DISSERTATION

TRAJECTORIES OF ACCULTURATION, ENCULTURATION, AND DEPRESSIVE SYMPTOMS: FINDINGS FROM A LONGITUDINAL STUDY OF LATINX ADOLESCENTS IN LOS ANGELES

Submitted by

Carla M. Ramirez

Department of Human Development and Family Studies

In partial fulfillment of the requirements

For the Degree of Doctor of Philosophy

Colorado State University

Fort Collins, Colorado

Spring 2024

Doctoral Committee:

Advisor: Nathaniel Riggs

Stephen Aichele
David Most
Julie Rieker

ABSTRACT

TRAJECTORIES OF ACCULTURATION, ENCULTURATION, AND DEPRESSIVE SYMPTOMS: FINDINGS FROM A LONGITUDINAL STUDY OF LATINX ADOLESCENTS IN LOS ANGELES

Acculturation is conceptualized as a dynamic process of change over time within individuals, yet the bulk of the research on acculturation is conducted using cross-sectional, as opposed to longitudinal approaches. Although there is an emerging body of longitudinal work in this area, there are several factors that contribute to within and between-person variation in acculturation that have yet to be explored. Furthermore, research examining the extent to which change over time in acculturation is related to the rate of change in depressive symptoms is scant.

This dissertation utilized a longitudinal data set examining acculturation and substance use among a sample of Latinx youth in Los Angeles, California. Survey data assessing cultural processes, stressors, and depressive symptoms was collected in-person and electronically between 2005 and 2018. Study 1 used growth curve modeling to examine the extent to which there was developmental change in acculturation during the period of adolescence and into early adulthood. The results revealed that there was significant change over time in acculturation and that to some extent change over time varied by the generational group. Study 2 examined how change over time in cultural processes (e.g., acculturation, enculturation, and ethnic identity) was related to changes in depressive symptoms and the extent to which these cultural processes

moderated the relationship between stressors and depressive symptoms. The results of study 2 elucidated the moderating effects of the rate of change in acculturation on the association between the rate of change in perceived discrimination and the rate of change in depressive symptoms.

This study provides new insights for acculturation research regarding change over time in this construct and the importance of considering context when examining the effect of acculturation on depressive symptoms. Furthermore, the combined results of these studies have important implications for the interpretation of previous studies using proxy measures of acculturation that are discussed further in text. Recommendations for improving the mental health and well-being of Latinx youth are also discussed.

ACKNOWLEDGEMENTS

I would first like to express my gratitude to everyone who supported me on this journey. To all the teachers who helped spark my interest in research, to those faculty members who extended their support when I was feeling lost, and to everyone who imparted some wisdom to me along the way, thank you for your guidance and support. I would also like to extend a special thank you to the following people: to my advisor Dr. Nathaniel Riggs, for taking me on as a student during the time when I needed the most support and for helping me to finally see this program through to the end, to Dr. Stephen Aichele, for your technical support in conducting my statistical analyses, and to Dr. David Most, for always listening to my concerns, being my sounding board, and helping me to think critically about methodological approaches and interpretations of statistical analyses. Without your collective efforts accomplishing this feat while working full-time would have truly been impossible.

I would also like to extend a heartfelt thank you to Dr. Jennifer Unger and the team at the University of Southern California's Tobacco Control of Regulatory Science Center, without whom I would not have access to the incredibly rich longitudinal data that I analyzed for my dissertation.

A special and warm thank you is also needed for my family and all the close friends who encouraged me along the way and never stopped believing in me, even when I had lost faith in myself. Thank you all for shining a light on my path during my darkest moments and for reminding me that my value as a person was not tied to what I could or could not accomplish in this program. Your love and support kept me grounded during the most challenging times.

And finally, I cannot begin to express my gratitude to my husband, for always reminding me to have fun and enjoy life. The mountains we climbed and the dance floors we visited lifted my spirit and filled me with the energy that I needed to continue moving forward on this long arduous journey. Thank you, Jorge, for your unwavering support throughout the last eight years, but especially for your support over the last few months in caring for our precious baby boy so I could focus on writing and finishing my degree.

DEDICATION

To Alvaro and Guillermina Arredondo,

For your bravery in starting your life over in a new country so your children could have access to opportunities that were outside of your reach. I am forever grateful for the sacrifices that you made to help me get to where I am today.

Con amor, your Soru

TABLE OF CONTENTS

LIST OF KEYWORDS

Keywords: acculturation, enculturation, perceived discrimination, perceived stress, depressive symptoms, ethnic identity, growth curve modeling

INTRODUCTION

Projections of racial demographics in the United States (U.S.) indicate that by the year 2060 half of the U.S. population will identify as a racial minority, with 27.5% specifically identifying as Latinx/Hispanic (U.S. Census Bureau, 2020). This demographic shift in the racial/ethnic composition of the country is noteworthy given that racial minorities, such as Latinxs, have unique experiences in the U.S. that can negatively impact their overall health and well-being. Indeed, prior research suggests that depression and factors associated with depression are more common among Latinx/Hispanics (Dunlop, 2003). Given that mental health conditions such as depression are among the leading cause of disability and premature mortality in the U.S. (Merlo & Vela, 2021), it is becoming increasingly important to understand the factors related to depression among Latinx/Hispanics to promote the health and well-being of this growing segment of the population.

To understand the increased risk of depression among Latinxs, prior research has frequently examined the association between acculturation and depression. Acculturation can be defined as the process of how individuals change over time due to long-term and sustained contact with a new culture (Ward & Geeraert, 2016). Despite years of research examining acculturation and depression among Latinxs, the relationship between these two constructs remains unclear. Some studies have identified acculturation as a protective factor (e.g., Yoon et al., 2013) while others have deemed it a risk factor (e.g., Torres, 2010; Alegria et al., 2008) for different developmental outcomes. The complex nature of acculturation processes and the methodological limitations of prior research may in part contribute to these equivocal findings.

To further understand the association between acculturation and depression, it is important to consider that acculturation is a developmental construct, which until recently, has been examined cross sectionally in most research studies with Latinx populations (Knight et al., 2009). Prior work has provided useful information on the cross-sectional relationship between acculturation and various important outcomes. Nevertheless, longitudinal associations between acculturation and any given outcome may differ from cross-sectional relationships (Smokowski, et al., 2010). Consequently, there is a need for more longitudinal research that examines previously established associations between acculturation and outcomes like depressive symptoms to elucidate the effect of acculturation processes on mental health and well-being. This dissertation consists of two studies. Study 1 will begin by examining the extent to which there is developmental change in acculturation during adolescence and early adulthood. Growth curve modeling will be used to examine longitudinal changes in acculturation and to determine the extent to which changes in acculturation trajectories vary by generational status (i.e., whether the individual and their parents were born in the U.S. or another country). I hypothesize that there will be growth, or a positive rate of change, in acculturation over time. Additionally, I hypothesize that initial status and rate of change in acculturation will vary by an individual's generational status. Study 2 will examine growth trajectories of depressive symptoms from a risk and resilience framework to understand how acculturation functions to increase risk and/or provide protection against the harmful effects of stressors on depressive symptoms in Latinx youth. I hypothesize that stressors will have a positive association with depressive symptoms. Furthermore, I hypothesize that cultural factors will moderate the association between stressors and depressive symptoms. More specifically, acculturation will exacerbate the relationship between perceived discrimination and depressive symptoms but buffer the effect of perceived

stress on depressive symptoms, while enculturation and ethnic identity will buffer the effects of both stressors on depressive symptoms.

STUDY 1 LITERATURE REVIEW

Theoretical Frameworks of Acculturation

Acculturation is fundamentally a construct that describes the process of cultural change, both at the individual and at the societal level (Kim & Alamilla, 2017). One of the most prominent theories of acculturation is the bidimensional model, which defines acculturation as the process by which migrants to a new culture develop a relationship with the culture of the host country and maintain the culture from the heritage country (Berry & Sam, 1997). This theoretical model asserts that acculturation is a dual process of cultural and psychological change that occurs when two or more cultural groups come into contact (Berry, 2005). While cultural change refers to acculturation that happens at the group level, such as through macro-level changes that occur at the societal level, psychological change refers to acculturation that occurs at the individual level. Given that the goal of this study is to understand how acculturation processes are related to depressive symptoms in Latinx youth, this study will focus on examining acculturation processes at the individual level.

The bidimensional model posits that each acculturating individual has a personal preference for the extent to which they want to establish contact with the dominant (i.e., host) cultural group and maintain their cultural heritage. These dimensions are referred to as contact or participation and cultural maintenance, respectively. The conceptualization of these dimensions demonstrates the historical roots of acculturation in the context of research with immigrant populations because it assumes that contact with the host culture must be established, and that the individual has a well-established heritage culture that they wish to maintain.

More recently, the scope of acculturation research has expanded to include the experiences of racial minorities who are children of immigrants living in the host country. This expansion in the scope of work is noteworthy given that there are subtle differences in the aforementioned dimensions for acculturating racial minorities who are born in the host country. For example, children of immigrants, or those acculturating individuals who are born into the host culture, do not need to establish contact because they are exposed to the host culture in their everyday life, albeit at different capacities. Furthermore, children of immigrants may be exposed to the host culture more frequently in their everyday lives than their heritage culture. Consequently, there are few opportunities for children of immigrants to be fully socialized into the heritage culture. Thus, for these individuals the dimension of cultural maintenance may be better understood as a process of socialization to and maintenance of the norms of the heritage culture, or what has been defined as enculturation by some scholars (Gonzales et al., 2002; Lorenzo-Blanco et al., 2011; Kim & Alamilla, 2017). Despite these subtle nuances, because acculturation, as defined by the bidimensional model, refers to changes in a person's orientation towards the host culture and the heritage culture (Berry & Sam, 1997), the term acculturation is broad enough to subsume enculturation as a subprocess of change specifically in a person's orientation to the heritage culture (Schwartz et al., 2010). To distinguish between the two subprocesses of acculturation, the term acculturation will be used when referring specifically to cultural change relating to the host culture and enculturation will be used when referring specifically to cultural change relating to the heritage culture.

Over the years, not only has acculturation research expanded, but the way that acculturation is conceptualized has also evolved. Previously, theoretical models of acculturation assumed that cultural change happened in one direction with acculturating individuals discarding

the heritage culture in exchange for the host culture. Yet, contemporary models of acculturation encompass bidirectional change in both the heritage and the host culture across various domains. For example, Schwartz et al. (2010) proposed an expanded multidimensional model of acculturation that builds on the bidimensional model. The theoretical framework proposed by Schwartz and colleagues (2010) integrates research that examines the constructs of cultural practices, cultural values, and cultural identifications under the umbrella of acculturation research. In this theoretical framework cultural practices, values, and identifications are also considered different domains that undergo acculturative change for both the heritage culture and the host culture.

Accordingly, acculturation is viewed as a multidimensional higher order process (i.e., change in orientation to host or heritage culture) that encompasses relatively independent subprocesses of change in different domains (i.e., specific changes that occur in cultural practices, values, or identifications for either the heritage culture or the host culture). To clarify, an acculturating individual could experience change in the domain of cultural practices for the heritage culture but not experience any change in the cultural practices for the host culture. Furthermore, experiencing change in the domain of cultural practices for the heritage culture does not determine the extent to which the same individual could experience change in the other domains of the heritage culture (i.e., cultural values, cultural identifications). It is also important to note that different acculturation processes may unfold over different time scales. For example, given that cultural practices comprise of behaviors that are both malleable and easily adaptable, cultural practices are prone to change more readily than something like one's cultural values which represent the core principles that determine desirable goals for members of the community (Smith & Schwartz, 1997).

Need for Longitudinal Assessment of Acculturation

To date, much of the prior literature examining acculturation has been cross-sectional. These cross-sectional studies have increased our understanding of acculturation and its relationship to various outcomes of interest. Nevertheless, cross-sectional work is limited in that it can only assess how acculturation outcomes may differ between people, but it cannot provide information about the extent to which acculturation may change over time. Thus, to fully understand acculturation, it is necessary to move beyond cross-sectional studies that can only provide static snapshots of the acculturation process at one point in time. Indeed, theoretically, acculturation is a dynamic process of change over time within individuals (Fuligni, 2001; Berry & Sabatier 2011). Furthermore, the bidimensional theoretical model of acculturation suggest that people's orientation towards both the host culture (i.e., acculturation) and the heritage culture (i.e., enculturation) may change over time (Berry & Sam, 1997). These processes of change in acculturation and enculturation can occur simultaneously, and at different rates. For example, an individual's acculturation and enculturation may increase or decrease over time, or they may increase or decrease their orientation to one culture and remain stagnant in the other. Given the nature of these dynamic changes in acculturation, longitudinal studies are better equipped to examine acculturation processes and its associated outcomes.

Fortunately, in recent years there has been emerging longitudinal work examining acculturation. For example, longitudinal studies have examined acculturation as a predictor of various outcomes such as aggression (Smokowski et al., 2009), alcohol use (Lorenzo-Blanco et al., 2016), family stress (Whitehead et al., 2020) and many other outcomes. Although these studies contribute important information to the body of work on acculturation and adaptation, they do not necessarily further our understanding of acculturation as a dynamic process. Few

studies (e.g., Cobb et al., 2021; Miller et al., 2009; Murray et al., 2014) have directly examined change over time in acculturation to assess the extent to which change is present and to describe the nature of that change. Additionally, several longitudinal studies conducted to date are short-term studies that only span a few years (Sirin et al., 2013; Whitehead et al., 2020; Meca et al., 2018). As such, these studies are limited in their ability to ascertain the extent to which acculturation changes across important developmental periods of the lifespan.

These gaps in the literature are noteworthy because there are developmental periods in the lifespan, such as adolescence and emerging adulthood, where acculturation processes are more likely to change (Knight et al., 2009; Baldwin-White et al., 2017). Adolescence and emerging adulthood are periods of the lifespan where it is particularly important to examine the dynamic aspects of acculturation because there are developmental processes at play that could shape trajectories of change in acculturation. For example, a central developmental task during adolescence is identity formation and exploration (Erikson, 1968). Thus, for Latinx youth, identity development may be closely tied to acculturation processes because during this period of exploration, youths contemplate which aspects of the heritage and host culture they want to incorporate into their identity (Schwartz et al., 2013; Portes & Rumbaut, 2006; Weinreich, 2009).

Inter-individual and Between-group Differences in Acculturation

Acculturation Strategies

To understand the increased risk of depression among Latinxs, prior research has frequently examined the association between acculturation processes and depressive symptoms. Acculturation is often viewed as a risk factor for poor developmental outcomes because there is a myriad of stressors that accompany acculturation (Crockett et al., 2007; Torres, 2010). For example, acculturating individuals need to make sense of their new cultural worlds, which can

include anything from learning a new language, to learning new cultural customs and cultural values, or even learning how to successfully navigate multiple cultural realms. In addition, individuals may experience interpersonal stressors with people from either the host culture or the heritage culture who disagree with one's personal choices for adopting or maintaining aspects of the host culture and the heritage culture (Schwartz & Zamboanga, 2008). Taken together, and in the context of higher stress levels being associated with increased depressive symptomatology, these findings suggest that acculturation processes may indeed increase Latinx's risk for depressive symptoms compared to non-Hispanic Whites.

Although acculturation has been linked to an increase in risk for depressive symptoms among Latinxs, acculturation is a complex developmental process that may vary between individuals. For example, Berry (2005) identified four acculturation strategies that are based on the dimensions of contact or participation and cultural maintenance. The acculturation strategies defined by Berry are as follows: assimilation, separation, integration, and marginalization. The assimilation strategy occurs when individuals reject the heritage culture and only maintain contact with and participate in the host culture. Separation occurs when individuals wish to maintain the heritage culture and identity but reject contact with the host culture. On the other hand, integration occurs when individuals have in interest in both maintaining their heritage culture and they are engaged in larger society or adopt the host country's cultural practices. Finally, the marginalization strategy occurs when individuals reject both the heritage culture and the host culture.

Acculturating individuals may have vastly different experiences and outcomes depending on the acculturation strategy that they utilize. In general, the integration strategy is considered the most adaptive strategy with the greatest benefits to well-being, whereas marginalization is

considered the least favorable, and the assimilation and separation strategies falling in between (Berry & Sabbatier, 2010; Phinney et al., 2001). Indeed, prior research demonstrates that individuals who employ the integration strategy generally experience less stress and better adaptation, such as reduced depressive symptoms, than individuals who employ the marginalization strategy (Sam & Berry, 2010; Berry, 2005; Bulut & Gayman 2020). Thus, individuals employing different acculturation strategies may experience variations in depressive symptoms outcomes. More importantly, however, these findings also demonstrate how differing orientations to each culture can be associated with different outcomes. For example, the integration strategy represents adoption of the host culture and maintenance of heritage culture, or an increase in acculturation and either stability or increases in enculturation over time.

Generational Status

Acculturation strategies are one way to understand the vast differences between individuals in the acculturation process and its outcomes. Nevertheless, restricting the examination of between person differences in acculturation to differences in acculturation strategies is not ideal because the assumption that an individual can select a particular type of acculturation strategy implies that they have agency in how the acculturation process unfolds, which is not always the case (Schwartz et al., 2010). For example, the generational group that one is born into indirectly shapes the acculturation process. Individuals who belong to the first generation, or the group of people who are born in the heritage country and migrate to the host country, face many unique challenges such as learning a new language, adapting to a new culture, and starting over in a new country with few familial resources. On the other hand, people who belong to the second generation and beyond, or those born in the host country, struggle less with issues pertaining to learning a new language and a new culture because they can learn the

language and customs of the host culture as they grow up. For those born to the second generational group and beyond, the main challenges of the acculturation process revolve around learning how to balance their two cultures (Portes & Rumbaut, 2006). For example, second generation youth may not need to invest time in learning the values of the host culture from the ground up, but they do need to learn how to balance conflicting cultural values of their two cultures to minimize distress or optimize family functioning (Unger et al., 2009). These differences in the experiences of acculturating people in different generational groups may manifest themselves as differences in their initial status and/or trajectories of change in acculturation and enculturation. Indeed, some evidence suggests that first generation Latinx immigrants identify more strongly with the Latinx culture than the dominant host culture (Lopez et al., 2004), suggesting differences in initial status in enculturation between generational groups.

Although some of the challenges of acculturation may differ between generational groups, there are other challenges that individuals of all generational groups experience. For example, a study examining the frequency and types of stressors reported among three generation of Latinx adolescents found that although the number and type of stressor varied by generational group, the three generational groups reported similar amounts of discrimination experiences (Cervantes et al., 2013). Furthermore, this study found that first generation Latinx youth reported higher stressor exposure than second or third generation youth. Despite the accumulated disadvantages that first-generation Latinx youth face, prior research indicates that foreign-born Latinx youth have more optimal developmental outcomes than their U.S.-born counterparts, an effect that has been called the “immigrant paradox” (Marks et al., 2014). The differences in developmental outcomes between individuals of different generational groups may be, in part, due to differences in the acculturation trajectories or patterns of change in

acculturation over time between individuals of different generational groups. Unfortunately, most research examining the immigrant paradox has been cross-sectional and is thus limited in its ability to ascertain whether differences in outcomes are due to underlying differences in acculturation processes like initial status or rate of change by generational status.

Hypotheses for Study 1

Given that adolescence and emerging adulthood are developmental periods where identity and cultural processes are likely to exhibit change (Erikson, 1968; Umaña-Taylor et al., 2014), study 1 examined the extent to which there was change over time in acculturation in Latinx youth. Specifically, this study focused on examining the domain of cultural practices and preferences given that this domain of acculturation mostly comprises of behaviors, which are malleable and likely to exhibit change more readily than other domains, like values or identifications (Schwartz et al., 2010). It was hypothesized that there would be growth (i.e., positive rates of change) in acculturation and enculturation as youth navigate the identity exploration that is characteristic of adolescence and work to establish a stable identity. Additionally, study 1 examined the extent to which there were between-group differences in acculturation based on an individual's generation in the United States. Given the inherent differences in acculturation processes for people of different generational groups, it was hypothesized that first-generation Latinx youth would have a higher initial status on their orientation toward the heritage culture than individuals of subsequent generations. On the other hand, it was hypothesized that Latinx youth of subsequent generational groups would have a higher initial status on their orientations toward the host culture compared to first-generation Latinx youth. Moreover, it was predicted that the rate of change in acculturation would differ between individuals of different generational groups. First-generation youths were expected to

have a steeper positive slope for acculturation than youths of subsequent generations, and youths of subsequent generations are expected to have a steeper positive slope for enculturation compared to first-generation youths.

STUDY 1 METHODS

Participants

This study is a secondary data analysis of Project RED (Reteniendo y Entendiendo Diversidad para Salud). Project RED was a longitudinal study of acculturation and substance use among Latinx youth in Southern California (Unger, 2014). Data collection for this study took place between 2005 and 2018. The first three waves of data were collected from 2005-2007 when the participants were in 9th, 10th, and 11th grade respectively. Waves four through six were collected from 2012 to 2014 and waves seven and eight were collected between 2015 and 2018. For this study we will use data from waves two through seven, given that these waves contain information regarding the variables of interest for this study. For a breakdown of sample size and demographic characteristics of the sample by wave, please refer to Table 1.

Table 1

Sample Size and Key Participant Demographics by Wave

Demographic	*N*	*M*	*SD*	%
Wave 2				
Sample Size	2414			
Age		15.85	0.43	
Gender (%)				
Female				53.2
Male				46.8
Wave 3				
Sample Size	2266			
Age		16.84	0.40	
Gender (% missing)				19.1
Female				38.2
Male				32.6
Wave 4				
Sample Size	1386			
Age		20.44	0.59	
Gender (%)				

Female				54.3
Male				45.7
Wave 5				
Sample Size	1409			
Age		21.96	0.45	
Gender (%)				
Female				59.0
Male				41.0
Wave 6				
Sample Size	1390			
Age		22.73	0.42	
Gender (%)				
Female				59.2
Male				40.8
Wave 7				
Sample Size	1405			
Age		23.87	0.44	
Gender (%)				
Female				58.7
Male				41.3

Recruitment procedures began when the participants were in high school. Eight high schools in Los Angeles County were invited to participate in the study. The schools were selected if data from the California Board of Education indicated that the school had at least 70% Hispanic students. Schools were only invited to participate if they were not participating in any other studies or interventions that addressed acculturation and substance use. To recruit students for the study, trained research assistants visited classrooms to explain the study to students and distribute paper copies of the parental consent forms. Each high school also provided roster information, which contained parent contact information, so that study staff could call parents whose students did not return a signed consent form. Research staff obtained verbal consent from parents who were contacted via telephone to expedite consent procedures.

In 2011-2012 research staff attempted to contact participants who had provided data at one or more timepoints during high school to invite them to participate in the early adulthood surveys. Research staff sent recruitment letters to participant's last known addresses with

instructions to call a toll-free number or visit a website if they were interested in participating in the study. Participants who called the toll-free number provided verbal consent over the phone and those who visited the website read the consent form online and provided their electronic signature. Extensive tracking procedures were used to locate participants who could not be reached by mail at their last known address. These procedures included emailing participants, texting them at the last known number, and searching for participants on social networking sites and publicly available search engines.

Procedure

To administer the high school surveys, data collectors visited classrooms to distribute paper copies of the surveys to students. Data collectors used a standardized script when they administered the survey to remind students that their responses were confidential and that they could choose to skip any questions they did not feel like answering. Data collectors returned in 2006 and 2007 to administer the survey to students in 10th grade and 11th grade. For the early adulthood surveys, participants were given the choice to fill out the survey online or over the telephone with a member of the study team.

Measures

Demographic Covariates

Gender was coded as 1 = *female* and 2 = *male*. Socioeconomic status was assessed using the household crowding index where the total number of people living in a household is divided by the total number of rooms in a house, excluding the kitchen and bathrooms.

Acculturation Rating Scale for Mexican Americans-II

Acculturation was assessed using the short form of the Acculturation Rating Scale for Mexican Americans-II (ARSMA-II; Cuellar et al., 1995). Participants indicated the extent to

which they engaged in and enjoyed certain activities (e.g., I speak English, I speak Spanish, I enjoy English language movies, I enjoy Spanish language movies, etc.), using a 5-point Likert scale ranging from 1 (*not at all*) to 5 (*almost always/extremely often*). The 12-item measure contained 6 items from the United States Orientation subscale ($\alpha = .70$) and 6 items from the Hispanic Orientation subscale ($\alpha = .92$). Responses from the items corresponding to each subscale were averaged to create a U.S. orientation score and a Hispanic Orientation score, where higher values indicate a stronger affiliation to the corresponding culture.

Generational Status

Generational status was coded according to the birthplace of individuals and their parents. Youths were categorized as first generation if they were born outside of the U.S., second generation if they were born in the U.S. and at least one parent was born outside of the U.S. and third generation if the youth and both parents were born in the U.S.

Data Analysis Plan

Descriptive statistics, including means, standard deviations, and cross tabulations were examined for the variables of interest prior to conducting the main analyses. T-tests were also conducted to determine whether there were statistically significant differences between participants who completed the study and those who dropped out. After the preliminary analyses, multilevel models were conducted, using the lme4 package in R version 4.3.1 (R Core Team 2023; Bates et al., 2015), to examine the initial status and trajectories of change over time in acculturation. Separate multilevel models were fit to data from each subscale, the U.S. Orientation Scale and Hispanic Orientation Scale, of the ARSMA-II. Multilevel modeling was selected due to the ability of this statistical analysis strategy to handle varied assessment schedules for participants across waves of data collection (i.e., time-unstructured data set; Singer

& Willet, 2003). Multi-level models treat time as a continuous predictor, which affords flexibility in the parameterization of time, and allows participants in time-unstructured data sets to have their own unique time variable (e.g., time in study measured in exact days). Additionally, multilevel modeling is well-suited for handling repeated measures data where participants do not have the same number of assessments over the study period (i.e., unbalanced design; Singer & Willet, 2003). Using maximum likelihood estimation, growth models are estimated by summing the individual contributions of each case (Curran et al., 2010). Thus, observations with more data points are weighted more heavily than observations with fewer data points.

Several two-level models, with repeated assessments nested within individuals, were fit to data from each of the ARMSA-II subscales. These models were fit sequentially, in order of increasing complexity and were tested for improvement in model fit based on changes in deviance (-2LL). The baseline model, an unconditional means or "intercept-only" model, which included fixed and random effects for intercepts without additional covariates was tested first. Next, a fixed effect for linear slope, with change operationalized as age in study centered at 14 years old was added to the subsequent model. And, finally, the last model added a random effect for linear slope. Taken together, these models allowed for the examination of intraindividual variability in both intercepts and slopes (i.e., stable individual differences and individual variation in change) in each of the AMRSA-II subscales. Once the best fitting model for each outcome measure was identified, generational status, a level 2 predictor, was added to the model to test the extent to which belonging to a different generational group predicted interindividual differences in growth trajectories of the ARMSA-II subscales.

STUDY 1 RESULTS

Preliminary data checks

Independent samples t-test were conducted to determine whether there were statistically significant differences between participants who completed all six waves of the study and those who completed less than six waves. The results of the t-test suggest that there were no statistically significant differences between the two groups in SES $t(2788) = -.015$, $p = .49$. Additionally, cross tabulations of gender and generational status demonstrated that that there were a relatively equal number of males and females in both groups. From the 5808 females in the study sample, 58.4% completed all six waves and 41.6% completed less than 6 waves. From the 4451 males in the study, 49.1% completed all six waves and 50.9% completed less than 6 waves. Regarding generational status, 47% of first-generation ($N = 1329$), 56.6% of second generation ($N = 7626$), and 50.9% of third generation ($N = 1144$) youths completed all six waves.

Multilevel models of group differences in changes

To examine the initial levels and trajectories of change over time in the two components of acculturation, several multi-level models were conducted to determine the best structure for the random effects. The unconditional means model was estimated first to provide the baseline comparison for the subsequent models and to partition the outcome variance into intraindividual and interindividual variance. Using these variances, the intraclass correlation coefficient (ICC) was calculated, which indicates the proportion of variance that lies between participants for each outcome variable. Computation of the ICC for the two study outcomes indicated that 45% of the variance in United States Orientation and 70% of the variance in Hispanic Orientation was between participants.

After estimating the unconditional means model, unconditional growth models were estimated with fixed and random effects for linear slope. In these models, time was operationalized as age in study, which was centered at 14 years old. Time was rescaled in decades for model convergence by taking the value for age in study centered at 14 and dividing the value by 10. Consequently, the time variable in the models represented change over time in decades. Based on the model fit statistics, it was determined that the model with the random effect for the linear slope demonstrated the best fit for both outcomes. Table 2 provides an overview of the goodness-of-fit statistics for the nested models tested (e.g., unconditional means, unconditional growth with fixed effect of time, unconditional growth with random effect of time).

Table 2

Model Comparisons for Growth Models of Acculturation and Enculturation

Model Name	Model Specification	AIC	BIC	-2LL	χ^2 (df)	*p*
Outcome: United States Orientation						
ModelUSO.0	Random intercept	15988.7	16010.3	15982.7		
ModelUSO.1	Random intercept fixed linear time	15718	15746.9	15710	272.62(1)	***
ModelUSO.2	Random intercept random linear time	15501	15544.3	15489	221.09(2)	***
Outcome: Hispanic Orientation						
ModelHO.0	Random intercept	22460.1	22481.8	22454.1		
ModelHO.1	Random intercept fixed linear time	22438.1	22467	22430.1	24.02(1)	***
ModelHO.2	Random intercept random linear time	21956.8	22000.1	21944.8	485.3(2)	***

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

After identifying the best fitting model for each outcome, the level 2 predictor generational status was added to determine the extent to which there were group differences in change over time in acculturation and enculturation, controlling for the effects of gender and school site given that participants were recruited from eight different high schools in Los Angeles County. Table 3 displays the coefficients for all the predictors and covariates in the final model. Overall, the average starting point of United States orientation was 3.47, with an average increase of .26 for each decade after age 14. For Hispanic orientation, the average starting point was 4.04 with an average decrease of .35 for each decade after age 14.

$$United\ States\ Orientation/Hispanic\ Orientation_{ij} = \beta_{0i} + \beta_{1i}(DecsOld\_ctr14_{ij}) + \varepsilon_{ij}$$

$$\beta_{0i} = \gamma_{00} + \gamma_{01}(Generational\ Status) + \gamma_{02}(Gender) + \gamma_{03}(School\ site) + \upsilon_{0i}$$

$$\beta_{1i} = \gamma_{10} + \gamma_{11}(Generational\ Status) + \gamma_{12}(Gender) + \gamma_{13}(School\ site) + \upsilon_{1i}$$

Additionally, there was a statistically significant difference in United States Orientation among the generational groups. Compared to those in the first generational group, youths in the second generational group scored .24 units higher on average in United States Orientation while youths in the third generational group scored .44 units higher on average in United States Orientation. The extent to which there were differences in change over time in United States orientation between the generational groups was also examined by including an interaction between time and generational status. This interaction was not a statistically significant predictor of United States orientation and thus was not included in the final model.

Regarding Hispanic orientation, compared to the first generational group, those in subsequent generational groups scored lower on average. Youths in the second generational group scored .53 units lower on Hispanic orientation, while youths in the those in the third generational group scored 1.64 units lower than those in the first generational group. For

Hispanic orientation there was also a statistically significant interaction between time and generational status, suggesting differences between the generational groups on their change over time in Hispanic orientation. Figure 1 displays the change trajectories for each generational group. As can be seen in Figure 1, at approximately 14 year of age, first-generation youth demonstrated the strongest affiliation to Hispanic culture. Nevertheless, first-generation youths also demonstrated the steepest decline over time and had nearly the same level of affiliation to Hispanic culture as second-generation youths by the end of the study. Second- and third-generation youths had lower affiliations to Hispanic culture relative to first-generation youths at the beginning of the study, but they also demonstrated shallower slopes indicating a slower rate of declining affiliation to Hispanic culture. Test of simple slopes indicate that first-generation youths, b = -0.34, t(204.34) = -5.22, SE = 0.07, $p < .001$, and second-generation youths, b = -0.06, t(1307.23) = -2.05, SE = 0.03, $p < .05$ had statistically significant decreases in Hispanic orientation. The simple slope for the third generational group was not statistically significant, b = -0.10, t(196.90) = -1.47, SE = 0.07, $p > .05$.

Table 3

Final Growth Curve Models for ARSMA-II Subscales

Predictor	Coefficient	Standard error	Variance	Standard Deviation	*p*
Outcome: United States Orientation (*N* = 9936)					
Fixed Effects					
Intercept	3.47	.033			***
Decades Old (centered at 14)	.258	.018			***
Second Generation	.236	.027			***
Third Generation	.435	.036			***
Male	-.020	.018			
El Monte High School	.047	.031			
Workman High School	.032	.038			
South El Monte High School	.042	.033			
La Puente High School	.094	.031			**
Artesia High School	.128	.034			***
John Glenn High School	.084	.032			**
Maywood High School	-.082	.038			*

Random Effects					
Intercept			.267	.517	
Slope			.263	.512	
Error			.168	.410	
Outcome: Hispanic Orientation (N = 9940)					
Fixed Effects					
Intercept	4.04	.065			***
Decades Old (centered at 14)	-.351	.074			***
Second Generation	-.527	.059			***
Third Generation	-1.63	.080			***
Male	-.266	.032			***
El Monte High School	-.088	.054			
Workman High School	-.011	.066			
South El Monte High School	-.048	.057			
La Puente High School	-.111	.054			*
Artesia High School	-.036	.059			
John Glenn High School	-.073	.056			
Maywood High School	-.128	.065			*
Decades Old*Second Generation	.287	.080			***
Decades Old*Third Generation	.251	.108			*
Random Effects					
Intercept			.716	.846	
Slope			.651	.807	
Error			.241	.491	

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

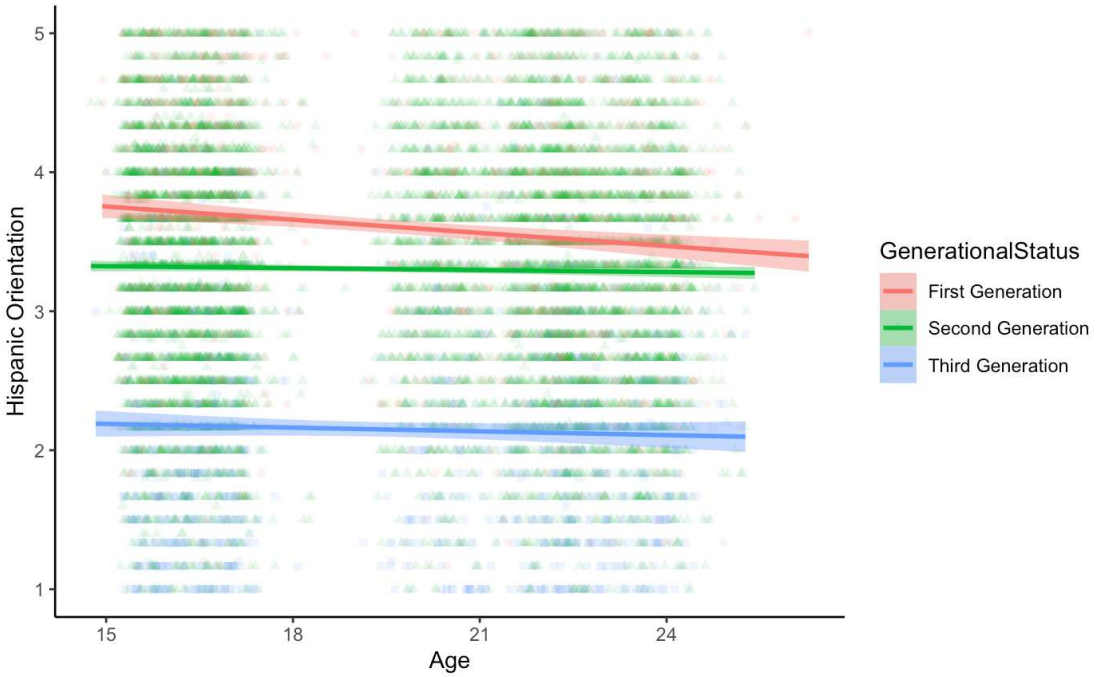

Figure 1. *Hispanic Orientation Over Time by Generational Group*

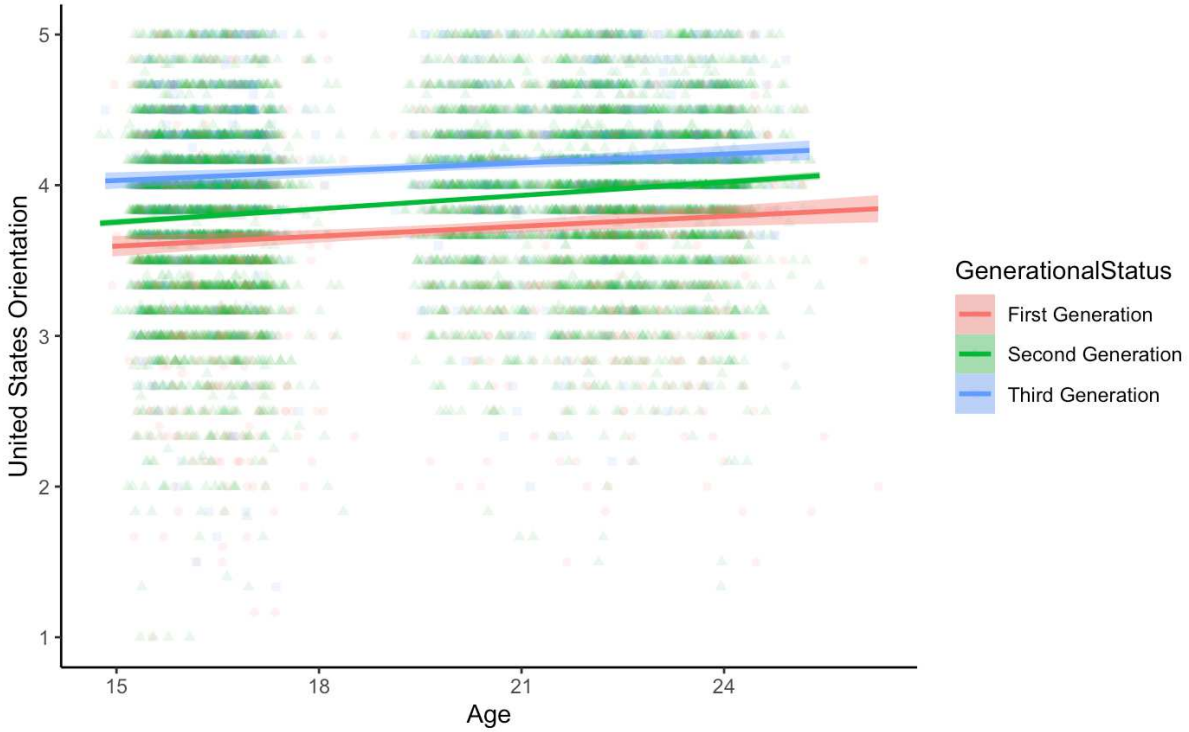

Figure 2. *United States Orientation Over Time by Generational Group*

STUDY 1 DISCUSSION

Study 1 examined the extent to which there was change over time in acculturation and enculturation in Latinx youth. In partial support of the first hypothesis, the results revealed that there was a positive rate of change in acculturation. Although the rate of change was small, on average, acculturation demonstrated a slight increase over the period from adolescence into early adulthood, which indicates a growing affiliation with U.S. culture over this developmental period. This finding is in line with prior work that has examined change over time in acculturation with other immigrant populations, including Asian American young adults (Murray et al., 2014) and Russian women (Miller et al. 2009). In general, these studies demonstrate an increase in U.S. culture acquisition over time and with increased exposure to environments (i.e., school, work) that promote interactions with people of the host culture. It should also be noted, however, that although the results indicate an increase in acculturation over time, some theoretical frameworks suggest that there are conditions that could disrupt this trajectory (Portes & Rumbaut, 2006; Irwin, 2003). Indeed, perceived discrimination has been shown to be negatively related to the endorsement of U.S. cultural values among ethnic minority youth (Knight et al., 2014), suggesting that discrimination experiences may also be related to trajectories of change in acculturation. Future research should seek to examine the effect of perceived discrimination and identify other factors that may predict trajectories of change in acculturation.

On the other hand, and contrary to the prediction of the first hypothesis, enculturation did not exhibit a positive rate of change. The rate of change in enculturation was small with a negative slope, suggesting a slight decrease in orientation to Latinx/Hispanic culture over time.

This finding was unexpected given that this sample of Latinx youth was drawn from Los Angeles County where 48% of the population identifies as Latinx/Hispanic (U.S. Census 2020). With such a high prevalence of Latinx/Hispanic people in Los Angeles, youth could potentially have a great deal of exposure and ways of staying connected to the heritage culture, thus facilitating the maintenance of the heritage culture. Indeed, another study examining changes in acculturation among adolescents in highly bicultural environments (i.e., Miami, Los Angeles) found no evidence of decreases in Hispanic cultural practices (Schwartz et al., 2015). It is important to note, however, that this study was conducted over a two-year period with a sample of immigrant youth who had arrived in the U.S. within 5 years of the fall semester of 9th grade in 2010. It may be the case that with this sample who was born in the heritage country, the limited time frame was not sufficient to capture any decreases that may occur in Latinx/Hispanic cultural orientation. Although the findings from this study contradict those by Schwartz et al (2015), other studies have found similar patterns of decline in orientation to the heritage culture among other immigrant populations (Miller et al., 2009; Murray et al., 2014). Furthermore, a study examining mean change in Mexican culture involvement across two time points spaced 5 years apart, found evidence of declining Mexican orientation (Updegraff et al., 2012). The current study adds to the literature by replicating the findings from Updegraff et al (2012) with a design that includes more frequent assessments over a longer period, thereby providing stronger evidence of the decline in Latinx/Hispanic orientation over time.

When examining group differences in acculturation and enculturation, there were more nuances in the starting point of each dimension for each generational group. In line with the prediction of the second hypothesis, first-generation youth demonstrated a higher starting point on Latinx/Hispanic orientation compared to youths in subsequent generational groups. First-

generation youth reported the highest orientation to Latinx/Hispanic culture followed by second-generation and third-generation youths, respectively. Furthermore, youths in subsequent generational groups had a higher orientation to U.S. culture compared to first-generation youths. In this case, third-generation youth reported the highest orientation to U.S. culture followed by second-generation and first-generation youth, respectively. These results provide further evidence for the pattern of findings from cross-sectional work that generally demonstrates an increase in U.S. culture orientation with each passing generation and either stability or decline in heritage culture (e.g., Dennis et al., 2016; Christmas & Barker, 2014). It is evident that with each passing generation, immigrants become increasingly immersed in U.S. culture as the demographic in the population shifts from foreign-born individuals to U.S.-born individuals. With each passing generation, exposure to media and institutions that teach, promote, and reinforce U.S. culture and values increases, with those in later generations being exposed to these influences earlier than immigrant youth (Ward & Geeraert, 2016). As for the heritage culture, it may be the case that with each passing generation in the host country immigrant families face a reduction in the quality of their connection to the heritage culture with the dwindling number of family members that have direct ties to the heritage country. Indeed, individuals in later generations have limited opportunities to spend time in the heritage country (Padilla, 2006), which may limit the extent to which they are able to establish meaningful and lasting connections to the motherland. Furthermore, prior research suggests that Spanish proficiency is related to the number of foreign-born parents in the household, such that individuals with two immigrant parents are more likely to be bilingual than those with one foreign-born parent or no foreign-born parents (Dennis et al., 2016; Portes & Rumbaut, 2001). Given that language serves

as a connection to one's culture, the reduction in Spanish proficiency across generations may also contribute to decreases in Latinx/Hispanic orientation across generations.

The last hypothesis regarding generational group differences in the rate of change of acculturation and enculturation was only partially supported. Contrary to the prediction that third-generation youths would have a steeper acculturation slope than subsequent generational groups, the results suggest that there were not any differences between the generational groups in the rate of change of acculturation. As can be seen in Figure 2, the generational groups have parallel slopes which demonstrate similar rates of change over time with a slight increase in U.S. orientation over the study period. This finding was surprising given the substantial differences in the acculturation process for individuals of different generational groups. For example, individuals in the first-generational group are often tasked with learning a new language in addition to acclimating to the cultural customs of a foreign land. Nevertheless, it appears that these additional tasks may not always hinder the rate at which individuals acculturate. Indeed, prior research examining the effect of age at migration on acculturation shows that individuals who arrive at younger ages in the U.S. report more acculturation than those who arrive at later ages (Chudek et al., 2015). Thus, it is also pertinent to consider the age at which the individual migrated when examining change in acculturation over time. Although it was not possible to ascertain the age at migration for the current study sample, it can be inferred that everyone emigrated to the U.S. prior to high school. All the surveys for the current study were initially conducted during high school and in English, suggesting that participants had prolonged exposure to U.S. culture well before their high school years. This exposure, while perhaps not uniform across all participants, was sufficient to result in English language acquisition as well as similar rates of change across the generational groups.

For the rate of change in Latinx/Hispanic orientation, it was hypothesized that youths of subsequent generational groups would have steeper positive slopes for enculturation than first-generation youths. The results indicated that it was first-generation youth, not third-generation youth, who had the steepest slope. Furthermore, as previously discussed, although it was expected that enculturation would exhibit a positive slope given the high prevalence of Latinx/Hispanic people in Los Angeles, the results indicate that much like the overall sample, each generational group had negative slopes. As can be seen in Figure 1, first-generation youth demonstrated the sharpest decline in Latinx/Hispanic orientation, while second-generation youth demonstrated a slight gradual decline over time and third-generation youth showed no change. Given that family is the primary context for transmission and ethnic socialization for ethnic-racial minorities and immigrant youth (Knight et al., 2016), it may be the case that as youth move away from home and begin building a life outside of their family of origin, the cultural influence of the family on maintenance of the heritage culture dissipates. Furthermore, because first-generation youth had a higher starting point on Latinx/Hispanic orientation than second and third-generation youth, they are more likely to exhibit a steeper decline in heritage culture orientation. It is also worth noting that although prior research suggests that the presence of a foreign-born parent provides the cultural capital needed to maintain ethnic heritage (Dennis et al., 2016; Chavez-Reyes, 2010), youths with foreign-born parents in this study (i.e., first and second-generation youth) still demonstrated a decline in Latinx/Hispanic heritage over time. Perhaps the presence of a foreign-born parent is more pertinent to the level of heritage culture orientation than it is to the rate of change over time in this dimension.

Implications and Limitations

The results of this study contribute to the literature on acculturation by providing more information about the dynamic properties (i.e., change over time) of this construct. With waves of data collection spanning from adolescence to emerging adulthood, this study was uniquely positioned to examine change over time in acculturation during an important developmental period with extensive changes in cultural and identity processes. One limitation of this study is that it specifically focuses on cultural practices/preferences. Although this study was restricted to examining behavioral acculturation as a secondary data analysis, future work should focus on examining the dynamic aspects of other acculturation dimensions including values and identifications to obtain a more comprehensive understanding of the dynamic aspects of acculturation.

Additionally, the inclusion of generational status as a predictor of acculturation growth allowed this study to examine the extent to which the dynamic properties of acculturation differed by generational group. This contribution is particularly important given the rapid increase in second and third-generation immigrants in the U.S. (Krogstad & Lopez, 2014). As such, another limitation of this study is that more than half of the sample was second-generation youths. Roughly about 14% of the sample was classified as first-generation youths, while 12% were classified as third-generation youths. This unbalanced design may have hindered statistical power and affected the observed trajectories. As such, future research should seek to replicate these findings with a more balanced design.

Overall, despite the limitations, this study contributes to the emerging longitudinal work on acculturation by directly examining change over time during an important developmental period. Moreover, given that the results indicate that there are indeed differences in acculturation

growth for Latinx youth of different generational groups, this study also helps to establish a new line of inquiry regarding the extent to which group differences in acculturation outcomes may be related to underlying differences in change trajectories between the different generational groups. With access to this new information, acculturation research can continue to improve and shed new light on how to best support the positive development of immigrant youth.

STUDY 2 LITERATURE REVIEW

Stressors and Acculturation

The minority status stress model describes the unique or excess stress that individuals in oppressed groups are exposed to because of their minority status in society (Meyer, 2003; Williams et al., 1997). For example, as a racial minority group in the U.S., Latinxs are more likely to come from low socioeconomic backgrounds, live in poverty, and are more likely to experience neighborhood stressors such as violence and crime (Williams et al., 2010; Glister, 2014). Using this framework, prior research has attributed the high rates of depression among Latinxs to increased stressor exposure from these life circumstances, in addition to stressors from the acculturation process (Cervantes et al., 2013).

Perceived Discrimination

One stressor that is pertinent to minority status stress, and is particularly salient for acculturating individuals, is perceived discrimination. Perceived discrimination can be defined as the subjective experience of being treated unfairly relative to others in everyday experiences based on personal characteristics, such as race (Williams et al., 1997). Lee et al. (2019) found that 63% of racial minorities reported experiences of racial/ethnic discrimination. The high rates of discrimination experienced by racial minorities is alarming given that perceived discrimination is a psychosocial stressor with detrimental effects on health on well-being (Vines et al., 2017; Pascoe & Smart-Richman, 2009). Indeed, perceived discrimination has been linked to poor physical health (Finch & Vega, 2003; Williams & Mohammed, 2009), increases in psychological distress (Torres et al., 2012), anxiety (Hwang & Goto, 2008), and depression (Umaña-Taylor & Updegreaff, 2007; Flores et al., 2008; Potochnick & Perreira, 2010).

Additionally, Flores et al. (2008) found that experiencing discrimination stressors in addition to other minority status stressors increased the risk for mental health problems, thus providing support for the minority status stress model.

Given that perceived discrimination is a salient stressor for Latinx youth that is associated with detrimental mental health outcomes, it is pertinent to understand how the effects of perceived discrimination unfold over time. Indeed, a study examining the daily experiences of Latinx adults over a two-week period found that participants reported higher levels of depressive symptoms, relative to their own baselines, the day after experiencing discrimination (Torres & Ong, 2010). The extent to which these daily experiences of discrimination have an aggregate impact on mental health over the life course is still unclear. Nevertheless, research with adolescents and young adults suggest that individuals reporting discrimination are at greater risk for adverse mental health outcomes relative to those who do not experience discrimination (Vines et al., 2017). More longitudinal work examining the association between discrimination experiences and depressive symptoms among Latinx youth is needed to fully understand the long-term impacts of discrimination on mental health.

Perceived Stress

Although the minority status stress model emphasizes the increased risk of depression for Latinx people based on the cumulative effects of stressors, other theoretical frameworks, such as the stress and coping framework (Lazarus & Folkman, 1984), emphasize the importance of a person's perception of their life events. Perceived stress has been defined as the extent to which events in a person's life are deemed to be stressful, unpredictable, and uncontrollable (Cohen et al., 1983). Rather than focusing on the presence or the frequency of stressors, the concept of perceived stress focuses on a person's subjective appraisals of their life events.

Latinxs in the U.S. face various stressors such as limited economic resources, environmental factors, cultural adaptation/acculturation, and racial/ethnic discrimination, all of which contribute to the overall perceived stress reported by Latinxs (Chavez-Korrell & Torres, 2014). High levels of perceived stress among Latinx are notable given that increases in perceived stress are well known to exacerbate mental health problems (Cristobal-Narvaez, et al., 2014; Johnson-Esparza et al., 2021). Furthermore, the relationship between perceived stress and depression is such that greater increases in perceived stress are associated with more severe depressive symptoms (Neese et al., 2013; Lui & Alloy, 2010). As such, it is critical to consider the role of perceived stress when examining acculturation processes and depressive symptoms given that Latinxs have various sources of stressors that can contribute to elevated levels of perceived stress.

Acculturation and Depressive Symptoms

Despite the numerous stressors and increased stress levels that acculturating individuals face, which would indicate elevated depressive symptoms, the relationship between acculturation and depression remains unclear. A recent meta-analysis that examined 79 studies found no association between acculturation and depression (Bridges et al., 2021). Nevertheless, there are a few important details to note about this meta-analysis. First, this study focused on examining the relationship between acculturation and depression in studies that used adult samples. Although the studies reviewed could include a range of adults who were over the age of 18, the mean age of the sample was about 45 years of age with a standard deviation of approximately 16 years. Given that adolescence is a period where there is a developmental increase in depressive symptoms (Michel, et al., 2012) and heightened vulnerability for the onset of depression (McLaughlin & King, 2015), it may be the case that the association between acculturation and

depression is more pronounced during this sensitive developmental period. Furthermore, evidence suggests that adolescent depression tends to persist into adulthood (Carballo et al., 2011) and given that there have been increases in the rates of depression among adolescents (Daly, 2021), it pertinent to understand the extent to which the pattern of findings reported in this meta-analysis holds during the period of adolescence and into emerging adulthood.

Another important thing to note regarding the meta-analysis is that the studies reviewed in this measured acculturation in a variety of ways. More than half of the studies reviewed measured acculturation as a proxy (e.g., English language fluency, time in U.S., birth region, generational status, etc.) whereas only a quarter of the studies reviewed used multi-dimensional measures to assess acculturation (e.g., Acculturation Rating Scale for Mexican Americans, Bidimensional Acculturation Scale for Hispanics). The lack of consensus on how acculturation is operationalized across study (i.e., scale measure vs. proxy measures) may also partially account for the absence of the association between these two constructs. Moreover, because acculturation is a multidimensional construct, meaning that changes can occur across different domains (e.g., practices, values, identifications; Schwartz et al., 2010), proxy measures may lack the precision to fully capture the process of acculturation and its relationship to important developmental outcomes, like depression. Indeed, in a study examining acculturation and mental health of Latinx adolescents, Smokowski and Bacallao (2007) found that length of residency in U.S., an indicator typically used as a proxy for acculturation, was not related to internalizing symptoms (e.g., anxiety, depression). Nevertheless, involvement in US culture, or acculturation, as measured by the Bicultural Involvement questionnaire was significantly related to internalizing symptoms.

Another aspect that may complicate the nature of the relationship between acculturation and depression, is the bidimensional nature of acculturation whereby people can acquire or retain aspects of the heritage and host culture simultaneously. Some studies have suggested that as youth acquire aspects of the host culture (i.e., acculturation), risk for depression increases (Lorenzo-Blanco et al., 2012). On the other hand, other studies suggest that it is the loss of the heritage culture (i.e., enculturation) that increases Latinx's youth risk for depression (Meca et al., 2018). To further elucidate the nature of the relationship between acculturation and depression, it is crucial for more research to examine how both acculturation and enculturation are related to important developmental outcomes, such as depression, both together and independently. Additionally, as more longitudinal work on acculturation is conducted, it may also be pertinent to distinguish between the level of acculturation and enculturation and the rates of change of in these dimensions. Such a distinction is unique to longitudinal work and would allow for a deeper understanding of how associations between acculturation and depression may vary depending on whether static or dynamic aspects of acculturation are examined at any given time.

Acculturation as a Moderator of the Relationship Between Stressors and Depressive Symptoms

The framework of risk and resilience emphasizes identifying risk and protective factors to promote adaptation and positive outcomes (Masten & Coatsworth, 1998; Masten, 2014). It is pertinent to consider this framework when examining acculturating youth given that stressors have a potent relationship with depression, and that acculturating individuals experience a myriad of stressors. As such, this framework can be applied to acculturation work to examine how acculturation may modify the relationship between stressors and depression (i.e., stressor-

well-being links) such that some individuals are able to fare well in face of adversity while others falter.

Research examining acculturation as a moderator of stressor-well-being links is limited, but the studies conducted to date suggest that acculturation may be either a risk or protective factor depending on which cultural dimension (i.e., acculturation vs. enculturation) is examined for a given outcome. For example, one study examining the relationship between parental conflict and Latinx youth's internalizing symptoms found that acculturation functioned as a protective factor reducing the harmful effects of parental conflict on youth's internalizing symptoms (Smokowski & Bacallao, 2007). On the other hand, enculturation emerged as a risk factor in this study, and adolescents who reported high level of enculturation and high parental conflict reported the most internalizing symptoms.

Furthermore, the extent to which acculturation and enculturation function as risk or protective factors may also vary depending on the specific stressor-well-being links that are examined. For example, even though enculturation emerged as a risk factor exacerbating the negative effects of parental conflict on youth's internalizing symptoms (Smokowski & Bacallao, 2007), another study found that enculturation functioned as a protective factor reducing the negative effects of discrimination on depressive symptoms for Latinx male adolescents (Umaña-Taylor & Updegraff, 2007). Additionally, other studies have found that acculturation is a risk factor that exacerbates the detrimental effects of discrimination on mental health (Saadi & Ponce, 2019; Finch et al., 2000). It is important to note, however, that these studies assessed acculturation via proxy measures that included respondents place of birth, the duration of their residency in the U.S. and the language they spoke at home, or some combination of these variables. More studies that examine acculturation as a moderator of stressor-well-being links via

non-proxy measures are needed to fully understand the extent to which these patterns of moderating effects hold for scale measures of acculturation.

Another important dimension of acculturation that could moderate stressor-well-being links is ethnic identity. Ethnic identity can be defined as an individual's sense of self in terms of membership in a particular ethnic or cultural group (Phinney & Ong, 2007). Thus, regarding acculturation, ethnic identity is the component that focuses on the subjective sense of belonging to a group or culture (Phinney et al., 2001). Examining the role of ethnic identity as a protective factor for depressive symptoms among Latinx youth is pertinent given that as members of an ethnic minority group, for Latinx youth the process of identity formation during adolescence includes learning more about their ethnicity and developing a racial/ethnic identity (Umaña-Taylor et al., 2014; Umaña-Taylor & Guimond, 2012; Phinney et al., 2001).

In general, ethnic identity has been linked to positive mental health outcomes and is thought to serve a protective function against negative circumstances for racial minorities (Smith & Silva, 2011; Chavez-Korrell & Torres, 2014; Torres et al., 2011; Neblett et al., 2012). For example, a strong sense of identification with one's ethnic group is associated with a reduction in depressive symptoms (Mossakowski, 2003; French & Chavez, 2010). Furthermore, a study examining the effect of ethnic identity on perceived stress in a diverse sample of immigrants found that, in general, high levels of ethnic identity were associated with a reduction in perceived stress (Espinosa et al., 2018). Given that ethnic identity is associated with positive outcomes, it may also be the case that it can serve as a protective factor mitigating the effect of stressors on depressive symptoms. Indeed, ethnic identity has been shown to function as a buffer of the negative effects of certain stressors (e.g., normative stressful demands) on well-being, even after

controlling for the effects of self-esteem which is known to be positively associated with well-being (Kiang et al., 2006).

Although ethnic identity is generally associated with positive outcomes and has been shown to mitigate the effect of certain stressors on well-being, some research shows that ethnic identity may also have some harmful effects (Cobb et al., 2017; Torres et al., 2011; Torres & Ong, 2010). It is important to note, however, that there are different stages of ethnic identity development. For example, Roberts et al. (1999) conceptualized ethnic identity as a two-phase process that involves an exploration phase and a commitment phase. During the exploration phase, individuals contemplate what it means to belong to a particular ethnic or cultural group. On the other hand, during the commitment phase, the individual is aware of the meaning of their ethnic group affiliation and has a clear and positive understanding of their membership in that cultural group.

Given that these phases of ethnic identity represent different experiences, each phase may be differentially associated with well-being outcomes. Indeed, a study by Torres and Ong (2010) found that ethnic identity exploration exacerbated the negative effect of daily discrimination on next-day depression in a sample of Latinx adults, whereas a sense of belonging or commitment to one's ethnic identity functioned as a buffer minimizing the negative effects of perceived discrimination on depression. Similarly, Torres et al (2011) found that ethnic identity exploration was associated with increased psychological distress, whereas ethnic identity commitment served as a buffer against the negative effects of discrimination on mental health. Thus, it is reasonable to conclude that the stress-buffering effects of ethnic identity may lie in the aspect of ethnic identity that represents a sense of belonging or commitment and less so with the aspects of ethnic identity that represent exploration.

Study 2 Hypotheses

Study 2 examined the extent to which trajectories of perceived stress, perceived discrimination, acculturation, and ethnic identity predict growth trajectories of depressive symptoms in Latinx youth. Both acculturation and enculturation were included as predictors of depressive symptoms to elucidate the extent to which each cultural dimension was differentially associated with depressive symptoms. Furthermore, it is important to note that study 2 utilized parameters extracted from the growth models of acculturation in Study 1 to examine the extent to which the intercept (initial status) and slope (rate of change) of acculturation and enculturation were related to trajectories of depressive symptoms. This approach elucidated whether higher or lower starting points on acculturation and enculturation were related to depressive symptoms in the same way as having steeper or shallower rate of change, thus furthering our understanding of acculturation as a dynamic process and its relation to depression. Acculturation, enculturation, and ethnic identity were also examined as potential moderators in this model to examine the extent to which they may exacerbate or attenuate the relationship between stressors and depressive symptoms for Latinx youth.

Given that stressors are generally associated with poor mental health outcomes, it was hypothesized that perceived stress and perceived discrimination would have positive associations with depressive symptoms. Furthermore, given that ethnic identity has been linked to positive mental health outcomes, it was hypothesized that ethnic identity would be negatively associated with depressive symptoms. Regarding acculturation, it was hypothesized that initial status and rate of change in acculturation and enculturation would have consistent associations with depressive symptoms. That is, having a high initial status and positive rate of change in acculturation would predict increases in depressive symptoms and a high initial status and

positive rate of change in enculturation would predict decreases in depressive symptoms. Finally, it was hypothesized that the moderating effects of acculturation, enculturation, and ethnic identity will vary depending on the type of stressor. For example, it was hypothesized that high levels of acculturation would buffer the association between perceived stress and depressive symptoms but would amplify the negative effect of perceived discrimination on depressive symptoms. Furthermore, it was hypothesized that high levels of both ethnic identity and enculturation would function as buffers of the positive association between perceived stress and depressive symptoms, as well as the association between perceived discrimination and depressive symptoms.

Table 4

Outline of Expected Moderation Effects

	High Ethnic Identity Belonging	**High Enculturation**	**High Acculturation**
High Perceived Discrimination	Minimizes risk/provides protection	Minimizes risk/provides protection	Increases risk
High Perceived stress	Minimizes risk/provides protection	Minimizes risk/provides protection	Minimizes risk/ provides protection

STUDY 2 METHODS

This study is a secondary data analysis of Project RED (Reteniendo y Entendiendo Diversidad para Salud). Project RED was a longitudinal study of acculturation and substance use among Latinx youth in Southern California (Unger, 2014). Data collection for this study took place between 2005 and 2018. The first three waves of data were collected from 2005-2007 when the participants were in 9th, 10th, and 11th grade respectively. Waves four through six were collected from 2012 to 2014 and waves seven and eight were collected between 2015 and 2018. For this study we will use data from waves two through six, given that these waves contain information regarding the variables of interest for this study. For a breakdown of sample size and demographic characteristics of the sample by wave, please refer to Table 1.

Participant Recruitment

Recruitment procedures began when the participants were in high school. Eight high schools in Los Angeles County were invited to participate in the study. The schools were selected if data from California Board of Education indicated that the school had at least 70% Hispanic students. Schools were only invited to participate if they were not participating in any other studies or interventions that addressed acculturation and substance use. To recruit students for the study, trained research assistants visited classrooms to explain the study to students and distribute paper copies of the parental consent forms. Each high school also provided roster information so that study staff could call parents whose students did not return a signed consent form. Research staff obtained verbal consent from parents who were contacted via telephone to expedite consent procedures.

In 2011-2012 research staff attempted to contact participants who had provided data at one or more timepoint during high school to invite them to participate in the early adulthood surveys. Research staff sent recruitment letters to participant's last known addresses with instructions to call a toll-free number or visit a website if they were interested in participating in the study. Participants who called the toll-free number provided verbal consent over the phone and those who visited the website read the consent form online and provided their electronic signature. Extensive tracking procedures were used to locate participants who could not be reached by mail at their last known address. These procedures included emailing participants, texting them at the last known number, and searching for participants on social networking sites and publicly available search engines.

Procedure

To administer the high school surveys, data collectors visited classrooms to distribute paper copies of the surveys to students. Data collectors used a standardized script when they administered the survey to remind students that their responses were confidential and that they could choose to skip any questions they did not feel like answering. Data collectors returned in 2006 and 2007 to administer the survey to students in 10^{th} and 11^{th} grade. For the early adulthood surveys, participants were given the choice to fill out the survey online or over the telephone with a member of the study team.

Measures

Demographic Covariates

Gender was coded as 1= *female* and 2 = *male*. Socioeconomic status was assessed using the household crowding index where the total number of people living in a household is divided by the total number of rooms in a house, excluding the kitchen and bathrooms.

Acculturation

In study 2, the acculturation variables will be individuals' random effects scores for intercepts and slopes that were extracted from the acculturation growth models in study 1. Random effect scores were extracted from the models without covariates using the ranef function on the lme4 R package. A total of four variables will be extracted from the two acculturation models in study 1: acculturation intercept, acculturation slope, enculturation intercept and enculturation slope.

Perceived Stress

Perceived stress was assessed using 9 items from the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983). This scale assesses the extent to which participants find their lives unpredictable, uncontrollable, and overwhelming. Participants reported the extent to which they had experienced each item (e.g., Been upset because of something that happened unexpectedly, felt nervous of stressed, etc.) during the past month using a 5-point Likert scale from 1 (*never)* to 5 (*very often*). Positively worded items (e.g., felt that you were on top of things) were reverse scored so that higher ratings on these items also indicated more perceived stress ($\alpha = .71$).

Perceived Discrimination

Perceived Discrimination was assessed using a 10-item measure (Guyll, Matthews, & Bromberger, 2001). Participants indicated how often they perceived that they were treated differently because of their ethnic or cultural background using a 4-point Likert scale from 1 (*Not at all*) to 4 (*A lot*). Sample items include "People act as if they think that you are dishonest." A mean score using the 10-items was created such that higher scores indicate greater levels of perceived discrimination ($\alpha = .88$).

Ethnic Identity

Ethnic identity was measured using the multigroup ethnic identity measure (MEIM; Phinney, 1992). Participants responded to 12 items on a four-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). The MEIM has two subscales: 1) ethnic identity exploration and 2) belonging. The exploration subscale includes 5 items (e.g., I think a lot about how my life will be affected by my ethnic group membership) and the Belonging subscale has 7 items (e.g., I have a clear sense of my ethnic background and what it means for me). Responses from the 7-items on the ethnic identity belonging subscale were averaged to create a mean score for use in the statistical analyses of study 2 ($\alpha = .89$).

Depressive Symptoms

Depressive symptoms were assessed using the 10-item version of the Center for Epidemiological Studies – Depressive Symptoms scale (CES-D; Kohout, Berkman, Evans & Cornoni-Huntley, 1993), which has been validated using Latinx samples (Gonzalez et al., 2017). Participants indicated the extent to which they had experienced each item (e.g., I felt depressed, I didn't sleep well, etc.,) during the past week using a 4-point Likert scale from 0 (*less than 1 day or never*) to 3 (*5-7 days;* Cronbach's α = .87). Items that were positively worded (i.e., I was happy; I enjoyed life) were reversed scored prior to creating a total score which is calculated by finding the sum of the 10 items.

Data Analysis

Descriptive statistics, including means, standard deviations, and bivariate correlations were examined for the variables of interest prior to conducting the main analyses. The data were also inspected for patterns of missingness, and T-tests were conducted to determine whether there were statistically significant differences between participants who completed the study and

those who dropped out. For study 2, data analysis was performed in two steps. First, given that there were repeated assessments of depressive symptoms, perceived discrimination, perceived stress, and ethnic identity across 6 waves, multilevel models were conducted, using the lme4 package in R version 4.3.1 (R Core Team 2023) in a similar procedure as in study 1. The intercept and slope score for each of the variables was extracted from the multilevel models to use as predictors and the primary outcome measure in a subsequent regression analysis. The slope parameter extracted for depressive symptoms was the dependent variable, and the predictors included in the model were the intercept and slope parameters for perceived discrimination, perceived stress, ethnic identity, and the acculturation parameters from study 1 (e.g., acculturation intercept, acculturation slope, enculturation intercept, enculturation slope). The intercept for depressive symptoms was also included as a covariate in the regression analyses along with gender and socioeconomic status. To further examine the moderating effects of acculturation and ethnic identity, 2-way interactions specifically with the slope parameters of each variable of interest were tested (e.g., Ethnic Identity Slope X Perceived Stress Slope, MOS slope X Perceived Discrimination slope, etc.).

STUDY 2 RESULTS

Preliminary data checks

Correlations among the main study variables in each wave of data collection are presented in Table 5. For simplicity, only correlations at baseline are described. Acculturation was negatively correlated with perceived discrimination (r = -.057, p = .006) and positively correlated with ethnic identity (r = .098, p < .001). Enculturation was negatively correlated with perceived stress (r = -.047, p = .036) and positively correlated with ethnic identity (r = .266, p < .001). Perceived discrimination also had a positive association with perceived stress (r = .299, p < .001), ethnic identity (r = .068, p = .001), and depressive symptoms (r = .299, p < .001). Perceived stress had a negative association with ethnic identity (r = -.045, p = .042) and a positive association with depressive symptoms (r = .683, p < .001). The only cultural variable with a statistically significant association with depressive symptoms at baseline was ethnic identity (r = -.070, p =.002).

After examining the bivariate correlations, independent samples t-test were conducted to determine whether there were statistically significant differences between participants who completed all six waves of the study and those who completed less than six waves in their SES, perceived stress, perceived discrimination, and depressive symptoms. The results of the t-tests suggest that there were no statistically significant differences between the two groups in SES t(2788) = -.015, p = .49, perceived stress t(1719.31) = -1.25, p = .21, perceived discrimination t(2348) = 1.29, p = .20, or depressive symptoms t(2012) = .22, p = .82.

Table 5

Correlation Among Main Study Variables at Each Wave

Variable	1	2	3	4	5	6
Wave 2						
1. United States Orientation	–					
2. Hispanic Orientation	-.020	–				
3. Perceived Discrimination	-.057**	.034	–			
4. Perceived Stress	<.000	-.047*	.299**	–		
5. Ethnic Identity	.098**	.266**	.068**	-.045*	–	
6. Depression	-.010	-.014	.299**	-.683**	-.070**	–
Wave 3						
1. United States Orientation	–					
2. Hispanic Orientation	-.080**	–				
3. Perceived Discrimination	-.051*	.029	–			
4. Perceived Stress	.024	-.028	.271**	–		
5. Ethnic Identity	.040	.318**	.056*	-.057*	–	
6. Depression	.009	-.012	.278**	.728**	-.100**	–
Wave 4						
1. United States Orientation	–					
2. Hispanic Orientation	.020	–				
3. Perceived Discrimination	-.007	.050	–			
4. Perceived Stress	-.018	-.025	.251**	–		
5. Ethnic Identity	.114**	.305**	.058*	-.099**	–	
6. Depression	-.011	-.067*	.293**	.681**	-.115**	–
Wave 5						
1. United States Orientation	–					
2. Hispanic Orientation	.054*	–				
3. Perceived Discrimination	-.038	.096**	–			
4. Perceived Stress	-.022	-.032	.280**	–		
5. Ethnic Identity	.047	.247**	.038	-.084**	–	
6. Depression	-.010	-.044	.276**	.673**	-.111**	–
Wave 6						
1. United States Orientation	–					
2. Hispanic Orientation	-.150**	–				
3. Perceived Discrimination	-.005	.030	–			
4. Perceived Stress	-.022	-.035	.333**	–		
5. Ethnic Identity	-.011	.318**	.040	-.106**	–	
6. Depression	.010	-.037	.312**	.683**	-.151**	–
Wave 7						
1. United States Orientation	–					
2. Hispanic Orientation	-.068*	–				
3. Perceived Discrimination	-.010	.048	–			
4. Perceived Stress	.077**	-.033	.243**	–		
5. Ethnic Identity	.031	.302**	-.003	-.024	–	
6. Depression	.071	-.032	.309**	.476**	-.095**	–

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Table 6

Independent Samples T-test Comparing Completers and Non-completers on Key Outcomes at Baseline

	Completers		*Non-Completers*					
Key Outcomes	*M (SD)*	*n*	*M (SD)*	*n*	*df*	*t*	*p*	*Cohen's d*
SES	1.47(.72)	929	1.47(.70)	1861	2788	-.015	.99	-.001
Perceived Stress	2.75(.67)	830	2.71(.63)	1178	1717.31	-1.25	.21	-.057
Perceived Discrimination	1.55(.55)	915	1.58(.57)	1435	2348	1.29	.20	.055
Depressive Symptoms	7.33(6.32)	831	7.40(6.43)	1183	2012	.217	.83	.010

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Multilevel models of study variables with repeated assessments

Several two-level multilevel models, with repeated assessments nested within individuals, were fit to the data from each predictor (e.g., perceived stress, perceived discrimination, and ethnic identity) and the outcome (i.e., depressive symptoms) to determine if it was possible to extract both intercept and slope parameters for each variable. The models were fit sequentially, in order of increasing complexity and tested for improvement in model fit based on changes in deviance (-2LL). For each variable the unconditional means or "intercept-only" model was tested first, followed by a model with a fixed effect for linear slope, with change operationalized as Age in study centered at 14 years old, and finally a model with a fixed and random effect for linear slope was tested. Table 7 provides an overview of the goodness-of-fit statistics for the nested models tested (e.g., unconditional means, unconditional growth with

fixed effect of time, unconditional growth with random effect of time) for each variable. Overall, for each of the variables tested, the model with the random intercept and random slope demonstrated the best fit. After determining the model with the best fit, the ranef function (Bates et al., 2015) was used to extract the individual intercept and slope parameters for everyone in the dataset. The random effects were then merged into a person-level dataset containing the demographic information (e.g., gender, SES) of each participant for subsequent regression analyses.

Table 7

Model Comparisons for Growth Models of Study 2 Variables

Model Name	Model Specification	AIC	BIC	-2LL	χ^2 (df)	p
Outcome: United States Orientation						
ModelUSO.0	Random intercept	15988.7	16010.3	15982.7		
ModelUSO.1	Random intercept fixed linear time	15718	15746.9	15710	272.62(1)	***
ModelUSO.2	Random intercept random linear time	15501	15544.3	15489	221.09(2)	***
Outcome: Hispanic Orientation						
ModelHO.0	Random intercept	22460.1	22481.8	22454.1		
ModelHO.1	Random intercept fixed linear time	22438.1	22467	22430.1	24.02(1)	***
ModelHO.2	Random intercept random linear time	21956.8	22000.1	21944.8	485.3(2)	***
Outcome: Ethnic Identity						
ModelEI.0	Random intercept	16263.8	16285.5	16257.8		
ModelEI.1	Random intercept fixed linear time	16038.2	16067.1	16030.2		
ModelEI.2	Random intercept random linear time	15776.4	15819.8	15764.4	265.8(2)	***
Outcome: Perceived Stress						
ModelPS.0	Random intercept	17426.7	17448.2	17420.7		
ModelPS.1	Random intercept fixed linear time	17402.5	17431.1	17394.5		
ModelPS.2	Random intercept random linear time	17315.8	17358.7	17303.8	90.7(2)	***
Outcome: Perceived Discrimination						
ModelPD.0	Random intercept	15993.2	16014.8	15987.2		
ModelPD.1	Random intercept fixed linear time	15596.8	15625.6	15588.8		

ModelPD.2	Random intercept random linear time	15224.7	15267.8	15252.7	376.2(2)	***
Outcome: Depressive Symptoms						
ModelDS.0	Random intercept	58487.9	58509.3	58481.9		
ModelDS.1	Random intercept fixed linear time	58388	58366.6	58330		
ModelDS.2	Random intercept random linear time	58066.1	58108.9	58054.1	275.9(2)	***

Note: Model 0 and Model 1 could not be compared because models were not fit to the same sample size; * $p < .05$, ** $p < .01$, *** $p < .001$

Multiple Regression Analysis

Once all the relevant parameters were extracted from the multilevel model analyses, a multiple regression analysis was conducted to examine the extent to which the starting point and trajectories of change in perceived stress, perceived discrimination, acculturation, enculturation, and ethnic identity predicted growth trajectories of depressive symptoms in Latinx youth. The first model tested was a saturated model that included the intercept and slope variables for each predictor along with the interaction terms for each of the hypothesized interaction effect for the slope variables. The slope variables were mean-centered to reduce non-essential multicollinearity between the interaction terms (e.g., Acculturation slope × Perceived discrimination slope) and the lower-ordered terms (i.e., main effects) in the model (Aiken & West, 1991). Covariates in the model included the individual intercepts for depressive symptoms, gender, and socioeconomic status (SES). Finding from this analysis showed that the overall regression was statistically significant $F(19, 2435) = 266.40$, $p < .001$. Nevertheless, most of the hypothesized interaction effects were not statistically significant. The only significant interactions in the model were Acculturation slope × Perceived discrimination slope, Enculturation slope × Perceived discrimination slope and Ethnic identity slope × Perceived stress slope. Thus, all other interaction effects were dropped to ensure the final model was parsimonious.

After dropping the non-significant interactions, the resulting model was still statistically significant, $F(16, 2438) = 316.20$, $p < .001$, suggesting that the variables included in the overall prediction equation were significant predictors of depressive symptom slopes. The linear regression equation resulting from this analysis can be written as follows:

$$\begin{aligned} DepSymt\ Slp' = {} & -.15 - .71DepSymptInt + .35Gender + .01\ SES + 7.95\ PSInt + .38\ PDInt - .53EthIdInt \\ & - .05EnculInt + .08AcculInt + 11.98PSSlp + .75PDSip - .66EthIdSlp - .10EnculSlp \\ & + .27AcculSlp + 1.00PSSlp \times EthIdSlp + .32PDSlp \times EnculSlp + .93PDSlp \times AcculSlp \end{aligned}$$

This regression equation indicates that a 1-point increase in depressive symptoms intercept is associated with .71 decrease on depressive symptoms slope, holding all other predictors constant. Likewise, a 1-point increase in gender is associated with .35 increase in depressive symptoms slope, and so on. Together the predictors in the equation accounted for 67.5% of the variance in depressive symptoms slope, adjusted $R^2 = .673$. According to Cohen (1988), this represents a large effect size.

Regarding the main effects, the findings indicate that the depressive symptoms intercept, perceived stress intercept, perceived discrimination intercept, ethnic identity intercept, perceived stress slope, perceived discrimination slope, ethnic identity slope, and gender were significant predictors of depressive symptoms slope. In line with the stated hypothesis both the intercept and slope variables for perceived stress and perceived discrimination had a positive association with depressive symptoms slope. Similarly, as predicted, both the intercept and the slope for ethnic identity had a negative association with depressive symptoms slope. On the other hand, and contrary to the stated hypotheses, neither the intercept nor the slope for acculturation or enculturation were significantly related to depressive symptoms slope.

Table 8

Results From the Multiple Regression Analysis

Variable		*Coefficient*	*SE*	*t*	*p*
Intercept	i_1	-0.149	.110	-1.35	.176
Depressive Symptoms Intercept	b_1	-0.707	.016	-44.52	< .001
Gender	b_2	0.353	.090	3.89	< .001
Socioeconomic status	b_3	0.007	.062	-0.12	.906
Perceived Stress Intercept	b_4	7.954	.212	37.56	< .001
Perceived Discrimination Intercept	b_5	0.381	.153	2.50	< .05
Ethnic Identity Intercept	b_6	-0.531	.145	-3.65	< .001
Enculturation Intercept	b_7	-0.049	.060	-0.83	.409
Acculturation Intercept	b_8	0.080	.140	0.57	.567
Perceived Stress Slope	b_9	11.979	.359	33.39	< .001
Perceived Discrimination Slope	b_{10}	0.754	.136	5.52	< .001
Ethnic Identity Slope	b_{11}	-0.656	.178	-3.68	< .001
Enculturation Slope	b_{12}	-0.101	.097	-1.04	.298
Acculturation Slope	b_{13}	0.269	.199	1.35	.176
Perceived Stress Slope × Ethnic Identity Slope	b_{14}	1.00	.565	1.78	.075
Perceived Discrimination Slope × Enculturation Slope	b_{15}	0.323	.200	1.62	.106
Perceived Discrimination Slope × Acculturation Slope	b_{16}	0.931	.347	2.68	.007
R^2		0.675			

Adjusted R^2	0.673
	$F(16, 2438) = 316.20$***

Note: *** $p < .001$

Regarding the moderation effects, the only statistically significant interaction in the final model was the interaction between the acculturation slope and perceived discrimination slope. In line with the hypothesis, the results demonstrate that acculturation slope moderated the relationship between perceived discrimination slope and depressive symptoms slope, such that at higher levels of acculturation slope (i.e., higher rates of change) higher rates of change in perceived discrimination predicted higher rates of change in depressive symptoms. Figure 3 displays the conditional regression slopes at different levels of acculturation. Simple slopes for the association between perceived discrimination slope and depressive symptoms slope were tested for low (1 SD below the mean), moderate (mean) and high (1 SD above the mean) levels of acculturation slope. Each of the simple slope test revealed a significant positive association between perceived discrimination slope and depressive symptoms slope, but perceived discrimination slope was more strongly related to depressive symptoms slope for high levels of acculturation slope ($B = 1.03$, $SE = .17$, $p < .001$), than for moderate ($B = .75$, $SE = .14$, $p < .001$) or low levels ($B = .47$, $SE = .17$, $p = .01$) of acculturation slope.

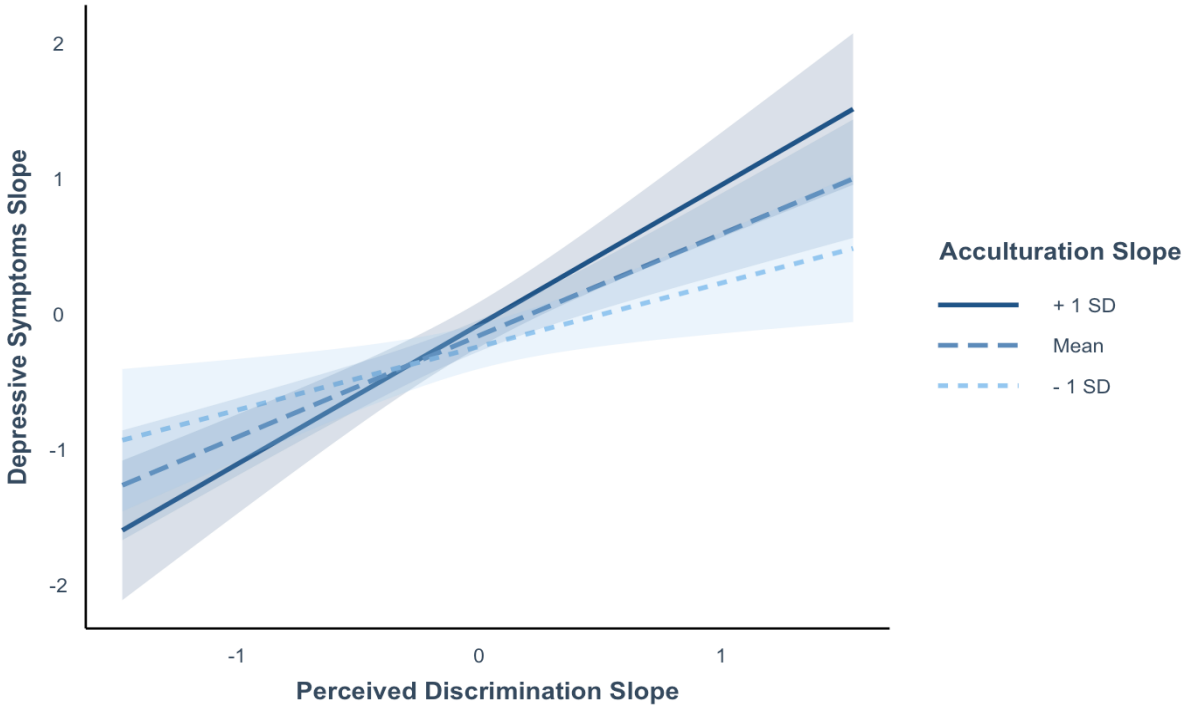

Figure 3. *Association Between Perceived Discrimination Slope and Depression Symptoms Slope at Different Levels of Acculturation*

STUDY 2 DISCUSSION

Study 2 examined the extent to which an individual's starting point and rate of change in different cultural factors and stressors was associated with the rate of change in depressive symptoms in a sample of Latinx youth. In particular, the study examined cultural factors such as acculturation, enculturation, and ethnic identity and stressors like perceived stress and perceived discrimination, to understand the extent to which static and dynamic aspects of these predictors were differentially associated with the rate of change in depressive symptoms. The study first examined the association between the stressors and the rate of change in depressive symptoms followed by an examination of the relationship between the cultural factors and depressive symptoms.

In support of the hypothesis regarding the relationship between stressors and depressive symptoms, the results indicated that both the intercept (i.e., starting point) and slope (i.e., the rate of change) of perceived stress and perceived discrimination had a positive association with the rate of change in depressive symptoms. These findings suggest that people with higher starting points of perceived stress and perceived discrimination at the beginning of the study demonstrated greater rates of change in depressive symptoms relative to people with lower levels starting points of perceived stress and perceived discrimination. Similarly, people demonstrating greater rates of change in perceived stress and perceived discrimination over the study period had greater rates of change in depressive symptoms relative to individuals with smaller rates of change in perceived stress and perceived discrimination.

These findings are in line with previous research that generally demonstrates the adverse effects of stress and discrimination on depressive symptoms (Potochnick & Perreira, 2010;

Torres & Ong, 2010). Furthermore, these findings build on previous research by demonstrating that both the initial level and the rate of change of perceived stress and perceived discrimination are useful indicators of the rate of change in depressive symptoms, thereby establishing the rate of change in these stressors as a pertinent dynamic predictor for the rate of change in depressive symptoms. It is important to note, however, that this study was conducted during the developmental period of adolescence into early adulthood, which is a period that is typically characterized by an increased susceptibility to depression (McLaughlin & King, 2015). As such, it may be the case that the rate of change in perceived stress and perceived discrimination is only associated with the rate of change in depressive symptoms due to the increased susceptibility to depression during this developmental period. Future research should seek to replicate these findings to see the extent to which they hold in other developmental timeframes.

Regarding the cultural factors, it was hypothesized that the starting point and rate of change in ethnic identity and enculturation would have negative associations with the rate of change in depressive symptoms while the starting point and rate of change in acculturation would have a positive association with the rate of change in depressive symptoms. The results suggest that both the intercept and the slope of ethnic identity had a negative association with the rate of change in depressive symptoms. Thus, people with higher starting points in ethnic identity and greater rates of change in ethnic identity demonstrated smaller rates of change in depressive symptoms relative to people with lower starting points and smaller rates of change in ethnic identity. These results are in line with prior research identifying ethnic identity as a protective factor for minority youth (Chavez-Korrell & Torres, 2014; Neblett et al., 2012; Espinosa et al., 2018) and help to establish the dynamic aspects of ethnic identity as a pertinent predictor for the rate of change in depressive symptoms.

Nevertheless, the results did not provide support for the hypotheses regarding acculturation and enculturation. In fact, neither the starting point nor the rate of change in acculturation or enculturation demonstrated a statistically significant association with the rate of change in depressive symptoms after controlling for all the other variables in the model. These finding contradict those by Cruz et al 2021, who found that steeper increases in Spanish use was associated with decreasing major depressive disorder among a sample of kids from 5th to 12th grade. The findings from Cruz et al 2021 demonstrate that the dynamic aspects of Spanish language use have a negative association with major depressive disorder. Although these findings lend support to the idea that the rate of change in enculturation may also have a negative association with the rate of change in depressive symptoms in Latinx youth, perhaps the inclusion of acculturation and ethnic identity along with enculturation contribute to the disparate findings. Furthermore, Cruz et al., 2021 looked at language use specifically whereas the current study measured change in enculturation as a whole using the Hispanic orientation subscale of the ARSMA-II. The ARSMA-II measures Spanish language use along with other behaviors that assess retention of the heritage culture. It may be the case that language use is a particularly potent predictor whose effects are obscured when using the composite score that accounts for other behavioral changes. Future research should examine these discrepant findings to see if the associations between the rate of change in depressive symptoms vary by different behaviors, or perhaps with different measure of acculturation that examine various components of acculturation (i.e., behaviors, values, identifications).

This study also examined the moderating effects of acculturation, enculturation, and ethnic identity to determine the extent to which these cultural indicators may exacerbate or mitigate the effect of stressors on trajectories of depressive symptoms. The results suggest that

these cultural indicators did not modify the relationship between perceived stress and depressive symptoms. Furthermore, enculturation and ethnic identity did not moderate the effect of perceived discrimination on depressive symptoms. Nevertheless, there was evidence indicating that acculturation moderated the relationship between perceived discrimination and depressive symptoms. More specifically the association between the rate of change in perceived discrimination and the rate of change in depressive symptoms was moderated by the rate of change in acculturation. The interaction effect suggests that among people with small rates of change in perceived discrimination, those with smaller rates of change in acculturation (1 SD below) had greater rates of change in depressive symptoms relative to those with average rates of change in acculturation or high (1 SD above) rates of change. People with the highest rate of change in acculturation demonstrating the smallest rate of change in depressive symptoms. On the other hand, among people with high rates of change in perceived discrimination, those with smaller rates of change in acculturation had the lowest rate of change in depressive symptoms and those with greater rates of change in acculturation demonstrated the highest rate of change in depressive symptoms.

This moderation effect highlights the complicated nature of acculturation in different contexts. For example, in environments where perceived discrimination is decreasing over time, acculturation provides protective effects as demonstrated by the smaller rates of change in depressive symptoms among individuals with average and high rates of change in acculturation relative to those with smaller rates of change in acculturation. On the other hand, in environments where perceived discrimination is increasing, acculturation exacerbates the deleterious effect of perceived discrimination on depressive symptoms as demonstrated by the greater rate of change in depressive symptoms among individuals with average and high rates of

change in acculturation relative to those with smaller rates of change in acculturation. Overall, these results demonstrate how acculturating may be advantageous for some individuals and harmful to others. This finding provides a precedent for the literature to move beyond categorizing acculturation and enculturation as harmful or protective and calls for more attention to the context in which cultural processes are unfolding to fully understand their effect of important developmental outcomes.

Implications and Limitations

Study 2 builds on prior work examining the relationship between acculturation and developmental outcomes in several important ways. First, this study is among one of the few to examine acculturation using a scale measure as opposed to relying on proxy measures. The use of a scale measure allows for greater precision in determining which aspects of the cultural adaptation process are specifically related to the rate of change in depressive symptoms among Latinx youth. In the case of this study, neither the starting nor the rate of change in the host culture or the heritage culture proved to be potent predictors of the rate of change in depressive symptoms, after accounting for the effects of stressors and demographics characteristics. Both the static and dynamic aspects of ethnic identity, however, predicted the rate of change in depressive symptoms. This combination of results reinforces the need for future work to examine multiple components of acculturation (i.e., behaviors, values, and identifications) to fully understand the effects of acculturation.

Despite being one of few studies to use a scale measure of acculturation, one limitation of this study is that it did not test acculturation strategies as defined by the bidimensional model (e.g., integration, assimilation; Berry, 2005). Acculturation strategies consider how acculturation and enculturation change in conjunction with each other and have been shown to have a

consistent relationship with developmental outcomes whereby individuals with bidimensional profiles (i.e., those employing the integration strategy) demonstrate the most optimal outcomes (Berry & Sabbatier, 2010; Sam & Berry, 2010; Bulut & Gayman 2020). Although the chosen analytic technique precluded the examination of acculturation strategies in favor of examining the independent effects of acculturation and enculturation, future longitudinal research on acculturation should seek ways to integrate the examination of the dynamic aspects of acculturation along with acculturation profiles. Another limitation of this study is the five-year time gap between waves three and four. In the time between these two waves, the original funding for the study expired and time had to be invested into securing more funds and tracking down the original sample. Although there was not a way to get around this time gap given the circumstances, this gap creates some obscurity regarding the accuracy of the slope parameters extracted. Given that change couldn't be measure precisely during that five-year period, it may be possible that the extracted slope trajectories do not accurately represent the trajectories of change. Future research should seek to replicate these findings with more a consistent assessment schedule to elucidate the extent to which the trajectories extracted accurately represent the change that occurs during this developmental period.

Despite these limitations, this study yields values information that uplifts conditional nature of the association between acculturation and depressive symptoms. More specifically, the study demonstrates that an increased risk for depression among acculturating Latinx youth is more likely to occur in the presence of high levels of perceived discrimination. These findings highlight how aspects of the surrounding environment may play a role in determining the effects of acculturation on depression. Given these findings, future research should prioritize identifying

variables in the surrounding environment (e.g., family support,) that may contribute to differences in the effects of acculturation on different developmental outcomes.

GENERAL DISCUSSION

The overarching aim of this dissertation was to understand how acculturation unfolds over a period of the lifespan characterized by changes in cultural identity, and to understand how the dynamic aspects of acculturation during this developmental period were related to the rate of change in depressive symptoms in a sample of Latinx youth. Study 1 elucidated the dynamic characteristics of acculturation, showing that orientation to the U.S. culture generally increased over time while orientation to the heritage culture generally decreased over time. Furthermore, this study demonstrated that there were differences in the starting point and the rate of change in acculturation and enculturation for Latinx youth of different generational groups. Prior research has speculated about differences in acculturation processes for members of different generational groups (Marks et al., 2014; Alegria et al., 2008), but differences in the starting point and rate of change in acculturation for members of different generational groups have remained largely unexplored.

Study 2 also provided several meaningful contributions to the literature by focusing on examining how the dynamic aspects of different cultural factors and stressors were related to the rate of change in depressive symptoms. Most notably, this study established the dynamic aspects of perceived stress, perceived discrimination, and ethnic identity as potent predictors of the rate of change in depressive symptoms among Latinx youth. Moreover, study 2 builds on the emerging longitudinal work examining change in acculturation over time. To date, most of research examining longitudinal changes in acculturation have employed latent class analyses whereby changes in acculturation and enculturation are examined simultaneously and different change profiles are constructed to describe the patterns of change across each dimension. While

this work has provided useful insights about how acculturative change is related to various developmental outcomes, these studies have not directly examined how the dynamic aspects of acculturation are directly related to the outcomes of interest.

More importantly, the combined results of these studies provide an important new insight for acculturation research with Latinx youth. As is evident from the results of study 1, Latinx youth will acculturate over time. Although prior research has suggested that increasing acculturation over time is linked with depressive symptoms, study 2 suggests that perceived discrimination is important to consider when examining the effects of acculturation on depressive symptoms. Indeed, the results of the moderation effect in study 2 demonstrated that as acculturation increases, if people also have reductions in perceived discrimination, then their rate of change in depressive symptoms small. On the other hand, if people have increasing discrimination as they are acculturating then they are at greater risk for depression. Thus, it appears that the combination of acculturating, or actively trying to be emerged in the host culture and still experiencing discrimination is what contributes to increases in the rate of change of depressive symptoms. These results highlight how acculturation is in fact beneficial for some people but not for others, depending on the amount of perceived discrimination they are experiencing.

Additionally, these findings have important implications for the interpretation of previous studies. For example, prior studies using time in the U.S as a proxy for acculturation typically suggest that risk for adverse outcomes increases with time spent in the U.S., implying that increasing acculturation is associated with poor developmental outcomes. Nevertheless, based on the results from study 1, it is evident that there is a lot of individual variation in the rate of change in acculturation, most of which remains largely unexplored. Thus, although there may be

a general trend of increasing acculturating, this is something that can still vary from person to person. Furthermore, given that with increased time in the U.S. there is a higher likelihood of people being exposed to discrimination, the increase in poor developmental outcomes demonstrated by prior studies could be attributed to increases in perceived discrimination from prolonged time in the U.S, as suggested by the findings from study 2. Future research examining acculturation should continue to explore factors that contribute to variability of rate of acculturation as well as contextual variables that may modify the effect of acculturation on developmental outcomes.

CONCLUSION

This dissertation adds to the burgeoning literature examining how dynamic changes in cultural aspects are related to trajectories of change in mental health outcomes. In particular, this study examined how the rate of change in three cultural aspects, acculturation, enculturation, and ethnic identity, were related to the rate of change in depressive symptoms during the period of adolescence. Given that adolescence is a period characterized by changes in cultural processes and an increased susceptibility to poor mental health outcomes, this study yields important information regarding ways to improve mental health outcomes for Latinx youth. Based on the results from this study, it would be pertinent for the field to provide a bigger emphasis on reducing discrimination to promote the mental health of Latinx youth. Prevention/intervention efforts may also consider offering community programs aimed at reducing discrimination, or offering workshops where youth can learn more culturally appropriate ways of successfully coping with discrimination, such as by leveraging ethnic identity.

REFERENCES

Aiken, L. S., & West, S. G. (1991). Multiple regression: Testing and interpreting interactions. Newbury Park: Sage.

Alegria, M., Canino, G., Shrout, P. E., Woo, M., Duan, N., Vila, D., Torres, M., Chen, C., & Meng, X. (2008). Prevalence of mental illness in immigrant and non-immigrant U.S. Latino groups. *American Journal of Psychiatry, 165*(3), 359-369. doi: 10.1176/appi.ajp.2007.07040704

Baldwin-White, A. J. M., Kiehne, E., Umaña-Taylor, A., & Marsiglia F. F. (2017). In pursuit of belonging: Acculturation, perceived discrimination, and ethnic-racial identity among Latino youths. *Social Work Research, 41*(1), 43-52. doi: 10.1093/swr/svw029

Bates, D., Maechler, M., Bolker, B., & Walker, S. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software, 67*(1*),* 1-48. doi: 10.18637/jss.v067.i01

Berry, J. W. (2005). Acculturation: Living successfully in two cultures. *International Journal of Intercultural Relations, 29*(6), 697-712. doi: 10.1016/j.ijintrel.2005.07.013

Berry, J. W., & Sabatier, C. (2010). Acculturation, discrimination, and adaptation among second generation immigrant youth in Montreal and Paris. *International Journal of Intercultural Relations, 34*(3), 191-207. https://doi.org/10.1016/j.ijintrel.2009.11.007

Berry, J. W., & Sabatier, C. (2011). Variations in the assessments of acculturation attitudes: Their relationships with psychological wellbeing. *International Journal of Intercultural Relations, 35*(5), 658- 669. https://doi.org/10.1016/j.ijintrel.2011.02.002

Berry, J. W., & Sam, D. L. (1997). Acculturation and adaptation. In J. W. Berry, M. H. Segall & C. Kagitcibasi (Eds.), *Handbook of cross-cultural psychology* (pp. 291-326). Allyn and Bacon.

Bridges, A. J., Ledesma, R. J., Guzman, L. E., Berman, I. S., & Benitez, D. (2021). A systematic review and meta-analysis of the relationship between acculturation and depression in Latinx adults. *Journal of Latinx Psychology, 9*(3), 232-257. doi: 10.1037/lat0000189

Bulut, E., & Gayman, M. D. (2020). A latent class analysis of acculturation and depressive symptoms among Latino immigrants: Examining the role of social support. *International Journal of Intercultural Relations, 76,* 13-25. doi: 10.1016/j.ijintrel.2020.02.002

Carballo, J. J., Muñoz-Lorenzo, M., Blasco-Fontecilla, H., Lopez-Castroman, J., Garcia-Nieto, R., Dervic, K., Oquendo, M. A., & Baca-Garcia, E. (2011). Continuity of depressive disorders from childhood and adolescence to adulthood: A naturalistic study in community mental health centers. *The Primary Care Companion for CNS Disorders, 13*(5), doi: 10.4088/PCC.11m01150

Cervantes, R. C., Padilla, A. M., Napper, L. E., & Goldbach. (2013). Acculturation-related stress and mental health outcomes among three generations of Hispanic adolescents. *Hispanic Journal of Behavioral Sciences, 35*(4), 451-468. doi: 10.1177/0739986313500924

Chavez-Korrell, S. & Torres, L. (2014). Perceived stress and depressive symptoms among Latino adults: The moderating role of ethnic identity cluster patterns. *The Counseling Psychologist, 42*(2), 230-254. doi: 10.1177/0011000013477905

Cobb, C. L., Martinez, C. R., Lee, S., Lee, T. K., & Lorenzo-Blanco, E. I. (2021). Acculturation trajectories differ by youth age at arrival and time in residency among Latino immigrant

families in a US emerging immigrant context. *International Journal of Intercultural Relations, 81,* 79-93. doi: 10.1016/j.ijintrel.2021.01.005

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*(4), 385-396. https://doi.org/10.2307/2136404

Cristóbal-Narváez, P., Haro, J. M., & Koyanagi, A. (2020). Perceived stress and depression in 45 low and middle-income countries. *Journal of Affective Disorders, 274,* 799-805. doi: 10.1016/j.jad.2020.04.020

Crockett L. J., Iturbide, M. I., Torres Stone, R. A., McGinley, M., Raffaelli, M., & Carlo, G. (2007). Acculturative stress, social support, and coping: Relations to psychological adjustment among Mexican American college students. *Cultural Diversity and Ethnic Minority Psychology, 13*(4), 347-355. doi: 10.1037/1099-9808.13.4.347

Christmas, C. N., & Barker, G. G. (2014). The immigrant experience: Differences in acculturation, intercultural sensitivity, and cognitive flexibility between the first and second generation of Latino immigrants. *Journal of International and Intercultural Communication*, *7* (3), 238-257. https://doi.org/10.1080/17513057.2014.929202

Crosnoe, R. (2012). Studying the immigrant paradox in the Mexican-origin population. In C. Garcia Coll & A. K. Marks (Eds.), *The immigrant paradox in children and adolescents: Is becoming American a developmental risk?* (pp. 61-76). American Psychological Association.

Cruz, R. A., Navarro, C., Carrera, K., Lara, J., Mechammil, M., & Robins, R. W. (2021). Mexican-origin youths' trajectories of internalizing symptoms from childhood into adolescence and associations with acculturation processes. *Journal of Clinical Child & Adolescent Psychology, 50*(*1*), 118-130. doi: 10.1080/15374416.2019.1622120

Cuellar, I., Arnold, B., & Maldonado, R. (1995). The acculturation rating scale for Mexican Americans-II: A revision of the original ARSMA scale. *Hispanic Journal or Behavioral Sciences, 17*(3), 275-304. https://doi.org/10.1177/07399863950173001

Curran, P. J., Obeidat, K., & Losardo, D. (2010). Twelve frequently asked questions about growth curve modeling. *Journal of Cognition and Development, 11*(2), 121-136. doi 10.1080/15248371003699969

Daly, M. (2021). Prevalence of depression among adolescents in the U.S. from 2009-2019: Analysis of trends by sex, race/ethnicity, and income. *Journal of Adolescent Health, 70*(3), 496-499. https://doi.org/10.1016/j.jadohealth.2021.08.026

Dennis, J. M., Fonseca, A. L., Gutierrez, G., Shen, J., & Salazar, S. (2016). Bicultural competence and the Latino 2.5 generation: The acculturative advantages and challenges of having one foreign-born and one U.S.-born parent. *Hispanic Journal of Behavioral Sciences, 38*(3), 341–359. https://doi.org/10.1177/0739986316653594

Dunlop, D. D., Song, J., Lyons, J. S., Manheim, L. M., & Chang, R. W. (2003). Racial/Ethnic differences in rates of depression among preretirement adults. *American Journal of Public Health, 93*(11), 1945-1952. doi: 10.2105/AJPH.93.11.1945

Erikson, E. H. (1968). *Identity: youth and crisis.* Norton.

Espinosa, A., Tikhonov, A., Ellman, L., Kern, D. M., Lui, F., & Anglin, D. M. (2018). Ethnic identity and perceived stress among ethnically diverse immigrants. *Journal of Immigrant and Minority Health, 20*(1), 155-163. doi: 10.1007/s10903-016-0494-z

Finch, B. K., Kolody, B., & Vega, W. A. (2000). Perceived discrimination and depression among Mexican-origin adults in California. *Journal of Health and Social Behavior, 41*(3), 295–313. https://psycnet.apa.org/doi/10.2307/2676322

Finch, B. K., & Vega, W. A. (2003). Acculturation stress, social support, and self-rated health among Latinos in California. *Journal of Immigrant Health, 5*(3), 109-117. doi: 10.1023/a:1023987717921

Flores, E., Tschann, J. M., Bachen, E. A., Pasch, L. A., & De Groat, C. L. (2008). Perceived discrimination, perceived stress, and mental and physical health among Mexican-origin adults. *Hispanic Journal of Behavioral Sciences, 30*(4), 401-424. https://doi.org/10.1177/0739986308323056

French, S. E., & Chavez, N. R. (2010). The relationship of ethnicity-related stressors and Latino ethnic identity to well-being. *Hispanic Journal of Behavioral Sciences, 32*(3), 410-428. doi: 10.1177/0739986310374716

Fuligni, A. J. (2001). A comparative longitudinal approach to acculturation among children from immigrant families. *Harvard Educational Review, 71*(3), 566-578. https://doi.org/10.17763/haer.71.3.j7046h63234441u3

Gilster, M. E. (2014). Neighborhood stressors, mastery, and depressive symptoms: Racial and ethnic differences in an ecological model of the stress process in Chicago. *Journal of Urban Health: Bulletin of the New York Academy of Medicine, 91*(4), 690-706. doi: 10.1007/s11524-014-9877-4

Gonzales, N. A., Knight, G. P., Morgan-Lopez, A., Saenz, D., & Sirolli, A. A. (2002). Acculturation and the mental health of Latino youth: An integration and critique of the literature. In J. M. Contreras, K. A., Kerns, & A. M. Neal-Barnett (Eds.), *Latino children and families in the United States: Current research and future directions* (pp. 45-74). Praeger.

Gonzalez, P., Nunez, A., Merz, E., Brintz, C., Weitzman, O., Navas, E., Camacho, A., Buelna, C., Penedo, F. J., Wassertheil-Smoller, S., Perreira, K., Isasi, C., Choca, J., Talavera, G. A., & Gallo, L. C. (2017). Measurement properties of the Center for Epidemiological Studies Depression Scale (CES-D 10): Findings from HCHS/COL. *Psychological Assessments, 29*(4), 372-381. doi: 0.1037/pas0000330

Guyll, M., Matthews, K. A., & Bromberger, J. T. (2001). Discrimination and unfair treatment: Relationship to cardiovascular reactivity among African American and European American women. *Health Psychology, 20*(5), 315-325. doi: 10.1037//0278-6133.20.5.315

Hwang, W. C., & Goto, S. (2008). The impact of perceived racial discrimination on the mental health of Asian American and Latino college students. *Cultural Diversity and Ethnic Minority Psychology, 14*(4), 326-335. doi: 10.1037/1099-9809.14.4.326

Irwin, D. O. (2003). An ethnographic description of Latino immigration in rural Arkansas: Intergroup relations and utilizations of healthcare services. *Southern Rural Sociology,* 19, 42-72.

Johnson-Esparza, Y., Rodriguez-Espinosa, P., Verney, S. P., Boursaw, B., & Smith, B. W. (2021). Social support protects against symptoms of anxiety and depression: Key variations in Latinx and non-Latinx white college students. *Journal of Latinx Psychology, 9*(2), 161-178. https://doi.org/10.1037/lat0000184

Kiang, L., Yip, T., Gonzales-Backen, M., Witkow, M., & Fuligni, A. J. (2006). Ethnic identity and the daily psychological well-being of adolescents from Mexican and Chinese backgrounds. *Child Development, 77*(5), 1338-1350. doi: 10.1111/j.1467-8624.2006.00938.x

Kim, B. S. K., & Alamilla, S. G. (2017). Acculturation and enculturation: A review of theory and research. In A. M. Czopp & A. W. Blume (Eds.), *Social issues in living color: Challenges and solutions from the perspective of ethnic minority psychology: Societal and global issues* (pp. 25-52). Praeger

Knight, G. P., Basilio, C. D., Cham, H., Gonzales, N. A., Liu, Y., & Umaña-Taylor, A. J. (2014). Trajectories of Mexican American and mainstream cultural values among Mexican American adolescents. *Journal of Youth and Adolescence,* 43, 2012-2027. doi: 10.1007/s10964-013-9983-8

Knight, G. P., Carlo, G., Mahrer, N. E., & Davis, A. N. (2016). The socialization of culturally related values and prosocial tendencies among Mexican American adolescents. *Child Development, 87*(6)*,* 1758-1771. doi: 0.1111/cdev.12634

Knight, G. P., Vargas-Chanes, D., Losoya, S. H., Cota-Robles, S., Chassin, L., & Lee, J. M. (2009). Acculturation and enculturation trajectories among Mexican-American adolescent offenders. *Journal of Research on Adolescence, 19*(4), 625-653. doi: 10.1111/j.1532-7795.2009.00614.x

Kohout, F. J., Berkman, L. F., Evans, D. A., & Cornoni-Huntley, J. (1993). Two shorter forms of the CES-D Depression Symptoms Index. *Journal of Aging and Health, 5*(2), 179-193. https://doi.org/10.1177/089826439300500202

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer.

Lee, R. T., Perez, A. D., Boykin, M., & Mendoza-Denton, R. (2019). On the prevalence of racial discrimination in the United States. *PLoS ONE, 14*(1), 1-16 https://doi.org/10.1371/journal.pone.0210698

Liu, R. T., & Alloy, L. B. (2010). Stress generation in depression: A systematic review of the empirical literature and recommendations for future study. *Clinical Psychology Review, 30*(5), 582–593. doi:10.1016/j.cpr.2010.04.010.

Lopez, O., Haigh, C., & Burney, S. (2004). Relationship between hardiness and perceived stress in two generations of Latin American immigrants. *Australian Psychologist, 39*(3), 238-243. doi: 10.1080/00050060410001701906

Lorenzo-Blanco, E. I., Schwartz, S. J., Unger, J. B., Zamboanga, B. L., Des Rosiers, S. E., Baezcone-Garabanti, L., Huang, S., Villamar, J. A., Soto, D., & Pattarroyo, M. (2016). Alcohol use among recent immigrant Latino/a youth: Acculturation, gender, and theory of reasoned action. *Ethnicity & Health, 21*(6), 609-627. doi: 10.1080/13557858.2016.1179723

Lorenzo-Blanco, E. I., Unger, J. B., Baezconde-Garabanti, L., Ritt-Olson, A., & Soto, D. (2012). Acculturation, enculturation, and symptoms of depression in Hispanic youth: The roles of gender, Hispanic cultural values, and family functioning. *Journal of Youth and Adolescence, 41*(10), 1350-1365. doi: 10.1007/s10964-012-9774-7

Lorenzo-Blanco, E. I., Unger, J. B., Ritt-Olson, A., Soto, D., & Baezconde-Garabanti, L. (2011). Acculturation, gender, depression, and cigarette smoking among U.S. Hispanic youth: The mediating role of perceived discrimination. *Journal of Youth and Adolescence, 40*(11), 1519-1533. doi: 10.1007/s10964-011-9633-y

Marks, A. K., Ejesi, K. & Coll, C. (2014). Understanding the U.S. immigrant paradox in childhood and adolescence. *Childhood Development Perspectives, 8*(2), 59-64. https://doi.org/10.1111/cdep.12071

Masten, A. S. (2014). Global perspectives on resilience in children and youth. *Child Development, 85*(1), 6-20. doi: 10.1111/cdev.12205

Masten, A. S., & Coatsworth, J. D. (1998). The development of competence in favorable and unfavorable environments: Lessons from research on successful children. *American Psychologist, 53*(2), 205–220. https://doi.org/10.1037/0003-066X.53.2.205

McLaughlin, K. A., & King, K. (2015). Developmental trajectories of anxiety and depression in early adolescence. *Journal of Abnormal Child Psychology, 43*(2), 311-323. doi: 10.1007/s10802-014-9898-1

Meca, A., Schwartz, S. J., Martinez, C. R., & Mcclure, H. H. (2018). Longitudinal effects of acculturation and enculturation on mental health: Does the measure matter? *Development and Psychopathology, 30*(5), 1849-1866. doi: 10.1017/S0954579418001165

Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin, 129*(5), 674-697. doi: 10.1037/0033-2909.129.5.674

Michel, A., Titzmann, P. F., & Silbereisen, R. K. (2012). Psychological adaptation of adolescent immigrants from the former Soviet Union in Germany: Acculturation versus age-related time trends. *Journal of Cross-Cultural Psychology, 43*(1), 59-76. doi: 10.1177/0022022111416662

Miller, A. M., Wang, E., Szalacha, L. A., & Sorokin, O. (2009). Longitudinal changes in acculturation for immigrant women from the former Soviet Union. *Journal of Cross-Cultural Psychology, 40*(3), 400-415. doi: 10.1177/0022022108330987

Mossakowski, K. N. (2003). Coping with perceived discrimination: Does ethnic identity protect mental health? *Journal of Health and Social Behavior, 44*(3), 318-331. doi: 10.1007/s40615-017-0372-y

Murray, K. E., Klonoff, E. A., Garcini, L. M., Ullman, J. B., Wall, T. L., & Myers, M. G. (2014). Assessing acculturation over time: A four-year prospective study of Asian American young adults. *Asian American Journal of Psychology, 5*(3), 252-261. doi: 10.1037/a0034908

Neblett, E. W., Rivas-Drake, D., & Umaña-Taylor, A. J. (2012). The promise of racial and ethnic protective factors in promoting ethnic minority youth development. *Child Development Perspectives, 6*(3), 295-303. doi: 10.1111/j.1750-8606.2012.00239.x

Neese, A. L., Pittman, L. D., & Hunemorder, R. (2013). Depressive symptoms and somatic complaints among Zambian adolescents: Associations with stress and coping. *Journal of Research on Adolescence, 23*(1), 118–127. doi:10.1111/j.1532-7795.2012.00834.x.

Pascoe, E. A., & Smart Richman, L. (2009). Perceived discrimination and health: A meta-analytic review. *Psychological Bulletin, 135*(4), 531-554. doi: 10.1037/a0016059

Phinney, J. S., Horenczyk, G., Liebkind, K., & Vedder, P. (2001). Ethnic identity, immigration, and well-being: An interactional perspective. *Journal of Social Issues, 57*(3), 493–510. https://doi.org/10.1111/0022-4537.00225

Phinney, J. S., & Ong, A. D. (2007). Conceptualization and measurement of ethnic identity: Current status and future directions. *Journal of Counseling Psychology, 54*(3), 271–281. https://doi.org/10.1037/0022-0167.54.3.271

Portes, A., & Rumbaut, R. G. (2001). *Legacies: The story of the immigrant second generation.* Berkeley: University of California Press.

Portes, A. & Rumbuat, R. G. (2006) *Immigrant America: A portrait* (3rd ed.). University of California Press.

Potochnick, S. R. & Perreira, K. M. (2010). Depression and anxiety among first-generation immigrant Latino youth: Key correlates and implications for future research. *Journal of Nervous and Mental Disease*, *198*(7), 470-477. doi: 10.1097/NMD.0b013e3181e4ce24

R Core Team (2023). _R: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing, Vienna, Austria. <https://www.R-project.org/>.

Roberts, R., Phinney, J., Masse, L., Chen, Y., Roberts, C., & Romero, A. (1999). The structure of ethnic identity in young adolescents from diverse ethnocultural groups. *Journal of Early Adolescence, 19*(3), 301-322. https://doi.org/10.1177/0272431699019003001

Saadi, A., & Ponce, N. A. (2019). Worse mental health among more acculturated and younger immigrants experiencing discrimination: California health interview survey, 2015-2016. *Journal of General Internal Medicine, 35*(5), 1419-1426. doi: 10.1007/s11606-019-05412-w

Sam, D. L. & Berry, J. W. (2010) Acculturation: When individuals and groups of different cultural backgrounds meet. *Perspectives on Psychological Science, 5*(4), 472-481. https://doi.org/10.1177/1745691610373075

Schwartz, S. J., Kim, S. Y., Whitbourne, S. K., Zamboanga, B. L., Weisskirch, R. S., Forthun, L. F., Vazsonyi, A. T., Beyers, W., & Luyckx, K. (2013). Converging identities: Dimensions of acculturation and personal identity status among immigrant college students. *Cultural Diversity and Ethnic Minority Psychology, 19*(2)*,* 155-165. doi: 10.1037/a0030753

Schwartz, S. J., Unger, J. B., Zamboanga, B. L., Cordova, D., Mason, C. A., Huang, S., Baezconde-Garabanti, L., Lonrenzo-Blanco, E. I., Des Rosiers, S., Soto, D. W., Villamar, J. A., Pattarroyo, M., Lizzi, K. M., & Szapocznik, J. (2015). Developmental trajectories of acculturation: Links with family functioning and mental health in recent-immigrant Hispanic adolescents. *Child Development, 86*(3), 726-748. doi: 10.1111/cdev.12341

Schwartz, S. J., Unger, J. B., Zamboanga, B. L., & Szapocznik, J. (2010). Rethinking the concept of acculturation: Implications for theory and research. *American Psychologist, 65*(4), 237-251. doi: 10.1037/a0019330

Schwartz, S. J., & Zamboagna, B. L. (2008). Testing Berry's model of acculturation: A confirmatory latent class approach. *Cultural Diversity and Ethnic Minority Psychology, 14*(4), 275-285. doi: 10.1037/a0012818

Singer, J. D., & Willet, J. B. (2003). *Applied longitudinal data analysis – modeling change and event occurrence.* Oxford University Press.

Sirin, S. R., Ryce, T., Gupta, T., & Sirin, L. R. (2013). The role of acculturative stress on mental health symptoms for immigrant adolescents: A longitudinal investigation. *Developmental Psychology, 49*(4), 736-748. doi: 10.1037/a0028398

Smith, P. B., & Schwartz, S. H. (1997). Values. In J. Berry, M. Segall, & C. Kagitcibasi (Eds.), *Handbook of cross-cultural psychology: Social behavior and applications* (pp. 77-118). Allyn & Bacon.

Smith, T. B., & Silva, L. (2011). Ethnic identity and personal well-being of people of color: A meta-analysis. *Journal of Counseling Psychology, 58*(1), 42-60. doi: 10.1037/a0021528

Smokowski, P. R., & Bacallao, M. L. (2007). Acculturation, internalizing mental health symptoms, and self-esteem: Cultural experiences of Latino adolescents in North Carolina.

Child Psychiatry & Human Development, 37(3), 273-292. doi: 10.1007/s10578-006-0035-4

Smokowski, P. R., Rose, R. A., & Becallao, M. (2009). Acculturation and aggression in Latino adolescents: Modeling longitudinal trajectories from the Latino acculturation and health project. *Child Psychiatry & Human Development, 40*(4), 589-608. doi: 10.1007/s10578-009-0146-9

Smokowski, P. R., Rose, R. A., & Bacallao, M. (2010). Influence of risk factors and cultural assets on Latino adolescents' trajectories of self-esteem and internalizing symptoms. *Child Psychiatry & Human Development, 41*(2), 133-155. doi: 10.1007/s10578-009-0157-6

Torres, L. (2010). Predicting levels of Latino depression: Acculturation, acculturative stress, and coping. *Cultural Diversity and Ethnic Minority Psychology, 16*(2), 256–263. https://doi.org/10.1037/a0017357

Torres, L., Discoll, M. W., & Voelle, M. (2012). Discrimination, acculturation, acculturative stress, and Latino psychological disress: A moderated mediational model. *Cultural Diversity and Ethnic Minority Psychology, 18*(1), 17-25. doi: 10.1037/a0026710

Torres, L., & Ong, A. D. (2010). A daily diary investigation of Latino ethnic identity, discrimination, and depression. *Cultural Diversity and Ethnic Minority Psychology, 16*(4), 561-568. doi: 10.1037/a0020652

Torres, L., Yznaga, S. D., & Moore, K. M. (2011). Discrimination and Latino psychological distress: The moderating role of ethnic identity exploration and commitment. *American Journal of Orthopsychiatry*, *81*(4), 526–534. http://dx.doi.org/10.1111/j.1939-0025.2011.01117.x

Umaña-Taylor, A. J., & Updegraff, K. A. (2007). Latino adolescents' mental health: Exploring the interrelations among discrimination, ethnic identity, cultural orientation, self-esteem, and depressive symptoms. *Journal of Adolescence, 30*(4), 549-567. doi: 10.1016/j.adolescence.2006.08.002

Umaña-Taylor, A. J., & Guimond, A. B. (2012). A longitudinal examination of parenting behaviors and perceived discrimination predicting Latino adolescents' ethnic identity. *Journal of Latina/o Psychology, 1*(S), 14–35. https://psycnet.apa.org/doi/10.1037/2168-1678.1.S.14

Umaña-Taylor, A. J., Quintana, S. M., Lee, R. M., Cross, W. E., Rivas-Drake, D., Syed, M., Seaton, E., Quintana, S. M., Cross, W. E., Schwartz, S. J., & Yip, T. (2014). Ethnic and racial identity during adolescence and into young adulthood: An integrated conceptualization. *Child Development, 85*(1), 21–39. doi:10.1111/cdev.12196

Unger, J. B. (2014). Cultural influences on substance use among Hispanic adolescents and young adults: Findings from Project RED. *Child Development Perspectives, 8*(1), 48-53. doi: 10.1111/cdep.12060.

Unger, J. B., Ritt-Olson, A., Wagner, K. D., Soto., D. W., & Baezconde-Garbanati, L. (2009). Parent-child acculturation patterns and substance use among Hispanic adolescents: A longitudinal analysis. *Journal of Primary Prevention, 30*(3-4), 293-313. doi: 10.1007/s10935-009-0178-8

U.S. Census Bureau (2020, February). Demographic turning points for the United States: Population projections for 2020 to 2060. *Population Estimates and Projections.* https://www.census.gov/content/dam/Census/library/publications/2020/demo/p25-1144.pdf.

Vines, A. I., Ward, J. W., Cordoba, E., & Black, K. Z. (2017). Perceived racial/ethnic discrimination and mental health: A review and future directions for social epidemiology. *Current Epidemiology Reports, 4*(2), 156-165. doi: 10.1007/s40471-017-0106-z

Ward, C., & Geeraert, N. (2016). Advancing acculturation theory and research: The acculturation process in its ecological context. *Current Opinion in Psychology, 8,* 98–104. https://doi.org/10.1016/j.copsyc.2015.09.021

Weinreich, P. (2009). 'Enculturation' not 'acculturation': Conceptualising and assessing identity processes in migrant communities. *International Journal of Intercultural Relations, 33*(2), 124-139. doi: 10.1016/j.ijintrel.2008.12.006

Whitehead, M. R., Parra-Cardona, R., Wamplet, R., Bowles, R., & Klein, S. (2020). Longitudinal changes among Latino/a immigrant parental acculturation and extra-familial immigration-related stress. *Hispanic Journal of Behavioral Sciences, 42*(1), 18-40. doi: 10.1177/0739986319900029

Williams, D. R., & Mohammed, S. A. (2009). Discrimination and racial disparities in health: Evidence and needed research. *Journal of Behavioral Medicine, 32*(1), 20-47. doi: 10.1007/s10865-008-9185-0

Williams, D. R., Mohammed, S. A., Leavell, J., & Collins, C. (2010). Race, socioeconomic status, and health: Complexities, ongoing challenges, and research opportunities. *Annals of the New York Academy of Sciences, 1186,* 69-101. doi: 10.1111/j.1749-6632.2009.05339.x

Williams, D. R., Yu, Y., Jackson, J. S., & Anderson, N. B. (1997). Racial differences in physical and mental health: Socioeconomic status, stress, and discrimination. *Journal of Health Psychology, 2*(3), 335-351. doi:10.1177/135910539700200305

Yoon, E., Chang, C., Kim, S., Clawson, A., Cleary, S. E., Hansen, M., Bruner, J. P., Chan, T. K., & Gomes, A. M. (2013). A meta-analysis of acculturation/enculturation and mental health. *Journal of Counseling Psychology, 60*(1), 15-30. doi: 10.1037/a0030652