]

I developed a final latent structure that included three factors. The first factor, *Unrest/Violence in Home Country,* includes five items (items 1 thru 5) and reflects the potential political and social unrest that the individual experienced in their country of origin. The second factor, *Dangerous Journey*, includes four items (items 6 thru 9) and describes the potentially risky decisions and potential for abuse while migrating to the US. The third factor, *Immigration Instability*, includes four items (items 10 thru 13) and represents the ongoing adversity associated with life as an immigrant living in the US. These factors capture experience pre, during, and post-migration. While these three

[4]The univariate statistics presented above reflect this decision.

factors are related (as evidenced by the CFA results below), they also represent distinct geographical, chronological, and conceptual aspects of an individual's experiences.

Confirmatory Factor Analysis. A one-factor CFA was initially fit to the data, and then the hypothesized three-factor solution CFA was fit to allow for a comparison of the fit indices of the ACE-I. Error covariances were included in the one and three-factor models for three pairs of items (1&5, 2&4, and 7&8; see Table 4 for the wording of items). In both the one and three-factor solutions the lacking food and water en route item had non-significant low standardized loadings (.04, p = .651 & .03, p = .739, respectively). This item was dropped from the ACE-I measure.[5]

Table 4.6
Fit Indices of the One and Three Factor ACE-I CFA

Model	$\chi 2$	*df*	p-value	CFI	RMSEA (90% CI)	SRMR
1- Factor	107.00	62	.000	.945	.046 (.031, .061)	.131
3-Factor	86.17	59	.012	.967	.037 (.018, .053)	.124

Note: FSE Financial Self-Efficacy; *CFI* Comparative Fit Index; *RMSEA* Root Mean Square Error of Approximation; *CI* Confidence Interval; *SRMR* Standardized Root Mean Square Residual.

Based on the remaining 13 items, fit indices for the one-factor model indicated an acceptable fit. Standardized loadings ranged from .25 to .89 (see Table 4.07). The three-factor solution indicated a better fit to the data. All fit indices improved with the three-factor solution. The SRMR was above the recommended cutoff of .08 (.13 and .12, respectively) in both the one and three-factor solutions.

Table 4.07 presents the ACE-I items' standardized factor loadings for the one and three-factor solutions. For the three-factor solution, all factor loadings were significant

[5]The univariate statistics presented above reflect this decision.

and standardized values exceeded .37 (except item 8, which had a standardized loading of .26). The three factors were also significantly correlated (*r* range from .53 to .64). I compared the χ2 of the one and three-factor solutions using the *DIFFTEST* option from Mplus to test if the improved fit was significant. The three-factor model had a χ^2 that was significantly smaller than the one-factor model ($\Delta\chi^2$ [*df*]= 23.59 [3], $p < .001$), indicating that the three-factor solution had a better fit to the data. The factor score from the one-factor model was used as a measured variable in the structural models for research questions two and three.

Table 4.7
Standardized Loadings of One and Three Factor ACE-I CFA

	1-Factor Solution	3-Factor Solution		
Immigrant-Specific ACEs Item	Uni-Factor	Unrest/ Violence in Home Country	Dangerous Journey	Immigration Instability
Factor 1: Unrest/Violence in Home Country			***r* = .64****	***r* = .53****
1. Forced to leave b/c of gang violence	.46** (.07)	.59** (.09)		
2. Forced to leave b/c war, or political violence/unrest	.51** (.07)	.67** (.09)		
3. Forced to leave b/c of a natural disaster	.31* (.12)	.44** (.13)		
4. Saw person killed or beaten up by soldiers/police	.48** (.08)	.59** (.11)		
5. Saw person killed or beaten up by gang members	.39** (.09)	.52** (.12)		
Factor 2: Dangerous Journey				***r* = .60****
6. En route: very afraid that you might be lost	.89** (.06)		.92** (.06)	
7. En route: threatened with physical harm	.51** (.11)		.52** (.11)	
8. En route: physically harmed on purpose	.25* (.10)		.26* (.11)	
9. En route: afraid that you might die	.87** (.05)		.89** (.06)	
Factor 3: Immigration Instability				
10. Worry that you, a family ... could be deported	.50** (.07)			.68** (.09)
11. Insecure citizenship status	.28** (.09)			.37** (.10)
12. Separated from parent b/c immigration	.28** (.08)			.41** (.09)
13. Self or family arrested/detained: immigration reasons	.43** (.07)			.57** (.09)

Note: Correlations (*r)* between latent factors presented in bold; standard errors presented in parentheses; * $p \leq .05$; ** $p \leq .01$
CFA fit indices: CFI = .97. RMSEA = .037 [90% CI: .018, .053]. SRMR=.124. $\chi^2[df] = 86.17$ [*59*], $p = .012$

Research Question Two

First, I discuss the univariate and bivariate statistics for the study variables. I then present the confirmatory factor analysis of the Strengths and Difficulty Questionnaire (SDQ) and the health risk behavior index. Finally, I present the results of the structural equation models.

Univariate Results

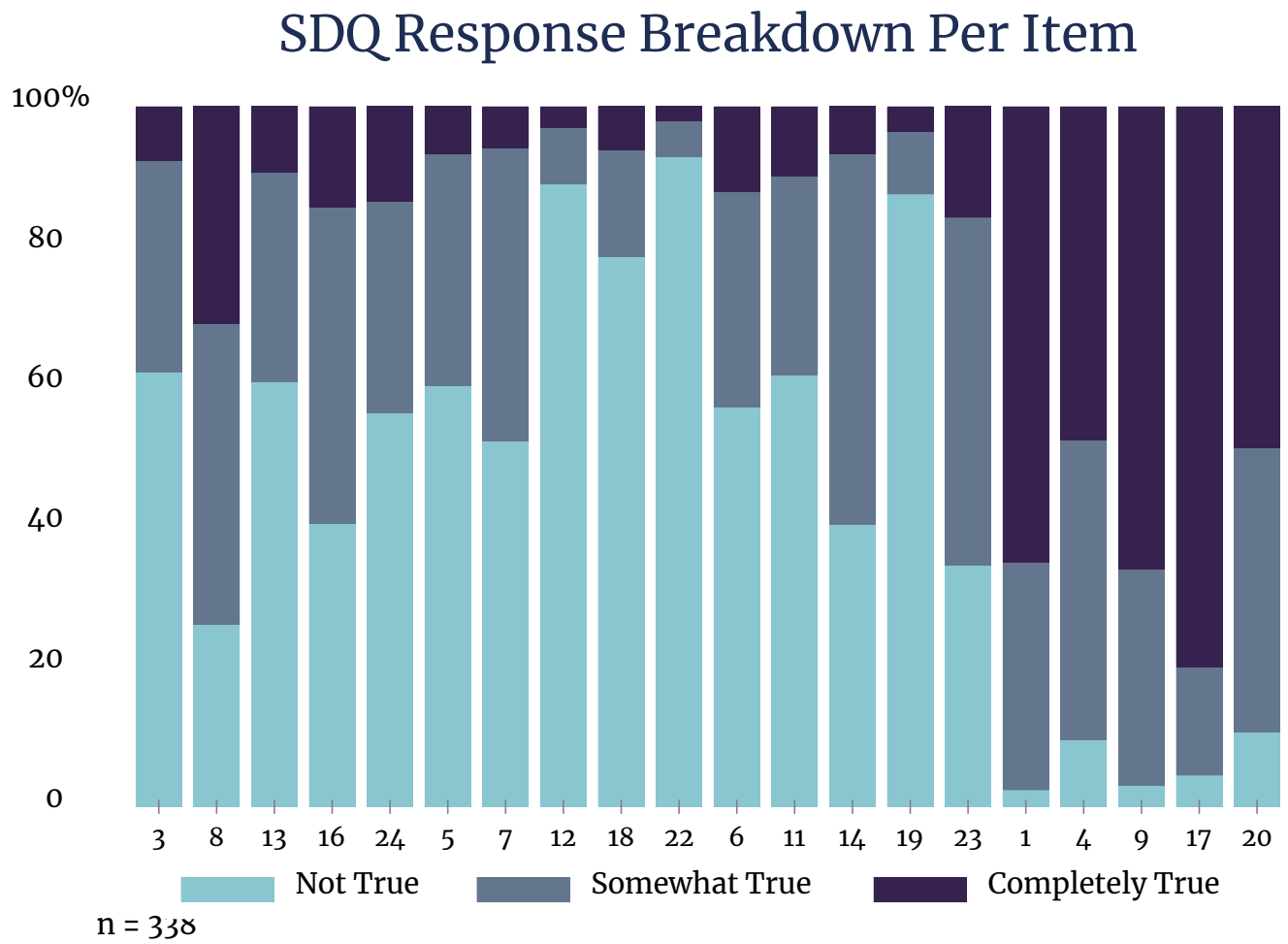
Strengths and Difficulties Questionnaire. As discussed in chapter 3, only four of the five SDQ subscales were administered by Identity at intake. First, I examined the distribution of responses for each SDQ item (see Table 4.08 and Figure 4.02). For most items, there was adequate variation among the responses. However, SDQ item 22 ("I take things that are not mine from home, school, or elsewhere") was highly skewed, with 92% of the sample endorsing the *Not True* option. This item was subsequently dropped from the analysis. Table 4.10 contains the mean and standard deviation for each subscale and the total SDQ. The total SDQ score is calculated by summing scores from the emotional symptoms, conduct problems, and peer relationship problem subscales.

Table 4.8
Endorsement Rates of SDQ Items by Subscale

Item	Item Statement	Not True	Somewhat True	Completely True
Emotional Symptoms		% (n)	% (n)	% (n)
3	I get a lot of headaches, stomach-aches or sickness	62% (209)	30% (102)	8% (26)
8	I worry a lot	26% (87)	43% (144)	31% (104)
13	I am often unhappy, depressed or tearful	61% (205)	30% (101)	9% (32)
16	I am nervous in new situations. I easily lose confidence	40% (135)	45% (151)	14% (48)
24	I have many fears. I am easily scared	56% (190)	30% (102)	14% (46)
Conduct Problems				
5	I get very angry and often lose my temper	60% (202)	33% (111)	7% (23)
7	I usually do as I am told*	52% (176)	42% (141)	6% (20)
12	I fight a lot. I can make other people do what I want	88% (297)	8% (27)	3% (10)
18	I am often accused of lying or cheating	78% (264)	15% (51)	6% (21)
22	I take things that are not mine from home, school or elsewhere	92% (312)	5% (17)	2% (7)
Peer Problems				
6	I would rather be alone than with people of my age	57% (193)	31% (104)	12% (41)
11	I have one good friend or more*	10% (33)	28% (94)	60% (204)
14	Other people my age generally like me*	7% (23)	53% (178)	40% (136)
19	Other children or young people pick on me or bully me	87% (293)	9% (30)	4% (12)
23	I get along better with adults than with people my own age	34% (115)	49% (166)	16% (53)
Prosocial Behaviors				
1	I try to be nice to other people. I care about their feelings	2% (8)	33% (110)	65% (220)
4	I usually share with others, for example games, food, school supplies	10% (32)	42% (143)	47% (159)
9	I am helpful if someone is hurt, upset or feeling ill	3% (10)	31% (104)	66% (222)
17	I am kind to younger children	4% (15)	15% (52)	80% (269)
20	I often offer to help others (parents, teachers, children)	11% (36)	40% (136)	49% (164)

*Item is reversed when scored

Figure 4.2
Endorsement Rates of SDQ Items



Health Risk Behavior Index. Six items were used to measure respondents' level of behavioral risk. Youth reported how frequently they engaged in each behavior, but there was minimal variation in response rates. Therefore, I created a dichotomized variable to capture if the individual engaged in that behavior in the previous 30 (90 in the case of sexual activity) days. Endorsement rates of substance use (i.e., nicotine, alcohol, THC, and other drugs) were particularly low (see Table 4.09). I decided to collapse all substance use into a single dichotomous variable (*any substance use in the last 30 days)*. The three items (substance use, fighting, sexually active) were summed to create the final health risk behavior index. The average behavioral risk score was 0.43 (*SD* = 0.66)

Table 4.9
Prevalence of Behavior Risk Items

	Prevalence
	n = 338
Item	% (n)
Any substance use in the last 30 days	5% (17)
Smoke, vape, or JUUL (nicotine cigarettes) in last 30 days	3% (10)
Drank alcohol in the last 30 days	2% (7)
Used illegal marijuana (THC) in any form in the last 30 days	2% (6)
Used other illegal drugs in the last 30 days (not including THC)	0% (0)
Physical fight in the last 30 days	15% (51)
Sexually active in the last 90 days	23% (78)

Bivariate Results

The relationships among study variables were examined using Pearson bivariate correlations (see Table 4.10). The two predictors of interest (ACE-T: traditional ACEs score, and ACE-I: immigrant-specific ACEs score) had a small positive correlation (r = .16, $p < .001$). The ACE-T score was significant correlated with all the subscales of the SDQ (r ranges from .13 to .18), save the prosocial behavior subscale which was not significant (r = -.05, p = .375*)*. The ACE-T score was also significantly correlated with

the health risk behavior index (r = .14, p = .008). The ACE-I was only correlated with emotional symptoms (r = .24, p < .001) but was correlated with the health risk behavior index at the p < .10 (r = .10, p = .057). The ACE-I score was not significantly correlated with the conduct problems subscale (r = .09, p = .117), the peer relationship problems subscale (r = .09, p = .105) or the prosocial behavior subscale (r = .03, p = .636).

Table 4.10

Descriptive Statistics and Correlations of RQ1 Study Variables.

Variable	1	2	3	4	5	6	7	8
1 ACE-Ts [a]	—							
2 ACE-I [b]	.16**	—						
3 Emotional Symptoms [c]	.18**	.24***	—					
4 Conduct Problems [d]	.17**	.09	.18**	—				
5 Peer Problems [e]	.13*	.09	.27***	.23***	—			
6 Prosocial Behaviors [f]	-.05	.03	.12*	-.29***	-.23***	—		
7 Total SDQ [g]	.24***	.21***	.81***	.53***	.69***	-.11*	—	
8 Health Risk Behaviors [h]	.14**	.10+	.07	.15**	.12*	-.07	.12*	—
M	1.64	3.64	3.31	1.03	2.68	7.78	7.10	0.43
SD	1.34	2.26	2.32	1.17	1.64	1.85	3.67	0.66

+ p ≤ .10; * p ≤ .05; ** p ≤.01; *** p ≤.001

[a] Total range from 0 to 11

[b] Total range from 0 to 13

[c] Total range from 0 to 10

[d] Total range from 0 to 8

[e] Total range from 0 to 10

[f] Total range from 0 to 10

[g] Total range from 0 to 28

[h] Total range from 0 to 3

In addition to the correlations between total ACE scores and outcomes, I examined the correlations between each ACE scale's items and the outcomes of interest. Tables 4.11 and 4.12 contain the point-biserial correlations for the ACE-T and ACE-I measures.

Table 4.11

Point-Biserial Correlations Between ACE-T Items and Outcomes

Traditional ACEs Item	Emotional Symptoms	Conduct Problems	Peer Relationship Problems	Prosocial Behaviors	Health Risk Behaviors
Neglect	.13*	.09	.11*	.04	.11*
Sexual Assault	.17**	.07	.07	.03	.01
Emotional Abuse	.20***	.15**	.18**	-.07	.03
Physical Abuse	.19***	.16**	.07	-.06	.15**
Economic Hardship	-.12*	-.06	-.05	-.05	.02
Witness Domestic Violence	.13*	.10+	.13*	-.02	.12*
Household Mental Illness	.12*	.07	.03	-.01	.09
Household Member in Jail	.08	.15**	.09	-.03	.06
Household Member Substance Abuse	.08	.14**	.10+	-.02	.06
Parents are divorced/separated/never together	.04	.07	.01	.01	-.01
Mother or Father is deceased	-.05	-.07	-.06	-.01	.11*

+ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Table 4.12

Point-Biserial Correlations Between ACE-I Items and Outcomes

IS-ACEs Item	Emotional Symptoms	Conduct Problems	Peer Relationship Problems	Prosocial Behaviors	Health Risk Behaviors
1. Forced to leave b/c of gang violence	.07	.09	.07	.08	.10^{+}
2. Forced to leave b/c war, or political violence/unrest	.11^{+}	.03	.09^{+}	-.01	.08
3. Forced to leave b/c of a natural disaster	.01	.01	-.08	.05	-.10^{+}
4. Saw person killed or beaten up by soldiers/police	.05	.06	.09	-.02	.03
5. Saw person killed or beaten up by gang members	.08	.06	.11*	-.04	.13*
6. En route: very afraid that you might be lost	.15**	-.01	.06	.00	.06
7. En route: threatened with physical harm	.04	.05	.06	-.02	.18**
8. En route: physically harmed on purpose	.11*	.03	.01	.05	-.05
9. En route: afraid that you might die	.24***	.06	.09	.01	.06
10. Worry that you, a family ... could be deported	.26***	.10^{+}	.05	.09^{+}	-.04
11. Insecure citizenship status	-.03	.01	-.00	.02	.07
12. Separated from parent b/c immigration	.12*	.02	.01	-.09^{+}	.02
13. Self or family arrested/detained: immigration reasons	.07	-.00	.06	.04	.02

$^{+}$ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Confirmatory Factor Analysis

Strengths and Difficulties Questionnaire. Initially, I tested a CFA model that included all four of the subscales from the SDQ. This model had an exceptionally poor fit (see Table 4.13, CFA 2.1). As the prosocial behavior subscale is not included in the total SDQ score, I excluded it from the CFA (CFA 2.2). CFA 2.2, which included only the three subscales used in the total SDQ score (i.e., emotional, conduct, peer), showed a more promising fit. Error covariances were then included between all the reversed items (items 7, 11, & 14). Additionally, modification indices were requested and were included when theoretically sound (see Figure 4.03). This process resulted in a final CFA model (CFA 2.3) with a good fit to the data as indicated by the fit indices.

Table 4.13
Fit Indices for Outcome Variables CFAs

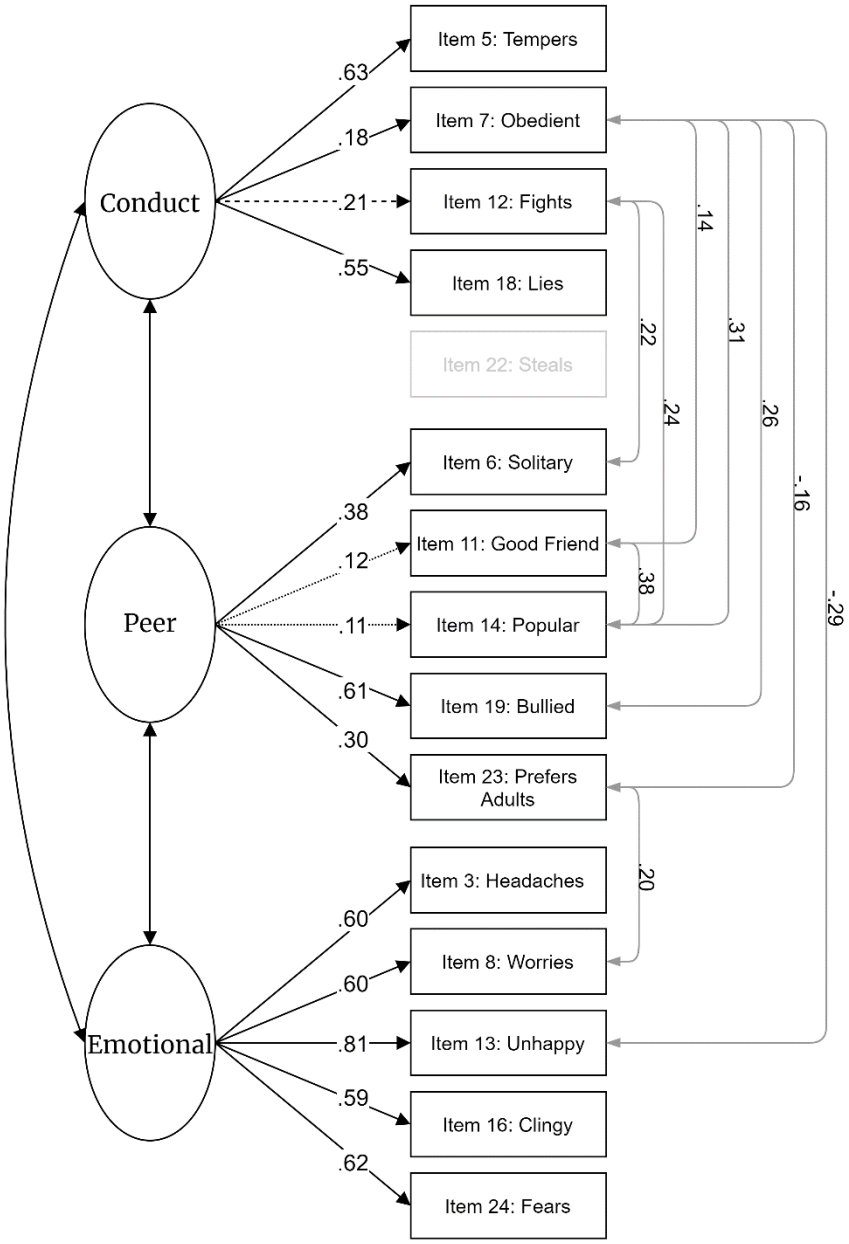
CFA	Included	$\chi 2$	*df*	p-value	CFI	RMSEA (90% CI)	SRMR
2.1	ES, CP, PR, PS	416.48	146	.000	.755	.074 (.066, .082)	.108
2.2	ES, CP, PR	177.52	74	.000	.835	.064 (.052, .077)	.078
2.3	ES, CP, PR	72.91	65	.234	.987	.019 (.000, .039)	.053
2.4	PS	18.35	5	.003	.961	.089 (.048, .134)	.051
2.5	BR	0.00	0	.000	1.00	.000 (.000, .000)	.000

Note: ES Emotional Symptoms; *CP* Conduct Problems; *PR* Peer Relationship Problems; *PS* Prosocial; *BR* Behavioral Risk; *CFI* Comparative Fit Index; *RMSEA* Root Mean Square Error of Approximation; *CI* Confidence Interval; *SRMR* Standardized Root Mean Square Residual.

Figure 4.03 shows the standardized factor loadings for each item and the standardized error covariance coefficients of CFA 2.3. I assessed the reliability of each subscale by calculating the *H*-coefficient. The emotional symptoms subscale had good reliability (*H* = .81). The reliability of conduct and peer relationship problems was low (*H* = .54 and .47, respectively). I conducted a separate CFA for the prosocial behavior

subscale (CFA 3.4), which fit the data well and showed acceptable reliability (H = .78). Figure 4.04 shows the standardized factor loading for CFA 2.4.

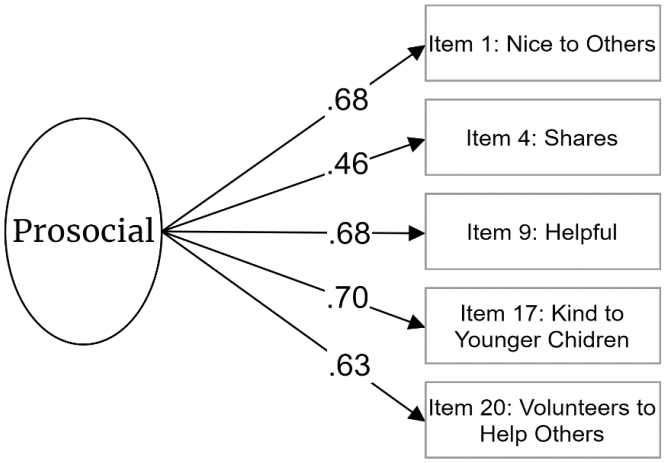
Figure 4.3
Standardized Loadings of Final SDQ CFA



Model Fit Indices: CFI = .987, RMSEA = .019 (90% CI: .000,.039), SRMR=.053, $\chi^2_{(df)} = 72.91_{(65)}$ p = .234

Note: Solid line = $p \leq .05$; Dashed line = $p \leq .10$; Dotted

Figure 4.4
Final SDQ-Prosocial Scale CFA with Standardized Loadings

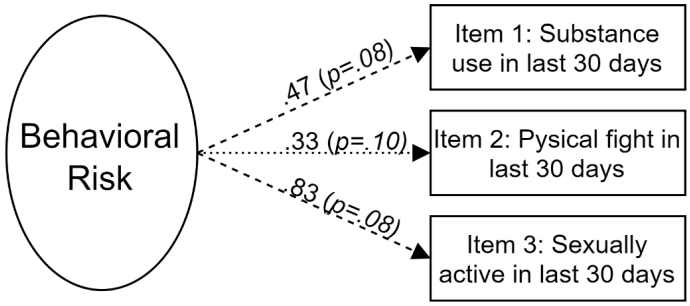


Model Fit Indices: CFI = 0.961; RMSEA = .089 (90% CI: .043,.134); SRMR=.051 $\chi^2_{(df)} = 18.35_{(5)}$ p = .003

Note: Solid line = p ≤ .05; Dashed line = p ≤ .10; Dotted line = p ≥ .10

Health Risk Behavior Index. A CFA of the three health risk behavior items perfectly fit the data across all fit indices (see Table 4.13, CFA 2.5). However, the loadings of the three items, while all above .30, were insignificant (see Figure 4.05). As calculated by the H-coefficient, the scale's reliability was acceptable (*H* = .72).

Figure 4.5
Final Health Behavior Risk CFA with Standardized Loadings



Model Fit Indices: CFI = 1.00, RMSEA = .000 (90% CI: .000,.000), SRMR=.000, $\chi^2_{(df)} = 0.00_{(0)}$ p = .000

Note: Solid line = p ≤ .05; Dashed line = p ≤ .10;

Factor Scores

Given sample size limitations, the structural equation models used to address RQ2 and RQ3 could not include the measurement portion of the ACE-T and ACE-I. The most straightforward strategy would be to utilize sum scores for each ACE measure. However, this assumes that all items load equally on the underlying factor. I tested this assumption by calculating the reliability of the scales using Cronbach's alpha. Sum scores of the ACE-T and ACE-I had low reliability (above .70 is considered acceptable). The Cronbach's alpha for the ACE-T was .45 and it was .65 for the ACE-I in the current sample. The reliability of the latent factors from the one-factor CFA solutions was much better (ACE-T H =.89; ACE-I H = .90). Therefore, using the factor scores from the one-factor CFA solutions represented a parsimonious and reliable approach.

Structural Equation Models

I examined the relationship between traditional ACEs (as measured by the ACE-T) and immigrant-specific ACEs (as measured by the ACE-I) and the outcomes of interests in three different models. The dependent variables in Model 2.1 were emotional symptoms, conduct problems, and peer relationship problems (as measured by the SDQ). In Model 2.2, the dependent variable was prosocial behavior (again from the SDQ), and in Model 2.3, the dependent variable was the health behavior risk index. In all models, the dependent variables were included as latent constructs and the independent variables were included as measure variables (factor scores from the one factor CFA). Table 4.14 presents the fit indices for each of the models tested. All the indices were above the cutoffs for good model fit for models 2.1 and 2.2. Model 2.3 showed a good model fit

among all indices except for the CFI, which was .911 and in the acceptable range (i.e., above .90; Kline, 2015).

Table 4.14
Fit Indices for Research Question 2 Structural Equation Models

Model	Outcome	$\chi 2$	*df*	p-value	CFI	RMSEA (90% CI)	SRMR
2.1	ES, CP, PR	142.47	109	.017	.955	.030 (.013, .043)	.056
2.2	PS	33.78	21	.038	.965	.042 (.010, .068)	.046
2.3	BX	16.33	8	.038	.911	.055 (.013, .094)	.058

Note: ES Emotional Symptoms; *CP* Conduct Problems; *PR* Peer Relationship Problems; *PS* Prosocial; *BX* Behavioral Risk; *CFI* Comparative Fit Index; *RMSEA* Root Mean Square Error of Approximation; *CI* Confidence Interval; *SRMR* Standardized Root Mean Square Residual.

I included two control variables in each model (age and gender; see Table 4.15). A third potential control variable (number of years living in the US) was explored but was not associated with any outcome variables and was not included in the final models. Across all three models age was not associated with ACE-T scores (b = .07, p = .191) but ACE-I scores were positively associated with age (b = .18, p < .001). Being male was associated with lower ACE-T scores (b = -.12, p = .027) but was not related to ACE-I scores (b = -.04, p = .458). Across all models, gender and age were significantly related (b = .11, p = .050), indicating that older participants were more likely to identify as male.

Table 4.15
Standardized Paths between Control and Dependent Variables in Models 2.1 thru 2.3.

	Model 2.1						**Model 2.2**		**Model 2.3**	
	Emotional Symptoms		Conduct Issues		Peer Problems		Prosocial Behavior		Behavior Risk Index	
Control Variable	*b*	*(SE)*	*b*	*(SE)*	*b*	*(SE)*	*b*	*(SE)*	*b*	*(SE)*
Age	-0.07	*(.06)*	-0.02	*(.09)*	-0.06	*(.11)*	-0.09	*(.07)*	0.47**	*(.11)*
Gender	-0.31**	*(.06)*	-0.16+	*(.09)*	0.06	*(.11)*	-0.13+	*(.07)*	0.31**	*(.11)*

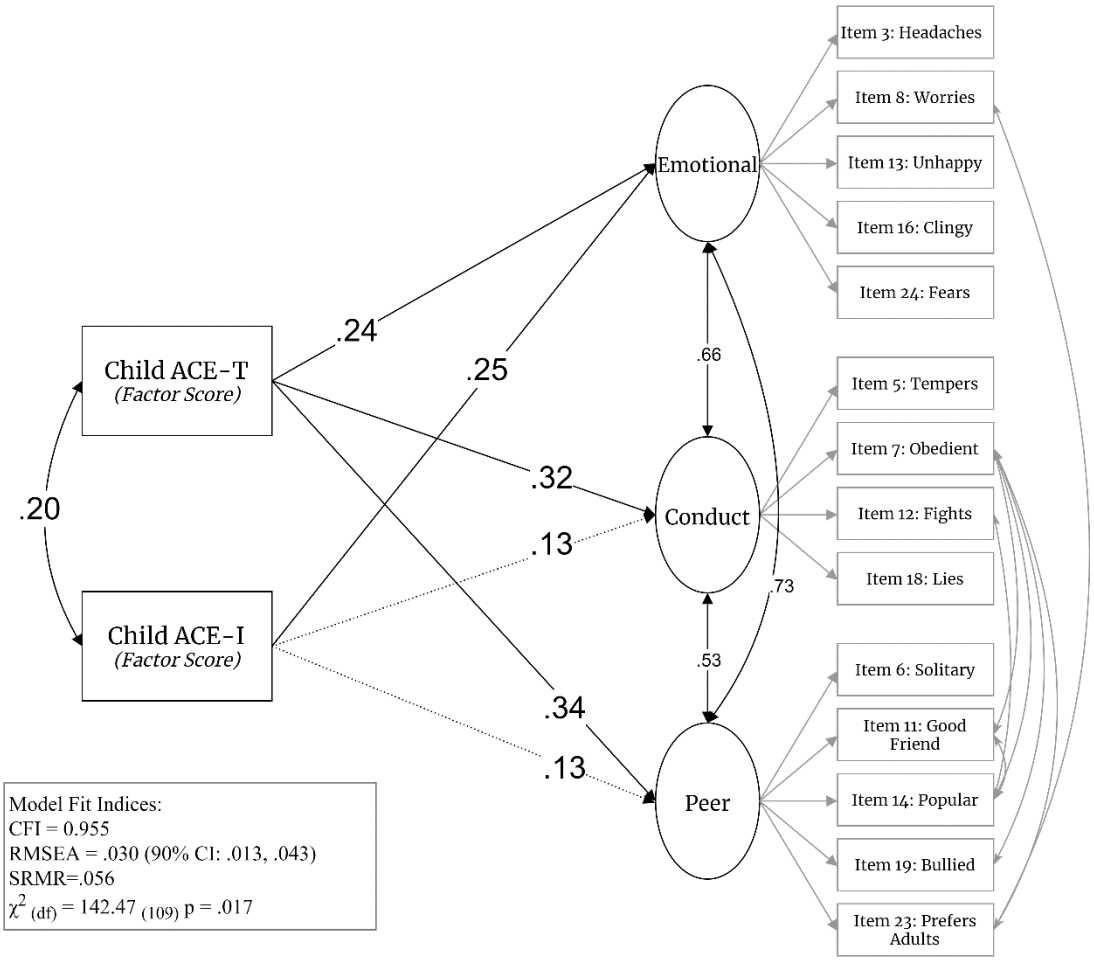
+ p ≤ .10; * p ≤ .05; ** p ≤.01

Model 2.1: Emotional Symptoms, Conduct Problems, & Peer Relationship Problems. Model 2.1 showed good fit to the data with all indices better than the recommended cutoffs (CFI = .96. RMSEA = .030 [90% CI: .013,.043]. SRMR=.056. $\chi^2[df] = 142.47$ [*109*], $p = .017$). While the Chi-Square value is significant at $p \leq .05$ the ratio of $\chi 2{:}df$ was 1.31:1, which is better than the 3:1 recommended by Barret (2007).

Figure 4.06 shows the relationship between the independent and dependent variables. ACE-T scores were positively and significantly related to emotional symptoms ($b = .24$, $SE = .06$, $p < .001$), conduct problems ($b = .32$, $SE = .09$, $p < .001$), and peer relationship problems ($b = .34$, $SE = .10$, $p < .001$). ACE-I scores were positively and significantly related to emotional symptoms ($b = .25$, $SE = .06$, $p < .001$), but not conduct problems ($b = .13$, $SE = .09$, $p = .165$) or peer relationship problems ($b = .13$, $SE = .10$, $p = .218$). Controls (age and gender) are not included in Figure 4.06 but their relationships to the dependent variables are documented in Table 4.15. In model 2.1 only gender was significantly negatively related to emotional symptoms ($b = -.31$, $p < .001$) indicating that being female was associated with higher reports of emotional symptoms.

Figure 4.6

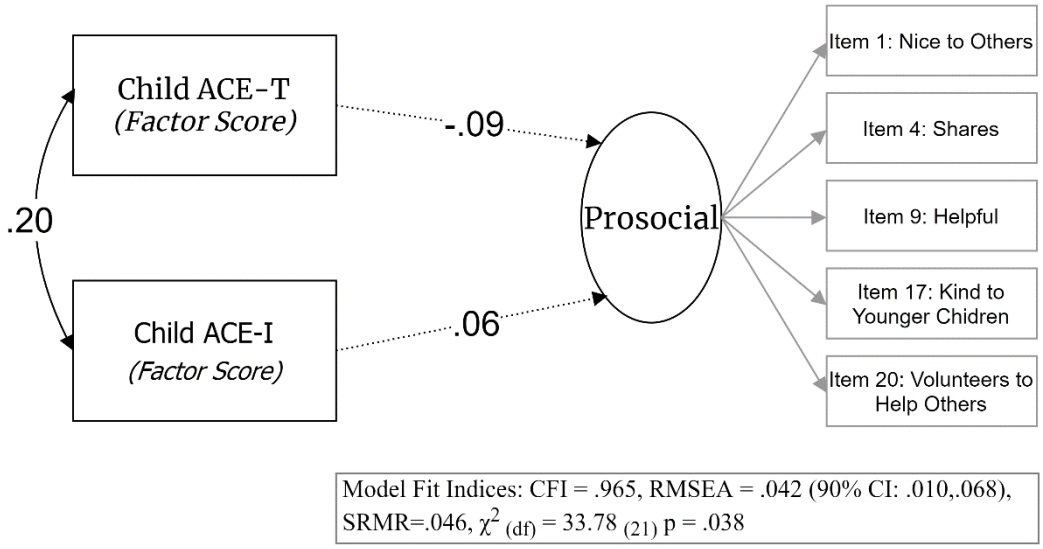
Standardized Paths of Structural Equation Model 2.1



Note: Solid line = $p \leq .05$; Dashed line = $p \leq .10$; Dotted line = $p \geq .10$

Model 2.2: Prosocial Behavior. Model 2.2 showed good fit to the data with all indices better than the recommended cutoffs (CFI = .97. RMSEA = .042 [90% CI: .010,.068]. SRMR=.046. $\chi^2[df] = 33.78$ [*21*], $p = .038$). Figure 4.07 shows the relationship between the two ACE scores and prosocial behavior. Neither the ACE-T ($b = -.09$, $SE = .07$, $p = .170$) or the ACE-I scores ($b = .06$, $SE = .07$, $p = .380$) were significantly related to prosocial behaviors. None of the control variables were significantly associated with prosocial behavior (see Table 4.15).

Figure 4.7
Standardized Paths of Structural Equation Model 2.2

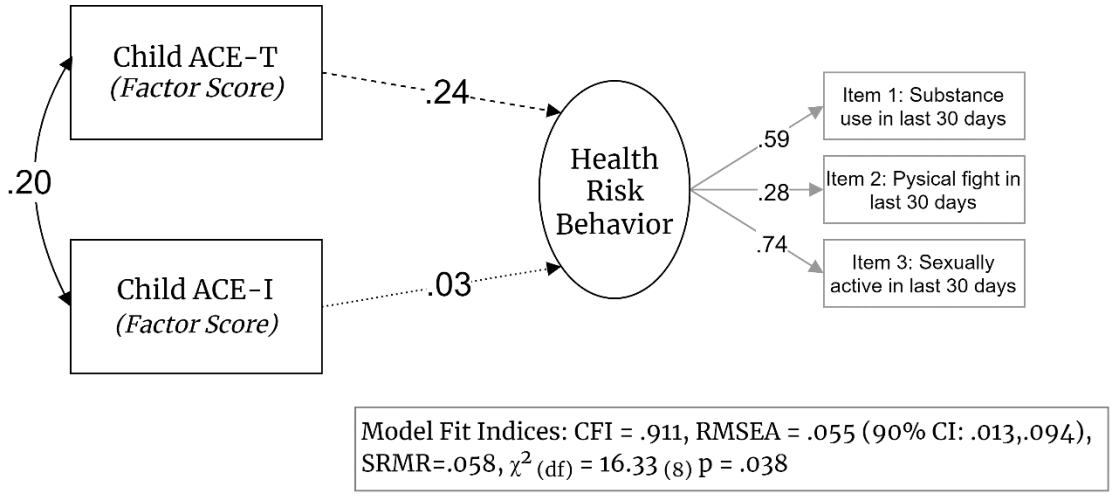


Note: Solid line = $p \leq .05$; Dashed line = $p \leq .10$; Dotted line = $p \geq .10$

Model 2.3: Health Risk Behaviors. Model 2.3 showed good fit to the data with most indices better than the recommended cut-offs (RMSEA = .055 [90% CI: .013,.094]. SRMR=.058. $\chi^2[df] = 16.33$ [*8*], $p = .038$). The only exception was the CFI (.911), which can be considered in the acceptable range (i.e., CFI above .90; Kline, 2015). Figure 4.08 shows the relationship between the two ACE scores and the behavioral risk index.

Interestingly, unlike models 2.1 or 2.2, the loadings and significance of the individual items onto the latent health risk behavior factor were drastically different from the initial CFA. In the final model, the loadings ranged from .28 to .74, and they were all significant at $p \leq .01$. The reliability of the behavioral risk index in the final model was $H = .65$. ACE-T score was positively related to a higher health risk behavior score but only at $p < .10$ ($b = .24$, $SE = .09$, $p = .053$). The ACE-I score was not significantly related to the health risk behavior index ($b = .03$, $SE = .10$, $p = .761$). Of the control variables age ($b = .47$, $p < .001$) and identifying as male ($b = .31$, $p = .005$) was associated with a higher health risk behavior index score.

Figure 4.8
Standardized Paths of Structural Equation Model 2.3



Note: Solid line = $p \leq .05$; Dashed line = $p \leq .10$; Dotted line = $p \geq .10$

Research Question Three

I first introduce the parent samples used in the analysis of question three. I then present the confirmatory factor analysis for the parent ACE-T and ACE-I. Finally, I present the results of the two structural equation models. As a result of Covid-19 and subsequent school closures, Identity was limited in its ability to collect data from parents. Therefore, the dyadic sample available was lower than the expected 250.

Parent Participants

Parents participated in programs through Identity, and their children may or may not be involved in other Identity programs. Parents completed a separate intake process as described in the methods section. I identified the population of interest for the current study (i.e., Latino immigrant parents) by selecting parents who identified both their ethnicity as "Hispanic/Latino" and reported being born outside of the US (n = 289). Five of these parents were missing complete data for the two variables of interest (ACE-T & ACE-I) and were excluded, resulting in a final sample of 284 parents.

From this sample, I identified a subsample of those parents that immigrated prior to the age of 18 by selecting parents that completed at least nine of the initial ACE-I items. As Identity collected this data via interviews, these items were only asked of those parents for whom it was relevant. This process resulted in a sample of 121 parents who immigrated prior to 18. I used these two samples to conduct the CFA and create factor scores used in the structural equation models. The analytic sample used for model 3.1 included Latino immigrant parents with a matched biological child who was also an immigrant (n = 112). The sample for model 3.2 included Latino immigrant parents who immigrated prior to age 18 with a matched biological child who was also an immigrant (n

= 54, model 3.2).

Table 4.16 reports the baseline characteristics of the two CFA samples, and Table 4.17 reports those same characteristics for the two analytic samples used in the final structural equation models. Of the initial sample of 284 Latino Immigrant parents, a majority (85%) were female, and the mean age was 38.6 years (*SD* = 6.1 years, range 23 to 66). Most parents (79%) were born in one of the three Northern Triangle nations of Central America (El Salvador, Honduras, and Guatemala). About 69% of the sample had less than high school education, and approximately 40% of parents reported having full-time employment. A majority of the sample (67%) reported living in the US for more than five years, while approximately 14% arrived in the US in the last three years.

Table 4.16

Demographic Characteristics of Parents Used to Create Factor Scores

Baseline characteristic	All Immigrant Parents *(n = 284)*		All Immigrant (≤ 18) Parent *(n = 121)*	
	n	%	*n*	%
Gender				
Female	241	84.9	96	79.3
Male	43	15.1	25	20.7
Age (Mean/SD)	38.6	6.1	39.0	6.4
Highest Education Level				
≤ Middle School	111	39.1	53	43.8
≤ High School	79	27.8	39	32.2
High School +	88	31.0	25	20.7
Country of Birth				
El Salvador	147	51.8	56	46.3
Honduras	42	14.8	30	24.8
Guatemala	32	11.3	20	16.5
Other	63	22.2	15	12.4
Years in US				
Less than 1	40	14.1	25	20.7
Between 1 and 2.9	14	4.9	3	2.5
Between 3 and 4.9	37	13.0	12	9.9
5 or more	189	66.6	78	64.5
Employment				
Unemployed	85	29.9	36	29.8
Part-Time	81	28.5	31	25.6
Full-Time	113	39.8	50	41.3
Health Insurance				
No	187	65.8	85	70.3
Yes	93	32.8	34	28.1
Documentation Status				
Secure [a]	65	22.9	28	23.1
Insecure [b]	216	76.1	91	75.2

[a] Includes naturalized US citizens and those with a green card

[b] Includes: temporary protected status, Deferred Action for Childhood Arrivals (DACA), undocumented and 'other' status.

Table 4.17

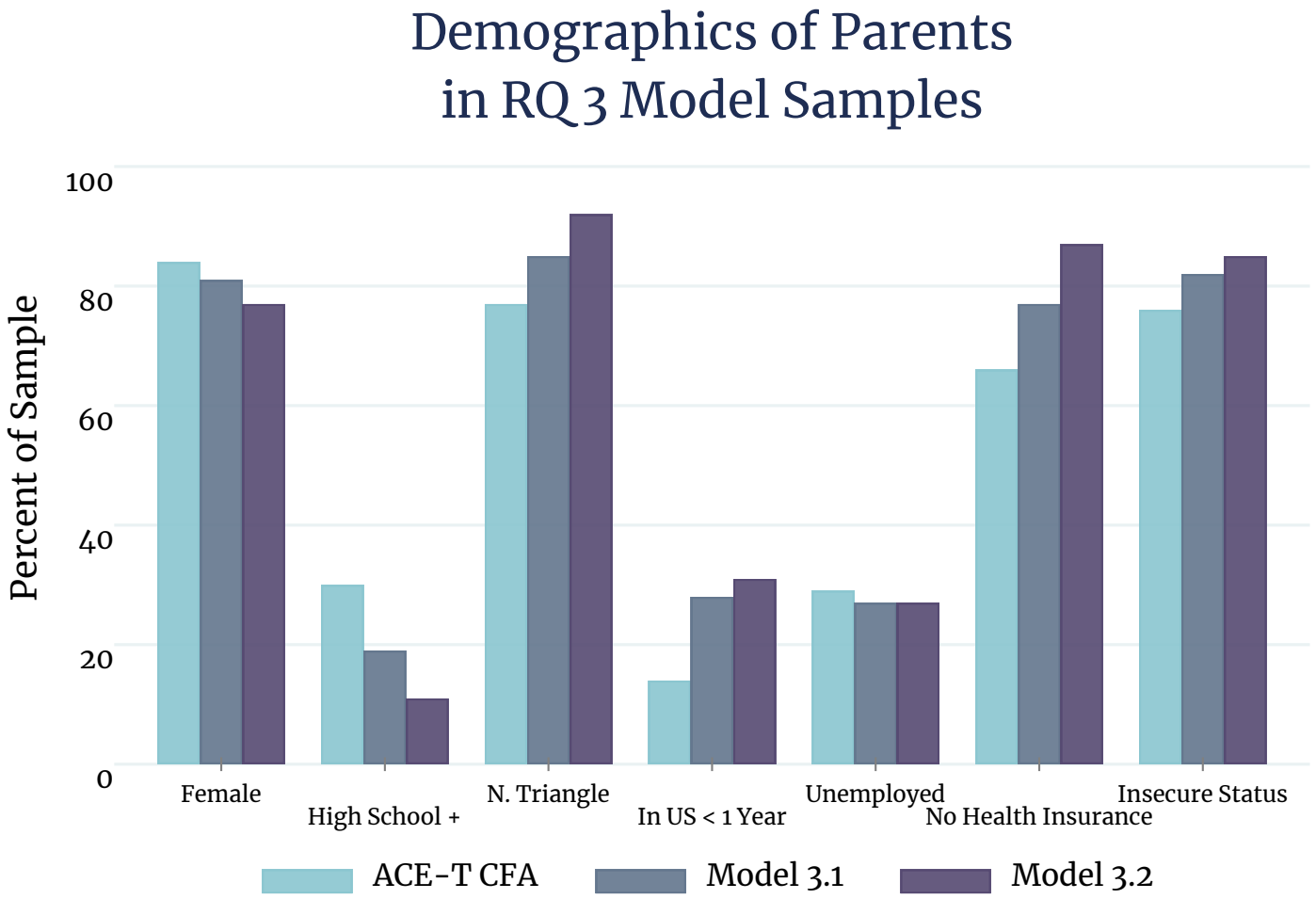
Demographic Characteristics of Parents Used in Final Structural Models

Baseline characteristic	Immigrant Parent with Immigrant Child (Model 3.1)		Immigrant (≤ 18) Parent with Immigrant Child (Model 3.2)	
	(n = 112)		*(n = 54)*	
	n	%	*n*	%
Gender				
Female	91	81.3	42	77.8
Male	21	18.7	12	22.2
Age (Mean/SD)	39.2	5.6	40.1	6.1
Highest Education Level				
≤ Middle School	52	46.4	30	55.6
≤ High School	34	30.4	16	29.6
High School +	22	19.6	6	11.1
Country of Birth				
El Salvador	56	50.0	24	44.4
Honduras	23	20.5	17	31.5
Guatemala	17	15.2	9	16.7
Other	16	14.3	4	7.4
Years in US				
Less than 1	32	28.6	17	31.5
Between 1 and 2.9	11	9.8	3	5.6
Between 3 and 4.9	22	19.6	8	14.8
5 or more	45	40.2	24	44.4
Employment				
Unemployed	31	27.7	15	27.8
Part-Time	28	25.0	15	27.8
Full-Time	51	45.5	22	40.7
Health Insurance				
No	87	77.7	47	87.0
Yes	25	22.3	7	13.0
Documentation Status				
Secure [a]	19	17.0	7	13.0
Insecure [b]	92	82.1	46	85.2

[a] Includes naturalized US citizens and those with a green card

[b] Includes: temporary protected status, Deferred Action for Childhood Arrivals (DACA), undocumented and 'other' status.

Figure 4.9
Demographic Characteristics of Parent in Initial CFA and Final Models



ACE-T CFA (n = 289), Model 3.1 (n = 112), Model 3.2 (n = 54)

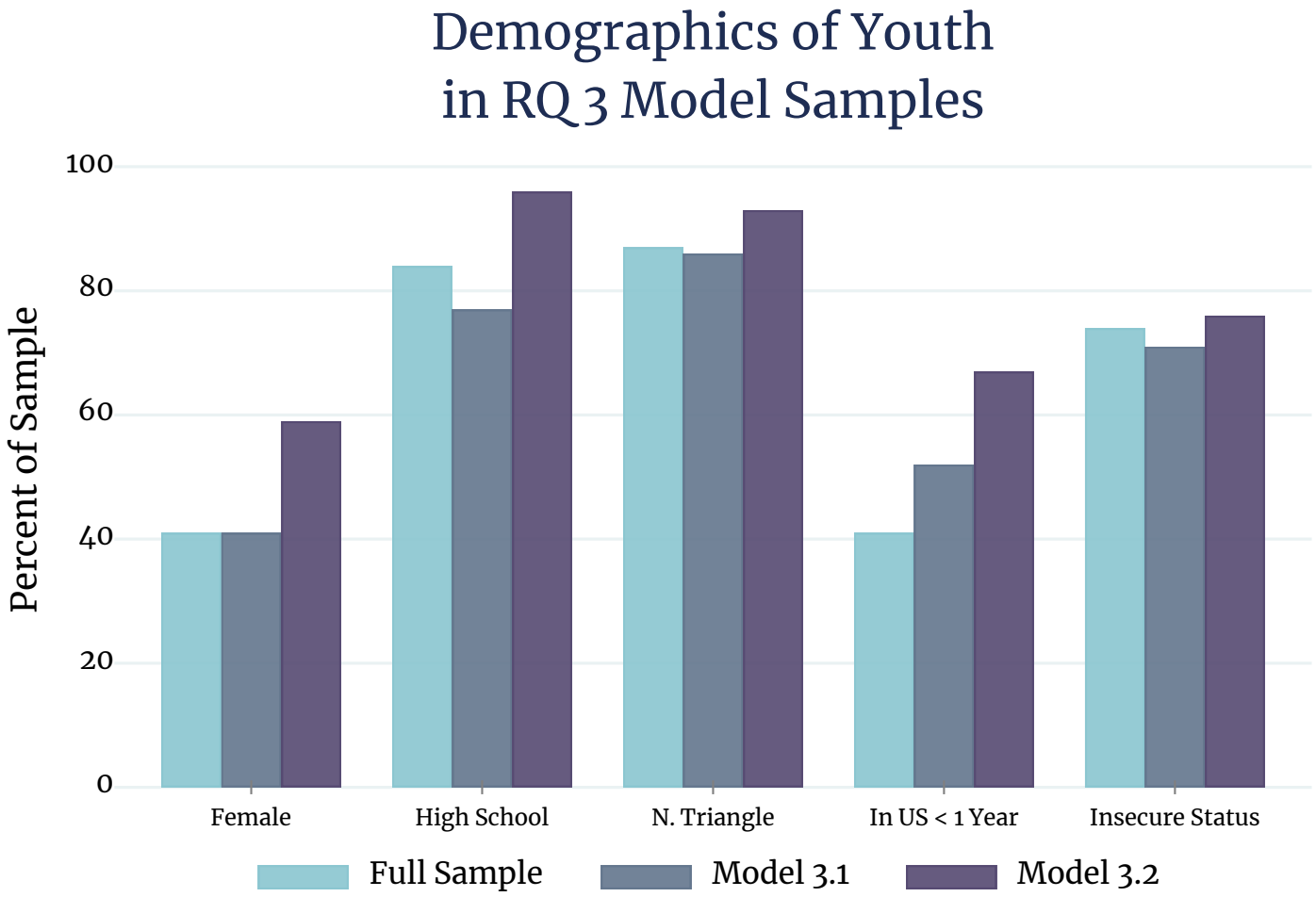
For the most part, the distribution of these demographic variables remained constant across the analytic samples (see Table 4.17). However, the samples for models 3.1 and 3.2 reported being more recently arrived, less likely to have health insurance, and more likely to report an insecure documentation status than the sample used in the ACE-T CFA. The sample for model 3.2 reported lower levels of education than the other two samples. Figure 4.09 presents this information visually. Table 4.18 repeats the demographic data of the youth used in research questions one and two. Table 4.18 also includes the demographic data of the youth used in models 3.1 and 3.2. This information is repeated visually in Figure 4.10

Table 4.18

Demographic Characteristics of Youth Samples

Baseline characteristic	Full Sample (Models 2.1-2.3) *(n = 338)*		Immigrant Parent with Immigrant Child (Model 3.1) *(n = 112)*		Immigrant (≤ 18) Parent with Immigrant Child (Model 3.2) *(n = 54)*	
	n	%	*n*	%	*n*	%
Gender						
Female	138	41	46	41	22	59
Male	199	59	65	58	32	41
Age (M/SD)	15.8	1.6	15.2	1.8	16.0	1.5
Current Education Level						
Middle School	52	15	26	23	2	4
High School	286	84	86	77	52	96
Preferred Language						
Spanish	299	88	98	88	49	91
English	36	11	13	12	5	9
Other	3	1	1	1	-	-
Country of Birth						
El Salvador	176	52	55	49	23	43
Honduras	69	20	24	21	18	33
Guatemala	50	15	17	15	9	17
Other	43	13	16	14	4	7
Years in US						
Less than 1	140	41	58	52	36	67
Between 1 and 2.9	91	27	21	19	9	17
Between 3 and 4.9	73	22	23	21	5	9
5 or more	34	10	10	9	4	7
Documentation Status						
Secure	88	26	32	29	13	24
Insecure	250	74	80	71	41	76

Figure 4.10
Demographic Characteristics of Youth Samples



Full Sample (n = 338), Model 3.1 (n = 112), Model 3.2 (n = 54)

Traditional ACEs

Univariate Statistics. In interviews with parents, Identity asked eight of the ACE-T (instead of the 11 asked of youth). Table 4.19 presents the prevalence of each ACE-T item among the initial sample used to create factor scores (n = 284). Endorsement of items ranged from 8% (incarcerated household member) to 31% (neglect). On average, parents endorsed 1.4 (SD = 1.7) of the eight ACE-T items. Table 4.20 presents the prevalence of each ACE-T item for both of the analytic subsamples. The analytic subsamples endorsed individual items at similar rates as the initial CFA sample. However, the sample for model 3.2 endorsed sexual abuse/assault and living with someone with a mental illness at lower rates than the other samples (see Table 4.20). The average total ACE-T scores were similar to the CFA sample (1.1 and 1.2 versus 1.4).

Table 4.19
Prevalence and Standardized Loadings of Parent ACE-T Items in CFA Sample

All Immigrant Parents (n = 284)	Prevalence	Standardized Loading
Traditional ACEs Item [a]	*% (n)*	
1. Neglect	31% (89)	.52** (.08)
2. Sexual abuse/assault	20% (58)	.61** (.08)
3. Emotional abuse	15% (43)	.93** (.05)
4. Physical abuse	18% (50)	.80** (.06)
5. Witnessed domestic violence	21% (59)	.75** (.06)
6. Household member with a mental illness	9% (25)	.63** (.09)
7. Household member was incarcerated [b]	8% (23)	.64** (.10)
8. Household member with substance abuse issue	16% (45)	.65** (.08)
Mean (SD)	1.4 (1.7)	H = .92

[a] Total range from 0 to 8

[b] Does not include arrests or incarceration related to immigration reasons

** $p \leq .01$

Table 4.20
Prevalence of Parent ACE-T Items in Analytic Samples

	Latinx Immigrant Parents with Immigrant Child (Model 3.1)	Latinx Immigrant (≤ 18) Parents with Immigrant Child (Model 3.2)
	n = 112	*n = 54*
Traditional ACEs Item [a]	*% (n)*	*% (n)*
1. Neglect	32% (36)	33% (18)
2. Sexual abuse/assault	13% (14)	4% (2)
3. Emotional abuse	11% (12)	13% (7)
4. Physical abuse	14% (16)	17% (9)
5. Witnessed domestic violence	16% (18)	15% (8)
6. Household member with a mental illness	5% (6)	4% (2)
7. Household member was incarcerated [b]	8% (9)	9% (5)
8. Household member with substance abuse issue	16% (18)	17% (9)
Mean (SD)	1.2 (1.5)	1.1 (1.4)

[a] Total range from 0 to 8

[b] Does not include arrests or incarceration related to immigration reasons

Confirmatory Factor Analysis. A one-factor CFA was fit to the data, and factor scores were saved. Fit indices for the one-factor model indicated good fit (CFI = .99. RMSEA = .038 [90% CI: .000,.068]. SRMR=.077. $\chi^2[df] = 28.00$ [*20*], $p = .109$). Standardized loadings ranged from .52 to .93 and all loadings were significant (see Table 4.19). The ACE-T factor showed good reliability ($H = .92$)

Immigrant-Specific ACEs

Univariate Statistics. Identity asked 12 of the original 14 ACE-I items in the parent intake. The item "en route: not having enough food or water" was asked but is not included in the current analysis based on the results from the initial CFA of the ACE-I from RQ1. Table 4.21 presents the prevalence of each ACE-I item among the sample

used to create factor scores (n = 121). Insecure documentation status was the most endorsed item (75%) and being forced to leave one's home country due to a natural disaster was the least endorsed (3%). Three other items (forced to leave home country b/c of gang violence, on the journey to the US feeling very afraid that you might die, and on the journey to the US feeling very afraid that you might be lost) were endorsed by over 20% of the sample. The remaining items were endorsed by between 4% and 15%. On average, parents endorsed 2.1 (SD = 1.8) of the 11 ACE-I items.

Table 4.21
Prevalence and CFA Standardized Loadings of Parent ACE-I Items Among Parents Who Immigrated Prior to Age 18

All Immigrant Parents Who Immigrated Prior to Age 18 (n = 121)	Prevalence	Standardized Loadings
ACE-I Item	*% (n)*	
1. Forced to leave b/c of gang violence	22% (26)	.57** (.12)
2. Forced to leave b/c war, or political violence/unrest	4% (5)	.89** (.11)
3. Forced to leave b/c of a natural disaster	3% (4)	.11 (.17)
4. En route: threatened with physical harm	9% (11)	.91** (.11)
5. En route: physically harmed on purpose	3% (4)	.50** (.12)
6. En route: afraid that you might die	29% (35)	.79** (.09)
7. En route: very afraid that you might be lost	27% (33)	.69** (.09)
8. Insecure citizenship status	75% (91)	.46** (.15)
9. Saw person killed or beaten up by soldiers/police	12% (15)	.38* (.19)
10. Saw person killed or beaten up by gang members	15% (18)	.62** (.14)
11. Often or very often worry that self, family, friend may be deported	9% (11)	.46** (.15)
Mean (SD)	2.1 (1.8)	H = .93

[a] Total range from 0 to 11

* $p \leq .05$, ** $p \leq .01$

Table 4.22 presents the prevalence of each ACE-I item for the analytic sample for model 3.2 (the only model that uses the parent ACE-I factor score). The analytic sample endorsed individual items at similar rates as the initial CFA sample. The two exceptions were item 6 (on the journey to the US, physically harmed on purpose), which was not endorsed by anyone in the analytic sample, and item 8 (insecure documentation status), which was endorsed by a greater percentage in the analytic sample (85% versus 75%). The average total ACE-I score for the analytic and CFA samples was 2.1 (*SD* = 1.6).

Table 4.22
Prevalence of Parent ACE-I Items in Model 3.2 Sample

	Prevalence (*n = 54*)
ACE-I Item	*% (n)*
1. Forced to leave b/c of gang violence	22% (12)
2. Forced to leave b/c war, or political violence/unrest	4% (2)
3. Forced to leave b/c of a natural disaster	2% (1)
4. En route: threatened with physical harm	7% (4)
5. En route: physically harmed on purpose	0% (0)
6. En route: afraid that you might die	24% (13)
7. En route: very afraid that you might be lost	24% (13)
8. Insecure citizenship status	85% (46)
9. Saw person killed or beaten up by soldiers/police	15% (8)
10. Saw person killed or beaten up by gang members	17% (9)
11. Often or very often worry that self, family, friend may be deported	6% (3)
Mean (SD)	2.1 (1.6)

[a] Total range from 0 to 11

Confirmatory Factor Analysis. A one-factor CFA was fit to the data, and factor scores were saved. Fit indices for the one-factor model indicated good fit (CFI = .98. RMSEA = .057 [90% CI: .008,.090], $\chi^2[df] = 58.61$ [*42*], $p = .046$). However, the SRMR was above the cutoff value of .08 (SRMR=.157). Standardized loadings ranged from .38 to .91, and all loadings were significant (see Table 4.21). Item 3 (forced to leave home county due to natural disaster) was the only item with a low and insignificant loading ($b = .11$, $p = .514$). The ACE-I factor showed good reliability ($H = .93$).

Bivariate Analysis. Descriptive statistics and correlations between study variables for the samples used in models 3.1 and 3.2 are presented in Tables 4.23 and 4.24. Several differences were noted in the correlations among these samples compared to the larger sample used in research questions one and two. The sample used in model 3.1 showed a significant relationship between conduct issues and the child's ACE-I score, whereas the larger sample did not (see Table 4.10). The sample used for model 3.2 did not show a significant relationship between child ACE-T and ACE-I scores. In contrast, both the larger sample and the model 3.1 sample did show this correlation. Finally, unlike the other two samples, the correlation between emotional symptoms and child ACE-T score was insignificant for the model 3.2 sample.

Table 4.23

Descriptive Statistics and Correlations of Model 3.1 Variables (n = 112)

	Variable	1	2	3	4	5	6	7
1	Child ACE-T [a]	—						
2	Child ACE-I [b]	.18^{+}	—					
3	Emotional Symptoms [c]	.24*	.29**	—				
4	Conduct Problems [d]	.34**	.30**	.30**	—			
5	Peer Relationship Problems [e]	.16	.15	.34***	.36***	—		
6	Total SDQ [f]	.32***	.32***	.83***	.63***	.74***	—	
7	Parent ACE-T [g]	.19*	.22*	.12	.18^{+}	-.01	.13	—
	M	1.59	3.58	3.48	1.08	2.61	7.10	1.18
	SD	1.51	2.13	2.45	1.24	1.76	4.11	1.53

$^{+}$ p ≤ .10; * p ≤ .05; ** p ≤.01; *** p ≤.001

[a] Total range from 0 to 11

[b] Total range from 0 to 13

[c] Total range from 0 to 10

[d] Total range from 0 to 8

[e] Total range from 0 to 10

[f] Total range from 0 to 28

[g] Total range from 0 to 8

Table 4.24

Descriptive Statistics and Correlations of Model 3.2 Variables (n = 54)

Variable		1	2	3	4	5
1 Child ACE-Ts [a]		—				
2 Child ACE-I [b]		.16	—			
3 Emotional Symptoms [c]		.14	.34*	—		
4 Parent ACE-T [d]		.38**	.26^{+}	.09	—	
5 Parent ACE-I [e]		.29*	.48***	-.14	.38**	—
	M	1.52	4.15	3.60	1.11	2.06
	SD	1.48	2.12	2.41	1.44	1.58

$^{+}$ p ≤ .10; * p ≤ .05; ** p ≤.01; *** p ≤.001

[a] Total range from 0 to 11

[b] Total range from 0 to 13

[c] Total range from 0 to 10

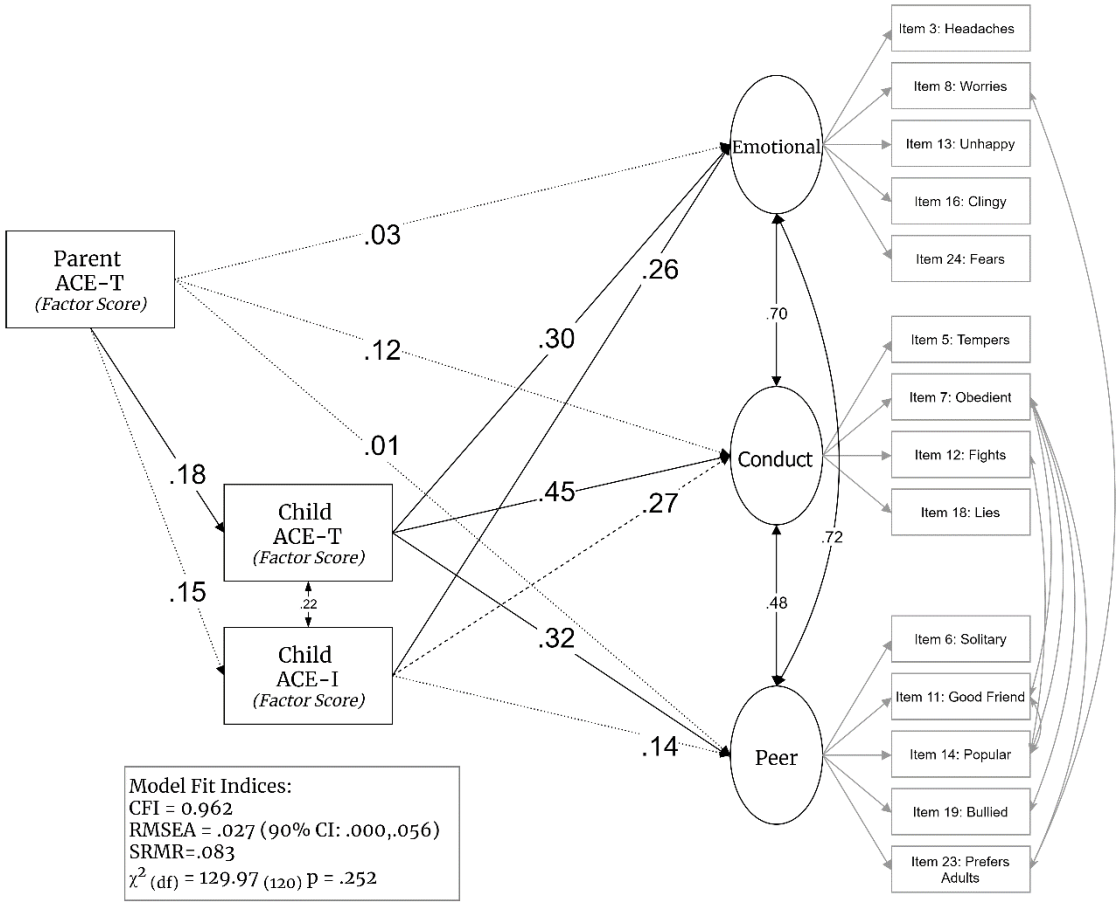
[d] Total range from 0 to 8

[e] Total range from 0 to 11

Structural Equation Models

Model 3.1. The first model examined the relationship between the parent's ACE-T score and the child's psychological well-being as mediated by the child's ACE-T score and ACE-I score among Latino immigrant parents and their biological children who were also immigrants. The model showed a good fit to the data across all fit indices (see Table 4.25). However, the SRMR was slightly above the recommended cutoff of .80 (SRMR = .83). Figure 4.11 presents the standardized path coefficients for model 3.1.

Figure 4.11
Standardized Path Coefficients of Model 3.1



Note: Solid line = $p \leq .05$; Dashed line = $p \leq .10$; Dotted line = $p \geq .10$

Table 4.25

Fit Indices for Research Question 3 Structural Equation Models

Model	Predictor	Mediator	Outcome	$\chi 2$	*df*	p-value	CFI	RMSEA (90% CI)	SRMR
3.1	Parent ACE-T	Child ACE-T, Child ACE-IS	ES, CP, PR	129.97	120	.252	.962	.027 (.000, .056)	.083
3.2	Parent ACE-T, Parent ACE-IS	Child ACE-T, Child ACE-IS	ES	32.14	29	.314	.960	.045 (.000, .116)	.082

Note: ES Emotional Symptoms; *CP* Conduct Problems; *PR* Peer Relationship Problems; *PS* Prosocial; *BX* Behavioral Risk; *CFI* Comparative Fit Index; *RMSEA* Root Mean Square Error of Approximation; *CI* Confidence Interval; *SRMR* Standardized Root Mean Square Residual. The sample for model 3.1 included all Latino immigrant parents whose child was also an immigrant, model 3.2 included only those Latino immigrant parents who immigrated to the US prior 18 and whose child was also an immigrant.

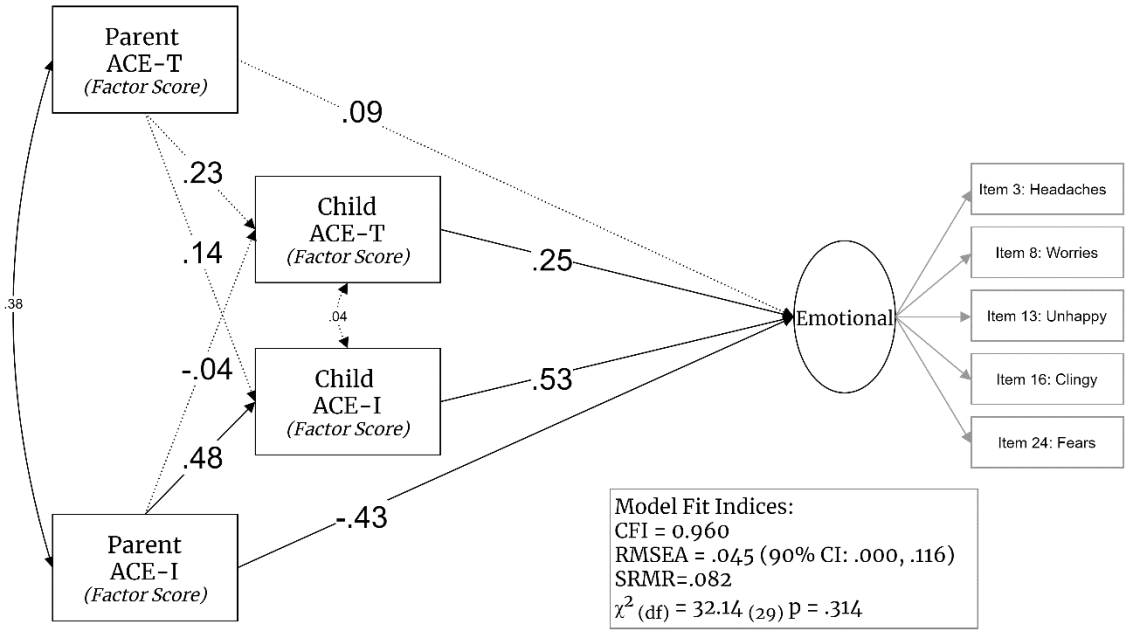
Parental ACE-T did not significantly relate to child outcomes but was positively related to the child's ACE-T score (b = .18, SE = .09, p = .048). Parent ACE-T was not related to child ACE-I (b = .15, SE = .09, p = .124). Child ACE-T scores were positively and significantly related to all three outcomes, as was seen in model 2.1. Child ACE-I was significantly related to emotional symptoms (b = .26, SE = .10, p = .009) but not to peer relationship problems (b =.14, SE = .14, p = .332). The relationship between child ACE-I and conduct problems was significant only at $p \leq .10$ (b = .27, SE = .13, p = .051). Parental ACE-T did not indirectly affect any of the child outcomes.

Model 3.2. The final model tested the relationship between parent ACE-T and parental ACE-I with child psychological well-being mediated by the child's ACE-T and ACE-I score. This model only included Latino immigrant parents who immigrated prior to age 18 and their biological children who were also immigrants. Given the small sample size (n = 54), I was limited in the number of paths I could test. I, therefore, restricted this model to examine only the emotional symptoms from the SDQ. The model showed a good fit to the data (see Table 4.25). However, the SRMR was slightly above the recommended cutoff of .08 (SRMR = .082).

Figure 4.12 presents the standardized path coefficients for model 3.2. As with the previous model, child ACE-T and ACE-I scores were positively related to the child's emotional symptoms (b = .25 and b = .53, respectively). In this model parental ACE-T scores were not related to either the child's emotional symptoms (b = .09, SE = .14, p =.528) or the child ACE-T score (b = .23, SE = .13, p =.146). However, parent ACE-I scores were negatively related to the child's emotional symptoms (b = -.43, SE = .16, p =.008) and positively related to the child's ACE-I score (b = .48, SE = .13, p = .002).

Indirect effects of both parental ACE-T and ACE-I scores on the child's emotional symptoms were examined using bootstrapping. Parental ACE-T scores showed no indirect effects via either the child's ACE-T or ACE-I score. Parental ACE-I scores were indirectly and positively related to the child's emotional symptoms as mediated by the child's ACE-I score (.25, 95% CI [.09, .48]) but not indirectly through the child's ACE-T score.

Figure 4.12
Standardized Path Coefficients of Model 3.2



Note: Solid line = $p \leq .05$; Dashed line = $p \leq .10$; Dotted line = $p \geq .10$

Chapter 5 Discussion

This study examined adverse childhood experiences among Latino immigrants and specifically establishes potential relevant and influential ACEs not captured by traditional ACE measures. Our community-based program partners provided data from 338 Latino immigrant youth and 289 immigrant parents/adults that received services between July 2019 and May 2020. From this sample, I was able to address three primary research questions. What follows is an interpretation and discussion of the findings from these research questions. Additionally, practice, research, and policy implications are discussed.

Research Question 1

What are the rates of traditional and immigrant-specific ACEs in a sample of Latinx immigrant adolescents?

- **Hypothesis 1.1**: Immigrant-specific adversities will be more prevalent than traditionally studied ACEs.
- **Hypothesis 1.2:** Confirmatory factor analysis of the traditional ACEs measure will show two underlying factors, Abuse, and Household Dysfunction, as identified in Figure 3.2.
- **Hypothesis 1.3**: There will be underlying factors of the immigrant-specific ACEs measure.

Rates of Traditional and Immigrant-Specific ACES

The most important finding from research question one is the significant discrepancy between the two summed ACEs scores (see Figure 4.01, repeated here). This finding supports hypothesis 1.1, that Latino immigrant youth would report higher

immigrant-specific ACEs than traditional ACEs. In addition, this finding supports the need for utilizing measures like the ACE-I when examining childhood adversity among marginalized groups. For example, research has consistently shown that ACEs have a dose-response relationship: the more ACEs one experiences, the greater the risk for later physical and mental health issues (Anda et al., 2006). A study relying on a traditional measure of ACEs would conclude, incorrectly, a relatively low prevalence of ACEs, 1.6 on average, in this sample. This finding would have some face validity as prior research found similarly low rates of ACEs among Latino immigrant youth when researchers only examined those traditionally studied ACEs (e.g., Caballero, Johnson, et al., 2017; Loria & Caughy, 2018). However, concluding that this indicates a low level of childhood adversity masks the actual experiences of these youth who, on average, experienced immigrant-specific ACEs at a rate over two times that of traditional ACEs (M = 3.6).

These findings demonstrate the need for more culturally relevant ways of assessing childhood adversity. The total ACE-I score showed a small but significant association with the ACE-T score at the bivariate level. This finding indicates that, while not entirely unrelated to traditional ACEs, the ACE-I tool assesses a unique component of early life adversity for immigrants. In addition, the high prevalence of ACE-I items in the current sample indicates the importance of understanding such events in immigrant youth's lives. Five of the 13 ACE-I items were endorsed by at least 40% of the sample, and the most prevalent item, living with an insecure documentation status, was endorsed by almost three in four young people. Four other items were endorsed at moderate rates (between 12% and 33%), and only four of the 13 items had a prevalence below 10%. Consistent with the literature, this study found that Latino immigrant youth are very

likely to experience some potentially traumatic event in their home country (Li, 2016) during the migration process (de Arellano et al., 2018; Kaltman et al., 2011; Markham, 2017), and after arriving in the US (Abrego et al., 2017; Ayón, 2018; Bacong & Menjívar, 2021).

In comparison, the rates of traditionally studied ACEs were much lower in this sample. Only one item (economic hardship) was endorsed by over 40%, and nine of the 11 items were endorsed by less than 10% of the sample. This finding is similar to Caballero and colleagues' (2017) study of traditional ACEs among Latino youth in immigrant families, who found low to moderate rates of traditional ACEs, with economic hardship being the most widely endorsed (32% in their sample). Notably, the traditional ACE item endorsed by almost half of the current sample is more structural. Most traditional ACE items relate to the family domain, whereas economic hardship may be more influenced by structural inequalities (e.g., access to education and high-quality employment).

Analysis of the ACE-T Measure

The one and two-factor CFAs of the traditional ACE measure showed an excellent fit to the data. The SRMR was higher than the recommended cutoff of .08 (SRMR = .104 and .097). However, the SRMR may not be an appropriate fit statistic with dichotomous dependent variables (Garrido et al., 2016). The two-factor solution was statistically better than the one, supporting hypothesis 1.2. However, the chi-square difference was slight (4.41, p = .036). All abuse factor items loaded significantly and strongly onto the latent factor in the two-factor solution. In addition, the abuse factor showed strong construct reliability as measured by the *H*-coefficient (*H* = .88).

Most household items loaded significantly onto the factor, but three items did not. Economic hardship, parent divorce/separation, and parent death had low and non-significant loadings. Our measure of economic hardship was based on the youth currently receiving free and reduced meals at school (FARM). It may not represent an effectively sensitive measure of economic hardship, particularly among immigrant youth who may have experienced economic hardship in the past but are currently in a more stable situation. There are, however, other possible reasons that this item did not load significantly onto the latent variable. FARM is a government program, and therefore immigrant families, particularly those with an undocumented member, may not participate due to a fear of potential deportation or concerns about future issues when trying to obtain citizenship (i.e., the public charge rule).

Parent death was endorsed by a small percent of the sample (n = 16). Thus, it is difficult to say if the non-significant loading is due to a genuine lack of relationship to the underlying factor or an artifact of the low prevalence. The lack of a significant loading for the parental divorce/separation item may represent that this event is much more common and accepted than in previous generations. Perhaps these families can maintain positive parent-child relationships even after divorce/separation; thus, this item may not represent true childhood adversity among this group. This is an important line for future research to investigate among large and representative populations. Even when retaining these three items (in line with current ACE research), the household factor showed good reliability (H = .82).

Analysis of the ACE-I Measure

The one and three-factor ACE-I CFAs showed a good fit to the data. The chi-square difference test indicated that a model with three latent factors was statistically better. The SRMR for the one and three-factor models were above the recommended cutoff of .08 (SRMR = .131 and .124, respectively). However, as mentioned above, the SRMR may not be an appropriate fit statistic when using dichotomous variables (Garrido et al., 2016). The strengths of the other fit indices suggest a good model fit. Individual items loaded significantly and strongly onto their corresponding latent factor, supporting the proposed factor structure. The only item that violated this was item 8 ("During your journey to the US, were you ever physically harmed on purpose [hit, slapped, punched, or sexually abused/assaulted]?), which had a low but significant standardized loading (b = .26, p = .016). The low loading for this item may result from its low prevalence in the current sample (3%), or it may indicate that this item is not related to the others in this factor. Future studies with more extensive and more diverse samples should further investigate the usefulness of this item.

There was a moderate and significant correlation between the three ACE-I factors, which supports the notion that they are related but assess unique aspects of immigrant-specific childhood adversity. Additionally, the "unrest/violence in home country" and "dangerous journey" factors had good reliability (i.e., H-coefficient above .8). However, the "immigration instability" factor reliability was below the .8 recommended cutoff (H = .63).

Given the strength of the model fit indices and the similar factor loadings of the one-factor solutions for both the traditional ACE measure and the ACE-I, it may be

simpler and more parsimonious to use the one-factor solutions when dealing with smaller samples, as in the current study. Using the one-factor solutions also increased the reliability of the measures (ACE-T H = .89 & ACE-I H = .90). Research questions two and three utilized the factor scores from the one-factor solutions.

ACEs and the Immigrant Paradox

The high rate of immigrant-specific ACEs highlights their relevance to the lived experience of Latino immigrants. Immigrant-specific ACEs may help us better understand the "immigrant paradox," a consistent population-level finding that immigrant groups, who are often at a greater risk of exposure to drivers of health disparities (Teruya & Bazargan-Hejazi, 2013), on average, have better overall health than their native-born counterparts (Carlisle, 2012). This advantage disappears in later generations. Researchers are challenging the immigrant paradox, pointing to the increasingly inconsistent empirical findings among different groups based on age, race, ethnicity, developmental domains, and social factors (Marks et al., 2014; Teruya & Bazargan-Hejazi, 2013). Exposure to and the influence of immigrant-specific ACEs may represent an aspect of this variability that could aid in our understanding of this phenomenon.

Additionally, the type of immigrant-specific ACEs complicates our understanding of the immigrant paradox. The speed at which these “healthy immigrants” begin to resemble native-born peers may be related to the immigrant-specific ACE items that make up the “immigration instability” factor. For example, Bacong and Menjívar (2021) argue that to understand the immigrant paradox, we need to recognize immigrants' vastly different experiences, particularly in response to their race. Immigrants of color are subjected to the same factors that result in poorer outcomes for US-born minorities

(Beydoun et al., 2016) and the political and structural pressures resulting from their legal status (Asad & Clair, 2018). Additionally, Latino immigrants are at a greater risk of being deported (Golash-Boza & Hondagneu-Sotelo, 2013) and are more likely to be considered undocumented (R. D. Flores & Schachter, 2018) than immigrants of other races. Thus "when legal status is racialized, immigrant health becomes intertwined with experiences of race and racism" (Bacong & Menjívar, 2021, p. 6). This more complex and nuanced understanding of the immigrant health paradox is consistent with the findings from this study.

Research Question 2

What are the relationships between traditional and immigrant-specific ACEs and adolescents' health risk behaviors and psychological health?

- **Hypothesis 2.1:** Greater exposure to traditional ACEs will be positively associated with greater difficulty in psychological well-being.
- **Hypothesis 2.2:** Greater exposure to immigrant-specific ACEs will be positively associated with greater difficulty in psychological well-being.
- **Hypothesis 2.3:** Greater exposure to traditional ACEs will be associated with more health risk behavior.
- **Hypothesis 2.4:** Greater exposure to immigrant-specific ACEs will be associated with more health risk behavior.

The second research question examined the relationship between ACEs, psychological well-being and risky behavior among Latino immigrant youth utilizing the two ACE measures examined in question one. Separate models examined psychological outcomes, prosocial behavior, and risky behaviors.

Psychological Well-Being

Traditional ACEs. In model 2.1, traditional ACEs were related to all three psychological well-being outcomes. The higher the youth's traditional ACE score, the more they report emotional symptoms, conduct problems, and peer relationship problems. This finding supports hypothesis 2.1. As this study is the first to examine this relationship among Latino immigrant youth, I cannot say how these results compare to other studies using similar samples. However, there is evidence that immigrant youth who experienced a traumatic event before or during the migration process are at increased risk for mental health issues (Delva et al., 2013; Perreira & Ornelas, 2013), which is in line with the current findings.

Additionally, these results corroborate the findings of a great deal of previous work that has found that exposure to ACEs increases the risk for behavioral and mental health issues for Latino youth (LaBrenz et al., 2020; Rosado et al., 2021) and the broader population (Lee & Chen, 2017). For example, in a majority Latino immigrant youth sample, Rosado and colleagues (2021) found a positive correlation between ACE score and increased emotional symptoms (as measured by the SDQ). However, unlike the findings from the current study, these researchers did not find a relationship between the child's ACE score and increased report of conduct problems or peer relationship problems. There are several explanations for this difference, including Rosado and colleagues' small sample size (n = 100) and the lack of statistical controls included in their analysis.

Model 2.2 examined prosocial skills, a different aspect of psychological well-being. Traditional ACEs were not associated with prosocial skills. Notably, the items

making up this subscale (e.g., being nice to others, being helpful) are recognizable as positive behaviors. Therefore, social desirability bias may have played a role in skewing these results. Alternatively, exposure to traditional ACEs may not have a relationship with exhibiting prosocial skills. It is possible that the inclusion of extended kin as part of the immediate family structure, as is common among Latino families (García-Coll et al., 1996), serves as a protective factor for youth's ability to foster positive relationships even in the face of adversity.

Immigrant-Specific ACEs. Model 2.1 shows that youth reporting a higher number of immigrant-specific ACEs are reporting more emotional symptoms. Immigrant-specific ACEs were not associated with conduct problems or peer relationship problems. Thus, hypothesis 2.2 was only partially supported. However, as traditional and immigrant-specific ACEs were examined in the same model, this finding highlights the need to reexamine how we conceptualize adversity. As with traditional ACEs, immigrant-specific ACEs were not related to prosocial behavior (model 2.3).

There are several possible explanations for the lack of a relationship between immigrant-specific ACEs and conduct issues and peer issues. This lack of a relationship may stem from limits related to the study design. First, unlike the emotional symptoms subscale, the reliability of these two subscales was lower than the recommended .80 threshold. The low reliability may indicate that these subscales of the SDQ are not as valid for Latino immigrant youth. The current literature is mixed on the reliability of SDQ with this population (Gómez-Beneyto et al., 2013; Ortuño-Sierra et al., 2015; Twyford et al., 2019). Secondly, while the emotional symptoms subscale assesses self-based items (e.g., worrying, being unhappy), the conduct and peer problems subscales

assess relationship-oriented items (e.g., I get bullied, I get in fights, I lie often). It may be that those relationship items are more difficult to endorse, particularly given participants' lack of anonymity. Youth completing these measures were starting to form relationships with program staff. They may have wanted to make a positive impression and were less forthcoming on items that indicated undesirable behavior. Future research may benefit from identifying ways to ensure anonymity for youth completing these measures.

Individuals may respond to ACE-T items and ACE-I differently. Both the ACE-T and ACE-I measure exposure to adversity, but there is the potential that exposure to ACE-T items is more likely to be experienced as a trauma than the ACE-I item. Therefore ACE-T items may relate to greater expression of post-traumatic stress disorder symptoms, including those captured by the conduct issue and peer problems subscale of the SDQ. Additionally, many of the ACE-I items are events that are in the past or occurred only a few times (e.g., being worried about dying on the journey to the US). In contrast, ACE-T events may be experienced more consistently over time. Thus, exposure to ACE-T items may have a stronger association with complex trauma. Complex trauma is a "specified qualitatively more severe traumatic events are presumed to result in profound and far-reaching outcomes" (Wamser-Nanney & Vandenberg, 2013, p. 672). However, youth likely experience ongoing exposure to the ACE-I items that comprise the Immigration Instability factor (parental separation, documentation status, involvement with ICE, and concerns about deportation). Therefore, this specific factor may relate to psychological well-being outcomes similarly to ACE-T items. Future studies with larger samples (and comprised of individuals who have been residing in the US for longer) should investigate this possible relationship.

Finally, immigrant-specific ACEs may genuinely not be related to conduct or peer problems, unlike traditional ACEs. Traditional ACEs may be seen as personal or family issues that should not or cannot be discussed with others. By not acknowledging the impact of these experiences, individuals may not be able to process and heal, leading to increased feelings of isolation. On the other hand, experiencing ACE-I items may carry less stigma as these experiences are less individual and more shared. Therefore, it could be that the structural nature of these adversities allows youth to talk about, process, and receive support from their family or peers more easily. Latino immigrant youth may tap into innate strengths, including more easily engaging with "peer supports rooted in cultural principles of trust, loyalty, and solidarity" (Cardoso & Thompson, 2010, p. 260). Familism, the term used to describe the Latino cultural value of respect, interdependence, connection, and commitment to one's nuclear and extended family (Cardoso & Thompson, 2010), may also be uniquely situated to support Latino youth in processing immigrant-specific ACEs. There is evidence that conversations between mothers and their children about the migration experience relate to greater family resilience (D'Angelo et al., 2009). Increased resilience and family connection may buffer the impact of immigrant-specific ACEs on externalizing symptoms. Additional studies that measure and analyze these resiliency factors are needed to understand the varied relationship between ACE-T and ACE-I scores, conduct issues, and peer relationship problems.

Health Risk Behaviors

Neither traditional ACE nor immigrant-specific ACEs were associated with the measure of risky behaviors (the traditional ACE score was related to behavioral risk at p

≤ .10). Therefore hypotheses 2.3 and 2.4 were not supported. These findings are inconsistent with the current literature, which shows that exposure to ACEs increases the likelihood of substance use (Villamil Grest et al., 2021), at least among Latino youth. A note of caution is due here as there are likely other factors influencing the result from the current study. First, the sample endorsed the behavioral risk items at meager rates, countering most studies examining these behaviors among adolescents. For example, from the sample of 338 youth, only 17 (5%) reported any type of substance use (nicotine, alcohol, THC, or other drugs) in the last 30 days. This rate is markedly different from the 28% of Latino high schoolers (though not strictly Latino immigrants) that reported drinking alcohol in the last 30 days or the 22% who reported using THC (CDC, 2019). It is much more likely that there was significant underreporting of these items. As discussed above, regarding the conduct and peer relationship problems subscales, youth were aware that staff would review their responses. Youth may have been unwilling to disclose illegal behaviors or those seen as negative (sexual activity, fighting).

Second, the confirmatory factor analysis results also highlight the need for caution when interpreting the results of this model. None of the items loaded significantly onto the latent factor in the initial CFA. However, we saw significant loadings in the final model with close to acceptable reliability (H = .65). This discrepancy indicates the instability of the factor. In addition, the final model (model 2.3) also had a lower CFI (.911), which adds to the likelihood that there are issues with the model or the data.

Finally, the lack of a significant relationship between ACE scores and behavior risk could indicate that while ACEs influence risky behavior, the effects of this are not seen for Latino immigrant youth until later in life. There is some support for this theory

in the literature, which supposes that as Latino immigrants become more acculturated and lose the protective cultural factors, they are more likely to use substances at rates similar to native-born peers (Kandula et al., 2004; Myers et al., 2009; Villamil Grest et al., 2021). However, caution is advised when making such a conclusion based on the current study. Future studies that can guarantee participants' anonymity will likely have more success in exploring the relationship between ACE scores and health behavior risks.

Research Question 3

What are the associations between parental exposure to traditional and immigrant-specific ACEs and their adolescent offspring's psychological health?

- **Hypothesis 3.1:** Greater parental endorsement of traditional ACEs will be positively associated with greater youth endorsement of traditional ACEs.
- **Hypothesis 3.2:** Greater parental endorsement of traditional ACEs will be positively associated with greater difficulty in the youth's psychological well-being.
- **Hypothesis 3.3:** Greater parental endorsement of immigrant-specific ACEs will be positively associated with greater youth endorsement of immigrant-specific ACEs.
- **Hypothesis 3.4:** Greater parental endorsement of immigrant-specific ACEs will be positively associated with greater difficulty in the youth's psychological well-being.

The third research question of this study expanded the models from question two to include the potential intergenerational relationship between parental ACEs, child ACEs, and the child's psychological well-being. Only the model with the psychological well-

being outcomes (2.1) showed a significant relationship to child ACEs, so I elected only to examine those outcomes. The two models used slightly different samples. Both models included only Latino immigrant parents and only included offspring that were immigrants. In model 3.2, only those Latino immigrant parents who immigrated prior to 18 were included (and their match children). Additionally, the sample size identified through a priori power analysis (n = 250) was not achieved, largely due to lockdowns resulting from the Covid-19 pandemic.

Parents' Traditional ACEs

Relationship with Child ACEs. The results of Model 3.1 supported hypothesis 3.1., finding a small but significant positive association between the parental traditional ACE score and their child's traditional ACE score (b = .18). The current study is the first to date that has examined this phenomenon specifically among Latino immigrants. Indeed few studies have examined this relationship at all, though researchers are beginning to point to this as an essential avenue of investigation (Narayan et al., 2021). This study supports findings from the few previous studies of different populations on the relationship between parent and child ACEs. For example, a study of fathers and sons living in London found that fathers with high levels of ACEs (4 or more) were 2.62 times as likely to have a son with high ACEs (Craig et al., 2021). However, this relationship was attenuated when other risk factors were included. These risk factors included low income and poor housing, which are often conceptualized as ACEs, and so it is unclear if this relationship may have held if these factors were included as ACEs. A study by Gomis-Pomares and colleagues (2021) found that among a sample of 420 Spanish young adults, those whose parents who experienced high levels of household dysfunction (a

common ACE category) were more likely to report similar experiences from their childhood. Future studies need to examine this relationship in other samples of Latino immigrants (and more broadly) to establish more robust evidence.

There are several reasons why children with high ACE scores are likely to have parents with similarly high scores. Studies have pointed to ACEs' impact on parenting behaviors (A. L. Roberts et al., 2015), parents' psychopathology (Ochoa et al., 2022), and even biological impacts (Schiele et al., 2020) as pathways by which adversity may affect subsequent generations. Attachment theory may offer insight into the phenomenon. According to attachment theory (Bowlby, 1973), infants seek close relationships with their primary caregivers to meet their emotional and physical needs. Through these early experiences, children develop mental representations of themselves, particularly their self-worth. These internal working models shape our thoughts, feelings, and behaviors, including our ability to manage and recover from adversity throughout our life (Narayan et al., 2021). In the context of significant adversity attachment figures may not be as responsive to the child, leading to negative internal working models and maladaptive coping later in life. As parents, these individuals may be less likely to identify and manage risk that could expose their children to similar adversity. Additional, internal working models primarily impact individuals' experiences and behaviors in relationships (romantic, peer, familial) throughout their life. As traditional ACEs chiefly concern relationships (that is most of these adversities involve the interpersonal domain) it may be that disrupted attachments and negative internal working models lead to relationships with higher levels of risk. Thus, increasing the likelihood that subsequent generations will endure similar adverse experiences.

The relationship between parent and child ACE-T scores was not seen in model 3.2. The limited size and the homogeneity of this sample may have impacted the ability to detect this relationship. Alternatively, it may be that when both the parent and child experienced immigration as children (i.e., under 18 years of age), the relationship between traditional ACEs does not hold. Unfortunately, many unknown variables (length of parent-child separation, age at parent's immigration, number of times parent may have crossed the border) could affect this relationship. For example, if a parent can migrate with their child early in life, the child may not be exposed to the same environment this parent had growing up, resulting in a lower ACE score. Alternatively, a child left in the care of relatives while their parent worked to establish themselves in the US may be at a greater risk for ACEs exposure. The current study cannot pinpoint the specific cause of the lack of a significant path between parent and child ACE-T scores without investigating these potential processes.

Relationship with Psychological Well-Being. Contrary to expectations, this study did not find a significant relationship between parental traditional ACEs and the child's psychological well-being. Prior studies have shown that increased parental exposure to adversity is associated with increased offspring's social-emotional behaviors (Plant et al., 2018; A. L. Roberts et al., 2015; Schickedanz et al., 2018). Several aspects of the current study may explain the lack of a significant finding. First, unlike other studies examining the influence of parental childhood adversity on offspring's well-being, this study included the offspring's ACE score. The positive relationship between parental ACE scores and child ACE scores indicates that this variable should be included in these types of studies. The current study could not find evidence supporting an indirect effect of

parental ACEs on the child's psychosocial outcomes (and, therefore, potential complete mediation). Studies with larger samples may detect such an effect. Additionally, prior studies almost exclusively examine maternal exposure to adversity. While the current study had a minority of fathers (16% or 19% depending on the specific model), their inclusion may have impacted the relationship between parental ACEs and child psychological well-being.

As in model 2.1, models 3.1 and 3.2 showed a significant positive relationship between child ACE-T, conduct issues, and peer problems. In addition, both models showed the expected positive relationship between child ACE-I score and emotional symptoms.

Parent's Immigrant-Specific ACEs

Before discussing the findings involving parents' immigrant-specific ACEs, a note of caution is due. Only parents who immigrated prior to age 18 and had children who were immigrants were included in this model (model 3.2). Therefore, the sample size of this model was small (n = 54). This limited sample size may hamper the ability to detect significant results. Initial power analysis showed that a sample closer to 250 dyadic pairs was required to detect effects.

Additionally, the specific context of the parents' immigration experience is unknown. For example, it is possible a parent had a child prior to 18 and then immigrated (with or without the child) to the US. Alternatively, a parent may have crossed the border multiple times throughout their life (circular migration). Unfortunately, these variables were unmeasured. Therefore, it is helpful to consider model 3.2 as exploratory and not draw definitive conclusions from these findings.

Relationship with Child Immigrant-Specific ACEs. In line with hypothesis 3.3, results showed a positive relationship between parent and child immigrant-specific ACEs (model 3.2). Whereas the relationship between parent-child traditional ACEs may be understood through attachment theory, the connection between parent-child immigrant-specific ACEs is better understood by applying the ecological model. Traditional ACEs exist in the innermost spheres of influence; the microsystems, the child's relationships with the immediate environments surrounding them (e.g., abuse, neglect), and the mesosystem, the interconnections between a child's microsystems (e.g., witnessing domestic violence, divorce; Bronfenbrenner, 1986). On the other hand, immigrant-specific ACEs are artifacts of the macro and exosystem. The macrosystem includes broad cultural values and governmental and economic systems. These cultural values and governmental actions are often expressed via societal institutions (schools, health care systems, police, courts) that make up the exosystem.

A child may experience immigrant-specific ACEs via the microsystem. For example, a child could be physically abused during the journey to the US. However, conditions necessitating a child travel unaccompanied and secretly stem from the macrosystem. Current and historical structures systematically disadvantage immigrants from Latin America. A history of colonialism created depths of poverty and political unrest, often pushing people to migrate to seek safety and economic means. This direct influence of the more distal systems aligns with García-Coll and colleagues' (1996) integrative model.

At the same time, current racialized immigration policies contribute to dangers experienced by certain groups of immigrants both during and after migration (Asad &

Clair, 2018). Children are likely to immigrate from the same country as their parents, and the same social-historical context influences both experiences. Immigrant-specific ACEs are structural, and as parents and children commonly share similar exo and macrosystems, it is understandable that a parent's exposure to immigrant-specific ACEs would predict the child's exposure to those same adversities. It is this shared macro-systemic context that influences exposure to immigrant-specific ACEs.

Relationship with Psychological Well-Being. Surprisingly, contrary to hypothesis 3.4, parental immigrant-specific ACEs were negatively associated with the child's endorsement of emotional symptoms. The more the parent was exposed to immigrant-specific ACEs, the less depressive type symptoms endorsed by their child. It may be that an adverse immigration experience enables these parents to better prepare their children for dealing with emotional issues. Studies examining resiliency in Latino immigrant families point to a shared migration history as a strength. Through this shared migration experience, parents can better empathize with their children, engage in positive communication, and seek spiritual and professional support (Cardoso & Thompson, 2010; Perreira et al., 2006). These findings are further complicated by the more intuitive positive indirect relationship (opposite of the direct relationship) between parental immigrant-specific ACEs and the child's emotional symptoms. This relationship indicates that a parent's increased exposure to ACE-I items leads to the child's endorsement of immigrant-specific ACEs and, subsequently, greater emotional symptoms.

As discussed above, the sample size is small, and several variables not included in this model would likely clarify this relationship. For example, the model does not include

the length of any parent-child separation, which could moderate this relationship. It may be that those separated from their parents are more prone to develop depressive symptoms while those who migrated with their parents are not. The opposite direction of the direct and indirect paths may also be a statistical artifact that, in a larger sample, would not appear. Nevertheless, the counterintuitive findings of this model point to the need for future research that includes additional variables and larger samples to obtain a clear picture of this relationship.

Summary of Findings

The current study contributes several significant findings to the ACE literature. Firstly, while it appears that Latino immigrant youth report low levels of ACEs, this is only true when examining traditionally studied ACEs. When asked about immigrant-specific ACEs, a clearer picture of the rates and types of childhood adversity Latino immigrant youth experience emerges. Immigrant-specific ACEs also appear to have a similar relationship to psychological well-being in youth as with traditional ACEs. Prior work on expanding ACEs to include peer victimization, social-economic status, and community violence exposure increased our ability to use ACEs exposure to predict youth mental and physical health issues (Finkelhor et al., 2015). Including immigrant-specific ACEs shows a similar benefit. Overall, these findings support the need to expand our conceptualization of ACEs.

Limitations

Several limitations should be considered when interpreting the findings from the current study. First, the study relied on self-report data collected in a context where the participants knew that program staff would be reviewing the survey. The lack of

anonymity could lead to an overall underreporting or an underreporting of the more sensitive items. Future studies should consider ensuring participant anonymity whenever clinically and legally appropriate. Second, while the ACE-I is meant to be a general measure applicable to all immigrants, the current version was developed and tested within a homogenous group. The current sample was primarily composed of recently arrived Latino immigrants from the Northern Triangle region of Central America. Thus, this sample's high prevalence of ACE-I items may not reflect the larger Latino immigrant community or the broader immigrant experience. Testing the ACE-I among diverse groups is needed to understand and identify those experiences that may be universal or more applicable to specific immigrant populations, including immigrants to countries other than the US.

The sample used was a convenience sample and was drawn from one geographic area and, therefore, may not be generalizable to individuals migrating to different parts of the US. The sample also was primarily comprised of adolescent youth with a mean age of about sixteen and a standard deviation of about two years. This age represents a critical but developmentally specific time. When presenting a theory of how living as undocumented affects youth Suarez-Orozco and colleagues (2011) note the importance of considering the developmental period. The results from this study may not be generalizable to elementary-aged children or young adults. These periods, while bracketing adolescents, are focused on different developmental tasks, and the effect of ACEs may show up in different ways. Future studies should replicate this study with samples from different age groups. These future studies should consider how exposure to

adversity at different developmental periods could have a varied impact on concurrent and future health and well-being.

Some models relied on small sample sizes, requiring those results to be interpreted with more caution. Additionally, the current study was limited in the potential control, mediating, and moderating variables. There are likely relevant variables that may help us better understand the results of this study. For example, including additional variables such as parent-child separation, the timing of parent immigration, and if the youth were an unaccompanied minor would allow us to test potential moderating factors. Additionally, the sample sizes and rarity of some of the ACE-I/T items limited my ability to examine potential measurement invariance. Independent t-test results did not show a significant difference in the total ACE-T or ACE-I score based on gender, age, or length of time in the US. However, future studies must investigate potential measurement invariance across these groups.

Implications

Practice Implications

The findings from this study can inform current clinical and programmatic practice. Culturally relevant trauma-informed services are becoming more prominent in healthcare and social services (Becker-Blease, 2017). Nevertheless, a one size fits all approach will not work. Understanding childhood adversities unique to immigrant populations will help clinicians and program developers tailor trauma-informed interventions to be more relevant, meaningful, and effective. For example, suppose information about immigrant-specific childhood adversities was more readily available.

In that case, programs could be more responsive to the needs of the populations they serve by better targeting resources for preventive services and treatment.

The high rates of immigrant-specific ACEs experienced by this group may allow for less formal and more accessible interventions. For example, *promotores* or community mental health models could increase support for those impacted by childhood adversity. Promotores are trained non-clinical members of the communities they serve (Miller & Burgos, 2021). Therefore, promotores understand the language and cultural values important to the community and provide culturally informed care. Peer supports are similar to promotores as they are non-clinicians that provide assessment, support, and referrals to community members (Mette et al., 2019). However, unlike promotores, peer supporters have similar lived experiences as those seeking support (e.g., a peer supporter for Latino immigrants would likely be a Latino immigrant themselves who dealt with similar exposure to immigrant-specific adversities). When providing mental health care, these formal but non-clinical services effectively address language and cultural barriers (Weaver & Lapidos, 2018) and reduce stigma (Miller & Burgos, 2021).

Regardless of the type of services provided, any program working with Latino immigrants, especially those working with youth with mental health or behavioral concerns, needs to be aware of this broader conceptualization of ACEs. Of course, screening for ACEs is not without controversy (Dube, 2018). Still, if programs collect this information in responsible ways and actively adjust their programs based on the needs of the participants, ACEs can be a helpful tool.

Research Implications

The central recommendation from this study is that researchers should stop relying on the traditional ten or so ACE items to provide a universally accurate picture of childhood adversity. Researchers should avoid simply adding the ACE-I measure in its current form to future research studies and assuming that it will capture the lived experience of all immigrant groups. Instead, researchers expanding on this work should involve immigrant communities from diverse racial/ethnic, national, and cultural backgrounds in developing and identifying additional items that may not be included in the current ACE-I version. Specific items may be more or less relevant, depending on the socio-historical context in which someone migrates. For example, there was a low prevalence of individuals endorsing item 3 (forced to leave their home country because of a natural disaster) in the current sample. However, if this item were asked of Haitian youth who immigrated after the massive earthquake in 2010, the prevalence would likely be higher, thus capturing more relevant adversity.

Researchers should also consider the global nature of immigration. The findings from this study may have relevance to other marginalized populations. For example, the categories of childhood adversity relevant and influential for Latino immigrant youth may be just as crucial for refugees from Syria, Iraq, and Afghanistan who immigrate to Europe. However, the intersection between immigration and the socio-historical context in this part of the world must be considered when adapting the measure. Similar recommendations hold when assessing childhood adversity in other marginalized groups. For example, adapting ACEs measures to capture the relevant experiences of LGBTQ+

youth, particularly concerning structural or societal forces, could better inform research and intervention development for this group.

I grounded the current study in a developmental and ecological theoretical foundation. Both of these components are essential to contextualizing the current study's findings. However, the current study was only able to examine a small slice of developmental time and ecological influence. As future research extends this work and explores developmental periods and various constellations of ecological influence, it will become essential to incorporate a life course theory. A life-course perspective will allow researchers to incorporate findings from multiple studies to explore the "importance of time, context, process, and meaning on human development and family life" (Bengtson & Allen, 2009, p. 417). This understanding will enable researchers to develop more effective interventions that mitigate the influence of childhood adversity. Additionally, person-centered analysis may allow for a deeper understanding of how different presentations of risk and resiliency factors are related to health and well-being.

Researchers should also consider variables that may moderate the relationship between ACEs and the well-being of adolescents. For example, age at immigration may alter the influence of ACEs depending on the developmental tasks an individual is working on mastering. Additionally, the historical timing of immigration may change the level of exposure to ACE-I items and their relationship to well-being as immigration policies shift over time. Other potential moderators include gender, country of origin, ethnic identity, and socioeconomic status. Additionally, as researchers explore relationships with parent ACE scores (both ACE-T and ACE-I), it will be necessary to explore potential moderators. For example, immigrant-specific ACEs may be buffered for

youth making the migration journey with a parent. In contrast, those traveling as unaccompanied minors may be at greater risk for experiencing negative outcomes.

Finally, future research must also move beyond simply identifying the breadth of adversities experienced by immigrant youth toward understanding the potential causal pathways by which immigrant-specific adversities influence health and well-being in potentially positive and negative ways. Researchers must situate findings in the sociopolitical contexts where participants live and avoid pathologizing those exposed to these adversities. Such understanding of the adversities immigrant groups face should guide researchers to recommend program policies that remove the structural barriers and systemic oppressions they experience.

Policy Implications

Findings from this study have immediate implications for local, state, and national policy. The high level of adversity that Latino immigrant youth face results from structural inequalities. ACE-T items primarily assess adversities in the family domain, whereas the ACE-I items assess adversities in community, social, and political domains. It is, therefore, vital to recognize that exposure to these adversities is intrinsically linked to the current and historical structures that systematically disadvantage immigrants from Latin America. A history of colonialism created depths of poverty and political unrest that pushed people to migrate to seek safety and economic stability. At the same time, current racialized immigration policies contribute to the dangers experienced by certain groups of immigrants both during and after migration (Bacong & Menjívar, 2021). Understanding this context moves us away from pathologizing individuals and families

due to adversities they faced and towards acknowledging how historical racialized oppression creates and perpetuates adversity.

Understanding and recognizing the structural nature of these adversities forces us to acknowledge how current immigration policies perpetuate adversity, which has long-lasting impacts on youth. For example, formal policies like those from the former Trump administration (e.g., separating children from their parents at the border) create adversity for people seeking refuge. Additionally, "immigration crackdowns" or ICE raids have significant consequences for young people, regardless of their immigration status. Exposure to these adversities results in increased symptoms of depression, anxiety, and post-traumatic stress disorder among children (Chaudry et al., 2016).

The negative impact these adversities have on health and well-being perpetuates health inequalities. For example, Suárez-Orozco and colleagues (2011) point to a common phenomenon in adolescents where undocumented youth seeking to establish independence and develop their identity are "confronted with the limited life opportunities" (p.454) available due to their citizenship status. These youth are often denied access to traditional rites of passage (e.g., getting a driver's license, going to college, getting a job), may struggle to find a sense of belonging, and thus be at risk of low self-esteem and increased depressive symptoms.

An overreaching goal of Healthy People 2030, an initiative from the US Department of Health and Human Services, is to "Eliminate health disparities, achieve health equity, and attain health literacy to improve the health and well-being of all" (DHHS, 2022). Such a goal cannot be achieved without immigration policy reform. Regardless of individual political beliefs, the government should not be the source of

significant and impactful adversity. Policymakers must remember that immigration policies do not only impact adults, but they also have real consequences for children (who may or may not be citizens) and families. Immigration policies that recognize society's responsibility for protecting children from adversity are needed.

Conclusion

The current study responds to researchers' growing calls for a more informed assessment and understanding of early life adversity among diverse groups. Over the last 20 years, ACEs researchers established the significant effect of early life adversity on health and well-being. However, we are limited in our capacity to apply these findings to immigrant populations unless we understand immigrants' authentic lived experiences. By broadening our conceptualization and measurement of early life adversity with tools like the ACE-I, we can better understand and meet this group's needs and potentially reduce the health inequalities. Findings from this study point to the negative impacts that exposure to traditional and immigrant-specific ACEs has on Latino immigrant youth. With this relationship established, researchers should now move toward understanding and identifying the risk and protective factors within this group that may mitigate these relationships.

Appendices

Appendix A: Traditional Adverse Childhood Experiences

We would like to ask you some questions about adverse experiences you may have had. Thinking about when you were younger than 18 years of age…

1. Did you **often or very often** feel that you did not have enough to eat, had to wear dirty clothes, or had no one to protect you?
    - Yes/No
2. Did any person ever forcibly touch your body or have you touch their body in a sexual way, or attempt to or actually have sex with you when you did not want to?
    - Yes/No
3. Did a parent of other adult in your home **often of very often** swear at you, insult you, put you down or humiliate you?
    - Yes/No
4. Did your parents or other adults in your home ever hit you so hard that you had marks or were injured?
    - Yes/No
5. Do you receive free and reduced meals at school?
    - Yes/No/I don't know
6. In your home, did you see a parent, or other household member being slapped, kicked, punched or beaten up?
    - Yes/No
7. Did you live with someone who was depressed, suffered from mental illness, or attempted suicide?
    - Yes/No
8. Did you live with a household member who was ever sent to jail or prison (**not because of immigration issues)**?
    - Yes/No
9. Did you ever live with a household member who was a problem drinker or alcoholic or used illegal drugs?
    - Yes/No
10. Were your parents ever separated or divorced?
    - Yes/No
11. Did your mother, father or guardian die?
    - Yes/No

Appendix B: Immigrant-Specific Adverse Childhood Experiences

While you were growing up, during your first 18 years of life:

Were you ever separated from your mother or father because of immigration issues?

- Yes/No

Have you, or any family member, ever been arrested or detained by police or ICE for immigration reasons?

- Yes/No
    i. If Yes, who?
        - Self/Mother/Father/Sibling/Grandparent/Other

Were you ever forced to leave your birth country because of war, political violence, or unrest?

- Yes/No

Were you ever forced to leave your birth country because of gang violence?

- Yes/No

Were you ever forced to leave your birth country because of a natural disaster (earthquake, hurricane, etc..)?

- Yes/No

During your journey to the US, were you ever threatened with physical harm?

- Yes/No

During your journey to the US, were you ever physically harmed on purpose (hit, slapped, punched, or sexually abused/assaulted)?

- Yes/No

During your journey to the US, did you lack food and water?

- Yes/No

During your journey to the US, were you ever very afraid that you might die?

- Yes/Not

During your journey to the US, were you ever very afraid that you might be lost?

- Yes/Not

Did you ever live in a country where you were considered an undocumented immigrant?

- Yes/No

When you were under the age of 18, did you ever see a family member, friend or any other person killed or beaten up by soldiers/police?

- Yes/No
    - If yes, where did this happen? (Select all that apply)
        - In my country of birth (other than US)/On my journey to the US/In the US

When you were under the age of 18, did you ever see a family member, friend or any other person killed or beaten up by gang members?

- Yes/No
    - If yes, where did this happen? (select all that apply)
        - In my country of birth (other than US)/On my journey to the US/In the US

Regardless of your own immigration or citizenship status, when you were under the age of 18, did you often or very often worry that you, a family member, or a close friend could be deported?

- Yes/No

Appendix C: Strengths and Difficulties Questionnaire

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain. Please give your answers on the basis of how things have been for you ***over the last month****.*

	Not True	Somewhat True	Certainly True
1. I try to be nice to other people. I care about their feelings	◯	◯	◯
~~2. I am restless, I cannot stay still for long~~	◯	◯	◯
3. I get a lot of headaches, stomach-aches or sickness	◯	◯	◯
4. I usually share with others, for example CD's, games, food	◯	◯	◯
5. I get very angry and often lose my temper	◯	◯	◯
6. I would rather be alone than with people of my age	◯	◯	◯
7. I usually do as I am told	◯	◯	◯
8. I worry a lot	◯	◯	◯
9. I am helpful if someone is hurt, upset or feeling ill	◯	◯	◯
~~10. I am constantly fidgeting or squirming~~	◯	◯	◯
11. I have one good friend or more	◯	◯	◯
12. I fight a lot. I can make other people do what I want	◯	◯	◯
13. I am often unhappy, depressed or tearful	◯	◯	◯
14. Other people my age generally like me	◯	◯	◯
~~15. I am easily distracted; I find it difficult to concentrate~~	◯	◯	◯
16. I am nervous in new situations. I easily lose confidence	◯	◯	◯
17. I am kind to younger children	◯	◯	◯
18. I am often accused of lying or cheating	◯	◯	◯
19. Other children or young people pick on me or bully me	◯	◯	◯
20. I often offer to help others (parents, teachers, children)	◯	◯	◯
~~21. I think before I do things~~	◯	◯	◯
22. I take things that are not mine from home, school or elsewhere	◯	◯	◯
23. I get along better with adults than with people my own age	◯	◯	◯
24. I have many fears, I am easily scared	◯	◯	◯
~~25. I finish the work I'm doing. My attention is good~~	◯	◯	◯

***** Note: *Items with double strikethrough are included in the full SDQ and are part of the hyperactivity subscale, which is not collected by the community program and not included in the proposed study.*

Appendix D: Behavioral Risk Index Items

1. During the past 30 days, on how many days did you smoke vape, or JUUL (nicotine cigarettes)?
   - 0 days
   - 1 or 2 days
   - 3 to 5 days
   - 6 to 9 days
   - 10 to 19 days
   - 20 to 29 days
   - all 30 days

2. During the past 30 days, on how many days did you have at least one drink of alcohol?
   - 0 days
   - 1 or 2 days
   - 3 to 5 days
   - 6 to 9 days
   - 10 to 19 days
   - 20 to 29 days
   - all 30 days

3. During the past 30 days how many times have you used illegal marijuana?
   - 0 days
   - 1 or 2 days
   - 3 to 5 days
   - 6 to 9 days
   - 10 to 19 days
   - 20 to 29 days
   - all 30 days

4. This question is about other drug use, including any forms of synthetic marijuana, cocaine, heroin, methamphetamines, ecstasy or prescription pain medicine used differently than how a doctor told you to use it. During the past 30 days, how many days did you use any of these drugs?
   - 0 days
   - 1 or 2 days
   - 3 to 5 days
   - 6 to 9 days
   - 10 to 19 days
   - 20 to 29 days
   - all 30 days
5. During the last month, I have been in physical fights.
   - Very often

- Often
- Rarely
- Never

6. During the las 3 months (90 days), how often did you or your partner use a condom during consensual sexual intercourse (vaginal/anal any gender partner), or oral sex?
   - Not applicable, I have never had sexual intercourse
   - I have not had sexual intercourse during the last 3 months
   - Never used a condom
   - Rarely used a condom
   - Sometimes used a condom
   - Usually/Most of the time used a condom
   - Always used a condom

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