Three Studies Examining Externalizing Behavior and Substance Use Among Diverse Youth

by

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Abstract

Over the past several decades, a great deal of research has been conducted on the predictors of youth externalizing behavior and youth substance use. Both behaviors can have serious consequences, therefore a more nuanced understanding of their predictors is likely to have implications for knowledge development, and for the development of more effective policies, programs, and interventions. This dissertation examined new questions concerning youth externalizing behavior and substance use among diverse youth. Ecological Systems theory and the Integrative Model motivated the research studies. This dissertation had two primary aims. First, this dissertation aimed to provide a more contextually comprehensive perspective on youth externalizing behavior and substance use by examining a broader set of measures associated with youth development. The second aim of the dissertation was to examine Latino/a group variation in externalizing behavior and substance use. Most extant research has treated Latinos/as as a monolithic group, and thus it is important to examine the degree to which there may be between group differences or diversity in the experience of various Latino/a groups.

In study one, using data from the Fragile Families and Child Wellbeing study (FFCWS), I examined the short- and long-term effects of childhood risk (physical punishment, family work-related stress) and protective factors (neighborhood collective efficacy) on externalizing behavior during adolescence. In this study, I also examined racial/ethnic (Black, Latino, and White) variation of short term and long-term consequences of the measures of interest. A series of multiple group structural equation models were carried out for analyses. Results from this study

reveal that parenting, parent employment and neighborhoods are significantly related to youth externalizing behavior.

In study two, I examined Latino/a variation of externalizing behaviors with data from the Fragile Families and Child Wellbeing study (FFCWS). Latino diversity that may exist is often masked when empirical research examines this group as one monolithic group. I examined multilevel models that accounted for the nested nature of the data. Results from this study show that cultural factors, parenting, parent employment, and neighborhoods are important for Latino youth externalizing behavior. Additionally, cultural factors did not vary across Latino groups.

In Study 3, I examined within Latino/a substance use variation. The substances of focus were alcohol (past 12-month use and binge drinking), marijuana (past 12-month use), cigarettes (past 30-day use), and cocaine (past 12-month use). Most substance use empirical research that is Latino/a inclusive, does not take into account the heterogeneity of this population. This study provides a national perspective on substance use as it pertains to Latino groups. I carried out a series of survey weighted logistic regressions using data from the nationally representative Monitoring the Future study (MTF). Results suggest that some substance use variation exists, however, the trends in substance use across Latino groups is similar.

Taken together the studies provide a comprehensive examination of related questions concerning youth externalizing behavior and substance use. Latino variation, while minor, was evident in the present studies. Additionally, Latino-unique measures are important for adolescent externalizing behaviors and substance use and they do not vary across groups. Therefore, implications for intervention efforts include sensitivity to cultural factors when working with this population.

Chapter 1

Introduction

The diversity in the U.S. is not represented in the literature characterizing adolescent substance use and externalizing behavior. Currently, 40% of the U.S. population identifies as an ethnic minority and 13.6% are foreign born (Radford & Noe-Bustamante, 2019). Additionally, an approximate 25% (1 in 4) of K-12 youth in the U.S. are Latino (López, Krogstad, & Flores, 2018). The Latino population is diverse, and the demographics of this population are rapidly changing, yet little research has empirically examined variation among Latinos.

When studying Latino youth, it is important to consider culturally sensitive and theoretically grounded contextual factors such as parent's employment and stressors related to cultural context, such as acculturation. For example, socioeconomic status (SES) is particularly important to consider when studying Latinos/as given that 66% of Latino children grow up in poverty. Additionally, Latinos earn the lowest hourly wage compared to White, Black, and Asian, even when controlling for college educational attainment (Patten, 2016). Latino high school dropout rate has reached an all-time low of 10%, however, Latinos still have the highest dropout rate compared to white, Black, and Asian youth (Gramlich, 2017). In the U.S., Mexican, Cuban and Puerto Ricans are the largest Latino groups, however, in recent years there have been changes in the Latino population, such that there are increasingly more Guatemalan, Dominican, and Venezuelan Latinos. There are also fewer 1st generation Latinos in the U.S.. Lastly, contrary to popular belief, approximately 79% of Latinos are U.S. citizens. Among all immigrant Latinos,

approximately 78% have been in the U.S. for over 10 years. These demographics changes in the Latino population are important to consider and they are a motive for examining variation among Latinos.

Presented Studies

In the following three papers I explicitly focus on diverse and Latino youth in the U.S. In paper one I examine short-term and long-term effects of childhood stressors on externalizing behavior in the traditional between groups method (i.e., Black, Latino, White). The childhood stressors examined were parenting, family work-related stress and neighborhood collective efficacy on externalizing behavior problems during adolescence. I used data from the Fragile Families and Child Wellbeing Study and applied Structural Equation Modeling for analyses. The two primary questions addressed in this paper were:

1) What are the short term and long-term effects of childhood stressors (physical punishment, family work-related stress, externalizing behavior) and protective factors (neighborhood collective efficacy) on externalizing behavior during adolescence?

2) Are there racial differences (Black, Latino, White) in the relationship between childhood risk and protective factors and adolescent externalizing behavior?

In the second paper, I examine contextual factors that may be unique to Latino youth externalizing behavior by examining the effects of parenting and neighborhood factors, while also including measures of parent's acculturation and employment. This paper is exclusively focused on Latino youth. In this paper I carry out multilevel models to account for the nested

nature of the Fragile Families and Child Wellbeing data. I examined interaction effects by Latino group to assess variation within Latino/a groups by measures of interest. I also examined interaction effects by year to assess for developmental change in the effects of the measures of interest. The primary questions answered in paper two were:

1) Are Latino-specific contextual measures related to short-term and long-term youth externalizing behavior?

2) Is there Latino group (Mexican, Puerto Rican) variation in the relationship between the Latino-specific contextual measures and externalizing behavior?

In the third study, I use Monitoring the Future data to examine substance use variation among Latinos/as (i.e., Mexican, Cuban, Puerto Rican, and Other Latino/a). The substances of interest were alcohol (past 12 month and binge drinking), marijuana (past 12-month), cigarette (past 30-day), and cocaine (past 12-month) use. The primary questions addressed in this study were:

1) What is the prevalence of Latino/a group substance use?

2) Is there Latino/a variation in substance use (i.e., alcohol, marijuana, cigarettes, and cocaine)?

3) How has substance use for Latinos/as changed overtime?

I applied a contextual and a developmental perspective to diverse and Latino youth externalizing behaviors and substance use. I explicitly focus on Latinos/as externalizing behavior and substance use to expand on the limited research available on this population. I examine within Latino/a variation to provide a more nuanced perspective of Latino youth and uncover variation that may be masked when empirical studies combine Latinos into one large monolithic group.

I use data from the Fragile Families and Child Wellbeing Study (FFCWS) and the Monitoring The Future study (MTF) to examine diverse youth externalizing behavior and substance use. The FFCWS is a large scale, longitudinal, six-wave, study of low-income youth and families in the U.S.. MTF is a U.S. nationally representative, school-based, study that collects annual data from 8th and 10th graders.

Externalizing Behavior and Substance Use

The outcomes of interest in the three studies are externalizing behavior and substance use. These two outcomes are intertwined in interesting ways. Research has provided evidence for a link between externalizing behavior during childhood and substance use during adolescence. Particularly, high levels of externalizing behavior have been linked with alcohol use (Sartor, Lynskey, Heath, Jacob, & True, 2007; Thompson et al., 2011). Across socioeconomic status (SES), youth with lower SES levels and higher levels of aggressive behavior are more likely to initiate alcohol use at earlier ages (Choukas-Bradley, Giletta, Neblett, & Prinstein, 2015). Substance use remains a significant public health concern in the U.S..

Alcohol and marijuana are the two most common substances used by American adolescents. Adolescent alcohol and marijuana use have been linked to a host of negative consequences. Both underage drinking and marijuana use have been linked with health and physical consequences, particularly alcohol with deaths from car accidents, homicide, and suicide (NIAAA, 2019). Underage drinking also increases risk for sexual assault, school-related problems, and legal problems (NIAAA, 2019). Adolescent alcohol use is also linked with cognitive impairment (NIAAA, 2019; Pfefferbaum et al., 2018).

Similarly, adolescent marijuana use has been linked with decreased school performance, social relationship problems, decreased physical ability (i.e., athleticism), mental health

problems (i.e., depression, anxiety), as well as impaired memory and cognitive performance (Filbey et al., 2014; Meier et al., 2012). Adolescent marijuana use also increases the risk of marijuana addiction, approximately 1 in 6 adolescents who use marijuana become addicted to marijuana (SAMHSA, 2021). As evident, alcohol and marijuana use are detrimental to adolescents and their wellbeing.

In my third study, I examine alcohol, marijuana, cigarette, and cocaine use among Latino adolescents. Cigarettes, once popular, has remained a low used substance among U.S youth (Johnston, Miech, O'Malley, Bachman, Schulenberg, Patrick, 2021). I included cigarette and cocaine use in my third study because this study was intended to be a replication and extension of a paper examining Latino/a substance use variation using Monitoring the Future data published in 2005 (Delva et al., 2005). My study replicates Delva et al (2005) by examining the same substances and same Latino groups using the same survey data from Monitoring the Future study. However, my paper extends on Delva et al (2005) in two major ways. First, my study includes both 8th and 10th grade data, to examine grade differences in substance use. Second, my study includes more recent nationally representative samples of Monitoring the Future data. Aside from the present study and Delva et al (2005), no other study has examined Latino/a substance use variation using nationally representative samples from the Monitoring the Future study. This is a major gap in the substance use literature.

Limitations of Previous Research

While there is a significant amount of literature on adolescent substance use and youth externalizing behavior, there are gaps in both areas that require additional research. For example, in the externalizing behaviors literature, the majority of the focus has been placed on parenting (Elizabeth T Gershoff & Grogan-Kaylor, 2016; Rohner et al., 2005) and neighborhood effects

(A. Grogan-Kaylor, Ma, & Graham-Bermann, 2018; Jocson & McLoyd, 2015; Ma & Grogan-Kaylor, 2017). However, there are other domains that could be important to youth externalizing behavior. For example, Bronfenbrenner (1986) suggests that youth development occurs in the context of the micro, meso, and macro spheres. Therefore, in my first and second study, I examine youth externalizing behaviors in the context of parenting, neighborhoods, as well as parent employment. I further examine contextual domains for Latino youth in my second study, where I am inclusive of acculturation and cultural connectedness measures. I examine contextual measures of parent employment and work-related stress, along with parenting and neighborhoods, to capture the broader context of diverse youth (study paper 1) and Latino/a (study paper 2) youth's externalizing behavior.

In both the substance use and externalizing behavior literature there is a limitation pertaining to diverse youth. One gap is the study of within group differences in large populations. For example, Latino-inclusive substance use research studies are often limited by small scale, community, clinical, adults or single-school samples (Schwartz et al., 2015; Wagner et al., 2010; Pereyra & Bean, 2017). These data have been critical in illuminating the heterogeneity that exists among Latino subgroups. However, sample size limitations of these data highlight the need for large scale and national data that can demonstrate population-level effects.

The majority of youth substance use and externalizing behavior literature tends to combine all Latino subgroups into one large monolithic group and not does not examine within Latino variation (i.e., Mexican, Puerto Rican, etc.). There are many empirical studies that are inclusive of Latinos in both the substance use (i.e., Bachman, Staff, O'Malley, & Freedman-Doan, 2013; Chen & Jacobson, 2012; Pilgrim, Schulenberg, O'malley, Bachman, & Johnston, 2006; Wallace

et al., 2002) and parenting literature(Gershoff & Grogan-Kaylor, 2016; Grogan-Kaylor, Ma, Lee, et al., 2018; Ma & Klein, 2018), however within Latino variation remains a gap in the literature. There are limitation that arise when combining Latino subgroups and using a total sample perspective without accounting for subgroup heterogeneity. For example, a total sample perspective may provide misguided information on externalizing and substance use behavior, rates of substance use prevalence, trajectories, and consequences of these behaviors. Therefore, there remain critical empirical questions to examine regarding Latino/a variation in substance use and externalizing behaviors. I address some of these gaps in the literature my studies by 1) using large scale and nationally representative data, 2) being inclusive of diverse populations, 3) focusing explicitly on Latinos and 4) examining Latino group variation in substance use and externalizing behaviors.

Research Study Overlaps

Given my research questions and data used to address the research question, I would like to inform the reader that there is overlap in the content of the three studies. First, in study one and study two, there is overlap in the methods sections given that I make use of the same dataset, Fragile Families and Child Wellbeing study, and make use of similar measures (i.e., parent use of spanking, maternal warmth, parent employment, neighborhood factors, and youth externalizing behavior). There is also overlap between my study two and study three. These studies make use of different data sets; however, the focus is on Latinos. Therefore, there is overlap in the introduction section as I introduce the importance of attributing empirical research to the Latino population in the U.S.

My overarching aim with these three studies is to build on existing substance use and externalizing behavior literature by focusing on diverse and Latino populations. My goal is to

help identify mechanisms that serve as unique protective and risk factors that can be targeted to reduce externalizing behaviors and substance use and, in turn, reduce Latino/a and low-income youths' vulnerability to the long-term consequences of these behaviors. By studying these populations, we can better understand the unique contexts of diverse youth and in turn work towards improving the health and wellbeing of diverse and Latino/a young people.

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Chapter 2 Study 1

Short-term and Long-term Effects of Childhood Stressors and Externalizing Behavior

Parenting and neighborhood factors have been key drivers of research on youth development and youth externalizing behavior. Youth with persistent and high levels of externalizing behavior, that do not subside by adolescence, are at an increased risk of developing behavioral problems in adulthood, including mental health, delinquent, and substance use problems (Bongers, Koot, Van der Ende, & Verhulst, 2008; Caspi, Elder, & Bem, 1987; Fergusson, Horwood, & Ridder, 2005; Odgers et al., 2008; Reef et al., 2011). Despite bans on harsh physical discipline in countries around the world, and the decline in the use of spanking in the US, 70% of parents still report support for the use physical discipline in their parenting (Smith, 2015). The co-occurring effects of parenting and neighborhoods have received increased attention in recent years, however, this literature has yet to reach a consensus on the role that neighborhoods play with regard to youth externalizing behaviors (Grogan-Kaylor, Ma, & Graham-Bermann, 2018). Parent employment measures, such as work-stress, while theoretically grounded (Bronfenbrenner, 1986), have received considerably less empirical attention than both parenting and neighborhood factors. Therefore, to fill some of these gaps in the literature, in the present study I examined parenting, neighborhoods, and parent work related stress, using a diverse sample. I examined both short-term and long-term effects of these factors across Black,

Latino, and white youth. The present study provides a more contextually comprehensive perspective of youth externalizing behavior.

Bronfenbrenner (1986) provides a framework that takes a 'person in environment' approach to understanding the factors that influence an individual's development. This perspective emphasizes the importance of considering an individual's multiple social identities and how the multiple systems of which they are a part of are interconnected and influence behavior. This theoretical framework includes the micro, meso, and macro sphere, which allow for the consideration of individual characteristics from the individual micro level to the social political and cultural macro level. Drawing on this theoretical framework, I examined factors across micro and meso level domains, such as parenting, parent employment, neighborhoods, and individual sociodemographic, to better understand the context of youth externalizing behavior.

Parenting

Decades of research have now reached a consensus about the detrimental effects that harsh physical discipline has on children. Data from large scale, longitudinal (Berlin et al., 2009; EliGershoff, Lansford, Sexton, Davis-Kean, & Sameroff, 2012; Ma & Grogan-Kaylor, 2017), cross-culturally in diverse samples (Gershoff et al., 2010; Lansford et al., 2014), and meta-analyses (Gershoff & Grogan-Kaylor, 2016; Gershoff, 2002) consistently provide support for the undesirable behavioral outcomes of children that are associated with parents' use of harsh discipline, such as spanking. The effects of harsh discipline on youth externalizing behavior are present even when considering control measures or moderation of other parenting tactics or neighborhoods (Grogan-Kaylor, 2004; Grogan-Kaylor, Ma, Lee, et al., 2018; Harper, Brown, Arias, & Brody, 2006; Lansford et al., 2010; Ma & Grogan-Kaylor, 2017). This research further

bolsters the findings that harsh discipline is detrimental to youth, regardless of race/ethnicity, neighborhoods, or use of other parenting strategies (i.e., parental warmth).

Existing research has also shown that there is a link between youth with higher levels of externalizing behavior at later ages and having experienced harsh physical discipline or physical punishment (Lansford et al., 2006; Leve, Kim, & Pears, 2005; Miner & Clarke-Stewart, 2008) and higher levels of family related stress (Lansford et al., 2006; Silver, Measelle, Armstrong, & Essex, 2005) during early childhood.

Neighborhood

The co-occurring effects of neighborhood and parenting context on youth externalizing behavior have received increased attention in recent years. The role of neighborhoods is generally well understood. Some empirical studies on neighborhood effects have shown harsh parenting is problematic, regardless of neighborhood context (Grogan-Kaylor, 2005; Grogan-Kaylor, Ma, & Graham-Bermann, 2018). However, research examining the role of disadvantageous neighborhoods on youth externalizing behaviors remains mixed. Some research suggests that harsh parenting is not as detrimental in neighborhood contexts where harsh discipline is normative (Deater-Deckard & Dodge, 1997; Eamon, 2002), and others find no mediating relationship between neighborhoods, parenting and youth externalizing behavior (Ma & Grogan-Kaylor, 2017). Scholars call for additional empirical research that further examines the role of neighborhoods (Grogan-Kaylor, Ma, & Graham-Bermann, 2018). Examining neighborhood context and parent use of harsh discipline is important because youth who have experienced harsh discipline are significantly more likely to become involved in child protective services (Lee, Grogan-Kaylor, & Berger, 2014).

Parent Employment

Parent work-related stress, while theoretically grounded, has received less empirical

attention in the study of youth externalizing behaviors. Parent work-related conditions can affect

parenting. For example, work conditions may pose challenges and stressors for parents such as

limited time to spend with their children, lack of parent ability to witness developmental

milestones, and the inability to participate in school functions and extracurricular activities

(Rapoport & Le Bourdais, 2008). Parent employment is directly linked to where a family can

afford to live, the school the child attends, and resources available in their environment. Parent

work related stress can stem from employment shifts or work conditions, particularly among

low-income earners. Some of the most vulnerable populations are employed in less optimal

working conditions. Parents with children, single mothers, mothers with lower levels of

education, and racial/ ethnic minorities are all more likely to be employed in jobs with

nonstandard work schedules and lower wages (Gassman-Pines, 2011; Golden, 2016; La Valle,

Arthur, Millward, & Scott, 2002). While some research has shown a link between parent

employment conditions, work related stress and in turn youth externalizing behaviors (Castillo,

Grogan-Kaylor, Gleeson, & Ma, 2020; Joshi & Bogen, 2007), some research finds no link

between these constructs (Dunifon, Kalil, & Bajracharya, 2005; Phillips, 2002).

Present Study

In the present study, I examine the short- and long-term effects of childhood risk

(physical punishment, family work-related stress) and protective factors (neighborhood

collective efficacy) on externalizing behavior during adolescence. The primary aims of this study

are twofold. First, to examine the short-term and long-term effects of parent discipline,

neighborhoods, and family related stress on youth externalizing behavior (see Figure 2.1).

Second, to examine racial (Black, Latino, and White) variation of short term and long-term

consequences of the measures of interest. To address these aims a series of structural equation models (SEM) were carried out using six waves of the Fragile Families and Child Wellbeing study (FFCWS).

Method

Sample

The Fragile Families and Child Wellbeing Study (FFCWS) is an ongoing, large scale, longitudinal, six-wave, survey study. Baseline data were collected in 1998, at child's birth, n=4,898, and most recent wave six data (mean age 15.6 years), n=3,444, were collected in 2017. FFCWS participants were recruited from 75 hospitals in the U.S. shortly after mothers gave birth and were invited to participate at each additional wave of data collection. FFCWS focuses on ethnic minorities and low-income families and was developed to contribute to research and policy efforts that focus on single parent households, child rearing, and the father's role in parenting practices (Reichman, Teitler, Garfinkel, & McLanahan, 2001).

Measures

The outcome measure of interest was externalizing behavior at wave six, approximate adolescent age 15. Data vary in availability by data collection waves. At waves three, four and five the mean youth ages were 2.9, 5.1, 9.3, and 15.6 years. At wave three and four, measures of parenting were available. At waves three, four, and five, predictor measures of neighborhood collective efficacy and parent work-related stress were available. These data were used to examine early childhood risk and protective factors and their association with externalizing behavior during adolescence.

Outcome Measures

Externalizing behavior. At waves three, four, five and six mothers reported on their youth's

behavior problems by completing the Child Behavior and Checklist (CBSL/2-3, CBCL/ 4-18,

and CBCL/ 6-18) (Achenbach, 1991). The CBCL subscale, aggressive behavior, consists of 15

items, on a 3-point scale: (0) "not true", (1) "somewhat or sometimes true", and (2) "very often

or often true". Consistent with other studies (Castillo et al., 2020; Grogan-Kaylor, Ma, Lee, et

al., 2018; Ma & Grogan-Kaylor, 2017), a mean score of the 15 items was used to measure youth

externalizing behavior. Sample items included in the scale were "Child is cruel, bullies, and

shows meanness to others", "gets in many fights" and "child destroys things belonging to the

family or others". The Cronbach's alpha score of internal consistency was 0.88, 0.86, 0.91, and

0.89 at each of the respective waves of data collection.

Predictor Measures

During the first wave of data collection, mother's self-identified and reported their race/ethnicity:

(1) White, (2) Black, (3) Latino, or (4) 'other' racial groups. During this time, mothers also

reported on the focal child's sex, (0) female/girl or (1) male/boy.

Income. At each wave of data collection, mothers and fathers report on their household income

in U.S. dollars. The FFCWS constructs a measure of household income at each wave after

computing missing income data. The FFCWS computed measures of household income at each

wave of data collection. This measure of income was used for the present study analyses.

Parenting. At wave three and four, mothers and fathers reported on their use of physical

punishment, spanking. Using two items, parents were first asked if they have ever spanked their

child. Following, parents were asked to report on their frequency of spanking as a form of child

discipline in the past month. Responses to each of the two items were used to create one

measure of mother's use of spanking discipline and one measure of father's use of spanking

discipline, such that, 0= "never", 1= "only once or twice", 2= "a few times this past month", 3= "a few times a week or every day or nearly every day". At waves three and four, mothers were evaluated on their maternal warmth towards the child using four items. Example items used to evaluate maternal warmth included, "Parent praises child twice during visit" and "Parent voices positive feelings to child". The mean score of these four items, at each wave, were used for analyses. The Cronbach alpha scores were 0.71 and 0.64 at waves three and four.

Neighborhood Collective Efficacy. At wave three, four, and five two subscales, comprised of 5-items each, *Neighborhood Cohesion and Trust* and *Neighborhood Social Control* (Sampson, Raudenbush, & Earls, 1997) were used to create a mean score of neighborhood collective efficacy. The Neighborhood Cohesion and Trust subscale asked mothers to report on the degree they agreed that their neighborhood they were close-knit, shared values, could be trusted, got along well, and were willing to help each other. Response options for each item ranged from 1 ("strongly disagree") to 5 ("strongly disagree") in wave 3 and from 1 ("strongly disagree") to 4 ("strongly agree") at wave 4.

Similarly, items from the *Neighborhood Social Control subscale*, asked mothers to report on the likelihood that their neighbors would intervene if, "children were showing disrespect to an adult", "children were pray-painting graffiti on a building", and "a fight broke out in front of their house". At wave 3, response option ranged from 1 ("very unlikely") to 5 ("very likely"). At wave 4, response options ranged from 1 ("very unlikely") to 4 ("very likely).

As applied in previous studies (Castillo et al., 2020; Ma & Grogan-Kaylor, 2017), a proportional linear transformation was used to rescale items from wave 4 (5-point scale response) to reflect a 4-point scale. The Cronbach's alpha measure for neighborhood collective efficacy was 0.85, 0.86 and 0.89 for waves three, four, and five, respectively.

Work- Related Stress. Mothers and fathers each completed three items at waves three, four, and five that were used to measure work related stress. Each of the three items were on a four-point scale ranging from 1= "Always" to 4= "Never" and asked each parent to report on the extent to which their work posed childcare challenges, additional stress, and if their job was flexible to attending to family needs. These items were reverse coded such that a higher score would reflect higher levels of work-related stress. The Cronbach's alpha score was 0.64, 0.63, and 0.66 for mothers and 0.58, 0.55, and 0.61 for fathers, at each available wave.

Analyses

Descriptive statistics were examined at each of the wave of data collection. Cronbach's alpha scores were used to assess the internal consistency of the constructs in the model. Structural Equation Modeling (SEM) was used address the two aims of this study: 1) a single group SEM was used to examine the short term and long-term effects of parent discipline, neighborhoods, and family related stress on youth externalizing behavior, and 2) a multiple-group SEM was used to examine whether the short- and long-term relationship differently relate by racial group (Black, Latino, and White). Figure 2.1 provides an illustration of the SEM model carried out. [a] All measures examined in the model were analyzed as observed measures.

SEM allows for the simultaneous estimation of associations among constructs while accounting for measurement error. This method provides model fit indices that indicate how well the specified model fit the data being examined. The following model fit indices were used: root-mean-square error of approximation (RMSEA), comparative fit index (CFI), Tucker–Lewis

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[a] Please note that Figure 2.1 does not depict correlations among measures. It also does not illustrate the control measures included, or error terms. These exclusions were made in the figure for ease of interpretability.

index (TLI), and Standardized Root Mean Square Residual (SRMR). The following cutoff scores were used to guide the fit of all models: RMSEA < 0.05, CFI > 0.95, TLI >0.95, and SRMR < 1 (Kline, 2015). The structural models utilized the ML adjusted estimator because most measures in the model were continuous. Full information maximum likelihood (FIML) was used to account for missing data (Muthen & Muthen, 2010). All SEM analyses were completed using Mplus version 7.

Results

Descriptive Statistics

In this study, 47.5% of the sample identified as Black, followed by Latino (27.30%), white (21.09%), and "other" race (3.97%). Approximately 47.8% of the youth were girls. The average annual household income across all waves was approximately $66,721 for white, $62, 384 for "other" race, $31,359 for Latinos and $29,417 for Blacks. There was slight variation in mother and father use of spanking by race. At wave three, 57.2% of Black, 42.8% of Latino, 53% of White, and 48% of other race mothers reported spanking. Among fathers, 44.7% of Black, 33.7% of Latino, 44.41% of White and 41.9% of other race reported spanking their child. There were lower levels of spanking reported at wave four by both mothers and father. By wave four, when the focal child's approximate age was five, 52.9% of Black, 37% of Latino, 44.5% of White, and 34.4% of other race mothers reported spanking. At this wave, father spanking ranged from 25.8% for Latino fathers to 35.5% among Black fathers. Mother and father work related stress was similar across all waves and across race, ranging from 1.63 to 1.79 on a 4-point scale. Neighborhood collective efficacy increased between wave three to wave five. At wave three, neighborhood collective efficacy ranged from 2.72 for Black to 3.10 for white youth. At wave four, neighborhood collective efficacy ranged from 3.04 for Black to 3.33 for white, and at wave

five, this measure ranged from 3.05 for Latino to 3.35 for white. Externalizing behavior decreased over time for all racial groups. More detailed descriptive statistics are presented in Table 2.1.

SEM Model Results

Model fit indices of the accepted model were RMSEA 0.025, CFI= 0.94, TLI= 0.89, and SRMR= 0.03. Based on recommended model fit indices, the accepted model had "good to excellent" fit the despite the lower than desired TLI score (Kline, 2015). All reported model estimates are based on the standardized model. Detailed results of the SEM model are presented in Table 2.2.

Externalizing Behavior Wave 3

Parenting and Parental Discipline. At wave three, mother and father use of spanking were significantly associated with higher levels of externalizing behavior at age 3 (β=0.168, p=<.001; β=0.075, p<.01). Maternal warmth was significantly associated with lower levels of externalizing behavior (β= -0.107, p<.001). **Parent Employment.** Mother work-related stress but not father work-related stress was significantly and positively associated with externalizing behavior, such that as mother work related stress levels increased youth externalizing behavior increased (β= 0.108, p<.001). **Neighborhood.** Neighborhood collective efficacy was negatively associated with externalizing behavior, such that as neighborhood collective efficacy increased, youth externalizing behavior decreased (β= -0.126, p<.001). **Control Measures.** This model controlled for household income, child sex, and race. All control measures were significantly associated with youth externalizing behavior. Higher income was associated with lower externalizing behavior (β= -0.050, p<.01) and girls had lower levels of externalizing behavior compared to boys (β= -0.055, p<.001).

Externalizing Behavior Wave 4

None of the wave three measures (mother spanking, father spanking, maternal warmth, mother, or father work related stress, and neighborhood collected efficacy) were significantly associated with youth externalizing behavior at wave four. Proximal, wave four measures, were significant with youth externalizing behavior. **Parenting and Parental Discipline.** Both mother and father use of spanking at wave four were significantly associated with higher levels of externalizing behavior (β= 0.111, p<.001; β=0.061, p=.01). Maternal warmth had a negative association with externalizing behavior, such that, as maternal warmth increased, youth externalizing behavior decreased (β= -0.045, p=.05). **Parent Employment.** At the more proximal wave, mother work related stress was significantly associated with higher levels of youth externalizing behavior (β= 0.064, p<.001). However, father work related stress was not significantly predictive of youth externalizing behavior. **Neighborhood.** There was no significant association between neighborhood collective efficacy at wave four and youth externalizing behavior. **Control Measures.** The control measures in this model were household income, child sex, and race. None of the control measures included were significantly associated with youth externalizing behavior at wave four. Prior levels of externalizing behavior were significantly associated with present wave externalizing behavior (β=0.482, p<.001).

Externalizing Behavior Wave 5

The wave three measures (mother spanking, father spanking, maternal warmth, mother, or father work related stress, and neighborhood collected efficacy) were not significantly associated with youth externalizing behavior at wave five. However, more proximal measures, at wave four and five, were significantly linked with youth externalizing behavior at wave five.

Parenting and Parental Discipline. Mother use of spanking at wave four was positively associated with youth externalizing behavior at wave five (β= 0.051, p<.01). Father use of spanking at wave four was not significantly associated with youth externalizing behavior. Maternal warmth at wave four was negatively associated with youth externalizing behavior at wave five, such that, as maternal warmth increased, youth externalizing behavior decreased (β= -0.079, p<.001). **Parent Employment.** Mother and father work related stress at wave four revealed no significant relationship with youth externalizing behavior. However, mother work related stress at wave five was significantly associated with youth externalizing behavior such that as mother work related stress increased, youth externalizing behavior increased (β= 0.050, p<.01). **Neighborhood.** Neighborhood collective efficacy revealed no significant relationship with youth externalizing behavior at wave five. **Control Measures.** Household income, child sex and race were all significantly associated with youth externalizing behavior at wave five. Girls and an increasing household income were associated with lower levels of externalizing behavior (β=-0.061, p<.001; β=-0.042, p<.01). Lastly, prior externalizing behavior was significantly linked with present wave externalizing behavior (β=0.183, p<.001; β=0.293, p<.001).

Externalizing Behavior Wave 6

By wave six, mean youth age 15.6 years, only some of the more proximal measures were associated with youth externalizing behavior. None of the wave three measures were significantly associated with youth externalizing behavior at wave six. **Parenting and Parental Discipline.** Of the parenting and parental discipline measures examined, only maternal warmth was significantly associated with youth externalizing behavior, such that as maternal warmth increased, youth externalizing behavior decreased (β=-0.046, p<.05). **Parent Employment.** Mother and father work related stress at wave four were also not significantly associated with

youth externalizing behavior at wave six. **Neighborhood.** Neighborhood collective efficacy at wave four was significantly associated with externalizing behavior. As neighborhood collective efficacy increased at wave four it was associated with lower levels of externalizing behavior (β=-0.035, p<.001). **Control Measures.** Of the control measures examined, only household income was significantly associated with youth externalizing behavior (β=-0.051, p<.001). Prior levels of externalizing behavior were associated with wave six externalizing behavior (β=0.047, p<.05; β=0.133, p<.001; β=0.133, p<.001).

Black Youth

Among Black youth, most wave three measures were significantly associated with externalizing behavior at wave three. Mother use of spanking was positively associated with youth externalizing behavior (β=0.191, p<.001) and maternal warmth was negatively associated with youth externalizing behavior (β=-0.094, p=.001). Mother work related stress was positively associated with externalizing behavior (β=0.105, p=.001). Lastly, neighborhood collective efficacy was negatively associated with externalizing behavior. Among control variables, a higher income and girls was associated with significantly lower levels of Black youths externalizing behavior (β=-0.071, p=.004; β=- 0.079, p=.001).

At wave four of externalizing behavior, only proximal wave four measures were significant. Both mother use of spanking was associated with higher levels of externalizing behavior (β=0.478, p<.001). Mother work related stress was also positively associated with youth externalizing behavior (β=0.064, p<.01). Neighborhood collective efficacy served as a protective factor, such that as neighborhood collective efficacy increased, Black youths externalizing behavior decreased (β=-0.051, p<.05).

Similarly, at wave five, only some of the more proximal measures at waves four and five were significantly associated with Black youths externalizing behavior. Mother use of spanking at wave four was significantly associated with externalizing behavior among Black youth (β=0.018, p<.001). Maternal warmth at wave four was also significantly associated with externalizing behavior, such that as maternal warmth increased, Black youths externalizing behavior decreased (β=-0.083, p<.01). Mother work related stress at wave five was significantly associated with youth externalizing behavior at wave five (β=0.082, p=.001). Income was negatively associated with externalizing behavior, such that as income increased Black youths externalizing behavior decreased (β=-0.06, p<.01). Lastly, prior levels of externalizing behavior were significantly predictive of present wave externalizing behavior (β=0.249, p<.001; β=0.216, p<.001).

By wave six, only one predictor measure was significantly associated with Black youths externalizing behavior: maternal warmth (β=-0.057, p<.05). Prior levels of externalizing behavior were significantly associated with higher levels of present wave externalizing behavior (β=0.150, p<.001; β=0.372, p<.001). Among control variables, only income was significantly and negatively associated with Black youths externalizing behaviors (β=-0.064, p<.01). More detailed results are available in Table 2.3.

Latino Youth

Among Latino youth, at wave three, mother use of spanking, father use of spanking, maternal warmth, mother work related stress and neighborhood collective efficacy were all significantly associated with Latino youth externalizing behavior. Mother and father use of spanking and mother work related stress were positively linked with externalizing behavior, such that as these predictors increased, Latino youth externalizing behavior increased (β=0.150,

p<.001; β=0.125, p<.01; β=0.106, p<.01). Negatively associated with externalizing behavior were maternal warmth and neighborhood collective efficacy (β=-0.157, p<.001; β=-0.078, p<.05). Neither of the control measures, gender or income, were significantly associated with Latino youth externalizing behavior at wave three.

At wave four, only proximal measures from wave four were significantly associated with youth externalizing behavior. Only mother use of spanking and mother work related stress were significantly associated with Latino youths externalizing behavior. These measures were associated, such that, as mother use of spanking and work-related stress increased, Latino youths externalizing behavior increased (β=0.169, p<.001; β=0.097, p<.01). Prior levels of externalizing behavior were also positively linked with present level externalizing behavior (β=0.429, p<.001). No control measures or other predictors were significantly associated with Latino youths externalizing behavior at this wave.

At wave five, only proximal measures from wave four were significantly associate with youth externalizing behavior. None of the wave three or wave five measures were significantly linked with youth externalizing behavior at this wave. Parenting measures, mother use of spanking, father use of spanking, and maternal warmth were associated with Latino youths externalizing behavior. Mother and father spanking were positively associated (β=0.074, p<.05; β=0.095, p=.05). Maternal warmth was negative associated with Latino youths externalizing behavior (β=-0.081, p<.05). Of the control measures, only gender was associated with externalizing behavior, such that girls had significantly lower levels of externalizing behaviors than boys (β=-0.109, p<.001). Lastly, prior levels of externalizing behavior were significantly and positively associated with present levels of externalizing behavior (β=0.190, p<.001; β=0.313, p<.001).

At the final wave, six, none of the prior measures from waves three, four, or five were significantly associated with Latino youths externalizing behavior. Only prior levels of externalizing behavior, from wave four and five, were significantly associated with present wave externalizing behavior (β=0.119, p<.001; β=0.259, p<.001). More detailed results for the Latino youth model are available in Table 2.4.

White Youth

At wave three, among white youth, mother use of spanking, mother work related stress, and neighborhood collective efficacy were significantly associated with externalizing behavior. Both mother use of spanking and mother work related stress were positively linked with externalizing behavior, such that as these measures increased, externalizing behavior increased (β=0.154, p<.001; β=0.114, p<.01). Neighborhood collective efficacy was negatively associated with externalizing behavior, such that as neighborhood collective efficacy increased, white youth externalizing behavior decreased (β=-0.211, p<.001). No control measures were significant at this wave.

At wave four, only one measure was significantly associated with white youths externalizing behavior: neighborhood collective efficacy. As neighborhood collective efficacy increased, white youths externalizing behavior significantly decreased (β=-0.087, p<.05). Prior externalizing behavior, from wave three, was also predictive of externalizing behavior at the present wave (β=0.528, p<.001).

At wave five, most proximal measures from wave five were significantly associated with white youths externalizing behavior. Mother and father work related stress at wave five were associated with white youths externalizing behavior at wave five (β=0.070, p=.05; β=0.076, p<.05). Neighborhood collective efficacy at wave five approached a significant level of

association with externalizing behavior (β=-0.068, p=.06). As neighborhood collective efficacy increased, youth externalizing behavior decreased, however, this finding did not reach conventional significance levels.

At the final wave, six, none of the measures from waves three, four, or five were significantly associated with white youths externalizing behavior, with the exception of prior levels of externalizing behavior and the control measure of household income. Prior levels of externalizing behavior at waves four and five were positively associated with white youths externalizing behavior (β=0.143, p<.001; β=0.407, p<.001). Household income was negatively associated, such that as household income increased, white youths externalizing behavior decreased (β=-0.072, p<.05). More detailed results for the white youth model are available in Table 2.5.

Discussion

This study revealed four key findings. First, that parenting, parent work related stress, and neighborhoods all related to both short-term and long-term youths externalizing behavior. Second, this study showed that the long-term effects of parenting, parent work related stress and neighborhoods varied by race. Third, this study showed that proximal measures may be most related to youth externalizing behavior. Lastly, prior levels of externalizing behavior, regardless of racial/ethnic background, were significantly and positively associated with short-term and long-term levels of externalizing behavior.

In the present study, only direct effects were examined, and parent work related stress varies in its relationship with youth externalizing behavior. One possibility is that there is statistical mediation occurring that is not being captured in the present models. Other research

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has demonstrated mediated effects of parent work related stress and youth externalizing behavior (Castillo et al., 2020; Joshi & Bogen, 2007; Li et al., 2014). While the present study provides some support for the relationship between parent work related stress and youth externalizing behavior, additional research is necessary to solidify this finding in other samples and better understand the interrelationships of parent work-related stress, parenting, and youth behaviors.

In model 1, where all racial groups are combined, and between racial/ethnic groups in the following models, results reveal proximal and some distal effects of mother spanking. This finding provides further support for the robust parenting literature and the detrimental effects of harsh parenting. Previous research has demonstrated the robust effect that harsh discipline has on youth behaviors (Grogan-Kaylor, 2004; Grogan-Kaylor, Ma, Lee, et al., 2018; Harper, Brown, Arias, & Brody, 2006; Lansford et al., 2010; Ma & Grogan-Kaylor, 2017). In this study, mother and father use of spanking during childhood (wave three and four, approximate youth aged 3 and 5 years), across Black, Latino, and white youth, loose significance by adolescence (wave six, approximate youth age 15). Future research that further examines the longitudinal effects of parenting during childhood and how it may influence youth behaviors would further inform the parenting literature. A meta-analysis revealed that while the parenting and youth behavior literature is robust, fewer studies have utilized longitudinal data and fewer studies have been inclusive of youth older than 11 years of age (Gershoff & Grogan-Kaylor, 2016).

Additionally, the non-significant relationship between childhood spanking and adolescent externalizing behaviors may be a result of a limitation of the present study. For example, one plausible explanation is that other developmentally appropriate forms of parental discipline are taking place during waves five and six (approximate youth aged 9 and 15) that are not captured in the present model. It is possible that parents who used harsh discipline with their child turn to

other harsh forms of discipline during adolescents, this is an area for future research to explore: developmental change in parent discipline and youth externalizing behaviors.

Building on existing neighborhoods and work stress literature, this study provides support for the positive impact of communities with high levels of cohesion and social control (Grogan-Kaylor et al., 2020; Ma & Grogan-Kaylor, 2017), and the harmless effects of work stress associated with youth behavioral problems (Castillo et al., 2020; Joshi & Bogen, 2007). Consistently, prior levels of externalizing behaviors are problematic and associated with externalizing behavior in adolescence. Across each of the racial groups, mother use of spanking and mother work related stress is harmful for youth externalizing behaviors. This is important to note because the study utilized a diverse and low-income sample. Therefore, regardless of disadvantageous background, spanking, mother work stress and neighborhood collective efficacy function similarly across race. This finding is consistent with some previous research (Gershoff & Grogan-Kaylor, 2016; Ma & Klein, 2018).

Strengths and Limitations

This study examined the short term and long-term effects of childhood stressors. It utilized a large and diverse sample, and multiple waves of data. Rigorous structural equation modeling was carried out to compare the relationships of the various measures of interest and youth externalizing behavior, by race. This study also examined parent work related stress, a theoretically grounded aspect of child development but an empirical gap in the youth externalizing behavior literature. However, there are limitations that should be considered with respect to the findings. For example, the FFCWS is a survey study whereby parents self-report on their parenting and child/ adolescents' behavior. Therefore, desirability and respondent bias may be present at the time of data collection.

Additionally, there are relatively low levels of internal consistency for the measures of mother and father work-related stress. Future studies with better internal consistency measures or singular measures may be better equipped to disentangle the aspects of work-related stress that are stressful for parents and how they relate to youth externalizing behavior. Additionally, in the present study, I only account for two forms of parenting (parent use of spanking and maternal warmth), work related stress, and neighborhood collective efficacy, however, the study spans childhood to early adolescence, future studies may provide fruitful insight regarding adolescent-related measures, such as the role of peers and school, and youth externalizing behavior to gather a broader perspective of the intricacies during adolescence. Lastly, studies that examine developmentally sensitive forms of parents, and changes in parenting, would also be informative to better capture how parenting 1) changes over time and 2) how parenting influences adolescents.

Future Directions

This study builds on existing parenting and youth externalizing behavior literature by examining an aspect of youth development that is often neglected, parent employment-related measures. It also builds on literature by further examining short term and long-term effects of childhood exposures. However, there remain gaps that future research can fill. A study that examines mediation would provide insight on the intricacies of how these factors impacting youth relate to one another. Additionally, a study that better captures aspects of parent work related stress and parent employment would provide an improved perspective on the role of parent employment on youth's development of externalizing behaviors.

Figure 2.1

Conceptual Model of Structural Equation Model
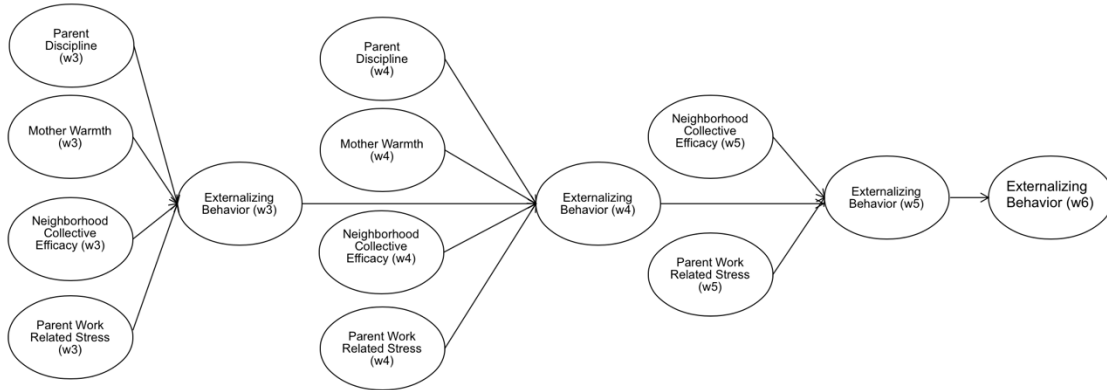
Note: For ease of interpretability, auto-regressors, correlations among measures, error terms, and control measures are not depicted in the figure.

Table 2.1

Descriptive Statistics

Measures	Black (n=2326) 47.63%		Latino/a (n=1,333) 27.30%		White (n=1,030) 21.09%		Other Race (n=194) 3.97%	
	n	% or mean	n	% or mean	n	% or mean	n	% or mean
Child sex (girl)	1,108	47.47%	644	27.59%	491	21.04%	91	3.90%
Income (w3)	2,035	$ 26,383.86	1,100	$ 27,847.69	922	$ 61,656.12	160	$ 57,385.06
Mother spanking (w3)	1,129	57.18%	465	42.82%	484	53.07%	76	48.41%
Father spanking (w3)	389	44.71%	224	33.73%	282	44.41%	44	41.90%
Maternal Warmth (w3)	1,147	0.871	481	0.90	391	0.97	71	0.94
Mother work stress (W3)	1,840	1.64	860	1.70	742	1.66	128	1.67
Father work stress (w3)	1,402	1.67	807	1.75	763	1.63	122	1.83
Neighborhood Efficacy (w3)	1,566	2.72	832	2.82	710	3.10	115	2.86
Externalizing (w3)	1,579	0.64	832	0.63	713	0.60	116	0.64
Income (w4)	2,022	$ 28,374.87	1,087	$ 30,129.58	873	$63,286.40	145	$ 66,580.36
Mother spanking (w4)	1,039	52.90%	395	37.02%	854	44.85%	50	34.48%
Father spanking (w4)	310	35.59%	158	25.82%	201	34.13%	32	31.68%
Maternal Warmth (w4)	1,136	0.83	523	0.86	398	0.92	54	0.86
Mother work stress (w4)	1,859	1.66	914	1.68	740	1.60	125	1.74
Father work stress (w4)	1,376	1.69	785	1.71	711	1.65	123	1.57
neighborhood Efficacy (w4)	2,008	3.04	1,078	3.05	869	3.33	144	3.11
Externalizing (w4)	1,855	0.45	917	0.45	804	0.43	130	0.50
Income (w5)	2,326	$ 24,716.79	1,333	$ 25,417.54	1,030	$ 54,921.81	194	$ 49,168.77
Mother work stress (w5)	1,661	1.59	784	1.65	675	1.58	114	1.79
Father work stress (w5)	1,115	1.70	654	1.78	628	1.65	97	1.79
neighborhood Efficacy (w5)	1,781	3.06	906	3.05	775	3.35	126	3.14
Externalizing (w5)	1,672	0.25	853	0.21	805	0.25	109	0.24
Externalizing (w6)	1,792	0.25	875	0.19	779	0.20	125	0.23

Table 2.2

Structural Equational Model Results

Measures	Externalizing 3			Externalizing 4			Externalizing 5			Externalizing 6		
	Estimate	S.E	P	Estimate	S.E	p	Estimate	S.E	P	Estimate	S.E	P
Child sex	-0.055	0.017	0.001**	-0.013	0.015	0.390	-0.061	0.016	<0.001***	-0.017	0.016	0.264
Race	0.043	0.017	0.011**	-0.007	0.015	0.635	-0.089	0.016	<0.001***	-0.02	0.016	0.213
Income	-0.05	0.017	0.003**	-0.009	0.015	0.575	-0.042	0.016	0.008**	-0.054	0.015	<0.001***
Mother spanking (w3)	0.168	0.018	<0.001	-0.005	0.018	0.772	0.035	0.019	0.069	0.019	0.018	0.289
Father spanking (w3)	0.075	0.024	0.002**	0.015	0.021	0.492	-0.009	0.026	0.740	0.041	0.027	0.125
Maternal Warmth (w3)	-0.107	0.021	<0.001***	0.002	0.022	0.920	-0.014	0.022	0.533	-0.011	0.021	0.588
Mother work stress (W3)	0.108	0.018	<0.001***	-0.001	0.017	0.948	-0.015	0.018	0.402	0.026	0.018	0.138
Father work stress (w3)	0.008	0.02	0.697	0.035	0.019	0.071	0.006	0.021	0.776	0.007	0.021	0.728
Neighborhood Efficacy (w3)	-0.126	0.017	<0.001***	-0.031	0.019	0.092	-0.033	0.019	0.085	-0.003	0.019	0.888
Externalizing 3				0.482	0.016	<0.001***	0.183	0.021	<0.001***	0.047	0.021	0.024*
Mother spanking (w4)				0.111	0.017	<0.001***	0.051	0.019	0.007**	0.022	0.018	0.232
Father spanking (w4)				0.061	0.024	0.011**	0.043	0.026	0.101	0.025	0.027	0.349
Maternal Warmth (w4)				-0.045	0.023	0.056*	-0.079	0.020	<0.001***	-0.046	0.021	0.025*
Mother work stress (w4)				0.064	0.017	<0.001***	0.016	0.018	0.382	0.001	0.018	0.970
Father work stress (w4)				0.023	0.019	0.232	-0.024	0.021	0.252	-0.012	0.021	0.585
neighborhood Efficacy (w4)				-0.006	0.016	0.715	-0.024	0.018	0.190	-0.035	0.018	0.046*
Externalizing 4							0.293	0.019	<0.001***	0.133	0.02	<0.001***
Mother work stress (w5)							0.05	0.017	0.004**	0.005	0.017	0.777
Father work stress (w5)							0.035	0.020	0.085	0.005	0.021	0.823
neighborhood Efficacy (w5)							-0.013	0.017	0.454	-0.024	0.017	0.150
Externalizing 5										0.133	0.02	<0.001***

Note: SE= Standard Error, P= P-value; * <.05, ** <.01, *** <.001

Table 2.3

SEM: Black Youths Externalizing Behavior

Measures	Externalizing 3			Externalizing 4			Externalizing 5			Externalizing 6		
	Estimate	S.E	P	Estimate	S.E	p	Estimate	S.E	P	Estimate	S.E	P
Child sex (girl)	-0.079	0.023	0.001	-0.008	0.021	0.705	-0.02	0.022	0.368	-0.038	0.021	0.070
Income	-0.071	0.025	0.004	-0.026	0.021	0.226	-0.061	0.023	0.009	-0.064	0.022	0.003
Mother spanking (w3)	0.191	0.024	<.001	0.004	0.025	0.874	-0.007	0.027	0.780	0.037	0.025	0.141
Father spanking (w3)	0.068	0.037	0.066	-0.013	0.038	0.727	-0.026	0.04	0.515	0.005	0.042	0.905
Maternal Warmth (w3)	-0.094	0.028	0.001	-0.02	0.029	0.493	-0.023	0.03	0.441	0.001	0.028	0.989
Mother work stress (W3)	0.105	0.025	<.001	0.008	0.023	0.726	-0.021	0.025	0.407	0.033	0.024	0.161
Father work stress (w3)	0.019	0.029	0.504	0.031	0.027	0.245	0.034	0.031	0.276	0.026	0.030	0.382
Neighborhood Efficacy (w3)	-0.118	0.024	<.001	-0.016	0.025	0.535	-0.001	0.028	0.983	0.004	0.026	0.890
Externalizing 3				0.478	0.022	<.001	0.216	0.030	<.001	0.044	0.030	0.144
Mother spanking (w4)				0.108	0.024	<.001	0.134	0.026	<.001	-0.034	0.025	0.174
Father spanking (w4)				0.059	0.037	0.115	0.01	0.043	0.813	0.017	0.041	0.685
Maternal Warmth (w4)				-0.024	0.031	0.444	-0.083	0.029	0.004	-0.057	0.028	0.042
Mother work stress (w4)				0.064	0.023	0.005	0.031	0.025	0.203	0.001	0.024	0.982
Father work stress (w4)				0.034	0.027	0.211	-0.026	0.029	0.383	0.008	0.029	0.799
neighborhood Efficacy (w4)				-0.051	0.022	0.021	-0.013	0.025	0.607	-0.046	0.024	0.056
Externalizing 4							0.249	0.028	<.001	0.15	0.028	<.001
Mother work stress (w5)							0.082	0.024	0.001	-0.004	0.023	0.853
Father work stress (w5)							0.034	0.032	0.284	0.025	0.032	0.432
neighborhood Efficacy (w5)							0.01	0.023	0.662	-0.009	0.023	0.684
Externalizing 5										0.372	0.024	<.001

Table 2.4

SEM: Latino Youths Externalizing Behavior

Measures	Externalizing 3			Externalizing 4			Externalizing 5			Externalizing 6		
	Estimate	S.E	P	Estimate	S.E	p	Estimate	S.E	P	Estimate	S.E	P
Child sex (girl)	-0.022	0.033	0.509	-0.023	0.03	0.443	-0.109	0.031	<.001	-0.006	0.031	0.847
Income	-0.051	0.035	0.147	0.039	0.03	0.199	-0.052	0.031	0.088	-0.035	0.031	0.261
Mother spanking (w3)	0.15	0.034	<.001	0.002	0.035	0.951	0.108	0.036	0.003	0.059	0.037	0.111
Father spanking (w3)	0.125	0.043	0.003	-0.054	0.047	0.248	-0.043	0.047	0.366	0.055	0.049	0.262
Maternal Warmth (w3)	-0.157	0.041	<.001	0.02	0.052	0.705	0.038	0.045	0.397	-0.003	0.047	0.955
Mother work stress (W3)	0.106	0.037	0.004	-0.05	0.037	0.181	-0.044	0.038	0.240	0.057	0.04	0.149
Father work stress (w3)	-0.017	0.04	0.667	0.035	0.04	0.381	-0.012	0.043	0.775	0.032	0.046	0.491
Neighborhood Efficacy (w3)	-0.078	0.035	0.023	-0.037	0.038	0.339	-0.041	0.036	0.254	-0.029	0.038	0.448
Externalizing (w3)				0.429	0.035	<.001	0.190	0.040	<.001	0.045	0.043	0.295
Mother spanking (w4)				0.169	0.035	<.001	0.074	0.037	0.046	0.041	0.038	0.284
Father spanking (w4)				0.028	0.046	0.554	0.095	0.048	0.051	0.126	0.052	0.016
Maternal Warmth (w4)				-0.067	0.047	0.157	-0.081	0.039	0.036	-0.006	0.044	0.897
Mother work stress (w4)				0.097	0.035	0.006	-0.028	0.039	0.465	-0.022	0.039	0.575
Father work stress (w4)				0.004	0.041	0.915	0.004	0.045	0.936	-0.057	0.046	0.212
neighborhood Efficacy (w4)				0.039	0.033	0.225	-0.019	0.036	0.591	-0.053	0.036	0.145
Externalizing (w4)							0.313	0.037	<.001	0.119	0.045	0.008
Mother work stress (w5)							-0.017	0.036	0.641	-0.019	0.036	0.610
Father work stress (w5)							-0.004	0.038	0.911	-0.016	0.042	0.702
neighborhood Efficacy (w5)							-0.013	0.033	0.700	-0.043	0.034	0.208
Externalizing (w5)										0.259	0.038	<.001

Table 2.5

SEM: White Youths Externalizing Behavior

Measures	Externalizing 3			Externalizing 4			Externalizing 5			Externalizing 6		
	Estimate	S.E	P	Estimate	S.E	p	Estimate	S.E	P	Estimate	S.E	P
Child sex (girl)	-0.02	0.034	0.562	-0.044	0.03	0.141	-0.099	0.032	0.002	0.003	0.031	0.927
Income	-0.034	0.036	0.344	-0.043	0.032	0.181	-0.057	0.033	0.084	-0.072	0.033	0.028
Mother spanking (w3)	0.154	0.04	0.000	0.023	0.041	0.572	0.046	0.042	0.273	-0.058	0.041	0.160
Father spanking (w3)	0.073	0.048	0.123	-0.003	0.046	0.956	0.032	0.051	0.531	0.07	0.052	0.178
Maternal Warmth (w3)	-0.017	0.047	0.721	0.071	0.046	0.122	-0.147	0.046	0.21	-0.042	0.049	0.388
Mother work stress (W3)	0.114	0.038	0.003	0.032	0.037	0.384	0.001	0.038	0.974	-0.06	0.038	0.113
Father work stress (w3)	-0.012	0.041	0.759	0.068	0.039	0.080	-0.051	0.041	0.210	-0.03	0.039	0.449
Neighborhood Efficacy (w3)	-0.211	0.037	0.000	-0.087	0.041	0.032	-0.042	0.04	0.301	0.034	0.042	0.411
Externalizing (w3)				0.528	0.031	0.000	0.173	0.044	0.000	0.034	0.045	0.455
Mother spanking (w4)				-0.022	0.039	0.575	-0.007	0.041	0.868	-0.010	0.042	0.967
Father spanking (w4)				0.077	0.046	0.093	-0.003	0.048	0.958	-0.058	0.052	0.259
Maternal Warmth (w4)				-0.025	0.053	0.630	-0.061	0.044	0.173	-0.044	0.046	0.345
Mother work stress (w4)				0.026	0.036	0.479	0.016	0.038	0.670	0.037	0.037	0.321
Father work stress (w4)				-0.01	0.04	0.813	-0.014	0.043	0.754	-0.007	0.044	0.872
neighborhood Efficacy (w4)				0.03	0.035	0.393	-0.046	0.038	0.231	0.03	0.039	0.452
Externalizing (w4)							0.343	0.042	0.000	0.143	0.045	0.001
Mother work stress (w5)							0.07	0.036	0.053	0.064	0.036	0.071
Father work stress (w5)							0.076	0.038	0.048	-0.003	0.041	0.937
neighborhood Efficacy (w5)							-0.068	0.036	0.061	-0.059	0.037	0.105
Externalizing (w5)										0.407	0.038	0.000

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Chapter 3 Study 2

Youth Externalizing Behavior: Within Latino/a Groups

Latino/as account for 18% of the U.S. population (Flores, Lopez, & Krogstad, 2019). Latino/a youth account for 25% of the U.S. K-12th grade population (López, Krogstad, & Flores, 2018). These Latino/a youth are twice as likely to grow up in poverty compared to white youth (Murphey, Belford, & Balding, 2018). Compared to whites, Latinos/as are more likely to have dropped out of high school, to be employed in low-wage jobs (e.g., agriculture, construction, hospitality, food service) and to earn the lowest hourly wages. Contrary to some beliefs, the majority of the Latino/a population holds legal status, and foreign-born Latino/as contribute to the economic wellbeing of the country (e.g., contributing taxes). Latinos/as are a young population that help sustain and contribute to federal and state taxes, social security, and Medicare programs (Joint Economic Comittee, 2015). However, structural and societal inequalities have contributed to the disparities (e.g., health, education, income) that Latino/as have experienced.

As evident, poverty, educational attainment, labor conditions, as well as discriminatory experiences are all factors linked with health and wellbeing. These risk factors are prevalent among Latino/a youth and families and are important to the study of the health and wellbeing of this population. Therefore, in this study I focus on externalizing behavior of low-income Latino/a youth and the unique contexts of Latino/a youth. I take into consideration theoretically grounded

factors associated with externalizing behavior that have received little empirical attention, such as the simultaneous effect of parent employment, parenting, and neighborhood factors.

Bronfenbrenner (1986) provides a framework that takes a 'person in environment' approach to understanding the factors that influence an individual's development. This perspective emphasizes the importance of considering an individual's multiple social identities and how the multiple systems of which they are a part of are interconnected and influence behavior. This theoretical framework includes the micro, meso, and macro sphere, which allow for the consideration of individual characteristics from the individual micro level to the social political and cultural macro level. Drawing on this theoretical framework, I examined factors across micro and meso level domains, such as parenting, parent employment, neighborhoods, and individual sociodemographic, to better understand the context of youth externalizing behavior.

However, Latino youth may also be grappling with challenging environments that stem from structural inequity, such as poverty and poverty related stress. These 'macro' level structural inequities may be more influential, and more proximal to Latino youth development than Bronfenbrenner (1986) Ecological Systems theory suggests. For this reason, I also draw on the Integrative Model (Garcia-Coll et al., 1996), which was specifically designed for the study and understanding of diverse and ethnic minority populations (Garcia-Coll et al., 1996). The Integrative Model parallels Bronfenbrenner (1986), however, the Integrative Model tailors the approach by considering traditional macro level factors as more proximal among diverse youth. The primary effort of the Integrative model is cultural sensitivity in diverse youth research. Garcia-Coll and colleagues (1996) suggest that a misrepresentation of ethnic minority youth may be promoted by research that does not appropriately capture the unique factors that influence the

lives of ethnically diverse youth. In the present Latino-focused study, I examined measures of

acculturation, cultural connectedness, and examine with-Latino/a variation (e.g., Mexican vs.

Puerto Rican).

I focus on Latino/a groups because little research has empirically examined variation that

may exist within Latino/a groups (e.g., Puerto Rican, Mexican). Instead, Latino/a groups, such as

Puerto Rican or Mexican American, are often combined into one large monolithic group, which

can mask between group heterogeneity that may exist.

Context of Youth Externalizing Behavior

Parenting is a predominant predictor of youth externalizing behavior (Elizabeth T

Gershoff & Grogan-Kaylor, 2016; Rohner et al., 2005). In recent years, the role of

neighborhoods on youth externalizing behavior has received increased research attention (Jocson

& McLoyd, 2015; Ma & Grogan-Kaylor, 2017). While parent discipline and neighborhood

factors may be driving child development literature, theoretical frameworks, such as

Bronfenbrenner Ecological Systems theory (Bronfenbrenner, 1986) and developmental

psychopathology (Cicchetti & Rogosch, 2002), suggest that development occurs in context. Per

these theories, there are contextual factors that while theoretically grounded, have received less

empirical attention, such as parents' work-related factors. Research suggests that parents'

employment and work-related stress may influence parenting(Conger et al., 2002) and in turn,

youth problem behaviors (Li et al., 2014). Therefore, in the present study, I examine contextual

measures of parent employment and work-related stress, along with parenting and

neighborhoods, to capture the broader context of Latino/a youth's externalizing behavior.

Parent Employment. Parenting norms are affected by a range of factors, including

parents' employment conditions. Parent employment can influence the living environment and

standard of living that parent can provide their children. Beyond income and wages, a number of other characteristics shape the quality of employment (Gleeson, 2016). Nonstandard work, work shifts outside of Monday through Friday between the hours of 8am and 6pm (Joshi & Bogen, 2007; Li et al., 2014), has demonstrated direct (Han, 2008) and indirect effects through parent work stress (Castillo et al., 2020; Joshi & Bogen, 2007) on youth externalizing behavior. Mothers have reported on the parenting challenges associated with nonstandard work, such as the limited time available to spend with their kids, being unable to witness developmental milestones, and the inability to participate in school functions and extracurricular activities (Rapoport & Le Bourdais, 2008).

However, some research finds no link between parent nonstandard work and youth externalizing behaviors (Dunifon et al., 2005; Phillips, 2002). Therefore, there is a need for additional research to empirically examine the association between parent employment and employment related conditions with youth behavioral problems. Some of the most vulnerable populations are employed in nonstandard work. Parents with children, single mothers, mothers with lower levels of education, and racial/ ethnic minorities are all more likely to be employed in jobs with nonstandard work schedules (Gassman-Pines, 2011; Golden, 2016; La Valle et al., 2002). Nonstandard work shifts have increased in recent decades and nonstandard work shift is often linked with low wages, few career development opportunities, and poor working conditions (Berg, Appelbaum, Bailey, & Kalleberg, 2004; Gleeson, 2016; Kalleberg, 2000, 2011)

Parenting and Neighborhoods. Empirical research on parents use of physical punishment has reached a consensus on the detrimental effects that physical discipline can have on youths externalizing behaviors (Gershoff & Grogan-Kaylor, 2016; Grogan-Kaylor et al., 2020). Some research suggested that physical punishment may yield less negative consequences

based on neighborhood and context, such that, youth from high risk environments or youth from environments where physical discipline is normative may experiences less negative effects of physical discpline (Deater-Deckard & Dodge, 1997; Eamon, 2002). However, more recent literature shows that harsh parent discipline, such as spanking, continues to be linked with youth behavior problems, even among youth in high risk or disadvantaged neighborhoods (Castillo et al., 2020; Grogan-Kaylor, 2005; Ma & Grogan-Kaylor, 2017; Ma, Grogan-Kaylor, & Lee, 2020). Physical punishment is detrimental regardless of race or environmental context (Grogan-Kaylor et al., 2020; Grogan-Kaylor et al., 2018).

Parents use of physical punishment is often a key measure in parenting research, however, there are other parenting dimensions, such as warmth (e.g., parent responsiveness, parent affection) that have also shown associations with youth behaviors but have received less empirical attention. Parental warmth has been linked with lower levels of youth behavioral problems (Eiden, Edwards, & Leonard, 2007; Khaleque & Rohner, 2011).

Acculturation. Acculturation is a bidirectional process that consists of, "learning, borrowing or adopting elements from other ethnic groups" (Halgunseth, 2004). Acculturation is often measured by primary language or first language spoken at home, nativity, the number of years spent in the U.S., and generational status (Schwartz, Pantin, Sullivan, Prado, & Szapocznik, 2006). In the present study I use generational status and cultural connectedness to capture an aspect of Latino youths' acculturation. Previous research suggests that acculturation varies in how it relates to youth behaviors (Gonzales, Fabrett, & Knight, 2009). Research on Latinos and examination of acculturation has increased, however, empirical studies have not reached a consensus on the relationship between acculturation and youth behaviors, largely due to the varying measures and aspects of acculturation (Gonzales et al., 2009; Gonzales, Knight,

Morgan-Lopez, Saenz, & Sirolli, 2002; Valencia & Johnson, 2008). I build on the limited available literature by examining two aspects of acculturation (i.e., generation and cultural connectedness) among Mexican and Puerto Rican youth.

Latino/a Context Matters

How are Latino/a employment, parenting, and neighborhoods linked? Latinos have been, and continue to be, a marginalized group in the U.S. Their employment prospects and potential are affected by institutional and structural inequality that can hinder educational attainment and financial resources. Latino youth are more likely to live in poverty (Joint Economic Committee, 2015) and Latino adults tend to report lower levels of educational attainment (Joint Economic Committee, 2015). Employment and household income are intertwined, and can dictate the environment or neighborhood that is affordable to live in. Research suggests that housing quality is linked to youth externalizing behaviors (Coley, Leventhal, Lynch, & Kull, 2013). Being from a low-income background can also contribute to the youth achievement gap (Duncan, Ziol-Guest, & Kalil, 2010). Lower socioeconomic neighborhoods may have access to less resourced schools (Owens, 2018), less resources for the community and opportunities for social capital and mobility (Curley, 2010). This is the context that many Latino children are growing up in and are being influenced by. This unique context merits empirical attention to better understand the development of Latino youth externalizing behavior.

Present Study

In this paper I examine the relationship between multiple domains (parenting, neighborhoods, parent employment, and Latino/a specific measures) that are theorized to influence youth externalizing behavior. I examine main effects and interaction effects by time and Latino/a subgroups, using six waves of data from the Fragile Families and Child Wellbeing

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Study (FFCWS). For this study, I exclusively focus on low-income Latino/a youth. The aims of this study are three-fold: First, to examine unique contextual (e.g., acculturation, employment) factors and their short term and long-term relationships with externalizing behavior; Second, to examine whether these relationships vary by Latino/a subgroup, Mexican and Puerto Rican; Third, to build on inclusive and diverse research.

Method

Sample

The Fragile Families and Child Wellbeing Study (FFCWS) is an ongoing, large scale, longitudinal, six-wave, survey study. Baseline data were collected in 1998 (at child's birth), n=4,898, and the most recent wave six data (at youth aged 15), n=3,444, were collected in 2017. However, data inclusion for the study reported upon within this dissertation chapter was restricted to Latino/a-only parent and child dyads (n=1,335). FFCWS participants were recruited from 75 hospitals in the U.S. shortly after the birth of the focal child and were invited to participate at each additional wave of data collection. FFCWS over-samples ethnic/racial minorities and low-income families and was initially developed to contribute to research and policy efforts that focus on single parent households, child rearing, and parenting practices (Reichman et al., 2001).

Measures

Outcome Measure

Externalizing behavior. At waves 3, 4, 5 and 6, (child ages, 3, 5, 9 and 15, approximately) mothers reported their child's behavior by completing the Child Behavior and Checklist (CBCL/2-3, CBCL/ 4-18, and CBCL/ 6-18) (Achenbach, 1991). The CBCL subscale, aggressive behavior, consists of 15 items, on a 3-point scale: (0) "not true", (1) "somewhat or sometimes

true", and (2) "very often or often true". Consistent with other studies (Grogan-Kaylor et al., 2018; Ma & Grogan-Kaylor, 2017), a mean score of the 15 items was used to measure youth externalizing behavior. Sample items included in the scale were "Child is cruel, bullies, and shows meanness to others", "gets in many fights" and "child destroys things belonging to the family or others". The Cronbach's alpha score assessing internal consistency was 0.88, 0.85, 0.91 and 0.88 at each of the respective waves of data collection.

Predictor Measures

Demographic Measures.

Child Sex. The focal child's sex was reported by the mother during the first wave of data, (1) female or (2) male. *Income.* At each wave of data collection, mothers and fathers report on their household income in U.S. dollars. The FFCWS constructs a measure of household income at each wave after computing missing income data. The FFCWS computed measures of household income at wave 3, 4 ,5, and 6 (child ages 3, 5, 9, and 15) were used for the analyses of the present study. *Parent Education.* Mothers and fathers self-reported their highest level of education. The education levels were (0), less than high school degree (1), high school degree of equivalent, (2) some college, and (3) college or graduate. The highest level of education attained, as reported by the mother or father, were used as the measure of parent education.

Latino/a-Specific Measures.

Latino/a Subgroup. Latino/a subgroup was determined using two items. First, mothers reported on their race, Black, Latino/a, White, or other. If mothers identified as Latino/a, in a follow up question they reported whether they identified as Cuban, Puerto Rican, Mexican, or as being from another Latino/a group. Due to sample sizes, this measure was recoded to reflect, (1) Puerto Rican, (2) Mexican or (3) other Latino/a. *Generation.* Mothers and fathers completed two sets of

questions that were used to establish the focal child's generation. Mothers and fathers reported

on their mothers/fathers (the focal child's grandparents) country of birth. They also reported on

their own country of birth (focal child's parent). These items were used to create a categorical

measure of the focal child as 1st, 2nd, 3rd generation or other generation. ***Ethnic/cultural***

Connectedness. At wave three, Mothers reported on two items regarding their ethnic and cultural

connectedness. Each of the two items, "I feel an attachment towards my own racial or ethnic

heritage" and "I participate in cultural practices of my own group, such as special food, music, or

customs" was on a 4-point scale: (1) strongly agree, (2) somewhat agree, (3) somewhat disagree,

and (4) strongly disagree. The two items were used to create a measure of ethnic/cultural

connectedness. Cronbach's alpha score was 0.60.

Parent Discipline Measures.

Physical Punishment. At wave three, mothers and fathers report on their use of physical

punishment, spanking. Using two items, parents were first asked if they have ever spanked their

child. Following, parents were asked to report on the frequency of spanking as a form of child

discipline in the past month. Responses to each of the two items were used to create one measure

of mother's use of spanking discipline and one measure of father's use of spanking discipline,

such that, 0= "never", 1= "only once or twice", 2= "a few times this past month", 3= "a few

times a week or every day or nearly every day". *Maternal Warmth.* At wave three*,* Interviewers

documented whether they observed (1) or did not observe (0) maternal behavior coinciding with

the maternal warmth subscale, Early-Childhood HOME Inventory (Caldwell & Bradley, 1984).

The mean score of the four items were used to measure maternal warmth. Some example items

of maternal warmth used were "Parent spontaneously praised child's behavior or qualities at

least twice" and "Parents voice convey positive feelings when speaking of, or to, child". The Cronbach alpha score for maternal warmth was 0.64.

Employment Measures.

Family Work- Related Stress. At wave three, mothers and fathers each completed three items that were used to measure work related stress. Each of the three items were on a four-point scale ranging from 1= "Always" to 4= "Never" and asked each parent to report on the extent to which their work posed childcare challenges, additional stress, and if their job was flexible to attend to family needs. These items were reverse coded such that a higher score would reflect higher levels of work-related stress. The Cronbach's alpha score for this measure was 0.60 for mothers and 0.56 for fathers. *Nonstandard Work.* Mothers work shift was used as a proxy measure of nonstandard work. Two sets of questions were used to measure nonstandard work. Mothers were first asked if they had completed any work for pay in the past week. Mothers who reported having completed work for pay were subsequently asked whether or not they worked each of the four work shifts: weekdays, weeknights, weekends, or a varied work schedule (an inconsistent work schedule). These items were collapsed and recoded into a three-category measure: mothers who reported only working weekdays were coded "Standard Work" (0), mothers who reported having worked weeknights, weekends, or a varied work schedule were coded as "Non-standard Work" (1) and mothers who reported not having worked for pay were coded as "not employed" (2).

Neighborhood Measure.

 Neighborhood Collective Efficacy. Two subscales, comprised of 5 items each, *Neighborhood Cohesion and Trust* and *Neighborhood Social Control* (Sampson et al., 1997)

were used to create a mean score of neighborhood collective efficacy. The Neighborhood

Cohesion and Trust subscale asked mothers to report on the degree to which they agreed that

their neighborhood weas close-knit, shared values, could be trusted, got along well, and were

willing to help each other. Response options for each item ranged from 1 ("strongly disagree") to

5 ("strongly agree"). The Cronbach's alpha measure of reliability for this subscale was 0.75.

The items from the *Neighborhood Social Control subscale,* asked mothers to report on

the likelihood that their neighbors would intervene if, "children were showing disrespect to an

adult", "children were spray-painting graffiti on a building", and "a fight broke out in front of

their house". Response options for these items ranged from 1 ("very unlikely") to 5 ("very

likely"). The Cronbach's alpha measure of reliability for this subscale was 0.87.

The Cronbach alpha score for the combined subscales was 0.82.

Analyses

In the present study, descriptive statistics of the sample and measures of interest were

examined. Following, each of the scales were examined using the Cronbach's alpha score as a

measure of internal consistency. To address the research questions of the present study, I

examined an unconditional multilevel model and a series of multivariable multilevel models

(Raudenbush & Bryk, 2002; Singer, Willett, & Willett, 2003) were carried out using STATA 15.

I used multilevel modeling to account for the nested nature of repeated measures data. The first

multilevel model examined the main effects of all predictor measures and youth externalizing

behavior at wave 3,4 5 and 6 (approximate youth ages 3, 5, 9, and 15). The second multilevel

model examined interaction effects by year and by Latino/a subgroup, while accounting for main

effects. To address missing data, I used multiple imputation (Schafer, 1999; Royston & White,

2011). Multiple imputation is optimal for accounting for missing data as this method, unlike

complete case analyses, uses available observed data to estimate possible missing data values. Multiple imputation creates multiple imputed datasets which not only yields better point estimates of the missing data but also reintroduces uncertainty into the model, thus yielding more accurate estimation of statistical significance. A single imputation would be unable to reintroduce uncertainty into the model, which could yield erroneous statistically significant findings. In the present multiple imputation analyses, I carried out 100 imputations. Missing data ranged from 12.3% for household income to 63.9% for maternal warmth. However, the majority of the measures in this model had less than 40% missing data.

Results

Descriptive Statistics

The majority of the Latino/a sample identified as Mexican (56%), followed by other Latino/a (29.7%), and Puerto Rican (14.2%). Of the sample, 48.3% of the focal children were female. Educationally, more self-identified Mexican (38.24%) parents reported having less than a high school education than did Puerto Ricans (17.89 %) or other Latinos/as (20.91%). An education of High School degree or equivalent was similar among Mexican, Puerto Rican and other Latinos/as, ranging from 20.5% to 23.2%. However, an education of some college and college degree or graduate school was higher among Puerto Rican (47.89%, 13.68%) and other Latinos/as (43.32%, 13.60%) than Mexican (31.95%, 6.95%). Parental discipline, such as mother use of spanking, was similar among Mexican, Puerto Rican, and other Latino/a, 41.7%, 45.9%, and 43.2%, respectively. Father's use of spanking as a form of discipline varied among Latino/a subgroup, such that 34.9% of Mexican, 38% of Puerto Rican, and 28.6% of other Latino/a fathers spanked their three-year-old child. Average scores of maternal warmth were similar across the three groups, .89, .88, and 92 for Mexican, Puerto Rican, and other Latino/a. Mother

work-related stress mean scores ranged between 1.69 and 1.70, while father work-related stress for each Latino/a subgroup ranged between 1.72 and 1.80. Cultural and ethnic connectedness was also similar across the three Latino/a group, average scores ranging from 3.12 and 3.15. Across Latinos/as, 38.5% of other Latino/a, 33.6% of Mexican, and 29.4% of Puerto Rican reported standard shift employment. All Latino/a groups reported between 46% and 49% non-standard employment. Neighborhood collective efficacy ranged between 2.64 and 2.86 for the three Latino/a subgroups. Lastly, externalizing behavior decreased over time for all Latino/a subgroups. At wave three and wave four, Puerto Rican youth reported higher levels of externalizing behavior (mean=0.73 and mean=0.51). At wave five, Mexican, Puerto Rican and other Latino/a youth reported similar levels of externalizing behavior, with mean scores ranging between 0.20 and 0.23. During the last wave, Mexican and other Latino/a youth reported a mean of 0.19 score on externalizing behavior, and Puerto Rican youth reported a mean score of 0.22. All descriptive statistics are presented in Table 3.1.

Multilevel Model 1: Main Effects

The unconditional model yielded an Intra Class Correlations (ICC) estimate of 0.371. This ICC value suggests that 37.1% of the variability in externalizing behavior is accounted for by the nested nature of the data, or in this case, within-person variation. The multilevel main effects model (n=1,335) revealed significant relationships between early childhood predictors (wave three) and externalizing behavior at wave six (see Table 2). Only one demographic characteristic, parent education, was significantly associated with youth externalizing behavior. A parent education of some college (B=-0.036, p=.05) and college degree or above (B=-0.056, p=.05) was associated with lower levels of externalizing behavior, compared to parent education of less than high school. No other parent education level was significantly associated with youth

externalizing behavior. There were no significant relationships between household income or child sex and youth externalizing behavior.

Latino/a-Specific Measures. Latino/a specific measures also revealed significant linkages with externalizing behavior. Compared to Mexican youth, Puerto Rican youth had significantly higher levels of externalizing behavior (B= 0.040, p<.05). Compared to first-generation youth, second or third generation youth were associated with higher levels of externalizing behavior (B= 0.046, p < .05; B= 0.042, p<.05). Additionally, higher levels of cultural/ethnic connectedness were significantly associated with lower levels of externalizing behavior (B= -0.024, p<.001).

Parent Discipline Measures. This model also revealed some significant associations between parenting measures and youth externalizing behavior. Mother (B= 0.039, p<.001), and father (B= 0.017, p<.05) use of spanking as a form of discipline was significantly associated with higher levels of externalizing behavior. While maternal warmth showed no significant association with externalizing behavior, the p-value approached significance (B=-0.086, p=.06).

Employment Measures. This model did not reveal any significant relationships between parent employment measures (i.e., work related stress and nonstandard work) and youth externalizing behavior.

Neighborhood Measure. Neighborhood collective efficacy was significantly associated with lower levels of youth externalizing behavior, such that, as neighborhood collective efficacy increased, youth externalizing behavior decreased (B= -0.030, p<.05).

Lastly, externalizing behavior significantly decreased over time, at wave four, wave five and wave six (B= -0.184, p<.001, B =-0.415, p<.001, and B=-0.441, p<.001).

Multilevel Model 2: Interaction Effects

Multilevel model 2 (n=1, 335), examined interactions among select predictor measures by Latino/a subgroup and by year, while accounting for predictor main effects. Results for Model 2 are presented in Table 3.3 and Table 3.4. The interaction model revealed only one significant interaction effect of Latino/a subgroup, Puerto Rican, with mother use of spanking as a form of discipline (B=0.037, p<.05). No other significant interaction effects were found of Latino/a subgroup with maternal warmth, cultural connectedness, or neighborhood collective efficacy.

Model 2 also revealed some significant interactions of year with predictor measures. The predictor measures with significant interactions by year were mother use of spanking, maternal warmth, and cultural connectedness. Interaction effects of mother use of spanking with year suggest that the negative effect of mother spanking on youth externalizing behavior decreases over time at waves 5 (B= -0.024, p<.05). Similarly, the significant interaction between maternal warmth and year suggests that the protective effect of maternal warmth decreases over time at years four, five, and six (B= 0.218, p<.05, B= 0.235, p=.01, B=0.223, p<.05). The significant interaction effect of cultural connectedness by year also suggests that the protective effect of cultural connectedness on youth externalizing behavior decreases over time at years four and five (B= 0.039, p=.01, B= 0.030, p<.05).

The main effects accounted for in this model also revealed some significant associations with youth externalizing behavior. Similar to the main effects only model in Table 2, youth's generational status, cultural connectedness, mother and father use of spanking, and neighborhood collected efficacy remained significantly associated with youth externalizing behavior. However, in this model, maternal warmth, showed a negative association with youth externalizing behavior (B= -0.240, p<.05), suggesting that maternal warmth is protective factor for externalizing

behavior. Similar to Model 1 in Table 2, there were significant associations between household income, child sex, or employment measures with youth externalizing behavior.

Discussion

This study showed that parenting and neighborhoods are important to Latino youth externalizing behavior. Parent use of spanking as a form of discipline is a risk factor of Latino/a youth externalizing behavior, while neighborhoods collective efficacy, cultural connectedness, generational status, and higher levels of parent education are all protective factors of externalizing behavior, in the sample of Latinos in this study. The retention of cultural norms and cultural connectedness as a protective factor is consistent with previous research (Poon, Homma, Saewyc, & Smith, 2010; Schwartz et al., 2011). In this study, first generation Latino youth exhibited lower levels of externalizing behaviors compared to second and third generation Latino youth. This finding provides support for the "immigrant paradox". Previous research examining nativity, number of years in the U.S., and generational status have demonstrated these factors negative association with problem behaviors (Bui & Thongniramol, 2005; Eamon & Mulder, 2005; Gil, Wagner, & Vega, 2000; Gonzales et al., 2009).

Parent use of spanking as a form of discipline is detrimental to Mexican, Puerto Rican, and Other Latino/a youth in the present study. The negative effects of spanking found in the present Latino-youth focused study is consistent with other parenting literature (Gershoff & Grogan-Kaylor, 2016; Gershoff & Grogan-Kaylor, 2016; Grogan-Kaylor et al., 2020). In the present study, I also found significant Latino group by spanking interaction effects, although these were only marginal (p<.05), such that compared to Mexican youth, spanking is significantly different for Puerto Rican youth and their externalizing behaviors. Higher levels of

spanking among Puerto Rican youth was significantly associated with externalizing behaviors. Empirical research that examines Latinos as one large monolithic group would not capture this sort of variation.

Importantly, this study demonstrates that Latino/a specific measures are important to all groups of Latinos/as and their externalizing behavior (i.e., Mexican, Puerto Rican, Other Latino/a). Similarly, parent use of spanking as a form of discipline is detrimental to all Latino/a groups and their externalizing behavior, with higher levels of spanking and externalizing behavior among Puerto Rican youth and families.

In this study I found no significant relationship between parent employment measures and youth externalizing behaviors. However, this findings is consistent with some previous research (Castillo et al., 2020). Other research suggests indirect relationships between parent work related measures and youth behavioral outcomes (Castillo et al., 2020; Joshi & Bogen, 2007; Li et al., 2014). It is possible that, for Latino/a youth, indirect effects of parent employment measures are also taking place. The empirical research on parent employment and youth externalizing behavior has yet to reach a consensus. Future research that further investigates indirect parent employment effects can shed light on the intricacies of parent employment and how it relates to youth behavioral outcomes.

Important to note are the relatively low levels of externalizing behavior among Mexican, Puerto Rican, and 'other' Latino/a youth. As these children aged, their externalizing behavior significantly decreased, whereby at approximately age 15, mean levels of CBCL externalizing behavior were .1, on a 0-2 scale. This finding suggests the unfounded criminalization and marginalization of low-income Latino youth. Oftentimes, low-income youth attend less

resourced schools, or schools with police enforcement and activity on campuses, however, the low levels of externalizing behavior suggest that Latino/a youth are not engaging in problematic behaviors. Historical marginalization and current events have contributed to the negative perceptions that Latino and Black youth have of police enforcement in their communities and schools (Zhang, Nakamoto, & Cerna, 2020). Despite declines in school violence, school policing and security has increased (Bracy, 2010; Nakamoto, Cerna, & Stern, 2019). The present study provides little evidence for Latino youths' engagement in problem behaviors. As studies continue to examine youth, and particularly diverse youths externalizing behaviors, we can demonstrate that diverse youth are not inherently criminal and school, and policing administrators can work towards the decriminalization of diverse youth.

Strengths and Limitations

The findings from this study inform our understanding of key predictors of Latino/a youth externalizing behavior in a broader context. However, there are limitations of this study that need to be considered. First, nearly all measures were mother and father self-reported data and respondent bias may exist. Second, this study only examined two aspects of parenting, there are additional measures of parenting (e.g., supervision) that may be associated with parent employment, neighborhoods, and youth externalizing behavior. Third, internal consistency of the mother and father work-related stress measure is relatively low. A low Cronbach alpha score may suggest a poor measure, while also capturing a broader scope. Additionally, because the FFCWS study oversamples children born to single mothers, the findings of this study are not generalizable to the U.S population. Lastly, this study only examined Mexican, Puerto Rican and 'other' Latino/a groups, there are Latino/a groups that are not accounted for in this study.

Future Directions

There remain gaps in the literature that require additional empirical attention to better understand the development of externalizing behaviors of Latino/a youth. For example, future research that can captures more nuanced wages, such as low-wage, middle-wage, and higher-wage working mothers would help discern the relationship between different nonstandard employment wage statuses and youth behavior. Additionally, research that is inclusive of more Latino/a groups would help further our understanding of the heterogeneity that may exist within Latino/a populations.

Table 3.1

Descriptive Statistics

Measure	Mexican American (n=748) 56.03%		Puerto Rican (n=190) 14.23%		Other Latino/a (n=397) 29.74%	
	n	% or mean	n	% or mean	n	% or mean
Parent Education						
Less than H.S	286	38.24%	34	17.89%	83	20.91%
H.S. or Equiv.	171	22.86%	39	20.53%	92	23.17%
Some College	239	31.95%	91	47.89%	168	42.32%
College or Grad	52	6.95%	26	13.68%	54	13.60%
Child Sex						
Female	372	49.73%	94	49.47%	179	45.09%
Male	376	50.27%	96	50.53%	218	54.91%
Generation						
First	256	34.22%	1	0.53%	99	24.94%
Second	168	22.46%	63	33.16%	83	20.91%
Third	245	32.75%	126	66.32%	150	37.78%
Other	79	10.56%	-	-	65	16.37%
Mom Spanks	256	41.69%	73	45.91%	136	43.17%
Dad Spanks	136	34.96%	38	38%	50	28.57%
Maternal Warmth	290	0.89	69	0.88	123	0.92
Mom Work Stress	463	1.69	132	1.7	266	1.7
Dad Work Stress	465	1.72	120	1.78	222	1.8
Mom Non-Standard Work						
Standard work	251	33.56%	56	29.47%	153	38.54%
Nonstandard Work	344	45.99%	95	49.47%	189	47.61%
Not Employed	153	20.45%	40	21.05%	55	13.85%
Cultural Connectedness	654	3.13	164	3.15	341	3.12
Neighborhood Efficacy	483	2.86	116	2.64	234	2.84
Externalizing Behavior Wave 3	485	0.61	115	0.73	233	0.62
Externalizing Behavior Wave 4	465	0.42	158	0.51	294	0.45
Externalizing Behavior Wave 5	486	0.2	116	0.23	251	0.22
Externalizing Behavior Wave 6	483	0.19	124	0.22	268	0.19

Table 3.2

Multilevel Model 1: Main Effects Only

Measure	Model 1: Main Effects Only (n=1,335)					
	Estimate	**Standard Error**	**t**	**p**	**95% confidence**	
Income	0.000	0.002	0.06	0.955	-0.004	0.004
Parent Education- Ref: Less than HS						
HS Degree or Equiv.	-0.015	0.017	-0.86	0.391	-0.049	0.019
Some College	-0.036	0.017	-2.13	0.035	-0.069	-0.003
College or Graduate	-0.056	0.026	-2.18	0.032	-0.107	-0.005
Child Sex - Ref: Girl						
Boy	0.025	0.015	1.71	0.095	-0.005	0.054
Latino Subgroup- Ref: Mexican						
Puerto Rican	0.041	0.020	2.08	0.04	0.002	0.080
Other Latino	0.018	0.015	1.15	0.253	-0.013	0.048
Generation - Ref: 1st						
2nd	0.046	0.022	2.1	0.042	0.002	0.091
3rd	0.042	0.020	2.07	0.044	0.001	0.082
Other	0.027	0.024	1.14	0.258	-0.020	0.075
Mother Spanks	0.039	0.007	5.9	<0.001	0.026	0.053
Father Spanks	0.017	0.008	2.09	0.042	0.001	0.034
Maternal Warmth	-0.073	0.038	-1.94	0.063	-0.151	0.004
Mother Work-Related Stress	0.012	0.010	1.23	0.226	-0.008	0.032
Father Work-Related Stress	0.007	0.009	0.73	0.468	-0.011	0.024
Mother Non-Standard Work- Ref: Standard Work						

Non-Standard	0.006	0.014	0.39	0.699	-0.023	0.034
Unemployed	-0.009	0.018	-0.51	0.613	-0.044	0.026
Cultural Connectedness	-0.024	0.007	-3.64	<0.001	-0.037	-0.011
Neighborhood Efficacy	-0.030	0.012	-2.48	0.020	-0.055	-0.005
year						
4	-0.184	0.012	-15.77	<0.001	-0.208	-0.161
5	-0.415	0.013	-32.7	<0.001	-0.441	-0.390
6	-0.441	0.013	-33.22	<0.001	-0.468	-0.414

Note: <0.001***, <0.01**, <.01*

Table 3.3

Multilevel Model 2: Multilevel Model Main Effects of Interaction Model

Measure	Model 2: Main Effects of interaction model (n=1,335)					
		Standard				
	Estimate	Error	t	p	95% confidence	
Income	0.000	0.002	0.15	0.885	0.003	0.004
Parent Education- Ref: Less than HS						
HS Degree or Equiv.	-0.016	0.017	-0.91	0.365	0.050	0.019
Some College	-0.037	0.017	-2.21	0.029*	0.070	-0.004
College or Graduate	-0.055	0.025	-2.19	0.031*	0.106	-0.005
Child Sex - Ref: Girl						
Boy	0.025	0.014	1.73	0.091	0.004	0.053
Latino Subgroup- Ref: Mexican						
Puerto Rican	0.178	0.131	1.36	0.179	0.084	0.440
Other Latino	0.037	0.101	0.37	0.715	0.165	0.239
Generation - Ref: 1st						
2nd	0.048	0.022	2.17	0.036*	0.003	0.093
3rd	0.042	0.020	2.08	0.042*	0.002	0.082
Other	0.026	0.024	1.11	0.272	0.021	0.074
Cultural Connectedness	-0.044	0.013	-3.39	<0.001***	0.070	-0.018
Mother Spanks	0.051	0.013	3.99	<0.001***	0.025	0.077
Father Spanks	0.018	0.008	2.22	0.031*	0.002	0.034
Maternal Warmth	-0.240	0.093	-2.58	0.022*	0.439	-0.040
Mother Work-Related Stress	0.012	0.010	1.21	0.235	0.008	0.032
Father Work-Related Stress	0.007	0.009	0.77	0.444	0.011	0.024
Mother Non-Standard Work- Ref: Standard Work						
Non-Standard	0.006	0.014	0.41	0.683	0.022	0.034
Unemployed	-0.012	0.018	-0.66	0.51	0.047	0.023
Neighborhood Efficacy	-0.035	0.015	-2.29	0.024*	0.065	-0.005
year						
4	-0.535	0.105	-5.09	<0.001***	-0.755	-0.316
5	-0.768	0.091	-8.47	<0.001***	0.954	-0.583
6	-0.712	0.103	-6.91	<0.001***	0.927	-0.497

Note: <0.001***, <0.01**, <.01*

Table 3.4

Multilevel Model 2: Interactions by Latino/a Subgroup and Year

Model 2: Interactions by Latino/a Subgroup & Year
(n=1,335)

Measure	Estimate	Standard Error	t	p	95% confidence	
Latino/a Subgroup X Mother Spanks						
Puerto Rican	0.037	0.019	1.99	0.048*	0.000	0.075
Other Latino	-0.007	0.015	-0.44	0.658	0.036	0.023
Latino/a Subgroup X Maternal Warmth						
Puerto Rican	-0.038	0.078	-0.49	0.626	0.193	0.116
Other Latino	0.015	0.063	0.24	0.814	0.109	0.138
Latino/a Subgroup X Cultural Connectedness						
Puerto Rican	-0.006	0.022	-0.29	0.776	0.049	0.037
Other Latino	0.003	0.016	0.21	0.836	0.028	0.034
Latino/a Subgroup X Neighborhood Efficacy						
Puerto Rican	-0.040	0.033	-1.19	0.243	0.108	0.029
Other Latino	-0.013	0.021	-0.64	0.524	0.055	0.028
Year X Mother Spanks						
4	-0.019	0.0119	-1.64	0.107	0.043	0.004
5	-0.024	0.0106	-2.25	0.025*	0.045	-0.003
6	-0.017	0.0113	-1.51	0.134	0.040	0.005
Year X Maternal Warmth						
4	0.218	0.0920	2.37	0.033*	0.020	0.415

	5	0.235	0.0893	2.63	0.019**	0.044	0.427
	6	0.223	0.1000	2.23	0.044*	0.006	0.439
Year X Cultural Connectedness							
	4	0.039	0.0148	2.6	0.014**	0.008	0.069
	5	0.030	0.0142	2.1	0.042*	0.001	0.059
	6	0.008	0.0134	0.59	0.558	0.019	0.035
Year X Neighborhood Efficacy							
	4	0.016	0.0170	0.95	0.346	0.018	0.050
	5	0.022	0.0160	1.37	0.176	-0.010	0.054
	6	0.020	0.0174	1.13	0.265	0.015	0.055

Note:
<0.001***, <0.01**, <.01*

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Chapter 4 Study 3

Latino/a Adolescent Substance Use: A U.S National Perspective

Latinos account for 18% of the U.S. population (Flores et al., 2019). Latino youth account for 25% of the U.S. K-12th grade population (López et al., 2018). The three largest Latino groups in the U.S. are Mexican, Cuban and Puerto Rican. Despite age regulations and decline in substance use among American youth, substance use remains a significant public health concern. The two most common substances used by American adolescents are alcohol and marijuana. Among Latino adults, they may report lower rates of alcohol use but are more likely to struggle with alcohol use problems (Chartier & Caetano, 2010). Latinos are also less likely to seek treatment for substance use-related problems than Whites (SAMHSA, 2013).

In 2020, in the U.S., annual marijuana use was 11.4% for 8th graders and 28% for 10thgraders. Annual alcohol use for 8th and 10th graders was 20.5% and 40.7%, respectively Cigarettes, at one point very popular, has remained low among 8th and 10th graders, with only 2.2% and 3.2% of 8th and 10th graders reporting past 30-day cigarette use in 2020 (Johnston, Miech, O'Malley, Bachman, Schulenberg, & Patrick, 2021). Adolescent alcohol and marijuana use, while declining, still pose health concerns. Alcohol-related harm ranks third in preventable causes of death in the U.S. (NIAAA, 2019). For example, underage drinking has been associated with accidental deaths in car accidents, homicides, and suicides (NIAAA, 2019). Both alcohol and marijuana have also been linked to declines in cognitive performance (Day, Celio, Lisman, Johansen, & Spear, 2013; Filbey et al., 2014; Scott et al., 2017). In the present study I focus on 8th and 10th graders. During 8th and 10th, the modal ages are 14 and 16 years, an age in which

alcohol use is legally prohibited. Under-age substance use can also have lasting detrimental

consequences.

Latinos in the U.S.

The demographic trends of Latinos/as in the U.S., compared to whites raises increase

concern for the Latino/a population. For example, relative to whites, Latinos are more likely to

have dropped out of high school (Gramlich, 2017), to be employed in low-wage jobs (e.g.,

agriculture, construction, hospitality, food service) and to earn a lower hourly wage (Economic

Policy Institute, 2018). Latinos are less likely to have a college degree, or own their home

compared to whites (Joint Economic Committee, 2015). Latinos are a young population that help

sustain and contribute to federal and state taxes, social security and Medicare programs (Joint

Economic Committee, 2015). Yet, Latino youth are more likely to live in poverty households

than white youth, and Latinos/as make up 28% of the US 'poor' population (Murphey, Belford,

&Balding, 2018; Krogstad, 2016.; López et al., 2018). Important to note is the potential

underreporting of these rates, as some Latino/as may go unaccounted for due to legal status.

Structural and societal inequalities have contributed to theses disparities (e.g., health, education,

income) that Latinos continue to experience. Therefore, it has become increasingly important to

better understand the Latino population, their position in the U.S. as a marginalized group, and

their development of substance use behavior to reduce disparity gaps and address Latino/a

adolescent substance use.

Empirical Within Latino/a Research

The substance use literature is vast, however, empirical research that examines diversity

in substance use remains sparse. For example, the majority of youth substance research that

includes Latinos/as tends to combine all Latino/a groups into one large monolithic group and not

examining within group variation. Between-group research (e.g., Latino vs White) has been informative for discerning substance use prevalence rates and identifying risk and protective factors that demonstrate consistent relationships with substance use. However, there are limitation when combining Latino/a groups and using a total sample perspective without accounting for subgroup heterogeneity. For example, a total sample perspective may provide misguided information on substance use behavior, rates of substance use prevalence, causes, trajectories, and consequences. Combining all Latino/a groups may also mask differences that exist within Latinos/as. The limited research that has been inclusive of Latinos/as and within Latino/a variation, are often limited by small scale, community, clinical, adults or single-school samples (Pereyra & Bean, 2017; Schwartz et al., 2015; Wagner et al., 2010). These data have been critical in illuminating the heterogeneity that exists among Latino/a groups. However, sample size limitations of these data highlight the need for large scale and national data that can demonstrate population-level effects. I draw on Delva et al (2005) for the present replication and extension study. Delva et al (2005) is the only study that uses the nationally representative data from the Monitoring the Future study, to examine Latino/a substance use variation. I replicate Delva et al (2005) by examining the same substances (alcohol, marijuana, and cocaine) and measures (sex, first language spoken at home, parent education as a proxy for socioeconomic status, parents in the household, and regional location). However, the present study also extends on Delva et al (2005) by including both 8th and 10th graders and using updated data from 2006 to 2017. I further expand on Delva et al (2005) by examining past 12-month alcohol use and past 30-day cigarette use, including the new and more inclusive measure of 'other' Latino/a identification, utilizing multiple imputation to account for missing data, taking a closer look at

annual change by examining annual variation as opposed to aggregated data, and the present study examined historical variation.

Acculturation

The process of acculturation is bidirectional, occurring between the individual and their environment and requires the adjustment to the receiving countries' cultural norms while retaining heritage and native norms (Berry, 1997). There are various measures of acculturation used in the literature (Halgunseth, 2003; Lorenzo-Blanco, et al., 2012; Marin & Gamba, 1996; Schwartz, et al., 2011) including language spoken at home, first language spoken, generational status, social relationships, nativity status, and levels of origin cultural identity. Research suggests that acculturation is a primary factor linked to Latino adolescent substance use (Neilsen & Ford, 2001; Schwartz, Unger, Des Rosiers, Lorenzo-Blanco, Huang, & Szapocznik, 2013). Higher levels of acculturation among Latinos have been linked with higher levels of substance use (Cano et al., 2015; Ortega, Rosenheck, Algeria, & Desai, 2000; Prado, Szapocznik, Maldonado-Molina, Schwartz, & Pantin, 2008). Acculturation research suggests that as an adolescent's English proficiency increases so does substance use (Epstein, Botvin, & Diaz, 2000; Epstein, Botvin, & Diaz, 2001; Neilson & Ford, 2001; Delva et al., 2005). Research suggests that retention of some heritage cultural norms (Schwartz et al., 2011) and Spanish language can serve as a protective factor for substance use related problems (Salas-Wright, Clark, Vaughn, & Cordova, 2015).

Present Study

The present study has two overarching aims. The first aim is to examine the prevalence of alcohol, marijuana, cigarettes, and cocaine use among Latino/a adolescents. The second aim is to examine substance use variation within Latino/a groups. To address these aims, U.S nationally

representative samples of 8th and 10th graders, between years 2006 to 2017, from Monitoring the Future (MTF) study were used for analyses (Miech, Johnston, O'Malley, Bachman, Schulenberg, & Patrick, 2021). Series of weighted bivariate and multivariate logistic regressions were examined to address the aims of this study. The Latino/a population is the largest ethnic minority in the U.S., with 1 in 4 American youth identifying as Latino/a, which bolsters the need for empirical attention that examines the heterogeneity of this population and better understand the substance use behavior of Latino/a youth substance use. Guided by previous Latino/a inclusive research, I examined sociodemographic measures of sex, acculturation (Epstein, Botvin, & Diaz, 2000, 2001; Salas-Wright, Clark, Vaughn, & Córdova, 2015; Schwartz et al., 2011), and socioeconomic status (Delva et al., 2005). For Latino youth, retaining some heritage and cultural norms and Spanish language can serve as a protective factor for substance use (Salas-Wright et al., 2015). Identifying prevalent substances and characteristics associated with substance use, uniquely for Latino/a groups, can better inform prevention and intervention efforts targeting adolescent substance use.

Methods

Sample

U.S. nationally representative samples, of 8th and 10th graders, between years 2006 to 2017, from the Monitoring the Future (MTF) study were used for analyses. The year of inclusion begins in 2006 due to survey changes, where in 2006 adolescents were permitted to select one or more race or ethnic category. The sampling process for the MTF study includes three stages of random selection at the geographic, school, and class level. The MTF data also have sampling weights available that, when applied, correct for any selection bias. The MTF study also provides clustering and stratifications weights that, when applied, correct for variance estimate bias (West

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& McCabe, 2012). In the analyses for the present study, all available MTF study weights were applied. The response rate is approximately 90% of 8th and 86% of 10th graders (Miech et al., 2021). The present study focuses on students who were randomly assigned to survey Form 1 or Form 2, accounting for 2/3 of the MTF 8th and 10th grade annual sample. Each of the survey forms is designed to present US nationally representative estimates when the complex survey weights are incorporated into analyses. For the present study, inclusion was restricted to survey Form 1 and survey Form 2. This study is also restricted to self-identifying Latino/a adolescents (n= 51,147).

Predictor Measures

Grade level. Adolescents self-reported their grade level, 8th or 10th.

Sex. Adolescents self-reported their sex, male or female.

Latino/a subgroup. Adolescents were asked in one question, "How do you describe yourself?" and were permitted to select one or more responses of the following, "Black or African American; Mexican American or Chicano; Cuban American; Puerto Rican; Other Hispanic or Latino; Asian American; White (Caucasian); American Indian or Alaska Native; Native Hawaiian or Other Pacific Islander." Inclusion in this study was restricted to adolescents who self-identified as one or more of the following Latino/a groups (1) Mexican, (2) Puerto Rican, (3) Cuban, or (4) other Latino/a. These responses were re-coded to reflect single-race Mexican (1), single-race Puerto Rican (2), single-race Cuban (3), and (4) consisted of multi-racial Latino/as and other Latino/a groups. The 'other' Latino/a, coded as four (4), is inclusive of adolescents who identified as any Latino/a group not listed and any combination of within Latino/a groups (i.e., Mexican and Cuban).

Parent education. In two items, adolescents reported on the highest level of education of their mother and father. The response options included: (1) grade school or less, (2) some high school, (3) completed high school, (4) some college, (5) completed college, (6) graduate or professional school, and (7) don't know. The highest level of either parent (or male or female guardian) was used to measure parent education. The education level categories were re-coded to reflect a low level of education (0) completed high school or less, (1) high level of education (completed some college or more). Students who reported "don't know" were coded as missing.

Language spoken at home. In one item, adolescents reported on the first language they spoke at home when they were a child (1) English, (2) Spanish, or (3) other language.

Household. Two items were used to assess whether adolescents lived with their parents. In one item, adolescents reported whether or not they lived with their mom (or female guardian) and in the second item, adolescents reported whether or not they lived with their dad (or male guardian). These two items were combined to reflect (1) adolescent lives with both parents and (0) adolescent does not live with both parents.

Region. Survey administrators recorded the region in which the survey was completed. The regional areas included (1) Northeast, (2) North Central, (3) South, and (4) West.

Year. Survey administrators recorded the year in which the survey was completed.

Outcome Measures

Adolescents were asked to report on the number of occasions of their past 12-month alcohol use, binge drinking, past 12-month marijuana use, past 30-day cigarette use, and past 12-month cocaine use. Each of the substance use items had ordinal response options; however, the substance use items were recoded into a binary measure, 0= "No use" and 1= "Use" for three reasons: 1) due to skewness of responses, 2) b because the aim of this study is focused on the

prevalence of substance use, and 3) because this study is a replication and extension of Delva et al (2005) where the original study also focused on prevalence.

Alcohol. Two alcohol outcomes were examined in this study, past 12-month alcohol use and binge drinking. Past 12-month alcohol use was measure by an ordinal item that asked adolescents to report on the number of occasions they used alcohol in the past 12-months. The response options ranged from (0) 0 occasions to (7) 40 or more occasions. This item was recoded into a binary measure of past 12-month alcohol use (0) no use and (1) used. The number of occasions of binge Drinking, having five or more drinks in one sitting, in the past 2-weeks, was also recoded from the original ordinal scale (1) none, (2) once, (3) twice, (4) three to five times, (5) six to nine times, and (6) ten or more times to a binary measure of (0) no binge drinking and (1) binge drinking.

Marijuana. Past 12-month marijuana use was measured by one item, where adolescents reported on the number of occasions they used marijuana (1) 0 occasions, (2) 1-2 occasions, (3) 3-5 occasions, (4) 6-9 occasions, (5) 10-19 occasions, (6) 20-39 occasions, and (7) 40 or more occasions. This item was re-coded into a binary measure of past 12-month marijuana use, (0) no marijuana use and (1) marijuana use.

Cigarettes. Adolescents reported on their past 30-day cigarette use, on one ordinal item. The ordinal item reported the adolescents' number of cigarettes or cigarette packs used in the past 30-days, ranging from (1) not at all to (7) two packs or more per day. This item was recoded into a binary measure (0) no cigarette use in the past 30-days and (1) cigarette use in the past 30-days.

Cocaine. Two items were used to measure past 12-month adolescent cocaine use. In one item, students reported on the number of occasions of their past 12-month cocaine use in "rock" form and in a following question, students reported the number of occasions they used cocaine in a

different form (i.e., powder), in the past 12-months. The response options for both items were: (1) 0 occasions, (2) 1-2 occasions, (3) 3-5 occasions, (4) 6-9 occasions, (5) 10-19 occasions, (6) 20-39 occasions, and (7) 40 or more occasions. These two ordinal items were combined and recoded to reflect cocaine use in any form (i.e., rock, powder, etc.) and then binary coded (0) no cocaine use and (1) cocaine use.

Analysis

Weighted descriptive statistics were conducted to examine the prevalence of substance use among Latinos/as between years 2006 to 2017. I examined Latino group, grade level, sex, parent highest level of education, first language spoken at home, region, and year in the sample descriptive statistics and also in bivariate analyses. Following, one multivariate logistic regression, with sampling weights, was carried out for each substance outcome (Past 12-month alcohol use, binge drinking, past 12-month marijuana use, past 30-day cigarette use, and past 12-month cocaine use). Wald's testing (coefficient testing), by Latino/a subgroup, was conducted to examine within Latino/a variation for each substance. I used multiple imputation to address missing data (Schafer, 1999; Royston & White, 2011). Multiple imputation is optimal for accounting for missing data as this method, unlike complete case analyses, uses available observed data to estimate possible missing data values. Multiple imputation creates multiple imputed datasets which not only yields better point estimates of the missing data but also reintroduces uncertainty into the model, thus yielding more accurate estimation of statistical significance. A single imputation would be unable to reintroduce uncertainty into the model, which could yield erroneous statistically significant findings. In the present multiple imputation analyses, I carried out 100 imputations. The missing data ranged from 1% for first language

spoken at home measure to 25.33% for the parent education measure. The majority of measures had less than 10% missing data. All analyses were completed using Stata15 (StataCorp, 2017).

Results

Descriptive Statistics

The majority of the sample in this study (n= 52,735) was Mexican (41.52%), followed by Puerto Rican (10.82%), and Cuban (3.06%), and 'other' Latino/a was 54.6% of the sample. The compostion of the "other" Latino/a group consisted of n= 471 multi-racial Latinos/as. The majority of the "other' Latino/a sample were students who identified as a Latino/a group not listed. to note is that in the previous Delva et al (2005) study, the 'other' Latino/a category was smaller in size because youth did not have the opportunity to designate more than one racial or ethnic category. In the present analyses, data are from 2006 to 2017, where adolescents had the opportunity to designate any combination of racial ethnic make-up.

In the present study, 56% of the sample were 8th graders and 51.9% were female. The weighted annual substance use prevalence, averaged over years 2006 to 2017, for 8th and 10th graders combined, for past 12-month alcohol use was 40.51% for Mexican, 41.65% for Puerto Rican, 41.73% for Cuban, and 38.27% for other Latino/a. For binge drinking, the average annual prevalence of binge drinking for 8th and 10th graders combined was 12.47% for Mexican, 11.57% for Puerto Rican, 12.61% for Cuban, and 10.86% for other Latino/a. Past 30-day Cigarette use prevalence, combined for 8th and 10th graders was 6.95% for Mexican, 8.17% for Puerto Rican, 9.38% for Cuban, and 4.30% for other Latino/a. The averaged 2006 to 2017 past 12-month cocaine use for 8th and 10th graders combined was least prevalent, with reported use of 3.20%, 2.01%, 3.37%, and 2.23% for Mexican, Puerto Rican, Cuban, and other Latino/a, respectively.

More self-identifying Mexican (52.08%) adolescents reported having parents with a low-level education than Puerto Rican (29.64%), Cuban (22.99%) or other Latino/a (40.49%) adolescents. Alternatively, more self-identifying Cuban (77.01%) adolescents reported having parents with high levels of educational attainment than Mexican (37.92%), Puerto Rican (70.36%), or other Latinos/as (59.51%). With regards to first language spoken at home, more Puerto Rican adolescents (73.81%) reported English, compared to 47.88% of Mexican, 57.50% of Cuban, and 49.95% of other Latino/a. However, more Mexican adolescents (52.35%) reported Spanish as the first language they spoke at home, compared to 23.85% of Puerto Rican, 37.63% of Cuban, and 47.63% of other Latino/a. The majority of the Latino/a adolescents in this sample reported living with both parents, 76.23% of Mexican, 62.06% of Puerto Rican, 73.08% of Cuban, and 73.90% of other Latinos/as. Detailed descriptive statistics are presented in Table 4.1.

During years 2006 to 2017, Mexican, Puerto Rican, Cuban, and 'other' Latino group substance use has generally decreased. As shown in Figure 4.1, past 12-month alcohol use has decreased for all Latino groups. Among Mexican adolescents, past 12-month alcohol use decreased from 45.7% in 2006 to 26% in 2017. Among Puerto Rican adolescents, past 12-month alcohol use decreased from 43.1% in 2006 to 28.7% in 2017. Cuban adolescents decreased their past-12month alcohol use form 52.9% in 2006 to 30.3% in 2017. Among 'other' Latinos, past 12-month alcohol use decreased from 42.3% in 2006 to 26.7% in 2017. Similarly, Figure 4.2, shows that binge drinking has, generally, decreased among all Latino groups. In 2006, 14.5% of Mexican youth reported binge drinking and by 2017, only 6.9% reported binge drinking. Among Puerto Rican youth, binge drinking decreased from 11.6% in 2006 to 7.4% in 2017. Among Cuban adolescents, binge drinking decreased from 18.7% in 2006 to 6.4% in 2017. Adolescents of 'other' Latino group reported 13.2% binge drinking in 2006 and decreased to 7.1% in 2017.

Figure 4.3 demonstrates change in marijuana use by Latino group. Generally, marijuana use has decreased for Mexican and Cuban adolescents and slightly increased for Puerto Rican and "other' Latino groups. For example, marijuana use slightly decreased for Mexican youth during 2006 to 2017, from approximately 21% to 19.3%. Among Puerto Rican youth, marijuana use increased between 2006 and 2017, from 20.8% to 24.7%. Among Cuban adolescents, past 12-month marijuana use decreased from 26% in 2006 to 17.5% in 2017. Lastly, for this substance, 'other' Latino, marijuana use increased from 16.5% in 2006 to 17.8% in 2017.

Figure 4.4 illustrates change in past 30-day cigarette use by Latino group during 2006 to 2017. Overall, cigarette use has decreased over time for all Latino groups. Among Mexican adolescents, 11.2% reported cigarette use in 2006 and this number decreased to 2.5% in 2017. Similarly, among Puerto Rican youth, nearly 11% reported cigarette use in 2006 and in 2017, only 4.3% reported cigarette use. 12.2% of Cuban adolescents reported cigarette use in 2006, and in 2017, only 4.8% reported cigarette use. Youth identifying as 'other' Latino group, also reported decreasing levels of cigarette use, from 9.4% in 2006 to 2.2% in 2017.

In the last Figure, 4.5, past 12-month cocaine use is illustrated during the years of 2006 to 2017. Cocaine use has declined for all Latino groups. Among Mexican youth, cocaine use declined from 4.6% to 1.4%. Similarly, among Puerto Rican youth, cocaine use declined from 1.9% to 1.5%. In 2006, 8.9% of Cuban youth reported cocaine use and in 2017, only 1.6% reported use. Adolescents identifying as 'other' Latino also had declines in cocaine use, decreasing from 3.8% in 2006 to 1.4% in 2017.

Bivariate Logistic Regressions

A weighted bivariate logistic model was carried for each substance outcome: past 12-month alcohol use, binge drinking, past 12-month marijuana use, past 30-day cigarette use, and past 12-month cocaine use. The bivariate model results are presented in Table 4.2.

Alcohol. Bivariate results for past 12-month alcohol use showed that within Latino/a groups, youth who identified as 'other' Latino/a had significantly lower odds of past 12-month alcohol use compared to Mexican, Puerto Rican, and Cuban adolescents (OR= 0.896, p<.001; OR= 0.838, p<.001, OR=0.800, p<.001). In this model, 10th graders (OR=2.062, p<.001) and females (OR=1.167, p<.001) had significantly higher odds of use than 8th graders and males. Parents with a high level of education and living with both parents were a protective factor for past 12-month alcohol use, such that adolescents had lower odds of use compared to adolescent with parents of low education (OR=0.940, p<.001) and adolescent who did not live with both parents (OR= 0.806, p<.001). Adolescents who reported a first language as 'other' had higher odds of past 12-month alcohol use compared to first language English speakers (OR=1.192, p<.05). Past 12-month alcohol use has significantly decreased over time.

Bivariate results for binge drinking were similar to past 12-month alcohol use. The odds of binge drinking were also lower for 'other' Latino/a identifying adolescents than Mexican (OR= 0.885, p<.001), Puerto Rican (OR=0.887, p<.001), and Cuban (OR= 0.857, p<.05). Similarly, the odds of binge drinking were significantly higher among 10th graders (OR= 1.420, p<.001) and females (OR=1.056, p<.001). The odds of binge drinking were also significantly lower for adolescent with high education parents (OR=0.820, p<.001) and adolescents who lived with both parents (OR=0.812, p<.001) compared to low education parents and not living with both parents. Additionally, compared to first language English speakers, Spanish and 'other' first language speakers had significantly higher odds of binge drinking (OR= 1.121, p<.001;

OR=1.721, p<.001). Binge drinking, like past 12-month alcohol use, has also significantly declined over time (OR= 0.940, p<.001)

Marijuana. Bivariate results for past 12-month marijuana use demonstrate that Puerto Rican adolescents had significantly higher odds of marijuana use than Mexican adolescents (OR=1.113, p<.001), while 'other' Latino/a adolescents had significantly lower odds of use compared to Mexican (OR=0.808, p<.001), Puerto Rican (OR= 0.722, p<.001), and Cuban (OR= 0.820, p<.001) adolescents. In this model, 10th graders were at increased odds of use compared to 8th graders (OR= 2.144, p<.001), and females were at significantly lower odds of use compared to males (OR= 0.853, p<.001). Having parents with a higher education and living with both parents was associated with significantly lower odds of marijuana use (OR= 0.899, p<.001; OR= 0.696, p<.001). Lastly, adolescents who reported Spanish as the first language they spoke at home had significantly lower odds of marijuana use than first language English speakers (OR= 0.763, p<.001). Among Latinos/as, marijuana use has not significantly decreased over time.

Cigarettes. The bivariate model for past 30-day cigarette use also revealed significant results. Within Latino/a groups, Puerto Rican adolescents had significantly higher odds of cigarette smoking than Mexican adolescents (OR= 1.148, p<.05). Cuban adolescents also had significantly higher odds of cigarette smoking than Mexican adolescents (OR= 1.381, p<.001). However, adolescents who identified as 'other' Latino/a had significantly lower odds of smoking than Mexican (OR= 0.860, p<.001), Puerto Rican (OR= 0.737, p<.001) and Cuban (OR=0.632, p<.001) adolescents. 10th graders were associated with significantly higher odds of cigarette smoking than 8th graders (OR= 1.365, p<.001). Females had significantly lower odds of smoking cigarettes than males (OR= 0.843, p<.001). Having parents with a high level of education (compared to low0, Spanish as a first language spoken at home (compared to English) and living

with both parents were all associated with significantly lower odds of cigarette use (OR= 0.888, p<.01; OR= 0.872, p<.001; OR= 0.686, p<.0010). However, a reported 'other' first language spoken at home was associated with significant higher odds of cigarette use compared to first language English speakers (OR= 1.997, p<.001). Past 30-day cigarette use has significantly declined over time (OR= 0.927, p<.001).

Cocaine. The last bivariate model examined past 12-month cocaine use. Among Latino/a groups, the only significant difference was among 'other' Latino/a adolescents. The odds of cocaine use were significantly lower among 'other' Latino/a adolescents compared to Mexican (OR=0.815, p<.001), Puerto Rican (OR= 0.806, p<.01) and Cuban (OR= 0.724, p<.01) adolescents. In this model, 10th graders were more likely to use cocaine than 8th graders (OR=1.160, p=.01). Females had lower odds of cocaine use (OR= 0.787, p<.001) than males. The odds of cocaine use were also significantly lower among adolescents who lived with both parents (OR= 0.760, p<.001) and adolescents who had parents of high education (OR=0.834, p<.001). The odds of cocaine use were significantly higher among first language Spanish and other language speakers compared to first language English speakers (OR= 1.120, p<.01; OR= 3.154, p<.001). Past 12-month cocaine use has significantly decreased over time (OR=0.958, p<.001).

Multivariable Logistic Regressions

Logistic regressions models one to five examined each of the substance outcomes: (1) past 12-month alcohol use, (2) binge drinking, (3) past 12-month marijuana use, (4) past 30-day cigarette use, and (5) past 12-month cocaine use. The results of each model are presented in turn below and detailed in Table 4.3.

Alcohol. Model 1 examined past 12-month alcohol use. This model showed significant Latino/a differences, such that other Latino/a groups compared to Mexican, Puerto Rican, and Cuban had

lower odds of past 12-month alcohol use (AOR= 0.907, p<.001; AOR= 0.855, p<.001; AOR= 0.772, p<.001). In this model, 10th graders (AOR= 2.089, p<.001) compared to 8th graders and females (AOR= 1.179, p<.001) compared to males had significantly higher odds of past 12-month alcohol use. Adolescents with parents of higher education had significantly lower odds of reporting past 12-month alcohol use (AOR= 0.910, p<.001) than their peers with parents of low education attainment. Compared to adolescent with spoke English as their first language, 'other language' speakers had significantly higher odds of past 12-month alcohol use (AOR= 1.182, p<.001). Living with both parents at home was significantly associated with lower odds of past 12-month alcohol use (AOR= 0.799, p<.001). Lastly, past 12-month alcohol use has significantly decrease over time (years 2006 to 2017) (AOR= 0.921, p<.001).

Model 2 examined adolescent binge drinking. Similar to the past 12-month alcohol use model, results for the binge drinking model also revealed Latino group variation. Adolescents identifying as "other Latino/a" had significantly lower odds of binge drinking compared to Mexican, Puerto Rican, and Cuban identifying adolescents (AOR= 0.910, p<.001; AOR=0.863, p<.001; AOR= 0.838, p<.01). This model also showed significantly higher odds of binge drinking for 10th (AOR= 1.427, P<.001) graders and females (AOR= 1.057, P<.05) compared to 8th graders and males. Youth with parents of high education also had lower odds of binge drinking (AOR= 0.818, p<.001) compared to low education parents. In this model, Spanish (AOR= 1.085, p<.001) and other language (AOR= 1.737, p<.001) speakers had significantly higher odds of binge drinking compared to first language English speakers. Adolescent living with both parents had lower odds of binge drinking (AOR= 0.799, p<.001). Lastly, similar to past 12-month alcohol use, binge drinking has also decreased over time (AOR= 0.939, p<.001).

Marijuana. In model 3, past 12-month marijuana use was examined. Among Latino/a groups, past 12-month marijuana use was significantly higher among Puerto Rican adolescents (AOR=1.223, p<.001) compared to Mexican adolescents. Compared to Mexican, Puerto Rican, and Cuban adolescents, past 12-month marijuana use was significantly lower among 'other Latino/a' (AOR=0.876, p<.001; AOR= 0.721, p<.001) compared to Mexican. The odds of past 12-month marijuana use were significantly higher among 10th graders (AOR=2.160, p<.001) and significantly lower among females (AOR= 0.862, p<.001), compared to 8th graders and males. Adolescent whose parents had a high level of education had significant lower odds of past 12-month marijuana use compared to adolescent with parents of low-level education (AOR=0.827, p<.001). Additionally, Adolescent with a first language of Spanish (AOR= 0.764, p<.001) and adolescent living with both parents (AOR= 0.693, p<.001) had significantly lower odds of past 12-month marijuana use compared to first language English speakers and adolescents reported not living with both parents. Lastly, there was no significant difference in past 12-month marijuana use over time.

Cigarettes. Model 4 examined past 30-day cigarette use. In this logistic regression, compared to Mexican-identifying adolescents, Cuban adolescents had significantly higher odds of past 30-day cigarette use (AOR=1.274, p=.01). Compared to Mexican, Puerto Rican, and Cuban adolescents, "other Latino/a" had significantly lower odds of cigarette use (AOR= 0.871, p<.001; AOR= 0.806, p<.001; AOR= 0.704, p<.001). The odds of past 30-day cigarette use were significantly higher among 10th graders (AOR=1.357, p<.001) and significantly lower among females (AOR=0.846, p<.001), compared to 8th graders and males. Having parent with a high level of education, compared to a low level of education, was associated with significantly lower odds of past 30-day cigarette use (AOR=0.830, p<.001). Adolescents whose first language spoken at

home was Spanish, had significantly lower odds of past 30-day cigarette use (AOR=0.873, p<.001), while a first language of "other" had significantly higher odds of cigarette use (AOR= 1.900, p<.001) compared to first language English speakers. Compared to not living with both parents, adolescents living with both parents was associate with significantly low odds of cigarette use (AOR= 0.691, p<.001). Lastly, past 30-day cigarette use has significantly decreased over time (AOR= 0.924, p<.001).

Cocaine. In the last model, 5, I examined past 12-month cocaine use. The results of this model showed that other Latino/a identifying adolescents had significantly lower odds of past 12-month cocaine use compared to Mexican, Puerto Rican, and Cuban adolescents (AOR=0.835, p=.001; AOR= 0.794, p<.01; AOR= 0.753, p<.05). In this model, 10th graders had significantly higher odds of cocaine use (AOR= 1.140, p<.05) while females had significantly lower odds of cocaine use (AOR=0.794, p<.001), compared to 8th graders and males. Adolescents with parents that had a high level of education had significantly lower odds of past 12-month cocaine use compared to their peers who had parents of low education (AOR=0.822, p<.001). With regards to first language spoken at home, "other" language speakers had significantly higher odds of past 12-month cocaine use compared to English speakers (AOR=3.162, p<.001). The odds of cocaine use in the past 12 months was significantly lower among adolescents who reported living with both parents (AOR=0.758, p<.001) compared to adolescent who did not live with both parents. Lastly, past 12-month cocaine use has significantly decline over time (AOR=0.954, p<.001).

Discussion

This nationally representative study shows that some variation exists within Latino/a adolescent substance use. Latino/a adolescents report varying rates of alcohol, marijuana,

cigarette, and cocaine use. Among the three largest Latino/a groups, Mexican, Puerto Rican, and Cuban adolescents, there are no significant differences in any (annual or binge) alcohol use or cocaine use. However, for marijuana use, Puerto Rican adolescents report significantly higher odds of use compared to Mexican youth. Another notable difference was found in cigarette use. Cuban adolescents had significantly higher odds of cigarette use compared to Mexican adolescents. Adolescents of 'other' Latino/a group had significantly lower odds of all substances examined compared to Mexican, Puerto Rican, or Cuban adolescents. Across all substances, 10th graders had consistently higher odds of use than 8th graders. Across all substances, except past 12-month alcohol use, females had significantly lower odds of use. Also, across all substances, parents with a high educational attainment level and living with both parents, was a consistent protective factor of substance use. Lastly, Spanish as a first language spoken at home was a protective factor for Latino/a marijuana and cigarette use. Between the years of 2006 and 2017, alcohol (annual and binge), cigarettes, and cocaine use has significantly decreased among Latinos/as.

This study provides an overview of substance use over the course of years 2006 to 2017. All substance use has, generally, decreased for all Latino groups, with the exception of marijuana use. The trends in substance use, over time, is similar for most substances, with the exception of marijuana use. Future research that examines the mechanisms for marijuana use variation would be useful for better understanding the fluctuation in marijuana use among Latino adolescents.

Compared to Delva et al (2005), the present study shares similarities in findings. For example, Puerto Rican youth continue to have significantly higher odds of marijuana use than Cuban adolescents. Another similarity was the association between first language spoken at home and marijuana use. In both studies, Spanish as the first language spoken at home,

compared to English, served as a protective factor. Another consistent finding is the protective effect of living with both parents for all substances. In both studies, living with both parents reduced the odds of use of each substance use. Furthermore, Delva et al (2005) identifies significant differences in marijuana use and binge drinking among Cuban adolescents and 'other', in the present study, 'other' Latino adolescents have consistently significantly lower odds of use for each substance compared to Mexican, Cuban, and Puerto Rican youth.

Some differences between the present study and Delva et al (2005), pertain to gender differences and historical variation. In the present study, females have lower odds of each substance use compared to males, with the exception of alcohol use (past 12-month and binge drinking). Additionally, in the present study, there are significant declines in use of alcohol (past 12-month and binge drinking), cigarette, and cocaine use. Some of the differences between the present study and Delva et al (2005) may be due to sample differences, such that the present study is inclusive of both 8th and 10th graders, and Delva et al (2005) was only inclusive of 8th graders. Another possibility for the differences that emerged could be due to the composition of the 'other' Latino/a group, because the survey item changed during the development of Delva et al (2005) and the present study.

Strengths and Limitations

A limitation of many studies that are inclusive of Latino/a adolescents is the monolithic comparison of this population and sample sizes. In this regard, the present study's use of MTF data provides an advantage because it allows for within Latino/a group comparisons while yielding nationally representative estimates. The present study also examined more than the commonly used substances of alcohol and marijuana, adding cigarette and cocaine use. The

present study is also able to provide an overview of substance use among Latinos, at a national level.

Despite the strengths of this study, there are limitations that should also be considered. First, the study is inclusive only those 8th and 10th graders who were enrolled and present in school on the day that the survey was administered administration. Because this is a school-based study, it does not capture students who were not present on the day of survey administration or students who may have dropped out from school. Additionally, all data are cross-sectional and therefore cannot be used to assess causality. The data are also limited to 8th and 10th graders and their self-reports; therefore, it is possible that there exists self-reporter bias. Furthermore, the 'other Latino/a' group consists of a variety of adolescents who identify as a race/ethnicity not listed and multiracial adolescents, therefore, results of that group should be interpreted cautiously. The variety of the 'other' Latino/a group may mask difference that exist among other non-listed Latino groups and multi-racial Latinos/as. Future research that presents a wider range of racial/ethnic options for participants or allows for a "written-in" race/ethnicity, would improve this limitation and provide more informative participant racial/ethnic breakdown. Lastly, the present study only considers sociodemographic characteristics and does not account for other psychosocial factors that may be related to Latino/a substance use behavior.

Implications and Future Directions

This study provides a large scale, national perspective, on the prevalence and variation in substance use among U.S-based Mexican, Cuban, Puerto Rican and other Latino/a adolescents during the years of 2006 to 2017. The results of the present study are informative of Latino/a alcohol, marijuana, cigarettes, and cocaine use behavior. However, this study also raises attention to research areas in need of additional empirical attention. The first research area is

acculturation and sociodemographic (i.e., generational status) factors, data that are inclusive of a wider range of these measures can further inform on Latino/a unique measures association with substance use. Another research area in need of research is the long-term effects of substance use behavior among groups of Latino/a adolescents. Longitudinal data would be best equipped to address this gap in the literature.

Table 4.1

Descriptive Statistics: 2006- 2017

Measure	Mexican n= 21,895 41.52%	Puerto Rican n= 5,707 10.82%	Cuban n= 1,615 3.06%	Other Latino/a n=23,518 44.60%
Grade				
8th	53.65%	58.30%	65.20%	58.01%
10th	46.44%	41.70%	34.80%	41.99%
Sex				
Female	46.47%	53.48%	48.66%	56.87%
Male	53.53%	46.52%	51.34%	43.22%
Substance				
Past 12-Month Alcohol	40.51%	41.65%	41.73%	38.27%
Binge Drinking	12.47%	11.57%	12.61%	10.86%
Past 12-Month Marijuana	23.66%	24.62%	22.17%	20.08%
Past 30-Day Cigarette	6.95%	8.17%	9.38%	4.30%
Past 12-Month Cocaine	3.20%	2.01%	3.37%	2.23%
Parent Education				
low	52.08%	29.64%	22.99%	40.49%
High	37.92%	70.36%	77.01%	59.51%
Language				
English	47.88%	73.81%	57.50%	49.95%
Spanish	51.35%	23.85%	37.63%	47.63%
Other Language	0.76%	2.34%	4.88%	2.41%
Lives w/ Both Parents	76.23%	62.06%	73.80%	73.90%

Table 4.2

Bivariate Logistic Regression Results

Measure	Model 1: Bivariate Past 12-Month Alcohol Use (n=51,147)						Model 2: Bivariate Binge Drinking (n=51,147)						Model 3: Past 12-Month Marijuana Use (n=51,147)					
	OR	St.d Error	t	p	95% Conf. Interval		OR	Std. Error	t	p	95% Conf. Interval		OR	Std. Error	t	p	95% Conf. Interval	
Grade- Ref: 8th																		
10th	2.062	0.077	19.28	<.001***	1.916	2.220	1.420	0.056	8.98	<.001***	1.316	1.534	2.144	0.088	18.54	<.001***	1.978	2.324
Sex- Ref: Male																		
Female	1.167	0.026	6.96	<.001***	1.117	1.219	1.056	0.028	2.08	0.037*	1.003	1.112	0.853	0.021	-6.34	<.001***	0.812	0.896
Latino/a Group																		
Mexican v. Puerto Rican	1.038	0.056	0.68	0.494	0.933	1.155	0.972	0.051	-0.53	0.595	0.877	1.078	1.113	0.062	1.91	0.056*	0.997	1.241
Mexican v. Cuban	1.023	0.085	0.28	0.78	0.870	1.203	0.952	0.082	-0.57	0.569	0.804	1.127	0.903	0.091	-1.01	0.311	0.741	1.100
Mexican v. Other Latino/a	0.896	0.024	-4.1	<.001***	0.850	0.944	0.885	0.026	-4.17	<.001***	0.836	0.937	0.808	0.025	-6.79	<.001***	0.759	0.859
Puerto Rican v. Cuban	0.927	0.068	-1.02	0.306	0.802	1.071	0.942	0.071	-0.79	0.431	0.812	1.093	1.130	0.098	1.41	0.158	0.954	1.339
Puerto Rican v Other Latino/a	0.838	0.039	-3.79	<.001***	0.764	0.918	0.887	0.041	-2.61	0.009**	0.810	0.970	0.722	0.034	-6.97	<.001***	0.658	0.791
Cuban v. Other Latino/a	0.800	0.051	-3.52	<.001***	0.707	0.906	0.857	0.057	-2.31	0.021*	0.752	0.977	0.820	0.059	-2.77	0.006**	0.713	0.944
Parent Education- Ref: Low																		
High	0.940	0.024	-2.46	0.014**	0.895	0.988	0.820	0.025	-6.63	<.001***	0.773	0.870	0.899	0.025	-3.77	<.001***	0.851	0.950
Language-Ref: English																		
Spanish	0.989	0.025	-0.43	0.667	0.940	1.040	1.121	0.031	4.11	<.001***	1.061	1.183	0.763	0.021	-9.86	<.001***	0.723	0.805
Other	1.192	0.094	2.22	0.027*	1.021	1.392	1.721	0.150	6.25	<.001***	1.452	2.041	1.175	0.104	1.84	0.067	0.989	1.397
Parents in Household	0.806	0.021	-8.46	<.001***	0.767	0.847	0.812	0.023	-7.25	<.001***	0.767	0.859	0.696	0.020	-12.68	<.001***	0.658	0.736
Region- Ref: Northeast																		
North Central	1.086	0.073	1.23	0.219	0.952	1.239	1.102	0.072	1.48	0.138	0.969	1.252	1.369	0.108	3.97	<.001***	1.172	1.599
South	0.971	0.064	-0.45	0.654	0.854	1.104	1.077	0.061	1.31	0.191	0.964	1.203	1.168	0.091	1.99	0.047*	1.002	1.362
West	0.991	0.061	-0.15	0.881	0.878	1.118	1.085	0.061	1.45	0.148	0.972	1.211	1.321	0.096	3.84	<.001***	1.146	1.523
Year	0.921	0.005	-13.78	<.001***	0.911	0.932	0.940	0.005	-11.92	<.001***	0.931	0.950	0.997	0.007	-0.37	0.71	0.983	1.012

Note: OR= Odds Ratio; Std. Error= Standard Error; * <.05; ** <.01, *** <.001

Table 4.2 continued

Bivariate Logistic Regression Results

Measure	Model 4: Bivariate Past 30-Day Cigarette Use (n=51,147)				95% Conf. Interval		Model 5: Bivariate Past 12-Month Cocaine Use (n=51,147)				95% Conf. Interval	
	OR	Std. Error	t	p			OR	Std. Error	t	p		
Grade- Ref: 8th												
10th	1.365	0.070	6.05	<.001***	1.234	1.510	1.160	0.071	2.42	0.015**	1.029	1.307
Sex- Ref: Male												
Female	0.843	0.030	-4.8	<.001***	0.786	0.904	0.787	0.038	-4.99	<.001***	0.716	0.865
Latino/a Group												
Mexican v. Puerto Rican	1.148	0.075	2.12	0.034*	1.011	1.305	0.994	0.081	-0.07	0.946	0.848	1.167
Mexican v. Cuban	1.381	0.138	3.23	<.001***	1.135	1.681	1.117	0.168	0.73	0.463	0.831	1.501
Mexican v. Other Latino/a	0.860	0.035	-3.75	<.001***	0.794	0.930	0.815	0.044	-3.8	<.001***	0.733	0.906
Puerto Rican v. Cuban	0.845	0.077	-1.84	0.066	0.706	1.011	0.883	0.118	-0.93	0.351	0.679	1.147
Puerto Rican v Other Latino/a	0.737	0.042	-5.42	<.001***	0.660	0.823	0.806	0.062	-2.79	0.005**	0.692	0.938
Cuban v. Other Latino/a	0.632	0.050	-5.75	<.001***	0.541	0.739	0.724	0.085	-2.76	0.006**	0.575	0.911
Parent Education- Ref: Low												
High	0.888	0.036	-2.92	0.004**	0.820	0.962	0.834	0.046	-3.3	<.001***	0.749	0.929
Language-Ref:												
Spanish	0.872	0.033	-3.65	<.001***	0.811	0.939	1.120	0.053	2.39	0.017**	1.021	1.230
Other	1.997	0.209	6.61	<.001***	1.627	2.452	3.153	0.394	9.18	<.001***	2.467	4.030
Parents in Household	0.686	0.026	-9.79	<.001***	0.636	0.739	0.760	0.040	-5.21	<.001***	0.686	0.843
Region- Ref: Northeast												
North Central	1.280	0.109	2.91	0.004**	1.084	1.512	1.315	0.140	2.58	0.01**	1.068	1.620
South	1.125	0.083	1.6	0.109	0.974	1.299	1.202	0.114	1.93	0.053*	0.997	1.449
West	0.906	0.066	-1.36	0.174	0.787	1.045	1.147	0.104	1.51	0.132	0.960	1.370
Year	0.927	0.006	-12.04	<.001***	0.916	0.938	0.958	0.008	-5.00	<.001	0.942	0.974

Note: OR= Odds Ratio; Std. Error= Standard Error ; * <.05; ** <.01, *** <.001

Table 4.3

Multivariable Logistic Regression Results

Measure	Model 1: Past 12-Month Alcohol Use (n=51,147)						Model 2: Binge Drinking (n=51,147)						Model 3: Past 12-Month Marijuana Use (n=51,147)					
	AOR	St.d Error	t	p	95% Conf. Interval		AOR	Std. Error	t	p	95% Conf. Interval		AOR	Std. Error	t	p	95% Conf. Interval	
Grade- Ref: 8th																		
10th	2.089	0.059	25.95	<.001***	1.976	2.209	1.427	0.049	10.39	<.001***	1.334	1.526	2.160	0.088	18.96	<.001***	1.994	2.339
Sex- Ref: Male																		
Female	1.179	0.027	7.21	<.001***	1.127	1.233	1.057	0.029	2.07	0.039*	1.003	1.115	0.862	0.021	-6.01	<.001***	0.822	0.905
Latino/a Group																		
Mexican v. Puerto Rican	1.025	0.048	0.52	0.601	0.935	1.122	1.028	0.055	0.53	0.597	0.927	1.141	1.223	0.643	3.83	<.001***	1.103	1.356
Mexican v. Cuban	1.103	0.076	1.42	0.156	0.963	1.263	1.018	0.088	0.21	0.837	0.859	1.207	1.030	0.089	0.34	0.735	0.869	1.220
Mexican v. Other Latino/a	0.907	0.023	-3.92	<.001***	0.864	0.952	0.910	0.026	-3.26	<.001***	0.860	0.963	0.876	0.026	-4.43	<.001***	0.826	0.929
Puerto Rican v. Cuban	1.042	0.077	0.56	0.575	0.902	1.205	0.967	0.086	-0.37	0.709	0.81156	1.15259	0.849	0.076	-1.83	0.068	0.712	1.012
Puerto Rican v Other Latino/a	0.855	0.036	-3.67	<.001***	0.787	0.930	0.863	0.041	-3.09	0.002**	0.78633	0.94763	0.721	0.032	-7.48	<.001***	0.662	0.786
Cuban v. Other Latino/a	0.773	0.044	-4.55	<.001***	0.692	0.864	0.838	0.057	-2.61	0.009**	0.734	0.957	0.821	0.053	-3.09	0.002**	0.724	0.931
Parent Education																		
High	0.910	0.024	-3.67	<.001***	0.865	0.957	0.818	0.026	-6.39	<.001***	0.769	0.870	0.827	0.024	-6.58	<.001***	0.782	0.875
Language- Ref: English																		
Spanish	0.991	0.024	-0.37	0.715	0.945	1.039	1.085	0.031	2.87	0.004**	1.026	1.147	0.764	0.022	-9.31	<.001***	0.722	0.809
Other Langua	1.182	0.096	2.06	0.039*	1.008	1.386	1.737	0.154	6.23	<.001***	1.460	2.067	1.175	0.106	1.79	0.073	0.985	1.402
Parents in Housel	0.799	0.020	-8.9	<.001***	0.760	0.839	0.799	0.024	-7.56	<.001***	0.754	0.847	0.693	0.020	-12.56	<.001***	0.654	0.734
Region- Ref: Northeast																		
North Central	1.073	0.055	1.36	0.173	0.970	1.187	1.116	0.070	1.75	0.08	0.987	1.262	1.375	0.102	4.31	<.001***	1.189	1.590
South	1.052	0.042	1.26	0.209	0.972	1.138	1.140	0.059	2.53	0.011*	1.030	1.262	1.312	0.086	4.13	<.001***	1.153	1.492
West	1.000	0.042	0.01	0.994	0.921	1.087	1.103	0.060	1.81	0.071	0.992	1.226	1.413	0.094	5.2	<.001***	1.240	1.609
Year	0.921	0.004	20.82	<.001***	0.914	0.928	0.939	0.004	-13.44	<.001***	0.931	0.948	0.998	0.005	-0.44	0.659	0.987	1.008

Note: AOR= Adjusted Odds Ratio; Std. Error= Standard Error; * <.05; ** <.01, *** <.001

Table 4.3 Continued

Multivariable Logistic Regression Results

Measure	Model 4: Past 30-Day Cigarette Use (n=51,147)						Model 5: Past 12-Month Cocaine Use (n=51,147)					
	AOR	Std. Error	t	p	95% Conf. Interval		AOR	Std. Error	t	p	95% Conf. Interval	
Grade- Ref: 8th												
10th	1.357	0.062	6.71	<.001***	1.241	1.484	1.140	0.068	2.19	0.029*	1.014	1.281
Sex- Ref: Male												
Female	0.846	0.030	-4.63	<.001***	0.789	0.908	0.793	0.039	-4.78	<.001***	0.720	0.872
Latino/a Group												
Mexican v. Puerto Rican	1.068	0.075	0.94	0.347	0.931	1.227	1.049	0.097	0.52	0.604	0.875	1.257
Mexican v. Cuban	1.274	0.130	2.38	0.017**	1.044	1.556	1.129	0.176	0.77	0.439	0.831	1.534
Mexican v. Other Latino/a	0.871	0.037	-3.23	<.001***	0.800	0.947	0.835	0.047	-3.23	<.001***	0.749	0.932
Puerto Rican v. Cuban	1.181	0.125	1.57	0.116	0.959	1.453	1.074	0.178	0.43	0.668	0.776	1.485
Puerto Rican v Other Latino/a	0.806	0.049	-3.57	<.001***	0.716	0.907	0.794	0.068	-2.69	0.007**	0.671	0.939
Cuban v. Other Latino/a	0.704	0.058	-4.23	<.001***	0.599	0.829	0.753	0.094	-2.28	0.023*	0.590	0.961
Parent Education- Ref												
High	0.830	0.036	-4.3	<.001***	0.762	0.904	0.822	0.050	-3.22	<.001***	0.729	0.927
Language- Ref: English												
Spanish	0.873	0.035	-3.43	<.001***	0.808	0.943	1.091	0.057	1.67	0.095	0.985	1.208
Other Language	1.900	0.209	5.85	<.001***	1.532	2.357	3.162	0.415	8.78	<.001***	2.445	4.089
Parents in Household	0.691	0.028	-9.23	<.001***	0.639	0.747	0.758	0.042	-4.99	<.001***	0.680	0.845
Region- Ref: Northeast												
North Central	1.319	0.119	3.08	0.002**	1.106	1.573	1.370	0.164	2.63	0.009**	1.083	1.733
South	1.256	0.094	3.05	0.002**	1.085	1.455	1.311	0.135	2.63	0.009**	1.071	1.606
West	0.989	0.077	-0.14	0.886	0.849	1.151	1.221	0.128	1.9	0.057*	0.994	1.499
Year	0.924	0.005	13.36	<.001***	0.914	0.935	0.954	0.008	-5.61	<.001***	0.938	0.970

Note: AOR= Adjusted Odds Ratio; Std. Error= Standard Error; * <.05; ** <.01, *** <.001

Figure 4.1

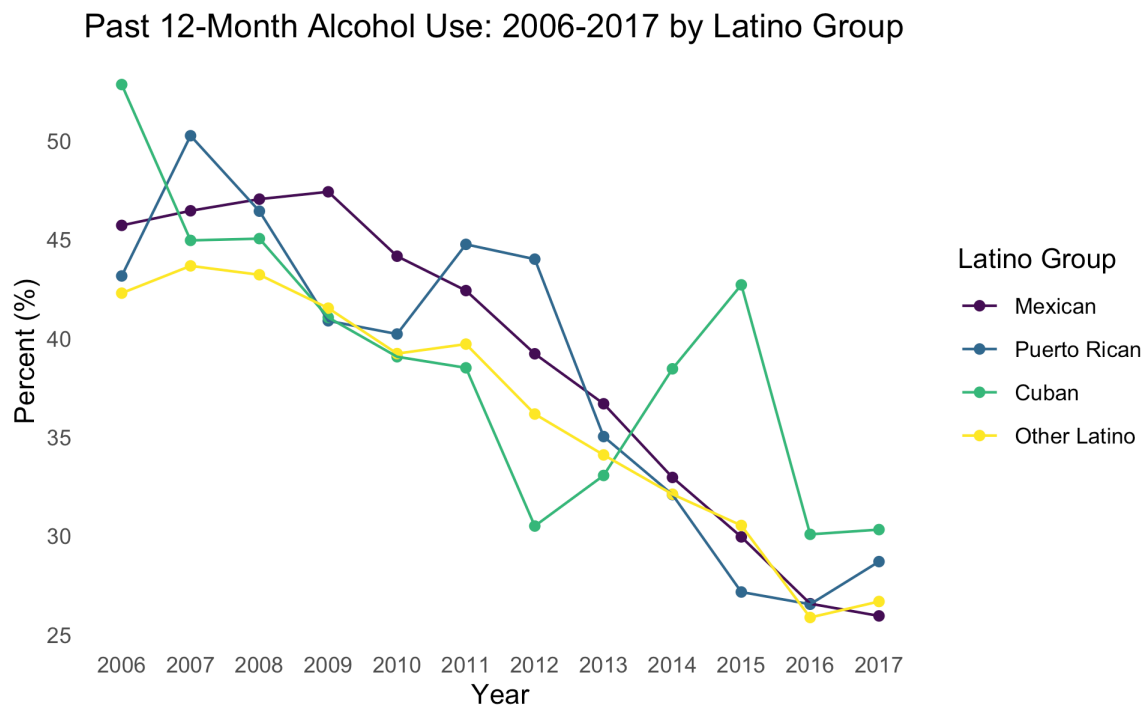*Past 12-Month Alcohol Use by Latino Group: 2006-2017*

Past 12-Month Alcohol Use: 2006-2017 by Latino Group

Figure 4.2

Binge Drinking by Latino Group: 2006-2017

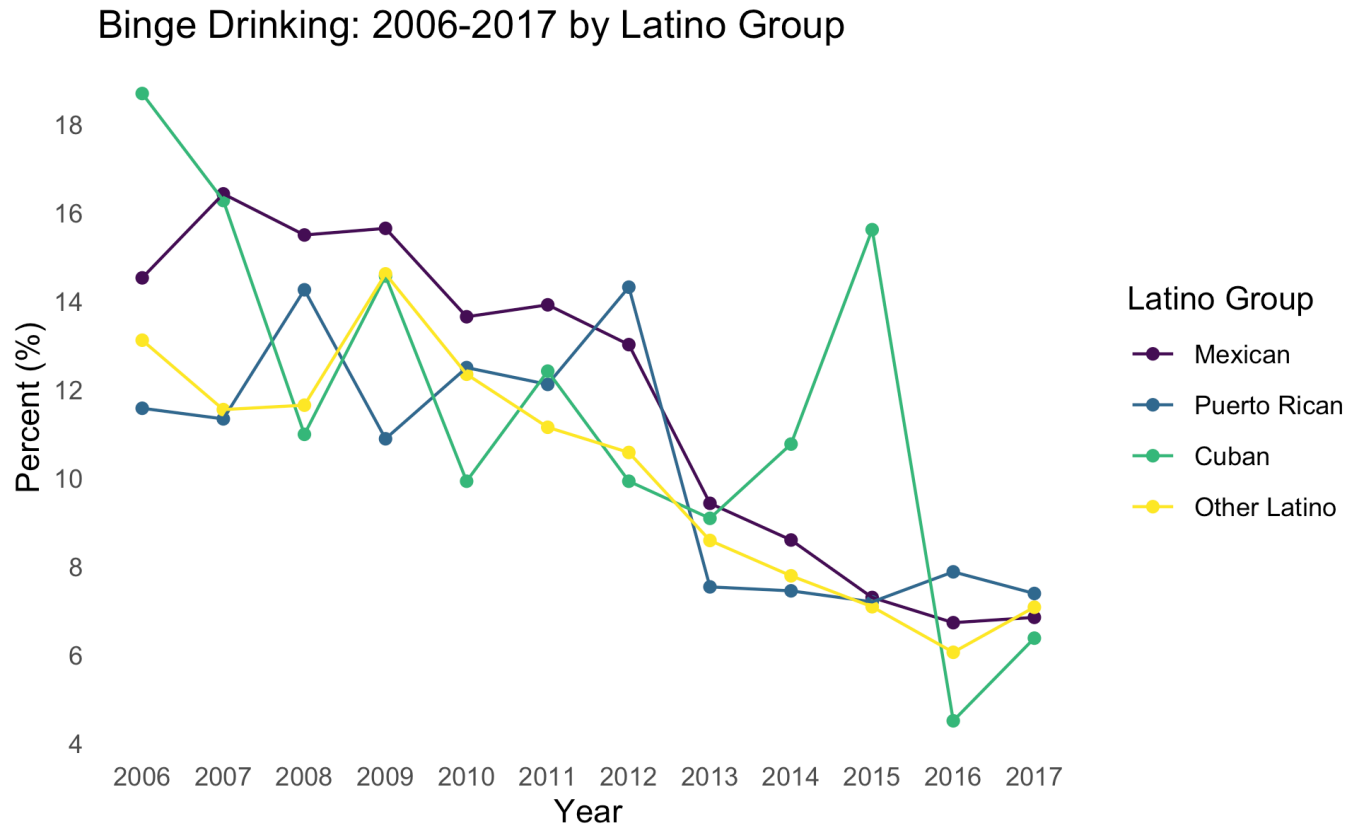Figure 4.3
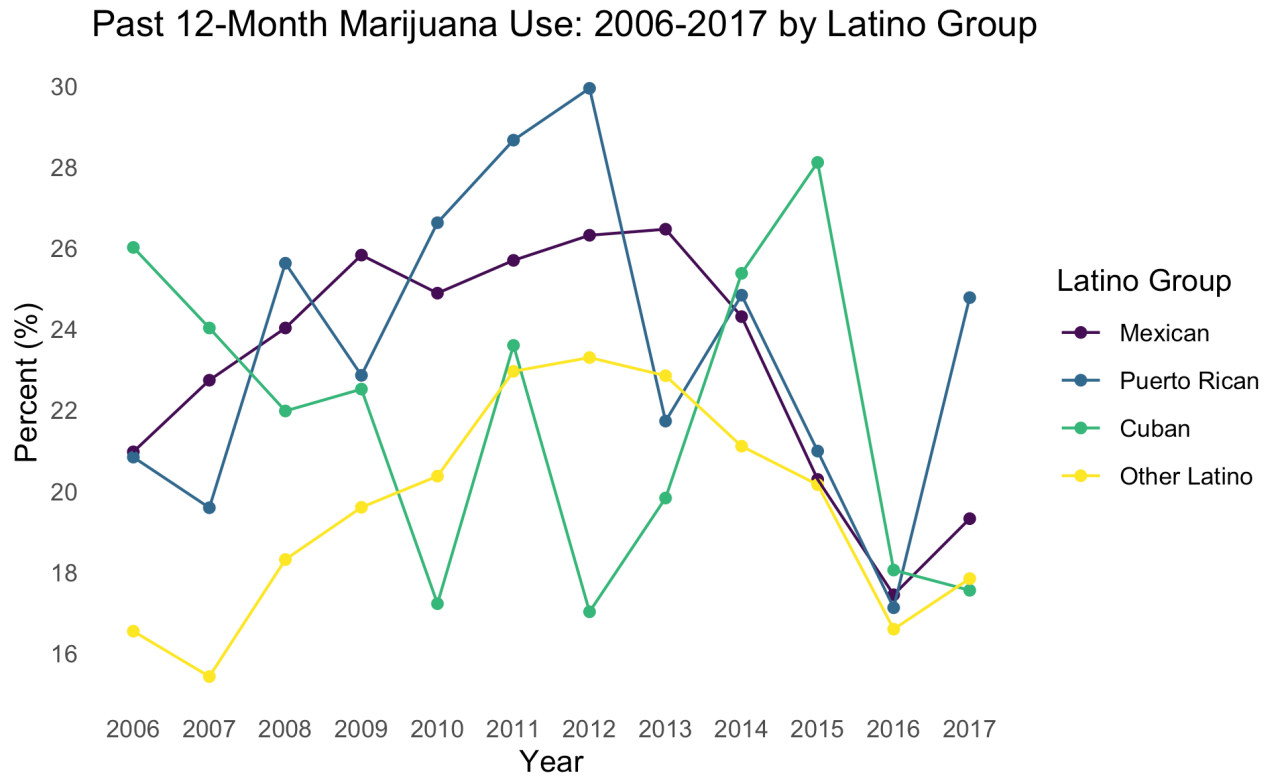
Past 12-Month Marijuana Use by Latino Group: 2006-2017

Past 12-Month Marijuana Use: 2006-2017 by Latino Group

Figure 4.4
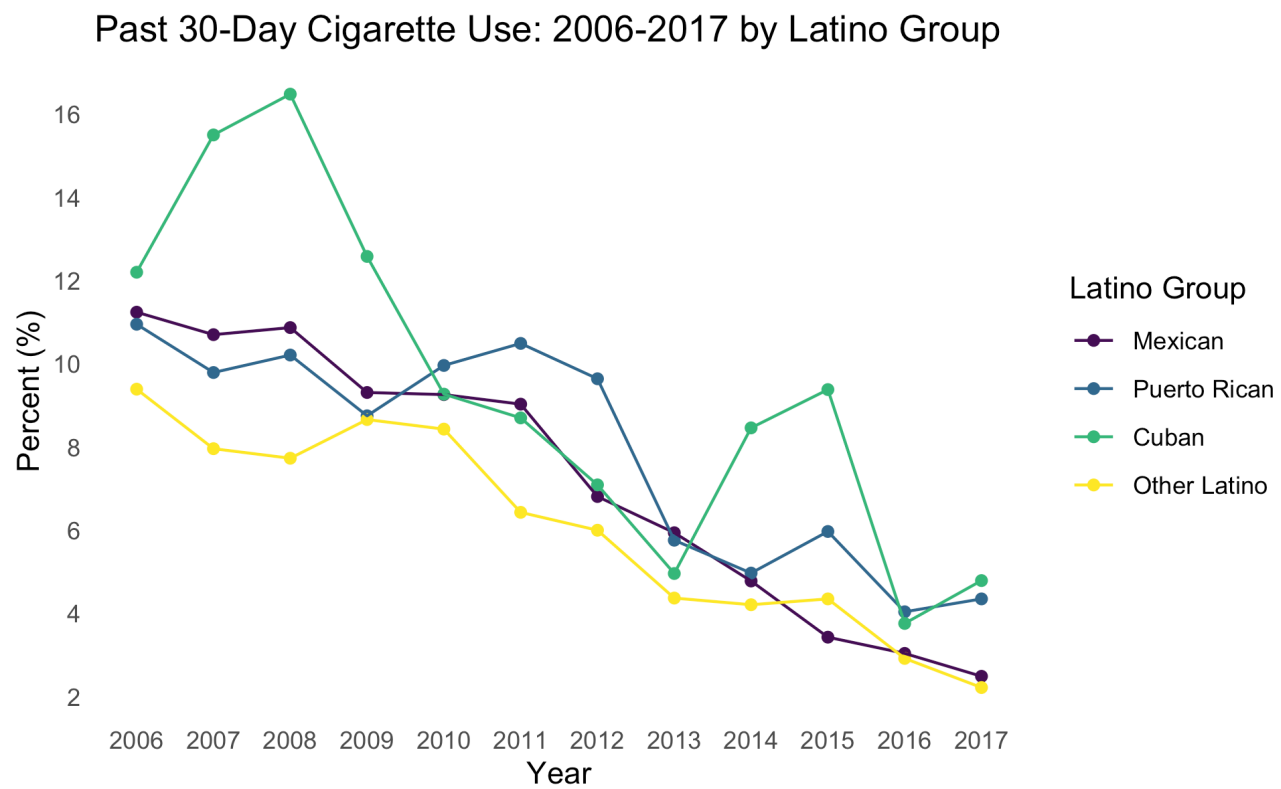
Past 30-Day Cigarette Use by Latino Group: 2006-2017

Past 30-Day Cigarette Use: 2006-2017 by Latino Group

Figure 4.5

Past 12-Month Cocaine Use by Latino Group: 2006-2017
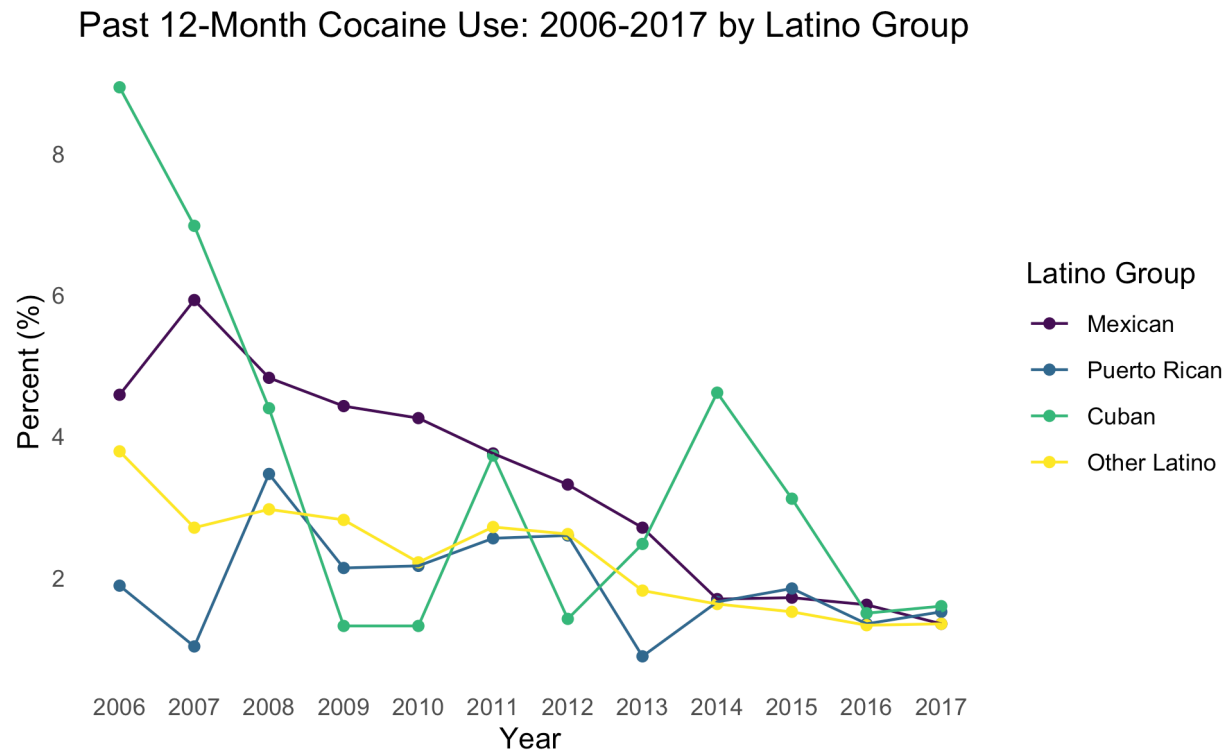
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Chapter 5

Conclusion

I have presented three studies. In each study, I focused on the contextual aspects of externalizing behavior and substance use among diverse or Latino youth. I applied a developmental lens to study one and study two and a historical lens to study three. Across the three studies, there were overlapping aims. First, to expand on empirical research by focusing on diverse groups. In study one, I focused on low-income youth in the U.S using. In study two, the focus was on low-income Latino youth in the U.S., and variation within Latino groups (i.e., Mexican and Puerto Rican). In study three, the focus was also on Latino youth (I.e., Mexican, Puerto Rican, Cuban, and multiracial Latinos) using U.S. nationally representative samples. Second, to provide a more contextual understanding of youth externalizing behaviors and substance use by examining a wider range of contextual measures that can influence youth development.

In study one, I was inclusive of contextual factors, such as parent employment, that can impact youth development. While parent employment can have a direct impact on children, such as their living situation, access to schools, and the availability of the parent, little research has examined the role of parent employment and youth behavioral outcomes. The majority of this literature has examined various forms of parenting, and more recently, the role that neighborhoods play in youth development. I further contextualized the experience of diverse and low-income youth in study two.

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In the second study, I account for some of the unique experiences of Latino youth by incorporating measures of acculturation. This study examined Latino youth externalizing behavior, in the context of parenting, neighborhoods, parent employment, as well as acculturation. Study two further examined Latino variation of externalizing behavior and parenting, neighborhoods, and acculturation, which remains a gap in the literature.

Lastly, in study three, I build on existing substance use literature in two ways. First, by examining Latino group variation in alcohol, marijuana, cigarettes, and cocaine use. Second, by using nationally representative samples of U.S. Latino youth. Limited research is available that examines Latino substance use variation while providing a national perspective. The majority of substance use research that is inclusive of Latinos, has largely examined Latinos as one group. However, the results from study two provide support for the examination of Latino youth substance use variation as well as the study of Latino-unique measures.

Primary Findings

In study one, the primary findings suggest that parenting, parent work related stress, and neighborhoods all relate to both short-term and long-term youths externalizing behavior. Study one showed that the long-term effects of parenting, parent work related stress and neighborhoods varied by race and that prior levels of externalizing behavior are prominent over time. Developmentally, study one showed that proximal measures may be most related to youth externalizing behavior than distal measures. Study one demonstrates direct relationships between childhood experiences of parenting, neighborhoods, and parent work related stress. However, this study does not explore mediated or indirect effects of these measures. The lack of significant associations between early childhood experiences and externalizing behavior during adolescence may be a result of mediated or indirect effects that are not examined in the present study. This

finding, lack of significant distal relationships, should be further examined in future studies through indirect effects.

In study two, examining Latino/a youth externalizing behavior showed that parenting and neighborhoods are important to Latino youth externalizing behavior. This study also showed that Latino specific measures were important for youth externalizing behavior. Furthermore, the Latino/a measures did not vary across Latino groups (i.e., Mexican, Puerto Rican, and 'other' Latinos). This is important for research on diversity and has significant implications for intervention efforts. For example, intervention efforts targeting youth externalizing behavior should consider the unique cultural aspects of Latino youth when working with this population. Study two also showed that parent use of spanking as a form of discipline was a risk factor of Latino/a youth externalizing behavior, while neighborhoods collective efficacy, cultural connectedness, generational status, and higher levels of parent education are all protective factors of externalizing behavior. Developmentally, the negative effects of spanking and positive effects of maternal warmth and neighborhood collective efficacy significantly decrease over time. The change in effects of these measures over time is an area for future research. One approach to examine the effects of these measures over time is by assessing indirect effects. It is possible that the effects of parenting, neighborhoods, parent employment, and unique- Latino contextual measures have long term effects on youth externalizing behavior, through indirect relationships. Examining indirect relationships would also further build on existing literature by providing insight on the intricacies of parenting, neighborhoods, parent employment, and cultural factors and how they relate to youth externalizing behaviors.

In study three, I examined substance use among Latino groups of Mexican, Puerto Rican, Cuban and "other" Latino adolescents. There were four major findings from this study. First,

variation exists in substance use by Latino group. Puerto Rican youth have higher odds of marijuana use than Mexican adolescents and Cuban youth have higher odds of cigarette use than Mexican youth. Consistently, adolescents who identify as 'other' Latino group had significantly lower odds of alcohol, marijuana, cigarette, and cocaine use. Second, alcohol, cigarettes, and cocaine use have significantly decreased over time and have decreased among each Latino group. Third, Latinas have significantly lower odds of marijuana, cigarette, and cocaine use, but higher odds of alcohol use (past 12-month and binge drinking). Fourth, living with both parents (or both guardians) was associated with lower odds of each substance. Other findings included grade variation. 10th grade Latino youth consistently report higher odds of use for each substance than Latina youth. In this study, Spanish as a first language spoken at home was a protective factor for marijuana and cigarette use, while it was a risk factor for binge drinking.

The findings from study three indicate that some variation exist among Latino groups and their substance use. The variation that was found among groups was prominent even after accounting for sex, grade level, regional location, parent education, household composition, and acculturation. The variation in substance use was, however, minor. Nonetheless, this study further confirms the heterogeneity that can exist among Latino populations, that can be masked when they are studied as one large monolithic group. The implications of these study are important for intervention efforts. Study three suggests that some variation, while minor, does exist among Latino groups. This study suggests that substance use does vary, to some degree, by Latino group. Increased efforts can be made to further target (i.e., 8th grade) substance use among younger adolescents, given that there are increases in substance use by 10th grade. When working with Latino/a adolescents, exploring unique contextual and cultural aspects (i.e., acculturation)

may prove beneficial, considering, for example, that Spanish language sometimes serves as a protective factor.

Overlap in Studies

Across study one and study two, there are two major findings. First, risk and protective factors function similarly across samples of low-income youth from the Fragile Families and Child Wellbeing study. I find, in both studies, that regardless of context and Latino/a group, spanking as a form of discipline is problematic for youth externalizing behavior. I also find that neighborhood collective efficacy is a protective factor. Among diverse low income FFCWS samples and Latino-only samples, parent employment is related to youth externalizing behaviors. The second major finding pertains to developmental timing. In both papers, proximal measures were influential to proximal behavior and lost significant associations over time.

In study two and study three, results suggest that Latino-specific (e.g., acculturation, language spoken at home) measures are important for Latino youths externalizing behaviors and substance use. The Latino unique measures are important across Latino groups. However, study two found little to no variation in Latino groups (Mexican and Puerto Rican) while study three found some variation in substance use. The differences in variation found in study two and study three further highlight the need for empirical research that examine Latino variation to generate more consistent results and understanding of this population.

Decades of empirical research has been carried out on the predictors of youth externalizing behavior and youth substance use. These behaviors can have serious implications for youth, and thus a more nuanced understanding of their predictors can be informative to future research efforts, and for the development of more effective policies, programs, and interventions. The three presented studies provide a comprehensive examination of related questions

concerning diverse youth externalizing behavior and substance use. Continued efforts must be

made to increase diversity and inclusivity in research, and in turn, better inform policies,

programs, and interventions.