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Patricia Rodriguez Espinosa

Candidate

Psychology

Department

This thesis is approved, and it is acceptable in quality and form for publication:

Approved by the Thesis Committee:

Steven P. Verney, Ph.D., Chairperson

Felipe González Castro, Ph.D., M.S.W.

Kamilla Venner, Ph.D.

SEGMENTED ASSIMILATION TRAJECTORIES AND LATINO HEALTH: AN ANALYSIS OF THE ADAPTATION PROCESS OVER TIME

by

PATRICIA RODRIGUEZ ESPINOSA

B.S. PSYCHOLOGY

THESIS

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DEDICATION

Para mi madre Diana Margarita Espinosa Lugo,
por todo el sacrificio y la distancia.

SEGMENTED ASSIMILATION TRAJECTORIES AND LATINO HEALTH:

An Analysis of the Adaptation Process Over Time

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ABSTRACT

Cultural adaptation factors likely influence health status and social mobility. Using data from the Corazón Life Journey Studies, cross-sectional interviews of immigrant Latino, U.S.-born Latino, and Non-Hispanic White adults (n=272), we investigated acculturation factors, social mobility, and health outcomes across four time points, elementary school, middle school, high school and current adulthood.

Using growth mixture modeling, lifetime segmented assimilation trajectories were developed describing different acculturation and social mobility changes. A four-class model best described the data. Significant differences emerged among the ethnic groups. Family Traditionalism significantly predicted acculturation's starting point and change over time. Initial acculturation values predicted social mobility. Differences were also found in health outcomes. Findings have implications for clinical work, research and policy. Early life experiences can influence social mobility later in life, affecting individuals' health. We encourage researchers to employ more complex models in order to reveal mechanisms underlying Latinos' and other ethnic groups' health inequities.

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Introduction

Latinos and Health Disparities

According to the 2010 U.S Census, Latinos accounted for over 50 million people in the U.S., which constitutes 16% of the population (Humes, Jones, & Ramirez, 2011). By the year 2050, Latinos are estimated to number over 102 million people comprising over 24% of the total U.S population. Despite being one of the fastest growing populations in the U.S, Latinos are underrepresented in certain areas of research, such as controlled clinical trials, and are affected disproportionately by health disparities including a more limited access to health care services in part due to low levels of health insurance coverage and treatment barriers (Andrulis, Siddiqui, Purtle, & Duchon, 2010; Thomas A. LaVeist, Gaskin, & Trujillo, 2011; Leigh, 2004).

Despite recent advances in preventive treatment and medical care, ethnic/racial minorities still exhibit high rates of diseases, disability and premature death. As a disadvantaged population, Latinos experience higher rates of death from stroke, chronic liver disease, diabetes, and AIDS as compared to non-Latino Whites (Kim & Fredriksen-Goldsen, 2012). They are more likely to be obese and less likely to participate in regular physical activities (Vega, Rodriguez, & Gruskin, 2009). Latino youth also report disproportionate high use of illicit drugs and alcohol use (Prado & Pantin, 2011). Given this increase in heath disparities, national organizations have recently proclaimed commitments to reduce and eliminate them. For example, Healthy People 2020 has recognized racial/ethnic minorities as targets for health disparity reduction (Services, 2011).

More in-depth research in the process of cultural adaptation and change experienced by immigrants and subsequent Latino generations could shed light on the mechanisms that create health disparity. Among some Latinos and Latinas, acculturation, the changes that occur as a result of contact with mainstream society, have been found to lead to negative health outcomes (Vega, Sribney, Aguilar-Gaxiola, & Kolody, 2004). According to the Immigrant Paradox phenomena, as Latinos acculturate, they begin to exhibit worse health outcomes. However, mechanisms underlying such process are not

well understood, and the evidence in only equivocal (Bromberger, Harlow, Avis, Kravitz, & Cordal, 2004; Vega, et al., 2004).

The relationship between acculturation and health for Latinos is quite complex. When considering certain variables, such as substance abuse, dietary preferences, and birth outcomes, there is evidence that acculturation is associated with worse health outcomes and behaviors. However, for different variables such as health care use and self-perceptions of health, the evidence seems to indicate a positive effect of acculturation (Lara, Gamboa, Kahramanian, Morales, & Bautista, 2005). Adding to the complexity, certain cultural variables may predict low access to treatment, to social mobility, and educational achievement, and, in turn, lead to increased health problems. Understanding health disparities among Latinos and its relationship with the cultural adaptation process will inform health policy solutions that may assist this population.

Acculturation

Acculturation has been defined as the changes that take place as a result of continuous and direct contact between individuals having different cultural origins (Redfield, Linton, & Herskovits, 1936). Interacting with a culture different from one's own can have long-term psychological and behavioral consequences for an individual. The results of the adaptation process can vary depending on the person, context and social situations. Extensive efforts have been made to understand these variables, their influence and what constitutes a favorable or unfavorable outcome in terms of acculturative strategies.

Empirical findings have shown that acculturation occurs across a wide array of domains, extending from language use and preferences, cognitions, personality, identity, attitudes and stress (Marin & Marin, 1991). Acculturation has also been related to important outcome variables such as mental health status (Chun, Balls Organista, & Marin, 2003; Szapocznik, Scopetta, Kurtines, & Aranalde, 1978), social support (Griffith & Villavicencio, 1985), alcoholism and drug use (Berman et al., 2003; Catalano & Hawkins, 1996), risk for coronary heart disease and cardiovascular problems (Padilla et al., 2011; Reed et al., 1982), suicide (Hatcher & Hatcher, 1975), depression (Gonzalez, Haan, & Hinton, 2001) and others (Marin, Sabogal, Marin, & Otero-Sabogal, 1987). Research regarding Latino and immigrant populations cannot ignore acculturations'

impact and explanatory power, and to exclude or minimize the effects of acculturation would provide a grossly inaccurate picture of this population.

Despite the advances into the construct of acculturation, there is still an ongoing debate about when and how acculturation influences specific health variables. Acculturation measures have not adequately addressed or challenged underlying assumptions of the acculturation process leading to flawed methodologies and conceptualizations. Some researchers have argued that acculturation be abandoned in health-related research (Hunt, Schneider, & Comer, 2004). However, the problem is not that acculturation should be abandoned because it is a difficult area of investigation given culture's dynamic and subtle nature; the problem is that we have not employed in-depth analyses and conceptualizations based on more ecologically valid empirical findings. The field has relied on outdated conceptualizations that only have moderate support. In addition, current measures lack the ability to capture subtle phenomena related to the acculturation process (Lopez-Class, Castro, & Ramirez, 2011).

Conceptualizations. Several definitions and conceptualizations of acculturation have been proposed over the years. Initially, anthropologists conceptualized acculturation as a group phenomenon (Boas, 1988). Later on, psychologists conceptualized as an individual one (Cuellar, Arnold, & Gonzalez, 1995).

Gordon (1964) talked about behavioral assimilation and structural assimilation. Assimilation implies adaptation of behavioral norms of the host society while structural assimilation implies affiliation with societal institutions, groups, religion, etc. He goes on to argue that structural assimilation has been slow due to discrimination and rejection of immigrants by the host culture (Gordon, 1964). Teske and Nelson (1974) delineate the differences between acculturation and assimilation. While acculturation does not require out-group acceptance or positive attitudes towards it, assimilation does. In this sense, assimilation is view as a separate process from acculturation, although they are not necessarily independent (Teske & Nelson, 1974). These conceptualizations have also debated over direction and degree of acculturation. Initial papers related to acculturation talked about it as a process vs. event, group vs. individual level, dominance of the host culture, and values of the out-group (Teske & Nelson, 1974)

Probably one of the best known conceptualizations of acculturation has been Berry's fourfold model (Berry, 1980). He distinguishes levels according to orientations toward one's ethnic group and towards the host group. This leads to four acculturation strategies: assimilation, separation, integration and marginalization. *Assimilation* refers to the process in which individuals lose their heritage culture and embrace the host values, behaviors, beliefs, etc. *Separation* refers to the opposite orientation, where individuals maintain their heritage culture and reject the host one. *Integration* alludes to feeling oriented and belonging to both cultures. Finally, *marginalization* means rejecting both the original and the host culture (Berry, 1980).

Despite its popularity, Berry's model has been criticized for various reasons, including the construct of marginalization, its concentration on minorities, its assumptions about the majority culture, the mutual exclusivity of the four strategies and its lack of inclusion of contextual variables that may influence acculturation strategies (Rudmin, 2003).

Park (1928) asserted that immigration and limited social mobility adds to the development of a marginalized personality, in which individuals abandon their cultural practices, but also are not accepted into the mainstream because of discrimination or prejudice. This hypothesis has relied heavily on observations and historical accounts remaining largely untested. Marginalization seems to lack construct validity and convergent evidence while it provides little utility as a concept (Del Pilar & Udasco, 2004). Despite such strong criticism, and lack of reliable scales to measure it, scientist continue with its use of the marginalization construct (Cullen & Pretes, 2000).

Other criticisms of Berry's model include excessive concentration in minorities. The model does not take into account how the host culture changes as a result of contact with the minority groups. Next, the fourfold model assumes that the dominant majority is composed of a single uniform culture without acculturative origins or influences. Findings also contradict the four strategies mutual exclusivity. People tend to identify themselves as belonging to more than one acculturation type (Rudmin, 2003). Finally, the theory does not reflect social or contextual influences such as poverty, neighborhood or ethnic enclaves, family dynamics, cultural distance between the groups and so on, that are very likely to influence the acculturation process and experience.

In addition to the interest in conceptualizations and theory, a lot of attention has been given to the effects of different acculturation strategies. Berry (1970) introduced the term a*cculturative stress* to refer to the potentially negative impact of acculturation. The linear model generally suggests that assimilation to the dominant culture leads to positive outcomes while the bidimensional model and Berry's fourfold theory argue that integration would be associated with positive outcomes. Marginalization has been related to the worst outcomes whereas assimilation and separation seem to be in the middle (Berry, 1970).

Low acculturated immigrants have been recently uprooted of their networks of support and work. They commonly experience isolation and due to the lack of proficiency in English and lack of skills to move in the new culture they cannot navigate the new culture successfully. All of these constraints have been argued to eventually lead to psychological and physical maladjustment. On the other hand, increases in acculturation may lead to alienation from traditional supportive groups and/or family breakdown for some individuals, but not for everyone who acculturates. It may also accompany internalization of negative stereotypes toward Latinos and consequently lead to identity problems and other negative outcomes (Rogler, Cortes, & Malgady, 1991).

Furthermore, many researchers have suggested that biculturalism is associated with the best outcomes (Coatsworth, Maldonado-Molina, Pantin, & Szapocznik, 2005; Fosados et al., 2007; Rashid, 1984). This advantage may be partly due to both the ability to navigate the new system successfully and to retain their social support networks for times of stress (e.g. discrimination).

Nevertheless, the outcomes seem to vary depending on circumstances that are not clearly identifiable in the literature. Rudmin (2003) argues that each acculturation strategy or path entails different challenges and difficulties and therefore comes with a certain degree of negative qualities. Others have equally emphasized that biculturalism does not resolve the internal conflict and frustration of navigating two different cultures with conflicting demands and may be more distressing than choosing one single ethnic identification. Bicultural individuals need to create a new radical self-identity that may be incompatible with some sectors of the dominant society, with their traditional roots and with assimilated individuals (Sue & Sue, 1973).

Dimensionality of acculturation. Another area of theoretical discourse is the dimensionality of acculturation. Some investigators suggest that acculturation can be described by an unidimensional or linear model (Gans, 1979; Gordon, 1964). This implies that gaining competence in one culture (e.g. U.S mainstream) consequently leads to losses in the other culture (ethnic/heritage culture). In other words, acquiring the language, behaviors and attitudes of one culture means relinquishing those of one's original culture. Individuals are placed in a single linear continuum from very assimilated on one end to unassimilated on the other. This linear model has been criticized due to its exclusion of bicultural individuals. It leaves out those who maintain their heritage culture even after identifying with the dominant one. The largely cross-sectional nature of acculturation research has only added to this conception of unidimensionality. However, Berry's model notes that such bicultural strategy of adaptation is possible (Berry, 1997).

On the other hand, the bidimensional or orthogonal approach posits that minority and majority orientations are independent. It suggests that identification with one culture does not predict identification with the second culture. Individuals may orient toward both cultures, one of them, or neither of them (Berry, 1997; Cabassa, 2003; Ryder, Alden, & Paulhus, 2000). Values, language, behaviors and customs of both cultures may be maintained. People are placed on two distinct and independent continuums, one for the heritage domain and one for the mainstream. Despite its advantages, this model has been criticized as well. Some researchers argue that it does not take into account context or receptivity of the dominant culture; individuals cannot always choose their acculturation strategy (Bhatia & Ram, 2001; Cabassa, 2003). Reliable and valid measurement of the bidimensional model raises other issues. Even when the theory implies that dimensions are orthogonal, scales tend to correlate highly with each other.

Acculturation measures. Despite lack of consensus regarding acculturation's concept, its use in research or dimensionality, many scales have been proposed over the years. Proxy scales have been and are still popular in research. Language use, time spent in the U.S., and generational status have become easy ways of getting at deep, underlying constructs (Buriel, Calzada, & Vasquez, 1982; Dressler & Bernal, 1982; Gilbert, 1987; Inclan, 1983; Neff, 1986; Ortiz & Arce, 1984; Salgado de Snyder, 1987). Even recent studies, continue to employ proxy measures despite criticisms of their superficial nature

(Ellison, Jandorf, & Duhamel, 2011; Gil, Eric F. Wagner, & William A. Vega, 2000; Hussey et al., 2007; Page, 2007; Rosenberg, Raggio, & Chiasson, 2005; Sanchez, Rice, Stein, Milburn, & Rotheram-Borus, 2010).

In addition to proxy measures, initial support for linear models gave rise to scales that assessed acculturation in a unidimensional fashion. Most of the scales assume that participants will move between opposite poles on the same continuum. This single continuum includes culture of origin on one pole and mainstream American society on the other extreme. Such scales do not allow participants to endorse similar identification and involvement between the two cultures. The Short Acculturation Scale for Hispanics constitutes an example of a unidimensional scale (Marin, et al., 1987). Participants are assessed on 12-items consisting mainly of language factors and response choices are limited to "only Spanish" to "only English". Both dimensions are not measured independently. The initial ARMSA scale is another example (Cuellar, Harris, & Jasso, 1980) of unidimensional measures.

Recently, more support has been given to bidimensional models of acculturation rendering the unidimensional scales inadequate. These scales allow respondents to identify with one, both or neither culture. Participants then can be grouped into Berry's four categories of acculturation (assimilation, integration, separation and marginalization). The ARSMA-II (Cuellar, Arnold, & Maldonado, 1995), the Bidimensional Acculturation Scale (Marín & Gamba, 1996), the Acculturation, Habits, and Interests Multicultural Scale for Adolescents (AHIMSA, (Unger, Gallaher, et al., 2002) and the Orthogonal Cultural Identity Scale (Oetting & Beauvais, 1990) are examples of bidimensional scales. They have also been favored for their inclusion of media preferences, food, ethnic identity and holidays in addition to language items.

The ARSMA-II is comprised of two scales. The main scale, ARSMA-II, assesses integration and assimilation. The second scale, the Marginality Scale, assesses separation and marginalization. In the original paper Cuellar states that the Marginality scale is experimental and therefore should be treated as such (pp. 283). This has led to an inappropriate use of the ARSMA-II in empirical studies. Most researchers only use the first scale given the lack of validity data for the Marginality scale (López, Ehly, &

Garcia-Vazquez, 2002; Thoman & Suris, 2004). While the scale is based on Berry's fourfold model, only two categories are assessed.

Gutierrez and colleagues (2009) tested the validity of the ARSMA-II Marginality Scale. They performed a confirmatory factor analysis that yielded a poor model-to-data fit. Additional validation analysis revealed that the scale does not perform well with heterogeneous Latino samples. The original measure was developed with a Mexican American sample. However, the ARSMA-II is used with a wide array of Latino samples, which may be contraindicated given the data. Gutierrez also failed to find significant relationships between marginality and other variables, calling into question the construct validity of the marginality concept in general (Gutierrez, et al., 2009).

Other discrepancies between theories and measurement of acculturation have been noted. Scales measuring the same construct should be highly correlated to one another. In addition, from the bidimensional theory, it follows that the two continuums on a scale (Hispanic/heritage culture orientation vs. American/mainstream society orientation) would be independent from one another, i.e., orthogonal. Participants' scores on one dimension should not predict scores on the other dimension. Acculturation measures have not conformed well to these validity standards. The ARSMA-II Hispanic orientation scale has been found to be significantly correlated with the ARSMA-II Anglo orientation scale. In addition, the Anglo Way of Life of Oetting's scale was not correlated with either the ARSMA-II Anglo orientation or the AHIMSA U.S. orientation scale. In addition, the ARSMA-II Latino subscale was not correlated with the AHIMSA Other Country orientation subscale (Unger, Ritt-Olson, Wagner, Soto, & Baezconde-Garbanati, 2007). All of these issues challenge the theoretical and psychometric basis of the measurements.

Furthermore, another critique of acculturation measures is the imbedding of two questions within a single item, known as the double-barreled question. One example will be asking "Immigrants should not maintain their culture of origin, nor adopt the Quebecois culture" (Rudmin, 2003). In this case respondents have to think about likes and dislikes of the cultural norms and beliefs of both cultures in order to answer a single question. In addition, several authors have emphasized that it is mistake to measure the fourfold acculturation categories. They argue that instead, we should be measuring the

underlying motives, issues and/or attitudes that have led to a particular identification with one strategy (Rudmin & Ahmadzadeh, 2001; Ward & Rana-Deuba, 1999).

Despite criticisms, Berry's model has been extremely useful in conceptualizing the acculturation process. It has served as the foundation for research hypothesis and data analysis. Its simplicity allows for clear understanding of categories and for teaching others about it. However, this simplicity also raises questions of validity. In order to move forward in our understanding of the dynamic cultural adaptation process, better assessment tools are needed. Capturing subtleties while maintaining feasibility is challenging. Nonetheless, it is essential for this area of study.

Immigrant paradox. Another issue of debate when it comes to acculturation research has been the *Hispanic/Immigrant paradox*. This phenomenon suggests that Latinos, despite their usually low socioeconomic status, minimal access to health care and added stressors related to the immigration and acculturation process, tend to show better health outcomes than their non-Latino White counterparts. Vega and colleagues (Vega et al., 1998) found lifetime rates among Mexican immigrants for DSM-III R disorders to be about 50% less than U.S born of Mexican origin and U.S general population. Those who migrated at a young age (<16) were found to have significantly higher rates of disorders than those who migrated at an older age (Vega, et al., 2004).

Similarly other studies have found a health benefit for immigrants. Foreign-born Mexican Americans have shown lower risk for DSM-IV substance use and anxiety disorders than their U.S-born counterparts (Grant et al., 2004). Alcohol use is lower for immigrants as compared with U.S born Latinos adolescents, suggesting that length of time spent in the U.S is detrimental. In addition to drug use, risky sexual behavior has been found to be lower for first generation immigrants (Hussey, et al., 2007). However, different analysis of the same data (Add Health) showed that differences among first and third generations were not significant while second-generation adolescents showed lower drinking rates (Cavanagh, 2007).

Increased acculturation has also been linked to oral health problems, prenatal stress, less positive attitudes toward pregnancy, low birth weight, more drinking and increased medical risk during pregnancy leading to preterm delivery (Page, 2007; Rosenberg, et al., 2005; Sanders, 2010; Zambrana, Scrimshaw, Collins, & Dunkel-

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Schetter, 1997). Among HIV/AIDS positive Latinas, higher acculturation was associated with more negative coping leading to non-medication compliance and drinking (Sanchez, et al., 2010)

One proposed explanation for this paradox is the *healthy immigrant hypothesis*, which offers that only those who are healthy tend to migrate, therefore explaining the lower rates of disease among recent immigrants. Support has been scarce for this explanation. Some studies have found similar rates of disorders among recent immigrants and those living in Mexico City (Vega, et al., 1998). The healthy immigrant hypothesis also does not explain why some people regress in terms of health, especially later generations which have more social mobility and educational attainment.

Another theory is the fact that family cohesion and support systems may start to break down with more time spent in the host culture. Reduction of traditional values and parental respect may act to increase stressors and puts individuals at risk for disorders such as drug use and dependence. Different generations experience unique challenges while losing initial protective factors as family ties deteriorate (Vega & Gil, 1999).

Despite many investigations, support for the idea that higher assimilation and time spent in the U.S can be detrimental to health has been equivocal. Many studies have yielded inconsistent results. Bromberger and colleagues (2004) found Hispanic women (as compared to White, African American, Japanese and Chinese women) to have the highest odds of scoring above the cutoff for depressive symptoms on the CES-D (Bromberger, et al., 2004). However, after adjusting for covariates (socioeconomic status, education, social support, high stress, etc.) racial/ethnic differences disappeared, suggesting that initial variation was linked to socioeconomic status. Similarly, alcohol use and engagement in risky behavior among college students were found to be similar for first and second generation immigrants (Schwartz, Weisskirch, Zamboanga, et al., 2010), which contradicts the Hispanic paradox's prediction that later generations would exhibit more problematic behavior. Assimilation measures have also failed to predict alcohol use among immigrant and U.S born youth while third generation immigrants tended to drink less (Warner, Fishbein, & Krebs, 2010), suggesting that social and environmental variables should be incorporated when measuring outcomes.

Some challenges and criticisms to health-related research have come to light during this immigrant paradox debate. First, instrument artifacts are often overlooked as a possible explanation for the findings. It is known that scales are usually biased when assessing individuals from racial/ethnic groups other than those used to validate it. Hispanics have also been found to show item biases and to underreport symptoms (Adam C, 2009; Breslau, Javaras, Blacker, Murphy, & Normand, 2008; Mulgrew et al., 1999; Thombs, Lewis, Bernstein, Medrano, & Hatch, 2007).

Second, the overwhelming majority of studies who support the immigrant paradox have used unidimensional or proxy measures of acculturation such as language use, time spent in U.S, generational status, etc. (Page, 2007; Sanchez, et al., 2010; Sanders, 2010; Schwartz, Weisskirch, Zamboanga, et al., 2010; Zambrana, et al., 1997). These measures are based on older linear models that ignore bicultural individuals while context and individual factors are left out. They only capture a gross picture of the acculturation process.

Third, Latinos are a heterogeneous group that comprises very different groups (Mexican, Cuban, Puerto Rican, Dominican, Colombian, etc.) with different national origins, cultural practices, religions, food, beliefs and more. Nonetheless, studies use the term Hispanic as an umbrella, leaving out significant differences among subgroups. This lack of differentiation among variables and subgroups can give rise to misleading research outcomes. Since most studies of the immigrant paradox concentrate on Mexican Americans, the paradox may not apply to other groups. SES heterogeneity among subgroups and migration waves can lead to heterogeneity of health as well. When analyzed individually, higher acculturation and SES was only detrimental for Mexican American immigrants. Individuals from the Caribbean groups actually suffered at lower SES and assimilation levels with Puerto Ricans showing disparities across all health outcomes (Zsembik & Fennell, 2005). When looking at anxiety and depressive disorders among late and younger immigrants there are no differences among Cubans, Puerto Ricans, Mexicans, and other Latinos. In this comparison, only substance use seems to be affected by longer stay and higher acculturation levels (Alegria et al., 2007). In a large national survey of Latinos and Asian Americans, the NLAAS study (Alegria et al., 2004), the paradox held for Mexican participants in regards to several disorders, while it only

held among Cuban and other subgroups for substance use. SES was also found highest for Cubans and lowest for Mexicans (Alegria et al., 2008). When looking at Latinos as an aggregate category, the immigrant paradox is supported, but support quickly fades when groups are analyzed independently. These findings suggest that health-related research should avoid grouping sub-ethnicities into a single "Hispanic" construct given that the generalizability of the immigrant paradox across groups seems questionable.

Segmented Assimilation Theory

In addition to the more mainstream theories and conceptualizations of acculturation such as Berry's model, other investigators have posited different theories in order to explain the adaptation process that minorities undergo after coming to the U.S. The present section will outline the theory that will be used in the present study. Portes and Zhou (1993) introduced the concept of segmented assimilation, which recognizes the changing and stratified contemporary America, and argues that the pattern of assimilation is not uniform given current trends. Different segments of society are available to which immigrants can assimilate, therefore taking on different acculturation paths. One path is *upward assimilation* through achievement of middle class status leading to integration into social and economic mainstream society. The second path is *selective acculturation,* which refers to middle class status achieved by community resources and education while deliberately maintaining cultural and ethnic community ties. Finally, the third path includes *downward assimilation*, which relates to low educational achievement, working class status and weak community resources. This final path most likely will lead to low socioeconomic achievement and marginal working class communities. This theory emphasizes that there is more than one path for assimilation (Portes & Rumbaut, 2001) and goes on to explain factors that influence which path is chosen.

A fundamental aspect of segmented assimilation theory is the context in which people operate. Most immigrants settle in poor neighborhoods and experience the negative consequences of discrimination. In the initial accounts of this theory, Portes and Zhou (1993) viewed downward assimilation as fundamentally caused by conditions of racism, poverty and spatial segregation that include the presence of inferior schools systems. It is important to notice that downward trajectories are not conceptualized as a

chosen path, but rather as a consequence of constrains, limited resources, and lack of opportunities. Therefore, children in those adverse environments may be more likely to experience negative outcomes such as dropping out of school or becoming gang members. In this case, entering the American culture does not lead to upward trajectories or social mobility but exactly the opposite (Portes & Rumbaut, 2001). Human capital, family structure and modes of incorporation shape the immigrant experience and continue to affect later generations. Children who assimilate faster than their parents may experience internal family conflicts that may put them at an increased risk of downward assimilation (Portes & Rumbaut, 2001).

Since context also includes families, this framework asserts that maintaining the heritage culture may help poor communities support each other while reinforcing achievements. In support of these ideas, neighborhood composition has been found to affect different variables for Latinos. Living in areas with high concentration of recent immigrants has been shown to be a protective factor against substance abuse (Kulis, Marsiglia, Sicotte, & Nieri, 2007; Martinez, Lee, & Nielsen, 2004). Immigrant children's academic performance also seems more responsive to neighborhood conditions than that of U.S-born Latino children (Pong & Hao, 2007). These findings highlight how communities can provide valuable resources even in the absence of material goods.

Regardless of their disadvantages, a small number of immigrants and their children show remarkable resilience and exhibit upward assimilation trajectories (Portes & Fernandez-Kelly, 2008). Some scholars argue that this due to parental emphasis on educational attainment. Parents exercise great control and involvement in their children's lives. Nonetheless, the children themselves do not rebel against parental control. They are motivated to please their parents. Children whose parents are involve but who develop to value American traits such as independence and self-satisfaction are less likely to succeed (Nicholas, Stepick, & Stepick, 2008).

Despite the importance of discussing factors that may increase or reduce a person's risk of downward assimilation, the most likely outcome for children of immigrants appears to be horizontal mobility. They will tend to replicate their parents' working-class status (Kasinitz, 2008). Portes and colleagues have labeled as 'marginal

working class' the majority who had neither downward nor dramatic upward mobility (Portes, Fernandez-Kelly, & Haller, 2005).

Segmented assimilation theory adds another layer to the understanding of the adaptation process experienced by immigrants and their subsequent generations. It can be taken as a possible explanation for the dissimilarities between Latinos' outcomes in terms of acculturation. It can also serve as a conceptual framework for understanding factors that determine or influence an individuals' trajectory (Stepick & Stepick, 2010).

Ecodevelopmental Model

The present study will use an Ecodevelopmental framework to guide conceptualizations and data analysis. This is one approach to studying segmented trajectories since it aids in understanding surrounding environmental features.

Ecodevelopmental frameworks could be thought of as models of systems within systems. Within this framework, different aspects of an individual's environment including biological characteristics, peers, families and communities exert great influences on the person development and functioning. Families, for example, are considered to influence one's ethnic identity, socialization, cultural norms and even risky behaviors such as substance use (F. G. l. Castro, Kellison, & Corbin, 2012). In this sense, family can be conceptualized as a system.

Under this approach, trajectories can be compared between individuals who shared common 'ecodevelopmental fields', which in our case include acculturation, social or human capital and SES, and life milestones. A person can undergo segmented assimilation by learning a different language, making friends from another culture and moving into neighborhoods mainly inhabited by a different ethnicity. Borders are common examples, where White individuals may become enculturated into the Latino culture by living in close proximity to a large population of Latinos. This process can happen for both minority individuals and those from the mainstream culture, meaning that it is considered a bidirectional process (Castro, Marsiglia, Kulis, & Kellison, 2010). An analysis of lifetime segmented trajectories with the use of an Ecodevelopmental model can help us understand complex and subtle processes that may be at play in the development of negative health outcomes and downward social mobility (Myers, 2009).

Summary of Acculturation and Model

Adaptation processes to the mainstream culture and their consequences continue to be a pressing issue for developing better assessments and interventions for Latinos and other minority populations in the United States. Despite its importance, advances in the field have been modest. Different theories, conceptualizations and measures have been proposed over the years. Debates continue regarding acculturation's role in Latino health and whether it leads to positive or negative outcomes.

If the health and mental health industry is to move forward in understanding the adaptation process, the contextual nature of human experience needs to be better incorporated into research on the acculturation process. Family dynamics, social and human capital, community resources and individual characteristics should be added to theories and assessments since they are likely to influence assimilation strategies, well-being and health outcomes. Segmented assimilation theory incorporates context while including longitudinal analyses of trajectories rather than cross-sectional measures. Applying these recommendations to research ideas and methodology can help identify key intervening variables in order to prevent downward mobility. Breaching the health disparity gap is a pressing issue if the U.S is to progress toward a healthier nation for all.

Family Traditions

In addition to the behavioral changes that accompany the acculturation process, values are another important dimension (Kluckhohn & Strodtbeck, 1961). Values operate at a more overt level and involve the adoption of the host's cultural values. Due to its overt and dynamic nature it has been difficult for scales to measure changes in values reliably (Marín & Gamba, 1996; Szapocznik, et al., 1978). Family values, interactions and dynamics has been one of the areas often overlooked by measures of acculturative change (Phinney, 2011).

In the context of the Hispanic culture, familism has received recent attention. *Familism* refers to a strong identification with and attachment to the family (nuclear and extended); strong feelings of loyalty, reciprocation, and solidarity among members of the same family; and the belief that individual family members should behave in ways that reflect well on the family (Sabogal, Marin, Otero-Sabogal, & Marin, 1987). For

Hispanics, family values are at the core of the culture and are therefore transmitted to subsequent generations through socialization and parental examples.

Sabogal and colleagues (Sabogal, et al., 1987) identified three factors of familism. *Familial obligation* is the belief that family members have a responsibility to provide economic and emotional support to one another. The second factor, *perceived support and emotional closeness*, is the perception that family members are dependable sources of help, should be united, and have close relationships. Finally, *family as referent* is the belief that family members' behaviors should meet familial expectations.

Familism values have been associated with important health and developmental outcomes. It has been positively associated with well-being and good psychosocial functioning (Schwartz, Weisskirch, Hurley, et al., 2010) High family values have been related to lower adolescent's deviance and delinquent behavior; acting as a protective factors for those living in poor, gang-driven neighborhoods (Germán, Gonzales, & Dumka, 2009). High familism among acculturated Mexican American women decreases their eating- and body-related concerns (Bettendorf & Fischer, 2009). Familism has also been associated to lower aggressive behavior and conduct problems in Mexican adolescents from immigrant families in the Southwest (Marsiglia, Parsai, & Kulis, 2009).

Mothers' familism values are associated with parenting behaviors that promote prosocial behavioral tendencies among their adolescent children (Calderon-Tena, Knight, & Carlo, 2011). High familism seems to be a characteristic of Hispanic and Anglo non-abusing parents (Coohey, 2001). Unger and colleagues (2002) found familism and filial piety to be associated with a lower risk of substance use in a multiethnic sample of adolescents.

These studies highlight the importance of understanding familism when it comes to research with the Hispanic community. Strong evidence points at familism as a resilience factor important for youth development and mental health. Families are a source of support, bonding and parental authority. Additional research is needed in order to better understand and potentially mobilize this great human and community capital.

Family traditionalism and acculturation. Findings related to familism and acculturation have been mixed. Sabogal and colleagues (1987) found family support to remain constant despite changes in acculturation. However, familial obligations and

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family as referents appeared to decrease as the acculturation process took place. Nonetheless, Latinos reported higher levels of familism than non-Latino Whites.

Other researchers have found that familism tends to increase with acculturation. In one study, family as referents did not differ by acculturation, but family support and obligations increased with acculturation (Rodriguez & Kosloski, 1998). Similarly, Zambrana and colleagues reported higher levels of familial support for Mexican American women than for their immigrant counterparts (Zambrana, Silva-Palacios, & Powell, 1992). Also, a higher degree of importance of family was found among later generations as well as among participants who identified strongly with Mexican and American culture (Rodriguez, Mira, Paez, & Myers, 2007). Family income and generation were positively associated with stronger importance of family. In accordance with these findings, children who preferred to use both English and Spanish or English alone reported higher familism scores than those who preferred Spanish (Romero, Robinson, Haydel, Mendoza, & Killen, 2004).

In addition, other researchers report no association between familism and acculturation. One study among two generations of Puerto Ricans found that acculturation was not predictive of familism for either the parent or child generation (Cortés, 1995). Age at arrival in the United States was the only variable positively associated with familism. Another study examining the relationship between familism, parental monitoring and drug use found no association between familism and acculturation level. Hispanic adolescents tended to score higher on familism than non-Hispanic Whites. However, no differences in familism were found among those scoring high, moderate, and low in acculturation (Ramirez et al., 2004).

Differences in familistic values among immigrant Hispanics and U.S born Hispanics have also been found. Almeida and colleagues (Almeida, Molnar, Kawachi, & Subramanian, 2009) found that foreign-born Mexicans reported higher family support as compared to U.S born Hispanics and non-Hispanic Whites. Language spoken at home seemed to account for the relationship between nativity and familial social support. SES also mediated the relationship between social support and nativity. Foreign-born and U.S. born Hispanics reported lower social support from family at higher levels of SES. This study emphasized how immigrants rely heavily on their family for support, which in turn

may work to strengthen their ties and cultural values. In this case, immigrants, who are assumed to be less acculturated, reported the highest levels of family support.

Similarly, Gil and colleagues (2000) found that acculturation and acculturative stress influence alcohol use through the deterioration of family values, attitudes, and behaviors. As acculturation increased, acculturation stress increased. This was in turn related to the reduction of traditional family values and parental respect. These findings support explanations of the immigrant paradox based on deterioration of family support, traditions, and cohesion.

The diverse array of measurements for both familism and acculturation renders a concise and consistent overview of this literature challenging. Results have varied depending on the familism factor being investigated. Some studies only report on a single factor while many others tend to use unidimensional and proxy measures of acculturation. Findings also seem to vary depending on the ethnic group (e.g., Mexican Americans vs. Puerto Ricans).

Understanding family values and traditions as protective factors for Latinos is critical for reducing health disparities and mobilizing community resources. Nonetheless, little is known about the change in values across generations and the role of values in acculturation strategies.

Stress

Acculturative stress is defined as psychological stress that results from the process of acculturation (Berry & Annis, 1974). Hispanics face several stressors related to their adaptation process. Many immigrants come to the U.S with very little social and human capital. They face stressors emanating from their minority status, language barriers, unfamiliarity with educational and health systems, legal status, financial hardships, discrimination, missing their family back home, and other circumstances. Other stressors relate to their different cultural values, beliefs, attitudes and worldviews that can at times collide with the mainstream culture.

Acculturative stress has been associated with several outcome measures that impact both physical and mental health. Studies have found stress related to acculturation, such as discrimination, to be detrimental to health, especially for those with low social support (Finch & Vega, 2003). Adolescent mothers facing high levels of

discrimination and acculturative stress reported higher depressive symptoms and greater involvement in risky behaviors (Umaña-Taylor, Updegraff, & Gonzales-Backen, 2011). Acculturation gaps among family members can be an additional stress source. U.S born adolescents often report stress related to intergenerational conflicts, having to translate for parents and coping with opposing cultural values (Cervantes & Cordova, 2011). In addition, others have documented a relationship between acculturative stress and feelings of alienation, marginalization, anxiety and identity confusion (Williams & Berry, 1991).

Social-stress models have been proposed over the years in order to the complex interaction between adaptation and stress (Cervantes & Castro, 1985; Williams & Berry, 1991). There are mediator variables that may affect an individual's ability to adapt successfully to their environment. Negative outcomes occur when stressors exceed the person's coping resources or mediators.

Stress impact on acculturation. The relationship between nativity, stressors, and acculturation appears to be quite complex. In one study, immigrant Hispanics reported higher levels of acculturative strains than their U.S born counterparts (Gil, Vega, & Dimas, 1994). Nonetheless, native born were more vulnerable to the effects of such stressors, possibly due to their lower family pride. Findings also highlighted how different groups have differential exposure to specific stressors. Immigrants mostly reported language problems while low acculturated U.S born respondents mainly reported discrimination as an issue (Gil, et al., 1994).

Acculturation may moderate the relationship between immigrant stress and depressive symptoms (Ayers et al., 2009). More acculturated individuals have more skills to function in the new society, therefore reporting less depressive symptoms. Low acculturation may also function to buffer the effects of discrimination on stress level (Araujo Dawson, 2009). Nonetheless, Dawson reported that both low and high acculturation levels were related to high stress.

The choice of whether to acculturate or not may be informed by different types of stressors. Latinos face pressure to learn English and the U.S. society's norms while at the same time being expected to maintain their own heritage culture. Spanish competency pressures and pressures against acculturation mediate the relationships between heritage-cultural orientation and internalizing symptoms, whereas pressures to acculturate mediate

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the association between American cultural orientation and self-esteem (Wang, Schwartz, & Zamboanga, 2010). Being oriented toward the Hispanic culture seems to buffer individuals against negative outcomes while being oriented toward the American culture tends to increase self-esteem. Findings suggest that bicultural individuals may report the most favorable outcomes.

Research related to acculturative stress has been criticized on several grounds (Rudmin, 2009). Most studies rely on a one-time measure of stress that cannot distinguish between initial acculturation stressors and later ones related to losing one's heritage culture. Many studies also fail to distinguish the temporal order between stress and negative outcome. Therefore, they do not control for the fact that illness can cause stress. Most studies also fail to control for general life stress, which tends to highly correlate with acculturative stress (Rudmin, 2009). In addition, there is evidence that acculturation can occur without stress. These criticisms have led to the suggestion that acculturative stress be dropped as a 'catch-all' construct that has been used to model all sorts of stressors minorities faced regardless of their relationship with acculturation.

In summary, investigations into the nature of acculturative stress have used models and designs that have been too simplistic. Acculturation is usually measured with proxy scales and distinctions between acculturation per se and acculturative stress have been lacking (Gil, et al., 1994). In addition, there is a need to better understand how these stressors impact individuals differently at distinct stages in the assimilation process. In other words, do stressors have the same impact on an immigrant as on a U.S born Latino? The present study aims to examine stressors independently of the acculturation measure in order to shed some light into the relationship between acculturative stress and acculturation measured bidimensionally. More specifically, we will examine whether high stress predicts downward assimilation trajectories and for whom.

Resilience

Resilience involves resistance to the negative effects of loss, serious failure, insult, or disturbance of the available social frame. It also refers to one's ability to cope with life's nontrivially difficult or unpleasant tasks, situations, or experiences with attitudes and actions that minimize or overcome their negative effects (Cohen, 2011). Many definitions of resilience have been offered over the years. Some of the most

popular, and the one used here, have two underlying assumptions: 1) there has been some risk, trauma, or adversity and 2) the individual's outcome is evaluated as satisfactory or good.

Different models of resilience have also been proposed. Two of the major approaches are *variable-focused* and *person-focused* (Masten, 2001). Variable-focused examines the links between risk, outcome and a person's characteristics or environments that serve as protective against negative outcomes. Person-focused approaches compare individuals with different profiles on a set of criteria in order to determine what differentiates one person from the other (e.g. resilient child versus other groups of children).

The mechanisms involved in recovery from negative outcomes are still debatable. Some researchers argue that resilience has been treated as a positive outcome when in reality it is a process to be explained and that can bridge the gap between coping and development. In this view resilience is not a resource that explains positive outcome, but rather it is phenomena to be explained (Leipold & Greve, 2009). Others envision resilience as being the interaction between individual resources, social conditions and the developmental challenge at hand. Coping is seen as the process, that under the right circumstances, results in resilience (Greve & Staudinger, 2006).

One of the most robust findings is that resilience is a common phenomenon. There is strong evidence that children exposed to stressors, poverty or even trauma, can grow up to be functional adults (Werner, 1989). Overcoming life challenges seems to be part of human nature and adaptation processes. The special aspect of resilience seems to be its ordinariness. Despite previous views that resilience was a very special characteristic, some type of invincible trait, the common perception today is that resilience is made of ordinary rather than extraordinary processes (Masten, 2001).

Several factors have been associated to resilience in the literature. Parental qualities, SES, intellectual abilities, self-efficacy and positive self-perceptions have been associated with positive outcomes relating to psychopathology, academic achievement, and prosocial behavior (Masten, 2001). Children reared in warm, engaged environments full of positive regard are less likely to develop an Axis II disorder. Findings suggest that beneficial child-rearing may be associated with resilience that extends into adulthood

(Johnson, Liu, & Cohen, 2011). Social competence has also been related to adult resilience. Early social competence in adolescent boys has been related to less involvement with delinquent peers, which in turns predicts less delinquent behavior and more educational attainment for youth in low-income neighborhoods (Stepp, Pardini, Loeber, & Morris, 2011). In addition, children's autonomy combined with an ability to ask for help were associated with resilience in Kauai Longitudinal Study (Werner, 1995). In the same study, resilient children had families that provided structure, rules and religious beliefs that allowed for meaning making in times of difficulty.

Resilience and Latinos in the U.S. Latinos in the U.S. are at an increased risk of several negative health outcomes given their likelihood to be living in poverty. According to the U.S. Census, over 32% of Latino children live under poverty conditions as compared to 17% of White children (Census, 2009). In addition, they experience added stressors related to discrimination and acculturation issues with implications for developmental and health outcome. Research in resilience investigates the effects of ethnicity and poverty on health outcomes. Nonetheless, most of the literature concentrates on deficits and increased risk of minorities. Findings highlighting that family and community's strengths can lead to positive outcomes tend to be ignored (Kuperminc, Wilkins, Roche, & Alvarez-Jimenez, 2009).

One robust finding in this literature is that low socioeconomic status can negatively impact children. Children who live in poverty are at increased risk of adverse developmental outcomes (Garmezy, 1991). Reports have illustrated the cycle of poverty. Disadvantaged mothers are more likely to experience poor nutrition and have less access to services, which increases infant mortality and children's future school failure and unemployment rates (Birch & Gussow, 1970). Nonetheless, authors reported that half the children did not repeat the maternal outcome in terms of low socioeconomic status in adulthood. Access to support networks and resources can allow mothers to better provide for their children. Findings highlighting the importance of further studying resilience in disadvantage communities.

In the context of neighborhood disadvantage, a longitudinal study found that high IQ in children, nurturing parents, and positive and close parent–child relationship, measured in early childhood, were associated with low levels of antisocial behavior and

high levels of social skills at ages 11 and 12 (Vanderbilt-Adriance & Shaw, 2008). These factors were stable across different levels of neighborhood disadvantage.

Despite the odds, many Hispanics achieve great success in terms of education, jobs and health. Studies looking at highly achieving first generation Latino college students have found that parental commitment to education, support of adolescent's autonomy, nonverbal expressions of support for educational goals, and the presence of faculty mentors in the students' lives where important components of success in Ivy League schools (Ceballo, 2004).

In a review of the literature, Cardoso and Thompson (2010) highlighted several factors that are commonly associated with Hispanics' resilience. Individual characteristics such as self-mastery, personal agency, strong desire for education and employment were protective assets despite cultural isolation following migration. Family strengths included familism, child supervision, involvement, and communication. Extended families had also an important role in providing encouragement and support in times of need. Cultural factors were also related to resilience. Shared rituals, traditions, spiritual systems, cultural pride and solidarity buffered individuals and families against negative outcomes.

Another asset possessed by Latinos is a strong sense of community. Studies found that at-risk youth benefit from education programs in community colleges, voluntary military service, and active participation in a church community (Elder, 1986; Werner, 1995). Community support through peers, mentoring programs, parenting classes and church seem to be protective against crime and marginalization (Cardoso & Thompson, 2010). Neighborhood social cohesion has also been associated with better physical and mental health, mediating the relationship between low neighborhood socioeconomic status and health outcomes (Rios, Aiken, & Zautra, 2012). Concentrating on community resilience could help facilitate mobilization of resources when there are resources to mobilize. Therefore, community social and physical capital can strengthen individuals' coping capacity (Ungar, 2011).

Research on resilience has the overarching message of positive psychology. Concentrating on human adaptation capabilities and cultural strengths can inform prevention programs that aim at increasing human capital and health among the

underserved and at risk communities. New studies should be tailored toward specific cultural, and contextual pathways. Given the increased diversity of the U.S population, with minority babies now accounting for the majority of births in the U.S (Census.gov, 2012), resilience research cannot afford to ignore Latinos and other minorities.

Depression in Latinos

Depression is a disorder affecting millions of people each year. In the year 2000, the economic burden caused by loss of productivity and resources allocated to treatment was over 83 billion dollars (Munoz, 2003). Given its profound impact, the World Health Organization estimates that by the year 2020, depression will constitute the second cause of disability worldwide (Ballenger et al., 2001).

Latinos face additional challenges in their everyday lives related to their minority status in the U.S, their common lack of resources and acculturation issues. Feelings of sadness, emptiness, hopelessness, and worry have commonly accompanied immigrants, their children and member of ethnic minorities. Depression has been a part of Latinos journey, especially when resources to cope are absent and when they leave loved ones back at home (Aguilar-Gaxiola & Gullotta, 2008). Depending on gender and other social factors, manifestation of the disorder may be seen through increased drug use, somatic complaints, and "ataque de nervios", an idiom Latinos may use to refer to one or more symptom complexes often overlapping with panic disorder (Guarnaccia et al., 2010; Liebowitz, Salmán, Jusino, & Garfinkel, 1994).

In addition of Latinos struggles in mainstream America, issues of discrimination and racism are almost always present. With the economic downturn currently being experienced by the country, feelings of anti-immigration have re-emerged. Latinos must now deal with negative public attitudes and laws toward undocumented immigrants. In addition, accessing health care providers is extremely difficult for Latinos. Language barriers, lack of insurance or transportation and unfamiliarity with the health care system all make it unlikely that Latinos will seek depression treatment (Rodriguez-Galan & Falcon, 2009).

Therefore, prevention approaches are crucial for this population. A deeper understanding of the etiology and manifestation of depression in Latinos is crucial. Somatization, the expression of distress through physical complaints, has been commonly

reported in the case of Latinos. Stomach ache, excessive gas, palpitations and chest pain are common symptom presentations for Puerto Ricans and Mexican Americans (Escobar, Randolph, & Hill, 1986).

Not surprisingly, Latinos are at an increased risk for depression than the general U.S population (Falcon & Tucker, 2000). Studies using data from the National Comorbidity Survey (Kessler, McGonagle, Zhao, & Nelson, 1994) indicated that the lifetime and 30-day prevalence rates of a major depressive episode were highest among Hispanics, in particular Hispanic women (Blazer, Kessler, McGonagle, & Swartz, 1994). Despite some paradoxical findings (Vega, et al., 1998), investigators in general tend to find higher rates of depressive symptoms among Latinos than non-Latino Whites (Cuellar & Roberts, 1997).

Depression and acculturation. Research related to the relationship between acculturation and depression has yielded mixed results. Some have found a negative relationship for older adults (Falcon & Tucker, 2000) and for women (Allen, Denner, Yoshikawa, & Seidman, 1996; Masten, Penland, & Nayani, 1994), with lower acculturation being associated with higher levels of depression (Neff & Hoppe, 1993). However, others find minimal relationships (Burnam, Hough, Karno, & Escobar, 1987). Positive relationships are also common in the literature. In one study, women exhibited higher depression scores if they were born in the U.S. (Ruiz et al., 2012).

The relationship can also be complex. Ayers and colleagues (2009) found that acculturation did not have a direct impact on depression. However, more acculturation was related to reduced stress and therefore less depression symptoms (Ayers, et al., 2009). Socioeconomic status can also mediate the relationship between acculturation and depression. Indeed, lower acculturation is associated with lower educational attainment and therefore lower social mobility. In support of this idea, Canabal and Quiles (1995) found that poverty and unemployment had a stronger impact on Puerto Ricans' depression than acculturation. Similarly, residents of poor, mother-only neighborhoods have higher levels of depression than residents of more well-to-do neighborhoods (Ross, 2000).

Cultural factors can also be protective against depressive symptoms. Familism and strong connections to the Latino community have been found to protect individuals

against mental health problems such as depression (Lefley, 1990). On the other hand, increased stressors associated with the acculturation process can put individuals at risk of depression (Umaña-Taylor, et al., 2011).

Depression for Latinos seems to be the result of a complex relationship between several variables associated with the experience of being a minority and acculturation issues. These variables can impact individuals differently depending on their resources, coping skills and resilience factors. Creativity and flexibility are necessary in our research methodology and in public health models if we are to help this population live meaningful and healthy lives in America (Aguilar-Gaxiola & Gullotta, 2008).

Developing a Model of Lifetime Segmented Assimilation

In summary, acculturation and its impact on Latino health continue to be issues of debate and research. Mixed and complicated findings are common in the literature. The heterogeneity of Latinos and the variability of assessments used in research make comparisons across studies difficult. However, it seems clear that the relationship between acculturation and mental outcomes are neither linear nor universal. Moderator variables seem important and crucial for our understanding of the adaptation process and its consequences. What constitutes a good health outcome of the acculturation process, for which variables, and under which conditions, are still debatable questions.

Current models found in the literature tend to be reductionistic in nature and fail to account for contextual and developmental influences. Latinos' early life experiences such as family traditionalism and acculturative stressors can inform how we conceptualize and predict outcomes. In addition, neighborhood and socioeconomic status, which are fundamental predictors of health, seem to be 'controlled for' rather than incorporated into models in a meaningful and purposeful way. Therefore, more complex models are necessary if we are to unravel how cultural adaptation influences health and what factors predict such processes. The health disparity gap experienced by Latinos can only be reduced through better understanding of protective, risk, intervening variables, and their relationships.

The present study attempts to develop a more ecologically meaningful model of acculturation that includes earlier life experiences such as family traditions, childhood

neighborhood SES, personal acculturative stressors and immigration status (see Figure 1). The model takes a developmental, rather than cross-sectional approach. We intend to capture a lifetime process of adaptation while pointing at nuances that are usually missed by employing cross-sectional methods. In addition, we intend to exemplify a new methodological approach for acculturation research that takes into account important contextual variables in an individual's life.

Specific Aims

Specific Aim 1. Model lifetime segmented assimilation trajectories, based on four milestones, elementary school, middle school, high school and current status, with the trajectory predictors of immigration status and family traditionalism. ***Hypothesis 1a:*** *Based on previous findings of this dataset, we expect to find at least two lifetime segmented assimilation trajectory groups with at least one group exhibiting a lifetime change toward mainstream culture (upward assimilation), and another group exhibiting a lifetime change toward their own cultural group (downward assimilation).* ***Hypothesis 1b:*** *We hypothesize that a higher proportion of immigrants will exhibit downward assimilation trajectories compared to both U.S. born Latinos, and non-Latino Whites.* ***Hypothesis 1c****: We hypothesize that higher family traditionalism (as assessed retrospectively for the participant's adolescence) will be associated with the downward assimilation trajectory. In contrast, less family traditionalism will be associated with upward assimilation trajectories.*

Specific Aim 2. Determine the relationship between personal stressors associated with relocation (as assessed retrospectively) and assimilation changes between high school and current time for immigrant and U.S born Latinos. ***Hypothesis 2:*** *We hypothesize that those with higher self-reported stress will exhibit a stronger downward assimilation trajectory than those reporting less stress.*

Specific Aim 3. Examine the relationship between lifetime segmented assimilation trajectories and the specific health outcomes of depression and resilience, for immigrants, U.S. born Latinos, and non-Latino Whites. ***Hypothesis 3:*** *We hypothesize that different assimilation trajectories will be associated with different health outcomes, with upward assimilation being associated with better health outcomes regardless of ethnicity or immigrant status.*
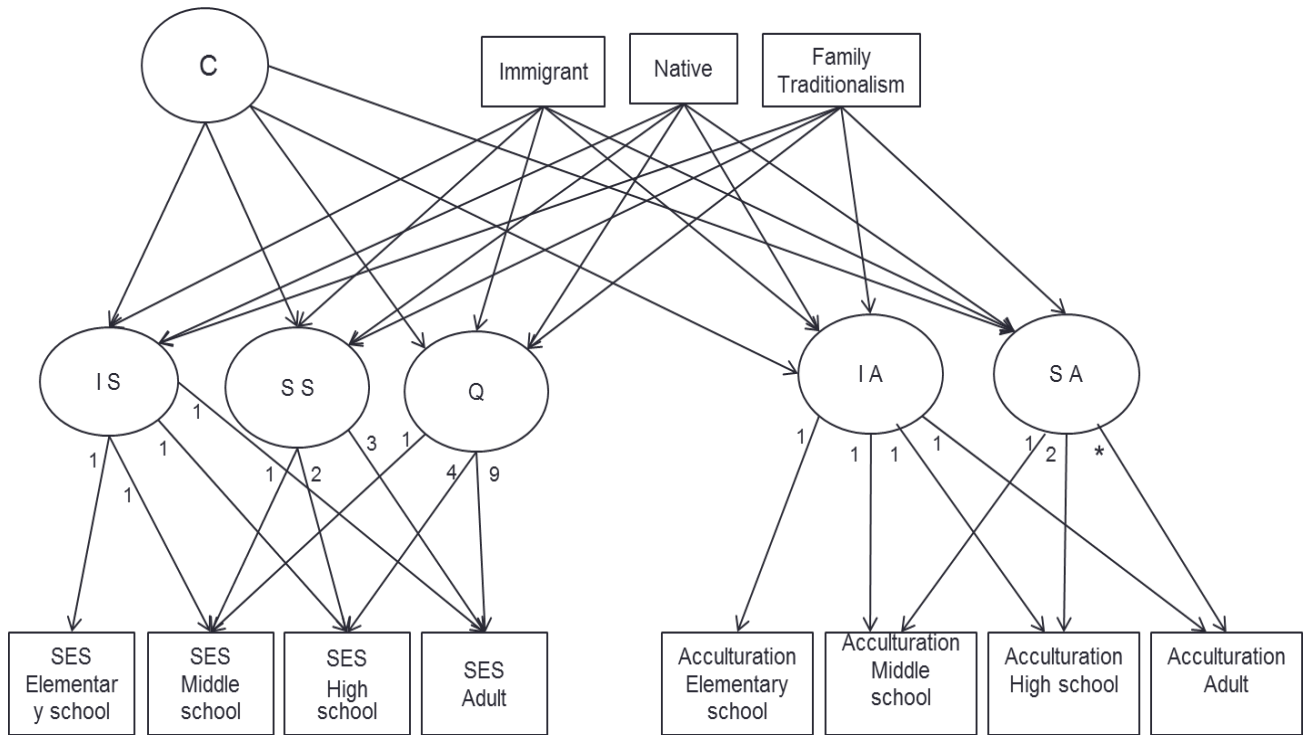
Figure 1. Lifetime Segmented Assimilation Trajectory Model Based on Acculturation and SES.

Note. Figure represents growth mixture model. Intercepts and slope fixed according to Bollen and Curran (Bollen & Curran, 2006) recommendations. Immigrant= being an immigrant, Native= U.S.-born Latino, Famility Traditionalism= Family Traditionalism Scale total score.

Methods

Design Overview and Setting

The preset study will use secondary data obtained from Dr. Felipe González Castro, Professor in the Department of Psychology, University of Texas, El Paso. Participants included in the data set were recruited through the Corazón Life Journey Studies designed to examine lifetime acculturative and socioeconomic life journey changes in Latino and other groups within the Southwest. The studies used purposive

nonprobability sampling in order to obtain a diverse sample of community residents with significant variations in their levels of acculturation (Castro, et al 2010).

Sample

The proposed study sample is comprised of 303 participants (15% female, mean age= 39.5) recruited from 2004 through 2008 from different ethnic backgrounds, and who were residents of the Phoenix Arizona metropolitan area. The Corazón Life Journey Studies consisted of two studies, one with drug users (N=216) and one with Hispanic community leaders and residents (N=87). In order to achieve higher power, we will utilize the full sample but divide the groups according to the respective study, i.e., drug users or other, in order to account for the individual differences in the sampling (see appendix A for a demographic table).

Inclusion/Exclusionary Criteria

Participants will self-identify as Latino immigrants, U.S born Latino or non-Latino Whites. All respondents are 18 years of age or older. We will exclude those individuals who have missing ethnic identity data or who self-identify with a different groups (e.g. African American or Native American).

Measures

Interview. In-depth 2.5-hour long interviews were conducted by trained members of the research team. The interview included sections on early life experience, mental health assessments, background and demographic information and cultural beliefs and traditions. Life events were assessed at four life milestone in participants' lives: (1) elementary school (age 8 to 10 years), (2) middle school (age 11 to 13 years), (3) high school (age 14 to 18 years), and (4) currently. Memory induction was used to increase focus and memory accuracy. At the end of the interview a clinical rating of memory was conducted by the interviewer to rule out unreliabable cases. A few of the unreliable cases were excluded from these data and consist of less than 2% of the interviews conducted.

Background. The end of the structured interview included several background questions regarding demographics. This included birthday, national origen (immigrant or

native), gender, marital status, employment status, job description, and total household income for the last year (from 1=Under $4,000 to 15=$75,000 or more). Current level of education was assessed by a single question with 8-levels ranging from 0=Did not complete grade school, 3=Completed high school or GED, 6=Completed college, to 7=Other.

Participants were also able to self-identify with one or more racial/ethnic groups. Common choices were White American (non-Hispanic White), White American with mixed background, African American, Hispanic/Latino(a) -which included Mexican, Mexican American, Cuban, Puerto Rican, Chicano and other Hispanic-, American Indian/Native American, Asian American –which included Chinese, Japanese, Korean, Filipino ad other Asian-, and other Ethnic Identities.

Socioeconomic status. Socioeconomic status was assessed with a single item self-report question. Respondents were asked to rate the type of neighborhood themselves and their family lived at. Sample choices ranged from 1) a poor, lower class, ghetto/barrio neighborhood, 2) a low-income, lower-class neighborhood, 3) a middle-income, middle-class neighborhood, 4) an upper-middle income, affluent neighborhood, and 5) a high-income, wealthy, elite neighborhood. The same question was repeated for elementary school, middle school, high school and current time point recollections.

Acculturation. Acculturation questions were elicited across the four milestones. The measure consisted of a 5-item self-report scale with 5 choices each. The items assessed (1) preferred spoken language (from 1=Only Spanish to 5= Only English), (2) preferred reading language (from 1=Only Spanish or another non-English language to 5=Only English), (3) best friends (from 1=Almost all Hispanic/Latinos and no White Americans to 5=Almost all White Americans), (4) neighbors (from 1= Almost all Hispanic/Latinos and no White Americans to 5=Almost all White Americans), (5) media language preference (from 1=Spanish only to 5=English only).

Stressors in Late Adolescence. A single question assessed particants' willingness to make their "big move" which involved moving out of their parents' home and starting a new adult life. For this item, choices ranged from 1 to 5 (1=unwilling to move away, 3=neutral, 5=determined to move). This was followed by 13-items asking

respondents to rate the stressfulness for them of this "big move" on a scale from 0=Did not occur, 1=Not at all, 2=A bit, 3=Somewhat, 4=Very much to 5=Extremely. Sample items include "feeling discriminated against", "having little money or resources" and "feeling all alone, with no close friends".

Family Traditionalism Scale. The Family Traditionalism scale is a 12-item scale that examines attitudes toward traditional and conservative Latino family norms (Castro et al., 2007). Participants rate each item on a scale from 1 to 5 (1=Strongly Disagree, 3=No Opinion, 5=Strongly Agree). Sample items include: "Children should be taught to be loyal to their family", "It is important for mothers to teach their daughters how to cook traditional cultural foods" and "Children should always be respectful of their parents and grandparents". The original scale of Family Traditionalism was developed as a 9-item scale from a sample of 437 Hispanic community women (Castro & Gutierres, 1997). These scale items are based on an earlier scale of traditionalism-modernism (Ramirez, III, 1991).

Center for Epidemiologic Studies Depression (CES-D). Depression symptoms were assessed using the Center for Epidemiologic Studies Depression (CES-D) scale which was modified to include 11 items asking about frequency of depressive symptoms during the previous week on a scale of 1 (rarely: <1 day) to 4 (most: 5-7 days). Items kept include number 2, 6, 7, 11, 12, 14, 15, 16, 18, 19, and 20. Sample questions include "feel lonely?", "feel sad?", "feel that you are enjoying life?" and "feel depressed?". The CES-D was designed for use with the general population and is therefore a short self-report measure (Radloff, 1977).

The scale has been used to screen for depression in community samples and a score of 16 or higher denotes potential clinical depression (Boyd, Weissman, Thompson, & Myers, 1982; Comstock & Helsing, 1976). Several studies have shown that the scale shows validity and high internal consistency and test-retest reliability among diverse racial and ethnic groups including African American, Latinos and Japanese (Guarnaccia, Angel, & Worobey, 1989; Jones-Webb & Snowden, 1993; Potter, Rogler, & Moscicki, 1995; Salgado-de Snyder & Maldonado, 1994).

Connor-Davidson Resilience Scale (CD-RISC). Resilience was assessed with the Connor-Davidson Resilience Scale (CD-RISC). This scale was created to measure

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ability to cope with life adversity (Connor & Davidson, 2003). It consists of 25 items that participants rate on a scale from 1 (Not true at all) to 5 (True almost all the time). Sample items include "even when things looked hopeless, you didn't give up" and "you were able to deal with whatever came your way". Initial research with patients and the general population provided support for the reliability and validity of a 5-factor model (personal competence, high standards, tenacity; trust in one's instincts, tolerance of negative affect, strengthening effects of stress; positive acceptance of change, secure relationships; control; and spiritual influences). Nonetheless, research with college students and young adults have shown support for a unidimensional structure (Burns & Anstey, 2010; Campbell-Sills & Stein, 2007). The scale has been validated for use with the general population (Brown, 2008; Lamond et al., 2008) as well as with clinical samples (Davidson et al., 2008; Karairmak, 2010).

Analytic Approach

Statistical analysis. We will begin by describing the participants' demographic, social, and psychological measures with means, and standard deviations. These descriptive statistics will be conducted in order to describe relationships among variables and help guide more detailed analyses, as well as assisting with interpretation.

Specific Aim 1. Model lifetime segmented assimilation trajectories, based on four milestones, elementary school, middle school, high school and current status, with the trajectory predictors of interest. In addtion, investigate the effects of immigration status and family traditionalism on trajectories of change.

Growth mixture modeling (GMM) will be used to identify lifetime changes in acculturation and socioeconomic status based on four time points: elementary school, middle school, high school and currently. GMM is commonly used for identifying homogenous subpopulations within a larger heterogenous population and for identification of groups or classes in a given data set (Jung & Wickrama, 2008). More specifically, I attempt to identify and group together individuals who share the same underlying trajectory of change in aculturation and SES. The trajectories will reflect changes in acculturation and socioeconomic status for respondents across these four time points.

The optimal number of latent classes (i.e. trajectory groups) will be identified using the intercept and the slope latent factors for socioeconomic status and level of acculturation across the four time points (see Conceptual model in Figure 1). Differences in participants' age introduces additional variablity between high school and the current time point. Therefore, I will estimate the last slope rather than fixing it as recommended by Bollen and Curran (2006). This should account for the age variation in respondents.

In order to account for the effects of immigration status and family traditionalism on a person's assimilation trajectory, both variables will be included in the growth mixture model as covariates or explanatory variables (see Fig. 1). These variables are expected to influence individuals' starting points (e.i acculturation and SES intercepts), as well as their change over time (e.i. acculturation and SES slopes). Immigration was dummy coded with non-Latino Whites as the reference group.

In order to simplify the model, variables of interest such as gender were not included as predictors. Given the relatively small sample size, adding parameters would not only complicate interpretation but also decrease power and the ability of software to estimate the model quickly and properly.

Specific Aim 2. Determine the relationship between personal stressors associated with relocation (as assessed retrospectively) and assimilation changes between high school and current time for immigrant and U.S born Latinos.

This analysis will be carried out using Path Analysis, a statistical technique for testing and estimating causal relationships among variables. It provides indices that indicate whether the model fits the data properly, as well as significance tests of specific causal paths. Variables that were measured directly are referred to as *manifest variables.*

In the present study, stressors will be used as a manifest variable to predict the last slopes in the GMM model. Stressors associated with moving were assessed retrospectively for the time period where respondents moved out of the parental household and started life on their own. For most respondents this happened after or around the high school period. Given that the lifetime segmented assimilation trajectories include time points previous to the stressors (e.g elementary school and middle school), I will only be predicting changes in assimilation and SES that occurred after the presence or influence of the stressors. The last slope in the model represents changes that occur

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between high school and the present. Hence, I will use stressors as predictors of the last slope rather than as predictors of the full trajectory. This last slope will be estimated in the GMM model (represented with * in Figure 1).

Each group will have their own slope. However, numbers of slopes used for this analysis may not be the same as the number of classes obtained in the GMM model. For example, two groups may have a flat slope for the last time period. Those two slopes will be treated as the same outcome i.e. no change. Sample questions of interst in this sections are "Were individuals who experienced more stressors more likely to move toward their own culture (i.e downward trajectory)?", "Were stressors a barrier to move up in social mobility?".

Specific Aim 3. Examine the relationship between lifetime segmented assimilation trajectories and specific health outcomes, as defined by depression and resilience, when examined for immigrant Latinos, U.S. born Latinos, and non-Latino Whites.

Lifetime segmented assimilation trajectory groups will be used in path analysis to predict health outcomes as defined by depression and resilience. In this section, previously developed assimilation trajectories (developed in Aim 1) will be used to explore health outcomes in each class. For example, are individuals on the upward trajectory group reporting less depressive symptoms and more resilience? Similarly, are those in the downward trajectory group reporting more depressive symptoms and less resilience as predicted?

Results

Descriptive Analysis

Tables 1 summarizes descriptive statistics for each ethnic group. Participants included in the data set were recruited through the Corazón Life Journey Studies designed to examine lifetime acculturative and socioeconomic changes in Latino and other groups within the Southwest. The studies included a diverse sample of community residents with significant variations in their levels of acculturation (Castro, et al 2010). The sample was composed of 63 immigrants, 126 U.S-born Latinos and 83 non-Hispanic Whites. The three groups were significantly different in age. Follow-up t-test revealed that U.S-born Latinos were significantly older than immigrant Latinos and non-Hispanic

Whites (t=2.99, *p*<0.01 and t=1.99, *p*<0.05 respectively). There were no significant age differences among immigrant Latinos and non-Hispanic Whites (t=1.5, *p*=0.12).

Table 1.

Descriptive Statistics

	Immigrant Latinos n=63	U.S-born Latinos n=126	Non-Hispanic Whites n=83	Statistics (df)
Age	36.16 (10.11)	42.12 (14.09)	38.64 (9.16)	$F(2)=5.73$ **
Gender (% female)	16 (25%)	29 (23%)	0	$X^2(2)=23.85$ **
Education	3.35 (1.53)	3.79 (1.30)	3.42 (0.90)	$F(2)=3.56$ *
Income	10.03 (4.39)	10.07 (4.75)	8.06 (4.45)	$F(2)=5.24$ **
Drug User (%)	39 (62%)	67 (53%)	83 (100%)	$X^2(2)=53.97$ **

Note. ** *p*<0.01, * *p*<0.05. Education was measured on a 5-point scale from less than 8th grade to completion of college. Income was measured on a 15-point scale from less than $4,000 to over $75,000.

There were significant differences among the groups on the percentage female on each group. Non-Hispanic Whites have significantly less number of females represented in their groups than immigrant and U.S-born Latinos (t=-5.28, *p*<0.001 and t=-4.96, *p*<0.001 respectively). There are no significant differences among immigrants and U.S-born Latinos in the percentage of females represented in their samples (*p*=0.72).

Average education level was significantly different for the three groups. Immigrant Latinos reported an average level of 3.35 (SD=1.5), U.S-born Latinos reported 3.79 (SD=1.3), and non-Hispanic Whites reported 3.42 (SD=0.9). Education was measured on a 5-level scale in which a 3 represents high school or GED and a 4 represents some technical degree. U.S-born Latinos reported significantly higher education level than immigrant Latinos and non-Hispanic Whites (t=2.00, *p*<0.05 and t=2.27, *p*<0.05 respectively). There were no significant differences among immigrant Latinos and non-Hispanic Whites in average education levels.

There were also significant differences among the ethnic groups in income level. Average income level was 10.0 (SD=4.4) for immigrant Latinos, 10.0 (SD=4.8) for U.S-born Latino and 8.1 (SD=4.5) for non-Hispanic Whites. A category of '8' corresponds to 20K-25K per year and '10' corresponds to 30K-40K. Immigrants and U.S-born Latinos reported significantly higher income levels than non-Hispanic Whites (t=2.59, $p<0.05$ and t=2.99, $p<0.01$ respectively). In addition, non-Hispanic Whites have significantly higher numbers of drug users in their sample than immigrants and U.S-born Latinos ($p<0.001$). There were no significant differences in drug user representation among immigrants and U.S-born Latinos ($p=0.26$).

The income and education differences could be due the sampling characteristics of the original study. The initial Corazón studies targeted drug-using populations in order to make comparisons with another sample of Hispanic leaders in the community. Hence, our non-Hispanic White sample consists of drug users, which may explain their lower income and education level.

Table 2 summarizes average acculturation and SES scores for the three ethnic groups in the sample across the four time points (elementary school, middle school, high school, and current time during the interview in adulthood). Average levels of acculturation increased slightly from elementary school to current time, 3.19 (SD=1.34) and 3.47 (SD=0.85) respectively. A score of 3 indicates biculturalism and 5 would indicate highest levels of acculturation. The same pattern was observed for SES average levels with 2.48 (SD=0.95) in elementary school and 2.97 (SD=0.86) at the current time point were 2 indicates low income and 3 indicates middle-class.

Table 2.

Descriptive Statistics (means and standard deviations) for Acculturation and Socioeconomic status (SES) per Group and Time Point.

	Immigrant Latinos	U.S-born Latinos	Non-Hispanic Whites	Total sample
Acculturation				
Elementary School	1.43 (0.89)	3.21 (0.79)	4.50 (0.49)	3.19 (1.34)
Middle School	1.69 (1.06)	3.29 (0.73)	4.48 (0.48)	3.28 (1.27)
High School	1.91 (1.13)	3.36 (0.67)	4.43 (0.49)	3.35 (1.19)
Current	2.70 (0.86)	3.32 (0.55)	4.28 (0.46)	3.47 (0.85)

Table 2 cont.

	Immigrant Latinos	U.S-born Latinos	Non-Hispanic Whites	Total sample
SES				
Elementary	2.49 (1.06)	2.17 (0.88)	2.94 (0.75)	2.48 (0.95)
Middle	2.62 (0.99)	2.38 (0.90)	3.06 (0.82)	2.64 (0.94)
HS	2.92 (0.97)	2.48 (0.91)	3.16 (0.86)	2.79 (0.96)
Current	3.13 (0.75)	2.98 (0.89)	2.83 (0.88)	2.97 (0.86)

Table 3 offers a summary of descriptive statistics for other variables of interest. Participants also reported an average level of Family Traditionalism of 4.16 (SD=0.50) were 4 indicated agree to the statement provided. Average stress level after the "big move", which involved moving out of their parents' home and starting a new adult life, was 2.30 (SD=0.89) with 2 indicating that stressors were "a bit bothersome" and 3 "somewhat bothersome". Average depression symptoms were 2.06 (SD=0.72) with 2 indicating that symptoms occur 1-2 days in the previous week. Resilience average levels was 3.75 (SD=0.71) were 5 would indicate highest value of resilience.

Table 3.

Descriptive Statistics (means and standard deviations) for Predictors and Outcome Variables.

	Immigrant Latinos	U.S-born Latinos	Non-Hispanic Whites	Total sample
Family Traditionalism Scale	4.13 (0.59)	4.16 (0.49)	4.20 (0.43)	4.16 (0.50)
Total stress	31.24 (11.54)	27.11 (10.01)	25.67 (11.06)	27.63 (10.86)
Average stress	2.59 (0.96)	2.27 (0.82)	2.12 (0.92)	2.30 (0.89)
Depression (CES-D)	2.01 (0.74)	1.87 (0.69)	2.37 (0.63)	2.06 (0.72)
Resilience (CD_RISC)	3.70 (0.74)	3.94 (0.67)	3.48 (0.66)	3.75 (0.71)

Note. Total stress is a sum of all stress items. Average stress is the average across the stress inventory. CES-D: Center for Epidemiological Studies Depression scale. CD_RISC: Connor-Davidson Resilience scale.

Tables 4 and 5 offer descriptive correlation matrixes among the variables of interest. Acculturation scores were significantly correlated with multiple SES time points. Self-reported stress during the adolescence period was significantly associated with all acculturation time points. In this case, more acculturation was associated with lower self-reported stress. Being a drug user was associated with lower levels of current SES. It was also associated with higher acculturation scores up to the high school time point. Higher levels of family traditionalism were significantly associated with lower SES at the current time point. Higher depression scores on the CESD were significantly associated with lower levels of current SES. Higher depression scores were also associated with higher acculturation levels during elementary school. Further, higher resilience scores on the CD-RISC were associated with higher SES levels during adulthood and lower acculturation scores during the elementary school period.

Table 4.

Correlation Matrix for Acculturation and SES Variables.

		Elementary SES	Middle SES	High school SES	Current SES
Elementary Acculturation	Pearson Correlation	.316**	.303**	.186**	-.101
	Sig. (2-tailed)	.000	.000	.002	.096
	N	272	272	272	272
Middle School Acculturation	Pearson Correlation	.287**	.308**	.239**	-.054
	Sig. (2-tailed)	.000	.000	.000	.378
	N	272	272	272	272
High School Acculturation	Pearson Correlation	.279**	.272**	.255**	.004
	Sig. (2-tailed)	.000	.000	.000	.946
	N	272	272	272	272
Current Adult Acculturation	Pearson Correlation	.247**	.224**	.213**	.136*
	Sig. (2-tailed)	.000	.000	.000	.025
	N	272	272	272	272

Note. **. Correlation is significant at the 0.01 level (2-tailed).
    *. Correlation is significant at the 0.05 level (2-tailed).

Table 5.

Correlation Matrix Among Other Variables of Interest.

		Average Stress level	Drug User	Family Traditiona-lism	CESD	CD_RISC
Elementary neigh SES	Pearson Correlation	-.042	.216**	.083	.105	-.115
	Sig. (2-tailed)	.489	.000	.171	.084	.058
	N	272	272	272	271	272
Middle neigh - SES	Pearson Correlation	-.010	.216**	.110	.115	-.071
	Sig. (2-tailed)	.869	.000	.070	.059	.240
	N	272	272	272	271	272
High school neigh - SES	Pearson Correlation	-.074	.122*	.076	.092	-.023
	Sig. (2-tailed)	.224	.044	.210	.130	.707
	N	272	272	272	271	272
Current neigh - SES	Pearson Correlation	-.092	-.267**	-.152*	-.222**	.269**
	Sig. (2-tailed)	.128	.000	.012	.000	.000
	N	272	272	272	271	272
Elementary Acculturation	Pearson Correlation	-.216**	.305**	.088	.173**	-.145*
	Sig. (2-tailed)	.000	.000	.148	.004	.017
	N	272	272	272	271	272
Middle School Acculturation	Pearson Correlation	-.232**	.214**	.050	.118	-.055
	Sig. (2-tailed)	.000	.000	.409	.053	.370
	N	272	272	272	271	272
High School Acculturation	Pearson Correlation	-.216**	.168**	.014	.078	-.044
	Sig. (2-tailed)	.000	.005	.820	.203	.468
	N	272	272	272	271	272
Current Adult Acculturation	Pearson Correlation	-.209**	.112	-.063	.032	.008
	Sig. (2-tailed)	.001	.066	.297	.595	.901
	N	272	272	272	271	272

Note. **. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Specific Aim 1: Developing Lifetime Segmented Assimilation Trajectories

Growth model. Before starting the full analysis using GMM, the individual parts of the model were tested in order to assess fit of the components of the larger model. Given that the full model includes two growth processes, both were tested. First, an unconditional acculturation growth model based on the four acculturation time points was tested. Mplus software version 7.0 (Muthén & Muthén, 1998-2013) was used for all analyses. Hooper and colleagues (2008) guidelines to assess model fit were used. Chi-square tests should be non-significant, indicating that our model does not fit the data worse than a model were all parameters are allowed to freely correlate. Other fit parameters of interest include Root Mean Square Error of Approximation (RMSEA) values less than 0.07, Comparative Fit Index (CFI) values greater than 0.95, and Standardized Root Mean Residual (SRMR) values smaller than 0.08. After analyzing these parameters, our model fitted the data well: X^2 (4) = 1.84, p = 0.76; RMSEA=0.001, 90% CI [0.001-0.065]; CFI= 1.00; SRMR= 0.017. Given that acculturation may not be the same construct for non-Hispanic Whites, the acculturation growth was tested for invariance (i.e. the same) between Latinos and non-Hispanic Whites. A multigroup analysis indicated that our model provided a good fit of the data: X^2 (9) = 9.4, p = 0.40; RMSEA=0.018, 90% CI [0.001-0.099]; CFI= 1.00; SRMR= 0.11.

Second, an unconditional SES growth model based on the four time points as tested. Results indicated that a model with a linear slope did not fit the data well: X^2 (4) = 62.5, p < 0.05; RMSEA=0.87, 90% CI [0.18-0.28]; CFI= 0.87; SRMR= 0.11. However, adding a quadratic slope resulted in good fit: X^2 (1) = 0.73, p = 0.78; RMSEA=0.001, 90% CI [0.001-0.10]; CFI= 1.00; SRMR= 0.003. This model was also tested for invariance between Latinos and non-Hispanic Whites. A multigroup analysis indicated that our model provided a good fit to the data: X^2 (2) = 1.62, p = 0.44; RMSEA=0.001, 90% CI [0.001-0.16]; CFI= 1.00; SRMR= 0.014. Given the improvement in model fit by adding a quadratic slope to the SES growth process, a quadratic slope for SES was included in all of the following models.

Latent class analysis. Latent class analysis (LCA) is a modeling technique used to explore how a set of variables or indicators vary across groups of individuals (Muthén & Muthén, 2000). However, group membership is latent or not directly observed.

Groups, or classes, can be seen as patterns of responses. Individuals who share the same pattern will be grouped together into a latent class. This analysis adds classes stepwise until the optimal number has been reached (Muthén & Muthén, 2000). Given that the final model will include latent classes, the presence and number of classes in each of the growth models (i.e. acculturation and SES) was explored. First, we tested an unconditional LCA model (no predictors) for each growth model. Next, we proceeded to incorporate both processed into a combined LCA model.

In LCA there is no precise way of estimating model fit or deciding on the proper number of classes. Nonetheless, model fit parameters have been developed that compare models with different number of classes in order to offer some guidance (Finch & Bronk, 2011). Common ones include Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC) and sample-size adjusted (aBIC). These fit indexes compare models by assessing the number of parameters and sample size. Although there is no standard cutoff, lower values are preferred and adjusted BIC has been found to be superior in simulation studies (Nylund, Asparouhov, & Muthén, 2007). Other model fit parameters such as Bootstrapped Likelihood Ratio Test (BLRT) compare the estimated model to a model that contains one fewer class (k-1 classes). For this criteria, low p-values are preferred since they indicate that the estimated model fits the data better than a model with k-1 classes (Finch & Bronk, 2011). Entropy, which indicates classification precision, is another criterion commonly used. In this case, high values, typically above 0.70 are preferred since they would indicate good precision.

All of these fit indexes adjust differently based on the number of parameters and give different penalties based on sample size. Hence, they could contradict each other when it comes to deciding the optimal number of classes. One can also take a more content-oriented approach in which parameters and classes are evaluated for their additional value (Lubke & Muthén, 2005). For example, adding a class may result in the splitting of well-interpretable latent class into two poorly interpretable one. In this case, one may decide not to add that class despite fit indexes.

Unconditional LCA for acculturation. Tables 6 summarizes the model fit criteria for the acculturation model. BLRT is absent for the one class model since there is no model with smaller number of classes than one. The information criteria continued to

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improve with each additional class added. Therefore, they were not very useful in selecting a particular number of classes. BLRT tended to favor models with more classes. Given the discrepancies in model fit indicators, particular values within classes and class sample sizes were explored to better understand the models and select the optimal number of classes.

Table 6.

Unconditional Acculturation Latent Class Analysis.

Model	C1	C2	C3	C4	C5
Entropy		.947	.863	.893	.89
Log-likelihood	-3,500	-3,464	-3,435	-3,406	-3,394
AIC	7,019	6,953	6,901	6,850	6,832
Bayesian (BIC)	7,055	7,000	6,959	6,918	6,911
Adjusted BIC (aBIC)	7,024	6,959	6,908	6,858	6,841
BLRT		70.7 ($p<.001$)	57.9 ($p< 0.001$)	57.7 ($p<.001$)	23.7 ($p<0.001$)
Smallest Class Size (% of total sample)		c2 N=21 (8%)	c3 N=19 (7%)	c1 N=18 (7%)	c1 N=18 (7%)

In the case of acculturation four classes seem to give the most appropriate solution (see Figure 2 for graphical representation and Table 7 for summary of intercepts and slopes). The four classes represented different starting values and different slopes. Class one, representing extreme upward acculturation, (N=18, 6.6% of the sample) had an intercept of 1.4 ($p<0.001$) with a slope of 0.92 ($p<0.001$). These individuals are starting with low acculturation values and significantly increasing thereafter. Class two, representing highly acculturated individuals, (N=118, 43%) had an intercept of 4.4

($p<0.001$) with a slope of -0.076 ($p<0.01$). These individuals started as highly acculturated but exhibit a slight decrease in acculturation over time.
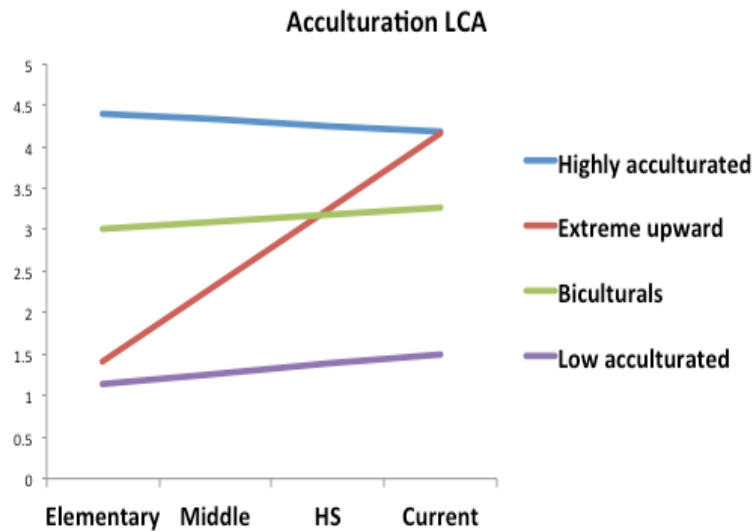
Figure 2. Acculturation Latent Class Analysis.

Note. The last time point (current) was freely estimated. Thus, the slopes represent change in acculturation from elementary school to high school (HS).

Table 7.

Summary of Intercept and Slopes: Unconditional Acculturation Latent Class Analysis.

	C1	C2	C3	C4
Intercept	1.4*	4.4*	3.0*	1.17*
Slope	0.92*	-0.08*	0.09*	0.12*

Note. * $p < 0.05$

Class three, representing biculturals, (N=88, 32%) had an intercept of 3.0 ($p<0.001$) with a slope of 0.09 ($p<0.01$). In contrast to class 2, these individuals also start high but they slightly increased rather than decrease in acculturation over time. Class four, representing low acculturated individuals, (N=48, 18%) had an intercept of 1.17 ($p<0.001$) with a slope of 0.12 ($p<0.05$). In contrast to class 1, these individuals also started at low acculturation values, but in this case they increased at a lower rate.

In summary, the four classes represent different possible acculturation processes. We found individuals who were highly acculturated and hence could not change much over time. On the other hand, we found individuals with very low levels of acculturation. Some of them remained at this level while others exhibited an extreme increase in their acculturation score over time. These two groups were classified as low acculturated and extreme upward, respectively. In addition, there was a class composed of bicultural individuals who have competencies in both the Latino and the American culture.

It is worth noticing that variances for the intercept and growth factors were significant ($p<0.01$). This indicates that within classes, individuals differ in their starting acculturation point and also in their rate of change over time. Hence, while classes describe similar patterns of response among individuals, they are not completely capturing all differences. However, models that completely capture differences in responding may over capitalize on data patterns and are not likely to replicate.

A five class model was rejected. Closer inspection of intercepts and slopes revealed that class 3 (N=53, 19%) and class 5 (N=64, 24%) are modifications of each other; both with high intercepts and moderate positive slopes. Hence, the addition of a fifth class does not explain any unique pattern in the data and does not justify the more complicated model.

Unconditional LCA for SES. Similar results were found for the SES LCA model (see Table 8). The information criteria continued to improve with each additional class added. Therefore, we turned to the parameters in each class in order to determine the best model. A four class model also seemed to fit the data the best (see Figure 3 for graphical representation, quadratic slopes not included).

Class one, representing a moderate downward trajectory, (N=200, 74% of the sample) had an intercept of 2.5 ($p<0.001$), a linear slope of -0.66 ($p<0.001$), and a quadratic slope of 0.66 ($p<0.001$). These individuals are starting with moderate SES values, decreasing and then increasing. Class two, a moderate upward trajectory group, (N=51, 18%) had an intercept of 2.2 ($p<0.001$), a linear slope of 1.36 ($p<0.001$) and a quadratic slope of -0.36 ($p<0.001$). These individuals started with moderate levels of SES and then exhibited a sharp increase in their SES with a slight decrease at the last time point.

Table 8.

Unconditional SES Latent Class Analysis.

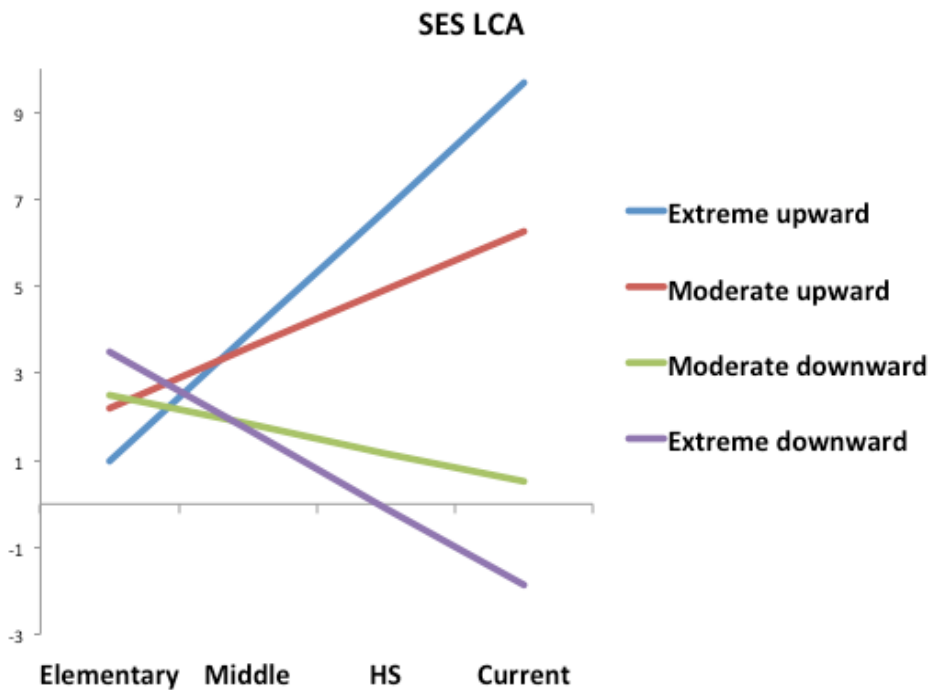| Model	C1	C2	C3	C4	C5
Entropy		.733	1.0	1.0	1.0
Log-likelihood	-1,221	-1,205	-1,115	-973.2	-796
AIC	2,501	2,445	2,272	1,996	1,650
Bayesian (BIC)	2,515	2,506	2,347.3	2,087	1,755
Adjusted BIC	2,473	2,452	2,281	2,007	1,663
BLRT (p value)		31.2 ($p<.001$)	172.3 ($p< 0.001$)	283.2 ($p<.001$)	353.99 ($p<0.001$)
Smallest Class Size (% of total sample)		c1 N=108 (40%)	c3 N=15 (6%)	c4 N=6 (2%)	c3 N=3 (1%)

Figure 3. Socioeconomic Status Latent Class Analysis
Note. Non-linear growth not represented

Class three, an extreme downward trajectory group, (N=15, 5.5%) had an intercept of 3.48 ($p<0.001$) with a linear slope of -1.78 ($p<0.001$), and a quadratic slope of 0.56 ($p<0.001$). These individuals started the highest in SES, decreased sharply and then show moderate gains in SES over time. Class four, an extreme upward trajectory group, (N=6, 2.2%) had an intercept of 0.98 ($p<0.001$) with a slope of 2.89 ($p<0.001$), and a quadratic slope of -0.7 ($p<0.001$). These individuals started with very low SES values, and then exhibited a sharp increase followed by a moderate decrease. Even though class four has very few individuals, they seem to exhibit a very different patter from the other classes that is worth noticing. However, given the very small sample size any interpretation should be done with extreme caution.

Variances were significant for the intercept and quadratic slope growth factors ($p<0.001$). This indicates that within classes, individuals differ in their starting SES point and also in their non-linear rate of change over time. The variance for the linear slope growth factor was not significant. Hence, individuals did not vary significantly in their linear SES rate of change over time.

Fit indices improved after adding another class to the model. Nonetheless, a five class solution can be rejected based on class size and separation. A close inspection of the intercepts and slopes reveals that four of the classes replicate the four class solutions while class 3 (N=3, 1.1%) seems to be a modification of class 5 (N=12, 4.4%), both with high intercepts, high negative linear slopes and moderate size positive quadratic slopes.

Unconditional growth mixture model. While it was important from a modeling perspective to explore each process separately in order to ensure that they offer a good fit of the data, our goal is to develop trajectory groups that combine both acculturation and SES growth process. Therefore, the two processes (i.e. acculturation and SES) with no predictors were combined. Parameter fit indices for this model are reported in Table 9. As before, the information criteria continued to improve with each additional class added and the BLRT tended to favor models with more classes. Particular values within classes and class sample sizes were explored to better understand the models and select the optimal number of classes. See Figure 4 for conceptual representation.

Table 9.
Unconditional Combined GMM.

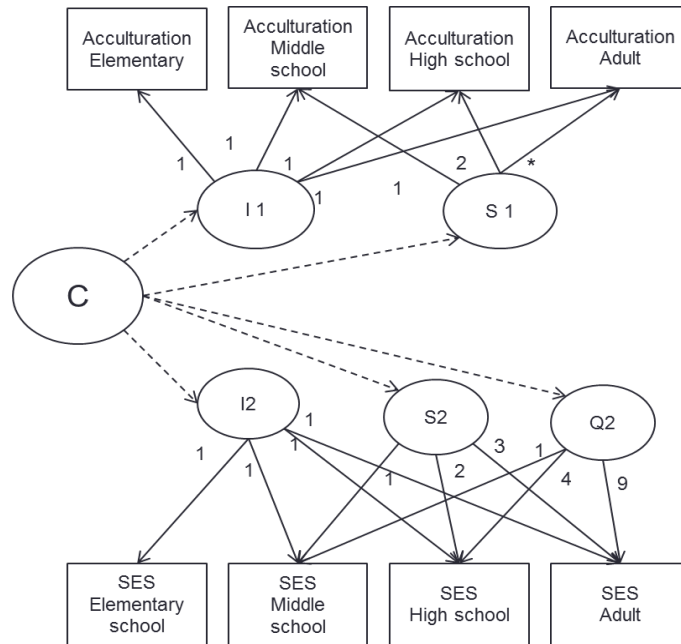| Model	C1	C2	C3	C4	C5
Entropy		0.928	1.0	1.0	1.0
Log likelihood		-4,636	-4,581	-4,438	-4,257
AIC	9,442	9,341	9,244	8,969	8,619
Bayesian (BIC)	9,547	9,468	9,392	9,138	8,810
Adjusted BIC	9,455	9,357	9,262	8,989	8,642
BLRT (p value)		112 ($p<.001$)	109 ($p< 0.001$)	287 ($p<.001$)	361 ($p<0.001$)
Smallest Class Size (% of total sample)		c 1 N=62 (23%)	c1 N=15 (5.5%)	c4 N=6 (2.2%)	c3 N=3 (1%)

Figure 4. Unconditional GMM Model Combining Both Acculturation and SES.

A four class model seemed to provide the best fit. Class one (N=15, 5.5% of the sample) has an acculturation intercept of 3.44 ($p<0.001$), with a slope of 0.21 (*n.s*). For SES this class has an intercept of 3.49 ($p<0.001$), linear slope of -1.76 ($p<0.001$) and a

quadratic slope of 0.56 ($p<0.001$). These individuals are starting with moderate SES and acculturation values, not making any acculturation change but sharply decreasing in SES over time and finally leveling off. This group can be conceptualized as bicultural in terms of acculturation while exhibiting extreme downward social mobility over time.

Class two (N=200, 74% of the sample) had an acculturation intercept of 3.17 ($p<0.001$), with a slope of 0.06 ($p<0.01$). For SES this class had an intercept of 2.5 ($p<0.001$), linear slope of -0.66 ($p<0.001$) and a quadratic slope of 0.66 ($p<0.001$). These individuals are starting with moderate acculturation and SES values, making slight increase in acculturation and slight decreases in their SES and finally leveling off. This group can also be conceptualized as biculturals with no significant changes in social mobility over time.

Class three (N=51, 18%) had an acculturation intercept of 3.2 ($p<0.001$), with a slope of 0.131 ($p<0.05$). For SES this class had an intercept of 2.2 ($p<0.001$), linear slope of 1.4 ($p<0.001$) and a quadratic slope of -0.36 ($p<0.001$). These individuals started with moderate SES and acculturation values, made slight gains in acculturation and a sharp gain in SES, followed by a decrease in their SES. This group is differentiated from others especially due to their upward social mobility over time.

Class four (N=6, 2.2% of the sample) had an acculturation intercept of 3.1 ($p<0.001$), with a slope of 0.14 (*n.s*). For SES this class had an intercept of 0.97 ($p<0.001$), linear slope of -2.9 ($p<0.001$) and a quadratic slope of -0.73 ($p<0.001$). These individuals started with moderate acculturation values and very low SES values, did not make significant acculturation changes while sharply increasing in their SES and then exhibiting a moderate decrease. This group is differentiated from others especially due to their downward social mobility over time.

Similar to previous models, variances for the growth factors were significant ($p<0.01$) except for the linear SES slope. This indicates that within classes, individuals significantly differ in their starting acculturation point and also in their rate of acculturation change over time. They also vary in their SES starting point and SES non-linear rate of change. However, they do not differ in their SES linear rate of change over time.

Parameter fit estimates continued to improve when a fifth class was added. However, a close examination of the five class model reveals that class one of the four class model (N=15) got split into two classes in the five class model. Here class 4 (N=3) and class 5 (N=12) are modifications of each other (i.e. moderate intercepts for acculturations and SES, non-significant acculturation slope, big negative linear SES slope and positive quadratic slope) and do not represent any new pattern of response. Hence, a four class model was selected for providing a more parsimonious characterization of the trajectories.

Conditional growth mixture model. After combining the two processes in the previous model, predictors of interest were added: immigration status (dummy coded into immigrant and U.S.-born Latino with non-Hispanic Whites as the reference category), and Family Traditionalism (see Figure 1). Growth factors (i.e. intercepts and slopes) are typically free to relate to one another via covariates. However, we wanted to make more clear statements regarding how they should relate to one another. Early experiences are fundamental for development and could be important predictors of events later in life (Claessens et al., 2011; Engert et al., 2010). Hence, direct paths were added in order to investigate the relationship between early life experiences (i.e. intercepts) and later development (i.e. slopes). In other words, we explored the hypotheses that acculturation and SES' starting values would predict future change in both variables. Parameter fit indicators are summarized in Table 10.

Table 10**.**

GMM for Combined Model Including All Predictors (Immigrant, U.S-born Latino and Family Traditionalism).

Model	C1	C2	C3	C4	C5
Entropy		0.958	0.969	1.0	1.0
Log likelihood	-4,516	-4,477	-4,454	-4,231	-4,206
AIC	9,114	9,048	9,013	8,580	8,542
BIC	9,262	9,217	9,204	8,792	8,776
Adjusted BIC	9,132	9,068	9,036	8,605	8,570
BLRT		78	47	346	69.4
(p value)		(*p*<.0001)	(*p*< 0.0001)	(*p*<.0001)	(*p*<.0001)

Table 10 cont.

Model	C2	C3	C4	C5
Smallest Class Size (% of total sample)	c2 N=23 (8%)	c2 N=3 (1%)	c4 N=28 (10%)	c3 N=3 (1%)

Deciding on the optimal number of classes. The number of classes that provided good fit with no redundancy was explored. After close evaluation of the growth factor, a four class model seemed to provide the best fit of the data. See figures 5 and 6 for a graphical representation of the four classes. Class one (N=65, 24%) had an acculturation intercept of 3.51 ($p<0.001$), with a slope of 0.37 ($p=0.44$). For SES this class had an intercept of 1.99 ($p<0.001$), linear slope of -0.62 ($p=0.11$) and a quadratic slope of 0.15 ($p=0.15$). These individuals started with moderate acculturation and SES values, and made no significant changes in either acculturation or SES over time. This group can be conceptualized as biculturals with a moderate upward social mobility trajectory.
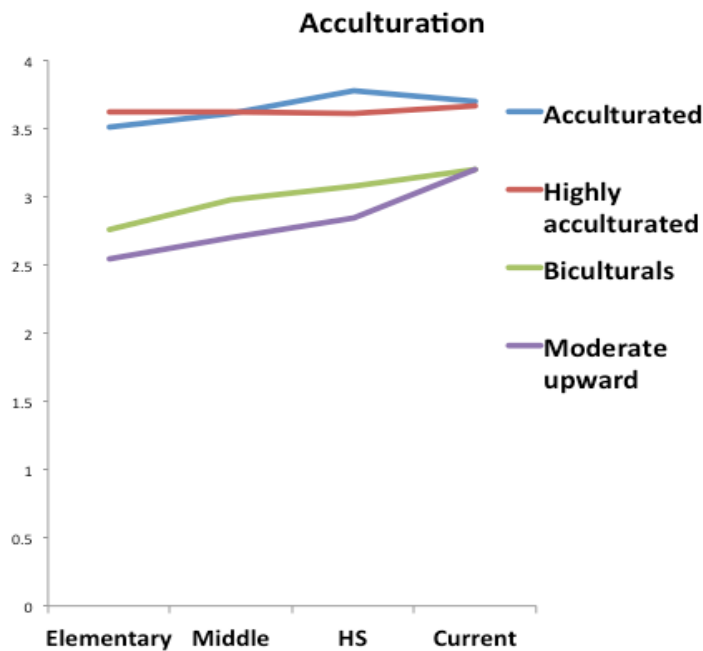

Figure 5. Final Model Solution for Acculturation Growth.
Note. The last time point was freely estimated. Thus the slope only represents time from elementary school to high school.
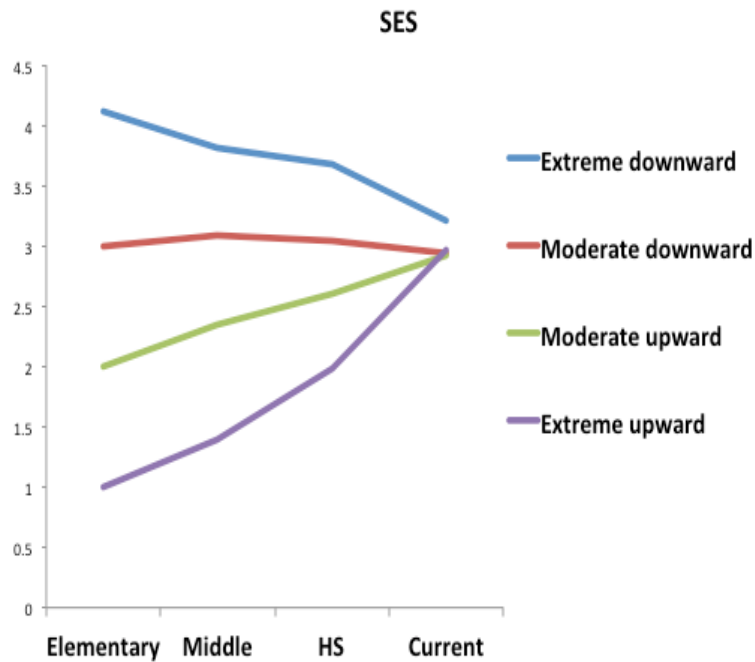
Figure 6. Final Model Solution for SES Growth.

Class two (N=125, 45.9%) had an acculturation intercept of 4.00 (*p*<0.001), with a slope of 0.24 (*p*=0.73). For SES this class had an intercept of 2.98 (*p*<0.001), a linear slope of -1.01 (*p*<0.05) and a quadratic slope of 0.14 (*p*=0.16). These individuals started with high acculturation and moderate SES values, made no significant changes in acculturation and exhibited a sharp decrease in their SES level over time. We classified this class as highly acculturated with a moderate downward social mobility trajectory.

Class three (N=54, 19.9% of the sample) had an acculturation intercept of 3.44 (*p*<0.001), with a slope of 0.37 (*p*=0.153). For SES this class had an intercept of 0.99 (*p*<0.001), linear slope of -0.66 (*p*=0.063) and a quadratic slope of 0.28 (*p*<0.01). These individuals started with moderate acculturation values and did not change significantly over time. In terms of SES they started at a very low level, increased in their level over time and level off towards the end. We classified this class as exhibiting a moderate upward acculturation trajectory coupled with an extreme upward social mobility trajectory.

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Class four (N=28, 10.2%) had an acculturation intercept of 4.19 ($p<0.001$), with a slope of 0.35 ($p=0.71$). For SES this class had an intercept of 4.09 ($p<0.001$), linear slope of -1.42 ($p<0.01$) and a quadratic slope of 0.18 ($p=0.15$). These individuals started with high acculturation and SES values, made no significant changes in acculturation while exhibiting a sharp decrease in their SES over time. We classified this class as acculturated with an extreme downward social mobility trajectory. For a summary of slopes and intercepts see Table 11.

Table 11.

Summary of Intercepts and Slopes for the GMM Model of Four Classes

	C1 (N=65)	C2 (N=125)	C3 (N=54)	C4 (N=28)
Acculturation Intercept	3.51*	4.00*	3.44*	4.19*
Acculturation Slope	0.37	0.237	0.37	0.35
SES Intercept	1.99*	2.98*	0.99*	4.09*
SES Slope	-0.62	-1.01*	-0.67	-1.42*
SES Quadratic Slope	0.15	0.14	0.28*	0.18

Note. * $p<0.05$

The information criteria moderately improved for the five-class model. However, close inspection of the sample size per class revealed that class 3 was composed of three participants, which represent 1% percept of the sample. Having a class that represents no more than 1% of the total sample is usually considered unacceptable since it probably represents data specific variations that is not likely to replicate (Nylund, et al., 2007). Giving this, a four-class model is preferred since it is a more parsimonious representation of the data.

Other model parameters of interest. In order to evaluate whether earlier experiences influence change later in time, direct effects of intercepts on slopes were analyzed. Where individuals start in terms of acculturation seems to be important for gains in social mobility later in life. Higher starting acculturation values positively

predicted increases in SES later on (0.20, $p<0.05$). However, initial values of SES do not significantly predict later acculturative change (0.004, $p=0.99$).

Acculturation's intercept, or starting value, had a significant negative correlation with the acculturation slope (-0.06, $p<0.05$). Individuals who started lower tended to gain more in acculturation across time. Equivalently, those who started higher in acculturation tended to gain less over time. This makes intuitive sense; the higher someone is the less they have to gain over time. The correlation between acculturation's intercept and SES intercept was not significant. Similarly, acculturation's intercept was not significantly related to the SES linear slope. Furthermore, change in acculturation (i.e. acculturation's slope) did not predict change in SES (i.e. SES' slope). Finally, SES linear and quadratic slopes were negatively correlated (-0.15, $p<0.001$). However, given confounds between these slopes (they share two of the loadings) I will not proceed to interpret this particular parameter.

Evaluating predictors. In the case of the predictors, Immigrant Latino (i.e. immigrants), Native (i.e. U.S.-born Latino) and Family Traditionalism were all significant predictors of the acculturation intercept. As compared to Whites, immigrants and U.S born Latinos reported lower starting acculturation values, -2.91 ($p<0.001$) and -1.03 ($p<0.001$) respectively. Higher self-reported family traditionalism values were associated with higher starting acculturation values (0.14, $p<0.05$).

Being an immigrant Latino and Family Traditionalism were also significant predictors of the acculturation slope. As compared to non-Hispanic Whites, immigrant Latinos tend to exhibit more gains in acculturation over time (0.23, $p<0.001$). In addition, as compared to non-Hispanic Whites, U.S. born Latinos did not exhibit significant changes in acculturation over time. Individuals who reported high levels of family traditions tended to show less changes in acculturation over time (-0.08, $p<0.001$).

SES starting point was not significantly predicted by being an immigrant or U.S.-born Latino. Family traditions were also not a significant predictor of the SES intercept. Neither of the variables predicted the SES linear slope. In the case of the quadratic SES slope, higher family traditionalism predicted less acceleration over time in terms of SES gains (-0.06, $p<0.05$). Acculturation initial values negatively correlated with the quadratic

SES slope (-0.02, $p<0.05$). Individuals with higher initial acculturation values also tended to exhibit less acceleration in the SES change over time.

Specific Aim 2: Stress Influences on Acculturation Trajectories

A path analysis model using Mplus version 7.0 (Muthén & Muthén, 1998-2013) was used to evaluate the effects of stress level on acculturation trajectories. Two different models were used to evaluate the hypothesis that higher self-reported levels of stress will be associated with downward trajectories or less changes in acculturation levels over time.

The first model included the average stress level after the 'big move', which occurred in late adolescence or early adulthood, predicting class membership. See figure 7 for a conceptual model. For simplification purposes the figure depicts the trajectory groups as a single dependent variable. However, in the actual model, each group represented a dependent variable. Results indicated that this model did not provide a good fit of the data: X^2 (6) = 117.5, p = 0.001; RMSEA=0.26, 90% CI [0.221-0.304]; CFI= 0.14. In addition, stress level was not a significant predictor of any class.
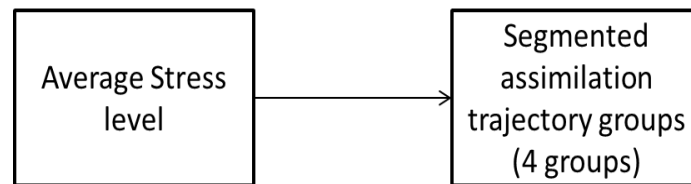
Figure 7. Stress Predicting Class Membership in the Four Segmented Assimilation Trajectory Groups.
Note. Each trajectory group represented a dependent variable.

The second path analysis model included average stress level after the 'big move' predicting the acculturation slope which represents acculturative change over time. See figure 8 for a conceptual model. Results indicated that this model provided a good fit of the data: X^2 (2) = 1.55, p = 0.46; RMSEA=0.001, 90% CI [0.001-0.111]; CFI= 1.00; SRMR=0.034. However, stress was not a significant predictor of the acculturation slope (0.005, p=0.31).
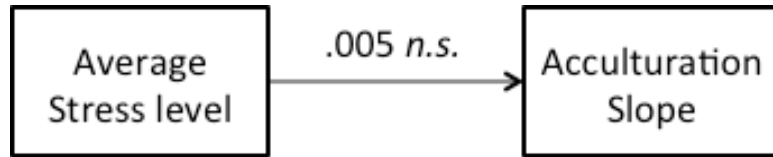
Figure 8. Stress Predicting Acculturation Change Over Time.

Evaluating stress influence on acculturation's growth model. In addition to evaluating stress influences on acculturation using assimilation trajectory groups or acculturation slope from the full growth mixture model, such effects were explored using acculturation growth model alone (i.e. without the influences of SES). This is the same growth model that was tested in the beginning stages of developing the full model. The growth model includes the four acculturation time points, the intercept and the slope growth factors. Average level of stress was included as a predictor of the slope growth factor. Since stress was assessed retrospectively for the period of late adolescence, it was not included as a predictor of the intercept given that the intercept represents the initial time: elementary school. See figure 9 for model representation.

Figure 9. Acculturation Growth Model with Stress Predicting Acculturation's Slope.

This model did not offer a good fit of the data: X^2 (8, N=272) = 154.7, p = 0.001; RMSEA=0.26, 90% CI [0.225-0.296]; CFI= 0.881; SRMR=0.214. Given that acculturation and acculturative stress may not be the same constructs for Latinos than for non-Hispanic Whites, the same model was tested but this time excluding non-Hispanic

Whites. This model also did not provide a good fit of the data: X^2 (8, N=189) = 55.14, p = 0.001; RMSEA=0.18, 90% CI [0.134-0.222]; CFI= 0.927; SRMR=0.113.

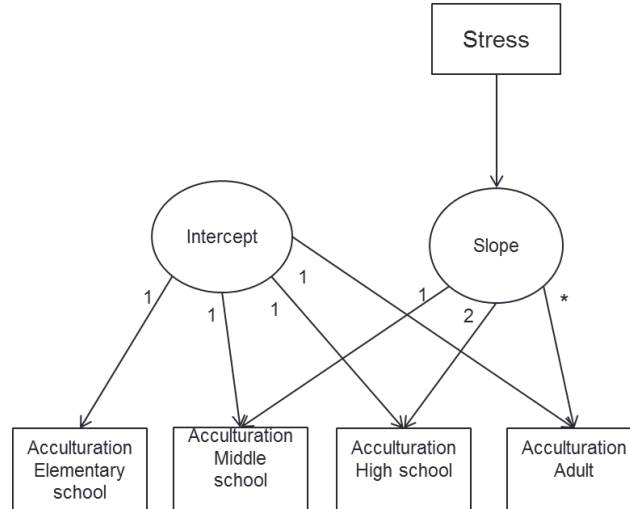**Logistic regressions.** In addition, binary logistic regressions were used to explore stress relationship to classes. Four different logistic regressions were run with classes (0=not member, 1=member) as dependent variables. Average level of stress was used as predictor in each regression. None of the logistic regressions were significant. Stress was not a significant predictor of membership in any class. Class 1 regression (n=65) resulted in a β=0.02, p=0.899; class 2 (n=125) a β=-0.199, p=0.149; class 3 (n=54) β=0.176, p=0.298; and class 4 (n=28) β=0.183, p=0.408.

Specific Aim 3: Health Outcomes

Path analysis model. Depression and resilience are important health variables and have been part of the debate regarding whether acculturation is detrimental to health. A path analysis model was used in order to investigate whether class membership in the trajectory groups differentially predicted health outcomes. Depression and resilience were included as dependent manifest or observed variables and were allowed to covary with each other. See figure 10 for a model representation.
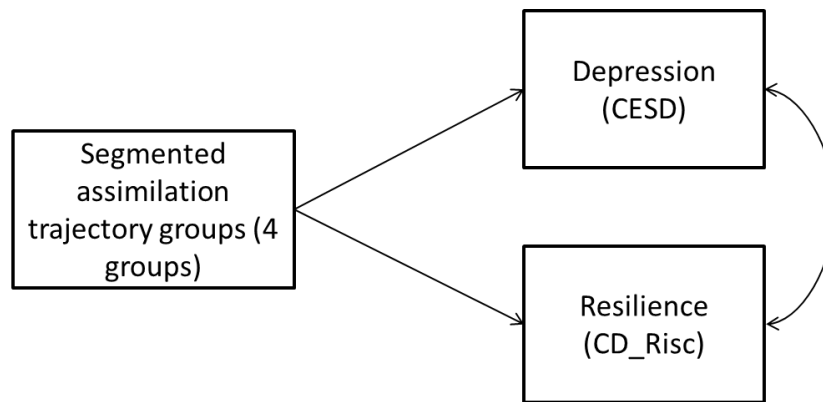
Figure 10. Conceptual Model Depicting Class Membership Predicting Depression and Resilience.
Note. Depression and resilience are allowed to correlate with each other.

A model where the four groups are included is too complex for estimation. Given the number of variables (four groups and two dependent outcomes) only a model with 21 parameters of less can be estimated. The full model would include more parameters and hence cannot be estimated. Given this identification problem, parameters such as

depression and resilience' intercepts residual variances and covariances were constrained. These values were not constrained to zero but instead were given values obtained from equivalent models which ended up being the same to end values provided by Mplus (Muthén & Muthén, 1998-2013). In addition, all the correlations among the trajectory groups were constrained to zero. Next, they were freed one by one and those values were used in a subsequent model. However, we were only able to estimate a few. Some of them were still constrained to zero in the final model. All of the constraints previously mentioned simplified the model and allowed estimation. The final model, however, did not provide a good fit of the data: X^2 (11, N=272) = 2406.7, p = 0.0001; RMSEA=0.89, 90% CI [0.865-0.925]; SRMR=0.153. One thing is worth noticing. After controlling for all parameters in the model, the only significant path was from class 2 to depression (0.231, $p<0.001$). However, this finding should be interpreted given that the model provided a poor fit of the data. This could be in part due to all the restrictions imposed in order to achieve convergence.

Exploring health variables as distal outcomes. Given the poor fit of the path analysis model, the data was also analyzed in a somewhat simpler way. A different way of analyzing differences in the health variables among classes or trajectory groups is by including depression and resilience as distal outcomes in the full growth mixture model. In Mplus (Muthén & Muthén, 1998-2013) distal outcome is a way of analyzing differences in a variable without this variable affecting the rest of the model or increasing its complexity. The outcome variables of interest are included in the full model as auxiliary variables. After the trajectory groups are developed, Chi-Squared tests are performed that compare classes in order to explore whether means for the auxiliary variables (i.e. depression and resilience) are significantly different among the different groups.

In the case of depression, class two, which represents highly acculturated individuals with a moderate downward social mobility trajectory, had a mean depression score significantly higher than the mean for class three, which includes individuals with upward trajectories in both acculturation and social mobility. There were no other significant differences among classes when it comes to depression.

In the case of resilience, all other classes had significantly higher resilience values than class two. In summary, individuals in class two seem to exhibit the worst outcomes as represented by higher depression and lower resiliency values. Results are summarized in Table 12. It is worth noticing that class two was characterized by the smallest gain in acculturation (i.e. smallest slope) and the second largest decrease in SES (i.e. second largest negative linear slope).

Table 12.

Comparison Among Classes of Mean Depression and Resiliency Scores

Depression		
	Mean	*S.E.*
Class 1	2.01	0.10
Class 2	2.18	0.06
Class 3	1.91	0.10
Class 4	1.96	0.11
	Chi-Square	*p-Value*
Overall test	7.16	*0.07*
Class 1 vs. 2	2.26	0.13
Class 1 vs. 3	0.49	0.48
Class 1 vs. 4	0.13	0.72
Class 2 vs. 3	5.29	*0.02*
Class 2 vs. 4	2.98	0.08
Class 3 vs. 4	0.08	0.78

Resilience		
	Mean	*S.E.*
Class 1	3.88	0.09
Class 2	3.57	0.06
Class 3	3.91	0.10
Class 4	3.87	0.10
	Chi-Square	*p-Value*
Overall test	15.29	*0.01*
Class 1 vs. 2	9.23	*0.01*
Class 1 vs. 3	0.03	0.86
Class 1 vs. 4	0.01	0.92
Class 2 vs. 3	8.16	*0.01*
Class 2 vs. 4	6.95	*0.01*
Class 3 vs. 4	0.06	0.80

Regression models of acculturation slope predicting health outcomes. Without reifying classes developed in Aim 1 and class membership as an observed variable, another way of looking at the same question is by regression analyses. In this case, instead of using classes to predict health outcomes, the acculturation slope was used to predict depression and resilience. Give that SES generally has an influence on health, the SES slope was entered first into the model, followed by the acculturation slope. In the case of depression, the SES slope accounts for 0.4% of the variance ($p=0.29$). The acculturation slope accounts for an additional 7.3% of the variance ($p<0.001$). In the case of resilience, the SES slope accounts for 0.1% of the variance ($p=0.57$). The acculturation slope accounts for an additional 6.4% of the variance ($p<0.001$). Beta weight for the SES slope predicting depression was 0.051 (*n.s*). The beta weight for the acculturation slope predicting depression was -0.27 ($p<0.001$). In the case of resilience the beta weight for the SES slope was 0.049 (*n.s*) and the beta weight for the acculturation slope was 0.254 ($p<0.001$). These findings suggest that higher acculturation gains over time are associated with less depression and more resilience.

Given that acculturation and its change may be different between Latinos and non-Hispanic Whites, the same regression models were run excluding non-Hispanic Whites. In this new analysis (n=189) the SES slope accounts for 0.6% of the variance in depression ($p=0.57$). The acculturation slope accounts for an additional 5.2% of the variance ($p<0.01$). In the case of resilience, SES slope accounts for 0.1% of the variance ($p=0.63$) and the acculturation slope accounts for an additional 6.1% ($p<0.01$). Beta weights had the same magnitude and direction as in the full model. These results seem very similar to the analysis for the whole group. In this case, underlying constructs of interest do not seem to vary widely between Latinos and non-Hispanic Whites.

Exploratory Analyses

Given this study interest in the segmented assimilation trajectory groups, comparisons among the classes were conducted in order to offer some description of the individuals in them. First, the composition of each class in regards to ethnicity and gender was explored. Table 13 offers a summary of frequencies of ethnicity, gender and drug users per class. Class 1 (n=65) was composed of 20% immigrant Latinos, 66% U.S-born Latinos and 14%non-Hispanic Whites. Class 2 (n=125) was composed of 20% immigrant

Latinos, 34% U.S-born Latinos and 46% non-Hispanic Whites. Class 3 (n=54) was composed of 28% immigrant Latinos, 63% U.S-born Latinos and 9% non-Hispanic Whites. Class 4 (n=28) was composed of 36% immigrant Latinos, 21% U.S-born Latinos and 43% non-Hispanic Whites.

Table 13.

Ethnicity, Gender and Drug Use Composition per Class.

	C1 (n=65)	C2 (n=125)	C3 (n=54)	C4 (n=28)
Immigrant Latinos	13 (20%)	25 (20%)	15 (28%)	10 (36%)
U.S-born Latinos	49 (66%)	43 (34%)	34 (63%)	6 (21%)
Non-Hispanic Whites	9 (14%)	57 (46%)	5 (9%)	12 (43%)
Females	15 (23%)	13 (10%)	11 (20%)	6 (21%)
User	39 (60%)	103 (82%)	28 (52%)	19 (68%)

Note. N (%)

Next, multiple t-tests were conducted in order to evaluate differences in age, income, education, acculturation and SES intercepts and slopes, and current levels. Since multiple comparisons were performed, a Bonferroni correction was applied (Dunn, 1961). T-tests were only considered significant for p-values of 0.001 or less.

On average, individuals in class 1 had significantly lower acculturation intercepts, $t(188)=4.48$, $p<0.001$, and lower SES intercepts than those in class 2, $t(188)=-273.208$, $p<0.001$. They also had higher acculturation slopes than those in class 2, $t(188)=5.4$, $p<0.001$, However, they still had lower current levels of acculturation than individuals in class 2, $t(188)=-3.57$, $p<0.001$. Comparing class 1 with class 3, a significant difference emerged. Individuals in class 1 had higher SES intercepts than those in class 3, $t(117)=1202.8$, $p<0.001$. When comparing class 1 to class 4, two differences were found. Individuals in class 1 had a lower SES intercept than those in class 4, $t(91)=-60.34$, $p<0.001$. However, despite starting lower, individuals they showed significant gains in SES over time in comparison to those in class 4, $t(91)=4.34$, $p<0.001$.

Classes 2 and 3 also had some significant differences. As compared to class 3, individuals in class 2 had a higher acculturation intercept, $t(177)=5.81$, $p<0.001$, and higher SES intercept, $t(177)=3094.9$, $p<0.001$. Despite an average lower starting value in comparison to those in class 2, individuals in class 3 showed more gains in acculturation over time, $t(177)=-5.88$, $p<0.001$. However, even after gaining more over time, individuals in class 3 still have a lower current acculturation value as compared to class 2, $t(177)=3.40$, $p<0.001$.

When comparing class 2 and class 4, the two downward social mobility classes, differences also emerged. Class 4 had more acculturation gains over time than class 2, $t(151)=-3.58$, $p<0.001$. Class 4 also have a higher SES intercept than class 2, $t(151)=-44.15$, $p<0.001$. As compared to class 3, individuals in class 4 had a higher acculturation intercept, $t(80)=3.81$, $p<0.001$, and higher SES intercept, $t(80)=80.93$, $p<0.001$. No significant differences emerged between the classes when looking at demographic variables such as age, education level, and income.

Stress as a predictor of health outcomes. Stress is an important predictor of health outcomes (Gebreab et al., 2012; Keller et al., 2012), especially depression (Low et al., 2012). Thus, a path analysis model in which stress predicted of both depression and resilience was explored. See figure 11 for a model representation. Depression and resilience were allowed to correlate with each other.
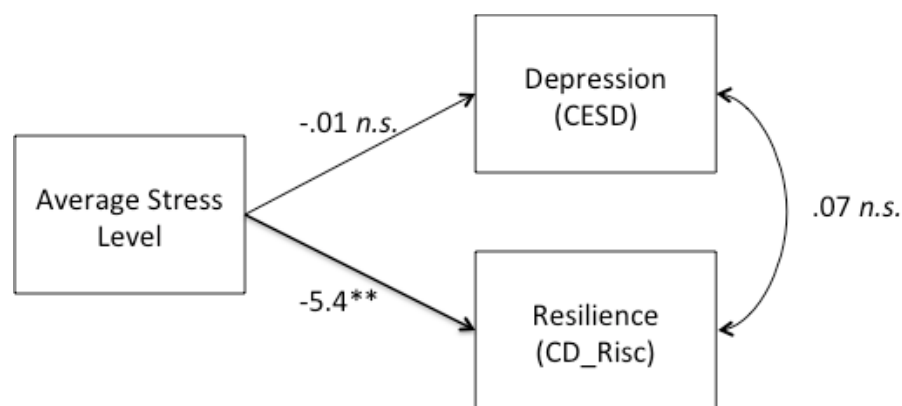

Figure 11. Conceptual Model of Stress as a Predictor of Health Outcomes.

The model provided a good fit of the data: X^2 (3, N=272) = 0.01, p=1.0; RMSEA=0.001, 90% CI [0.001-0.01]; CFI=1.0; SRMR=0.01. Stress did not significantly predict depression symptoms (-0.006, p= 0.92). However, higher levels of were associated with lower levels of resilience (-5.415, p< 0.001). The correlation between depression and resilience was also not significant (0.069, p= 0.88).

Given that immigrant Latinos may have higher levels of acculturative stress, the model was tested for invariance between immigrant Latinos and the other two groups (i.e. U.S.-born Latinos and non-Hispanic Whites). The invariant model fitted the data well: X^2 (8, N=272) = 0.01, p=1.0; RMSEA=0.001, 90% CI [0.001-0.01]; CFI=1.0; SRMR=0.01. This indicates that the model applies to immigrant Latinos as well as to non-immigrants. In addition, given that acculturative stress may not mean the same to non-Hispanic Whites, the model was also tested for invariance between Latinos (both immigrants and U.S.-born) and non-Hispanic Whites. The invariant model also fitted the data well: X^2 (8, N=272) = 0.01, p=1.0; RMSEA=0.001, 90% CI [0.001-0.01]; CFI=1.0; SRMR=0.001. This indicates that the model works similarly for racial or ethnic groups.

Neighborhood SES as predictor of health outcomes. Health disparities research has recently been more interested in how neighborhood characteristics influence health and can possibly explain some of the mechanisms that lead to disease (Diez Roux, 2003; Massey, 2004; Schulz et al., 2000). Given the importance of such a construct, a path analysis model was analyzed in which neighborhood SES as a direct predictor of depression and resilience.

This model uses both elementary and current levels of SES to predict depression and resilience. There are three rationales for this. One is the evidence that current levels do not completely capture past levels. In order words, they seem to operate differently in the sense that one is not completely predicted or correlated with the other one. Therefore, it seems important to keep both in the model. Another rationale is the temporal nature of the data. Elementary SES occurs before current levels. Therefore, it was included as predictor of current levels. In this case, the previously mentioned correlational findings were ignored in favor a completely theoretical model. Finally, both time points were included in order to explore whether earlier and more recent life experiences (i.e. elementary and current SES) predict health after controlling for each other. For example,

it could be plausible that after accounting for earlier life experiences, current experiences are no longer significant predictors of health. This pattern could not be explored unless earlier experiences are also in the model. As in previous models, depression and resilience were allowed to correlate with each other. See figure 12 for a model representation.
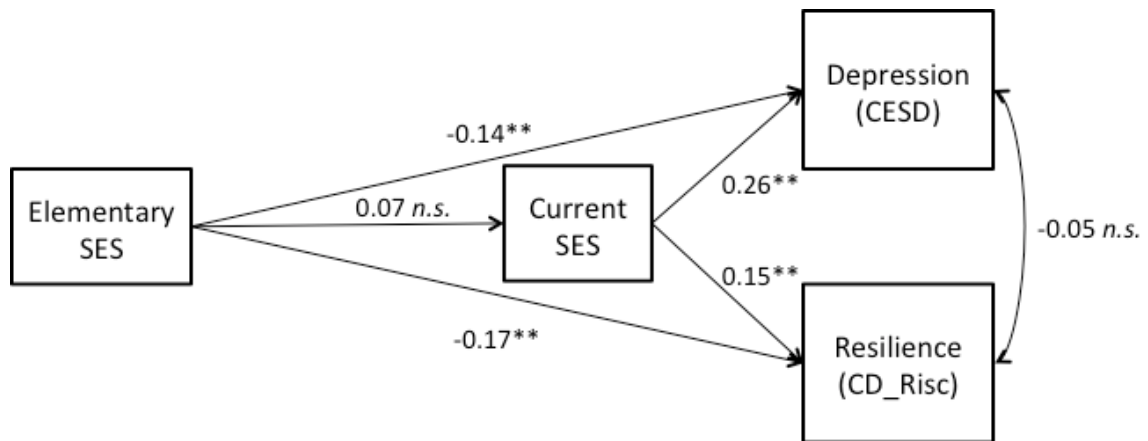
Figure 12. Elementary SES and Current SES as Predictors of Health Outcomes.
Note. Elementary SES= SES 1, Current SES= SES 4. Figure shows standardized parameters.

Elementary school SES was not significantly correlated with current levels of SES (0.069, p=0.13). In addition, a linear regression model revealed that elementary SES only accounts for 5% of the variance in current SES level (p=0.259). This is consistent with the analysis of SES growth model where we found that SES growth is not completely linear. Hence a non-linear growth component (i.e. SES quadratic slope) was introduced.

This model provided an excellent fit of the data: X^2 (4, N=272) = 0.01, p=1.0; RMSEA=0.001, 90% CI [0.001-0.01]; CFI=1.0; SRMR=0.01. As expected, elementary SES was not a significant predictor of current levels (0.065, p=0.23). Also, as previous model with the health variables, depression and resilience were not significantly correlated with each other (-0.428, p=0.38). Elementary SES predicted both depression and resilience. Higher levels predicted lower levels of depression (-0.104, p<0.01) and also lower levels of resilience (-2.386, p<0.001). Higher levels of current SES levels predicted more depression (0.213, p<0.001) and more resilience (2.132, p<0.001).

Discussion

As racial/ethnic minorites, and Latinos in particular, continue to experience population growth in the U.S., researcher related to Latino health and their financial opportunities becomes essential. Previous work has documented low social mobility among Latinos and the tremendous impact that this could have on their health (Vega & Amaro, 1994). Acculturation is a construct that is intimately tied to Latinos's health and to their adaptation process (Sam & Berry, 2006). Thus, it cannot be ignore when it comes to research with Latinos. However, despite years of investigations, acculturation is still not clearly understood (Phinney, 2011) and is not often related to social mobility.

The present study was based on an ethnically diverse sample of 272 individuals recruited via the Corazón Life Journeys Studies, designed to examine lifetime acculturative and socioeconomic life journey changes in Latino and other groups within the Southwest. The total sample included two subsamples, one of drug users and one with Latino community leaders and residents. Together, the two studies included immigrant Latino, U.S.-born Latino, and non-Hispanic White adults. Using a ecodevelopmental framework, a foundation for understanding surrounding enviromental factors, segmented assimilation trajectories were developed in order to explore a life journey of respondents' adaptation process. In the present paper, assimilation was conceptualized as adaptation to different groups in society, not necessarily to mainstream America. Given the heterogeneity of the U.S., multiple groups are available to which a person can assimilate to. In addition to acculturation, the trajectories in the model included chages in social mobilty. During their lives, individuals may experience changes in their socioeconomic status, community resources and they may also make gains in education. The trajectories capture these processes simultanoeusly.

The purpose of this study was to investigate how early life experiences influence these assimilation processes using a cross-sectional design where participants retrospectivly reflected on their early life experiences. We also analyzed how different trajectories are related to health outcomes, and how those may differ depending on ethnicity and nativity. By introducing a comprehensive methodology we were able to investigate in-depth processes that may be at play in the adaptation process of Latinos to the U.S mainstream society.

Using growth mixture modeling (GMM), a model of segmented assimilation trajectories was developed. A four class solutions was found to be optimal (see Figure 5). Among these four classes, two of them exhibited a pattern consistent with a downward trajectory (previously termed by (Castro, et al., 2010). These individuals reported experiencing decreases in social mobility throughout their lifes. A stable patter of change was exhibited by the other two classes. These individuals did not significantly deviate from their acculturation and SES scores at elementary school.

Both immigrant and U.S.-born Latinos reported lower acculturation scores during elementary school compared to non-Hispanic Whites. Immigrant Latinos exhibited a significant increase in acculturation over time. Family Traditionalism predicted both childhood acculturation scores and acculturation change over time. Higher Family Traditionalism scores were associated with higher starting acculturation values and with less acculturative change over time. In addition, higher initial acculturation values predicted higher social mobility later in life. Acculturative stress was not associated with the assimilation trajectories or with acculturative change over time. Additional analyses probing the relationship between stress and health outcome revealed that higher levels of stress were associated with lower levels of resilience. Analyses of health outcomes such as depression and resilience revealed that the trajectory group with the smallest acculturation slope and a large decrease in SES exhibited higher levels of depression and less resilience than groups with more acculturation change and no significant loses in social mobility. Exploratory regression models revealed that higher acculturation gains over time were associated with less depression and more resilience. A model exploring the relationship between neighborhood SES and health outcomes revealed significant associations. However, the direction depended on the time point chosen.

Developing Lifetime Segmented Assimilation Trajectories

Both immigrant and U.S born Latinos reported low level of acculturation during elementary school as compared to non-Hispanic Whites. Consistent with our hypotheses, immigrant Latinos reported the lowest acculturation values at this first time point. Immigrant Latinos do not grow up in the U.S., and hence, are likely Spanish language dominant, have friends who also speak Spanish, watch TV in their native language, etc. All of these would indicate lower acculturation to mainstream U.S. society. Similar

explanations may be applied to the U.S-born Latinos also reporting lower initial acculturation scores than non-Hispanic Whites. U.S.-born Latinos would likely be less assimilated to mainstream society than non-Hispanic Whites, often living in Latino neighborhoods and interacting with close relatives, some of whom may be first generation Latinos.

       Acculturation change over time. In addition to different acculturation scores at the first time point of elementary school, ethnic groups also differed in their acculturation change over time. Immigrant Latinos reported more acculturative change over time as compared to non-Hispanic Whites. U.S-born Latinos also exhibited an increase in acculturation over time; however, it was not significantly different than that of non-Hispanic White respondents. Given that immigrant Latinos have the lowest acculturation scores during the elementary school years, they also have the most potential to acculturate. Thus, they exhibit the most significant changes over time in terms of acculturation scores.

       Socioeconomic status. The three ethnic groups did not significantly differ in their initial socioeconomic status (SES) score or in their change in SES scores over time. Despite likely entering the U.S. from underdeveloped and less affluent countries than the U.S., immigrant Latinos did not report significantly lower SES in their childhood as compared to non-Hispanic Whites. This similarity in reported SES could be related to the participant's perception upon reflecting back to their childhood rather than an SES score in relation to the U.S. as a whole. If most people in the participant's neighborhood and/or country at large had relatively similar SES, then despite being a lower SES level compared to the general U.S., they would not see themselves as poor given that discrepancies are not extreme between people or social classes. Thus, coming from countries with less salient social inequality, immigrants may be evaluating their childhood SES in comparison to their peers back in their country of origin rather than in relation to the U.S.

       An alternative explanation can come from an idealization of immigrant Latinos' country of origin (Stone, Gomez, Hotzoglou, & Lipnitsky, 2005). In this framework, nostalgia may influence immigrant populations to remember positive rather than negative aspects about their country of origin. In support of this idea, Stone and colleagues (2005)

found that immigrant families and their subsequent generations, despite their acculturation level, told stories that idealized their country of origin, especially for its beauty. The stories also reflected a sense of superiority of the home country in comparison to America.

Acculturation LCA. Acculturation slopes were all significant for the unconditional latent class analysis (LCA) as well as for the unconditional combined model (see Table 4). Both of these models did not include any predictors of change over time. However, none of the acculturation slopes were significant in the final GMM model. Acculturation growth appears to become insignificant with more model complexity, suggesting other variables added to the model account for the variance and covariance relationships. However, another plausible explanation may be that power to detect individual effects decreases with increasing model complexity (MacCallum, Browne, & Sugawara, 1996); i.e., fewer individuals are available to estimate each parameter.

GMM. Our conditional GMM model revealed that four latent trajectory classes provided the optimal solution. These classes emcompassed both acculturation and SES growth processes. Class two and class four (C2 and C4 respectively) had significant decreases in SES over time, suggesting a downward trajectory. Individuals in these groups experienced, on average, a significant decrease in social mobility over time. Individuals in C4 in particular exhibited the most extreme downward trajectory over time, reporting less SES as adults than they did as children.

The other two classes, class one and class three (C1 and C3 respectively), exhibited only minor changes in acculturation over time. Thus, we can consider C3 as a moderate upward trajectory class in terms of acculturation while C1 was considered a bicultural class. In terms of social mobility, both classes exhibited gains over time. C3 in particular had an extreme upward trajectory while C2 showed a moderate upward trajectory.

Consistent with the study hypotheses, immigrant Latinos more commonly presented a downward trajectory compared to U.S.-born Latino or non-Hispanic Whites. Nearly 40% of immigrant Latinos were in C2 and another 16% were C4. These were the

classes associated with downward social mobility over time. In sum, a majority (56%) of immigrant Latinos reported a downward trajectory over the four time points.

Findings highlight the idea that assimilation is not a uniform process. Both immigrant populations and U.S. mainstream society are very heterogeneous. Integration into mainstream society is only one of many possibilities. In addition, factors such as resilience, family structure, immigration policies and human capital all likely influence these variations (Portes & Rumbaut, 2001). The specific neighborhoods in which immigrants settle can also impact their trajectories via availability of jobs, quality of education, community resources and concentration of poverty (Portes & Rumbaut, 2001).

Family traditionalism. Higher family traditionalism was associated with higher acculturation scores at the first time point and reduced acculturative change over time. In addition, family traditionalism was not a significant predictor of SES during elementary school or SES linear change over time. However, family traditionalism negatively predicted the SES non-linear growth (i.e. SES quadratic slope). That is, individuals with higher family traditionalism values experienced less acceleration in SES growth towards the last time point. Further, the independent sample t-test revealed no significant differences among the classes on family traditionalism mean level.

There is only limited literature on family traditions and acculturative or SES change over time. Desmond and López Turley (2009) found that Latino senior high school students were more likely to value living at home with their families. These students were also less likely to apply to college and less likely to apply to competitive institutions. If Latinos and individuals in general who value family cohesion and living at home with their relatives and parents are less likely to apply to colleges, they may also be less likely to engage in other activities that require some distancing from their families. In the case of Latinos in particular, these extra familial activities could be the ones that expose them to the mainstream culture and will thus increase their opportunities for acculturation. These previous findings and theories may assist in understanding our finding that higher family traditionalism was associated with less acculturative change over time. If these individuals are not engaging in activities that will pull them away from their tight families, and possibly their communities at large, they will have less chance of acculturating to mainstream culture. In addition, if these individuals are less likely to

apply for college, their social mobility would be limited in the U.S. Our findings suggest that those with higher family traditionalism were less likely to exhibit high social mobility changes towards the last time points. Social mobility is a complex construct; therefore, these explanations should be interpreted with caution.

Taken together these results would seem somewhat contradictory to the literature documenting the beneficial effects of family support and cohesion for Latinos (Fuligni, Tseng, & Lam, 1999; Ream, 2005; Smith-Maddox, 1999; Suárez-Orozco & Suárez-Orozco, 1995; Valadez, 2002). However, studies documenting some negative effects of familism are not uncommon in the literature, especially around school achievement (Niemann & Romero, 2000; Ream, 2003). Portes (1998) reported that closely tied families tend to place higher demands on their members, and in turn, these high demands have been attributed to Latinos poor school success (Brooks-Gunn & Markman, 2005).

As evidenced by disagreement in the literature, the influence of familism on Latinos' functioning and behavior is not simple or unidirectional. More research is needed in order to unravel these complex social forces. As researchers, we must be very cognizant of our methodologies when it comes to assessing complex constructs such as family traditions or familism. Questions that we ask or fail to ask can become important factors in our interpretation of findings.

The present study findings surrounding family traditionalism should be interpreted with caution due to the characteristics of our sample. First, our non-Hispanic White sample was composed of drug users seeking treatment. These individuals are not representative of the non-Hispanic White population. It is possible that while recovering from substance use, they have become more aware of their values, possibly in an idealistic way, and are now endorsing high levels of family traditions. Hence, our scale was unable to differentiate between the three racial and ethnic groups. Second, rates of substance use are also elevated for the immigrant and U.S. born groups. This is also not representative of the general population.

Effect of early life experiences. Higher acculturation scores in elementary school predicted higher social mobility throughout development. This is consistent with other studies finding a positive relationship between acculturation and social capital (Valencia-Garcia, Simoni, Alegría, & Takeuchi, 2012). Negy and Woods (1992) reported a positive

relationship between acculturation and SES, regardless of how SES was measured. Acculturation appears to positively predict SES through school success and subsequently, access to higher-paying jobs. In addition, children with higher levels of acculturation tend to come from households with more educated parents. Results should be interpreted with caution given the possibility of alternative explanations. Children from higher SES backgrounds could be exposed to more opportunities to acculturate (e.g. being enrolled in less segregated schools where English is the dominant language among students, travel away from home, etc.), rather than acculturation leading to more penetration in mainstream society. These two explanations can also happen simultaneously.

Stress and Lifetime Segmented Assimilation Trajectories

Multiple models were applied in order to explore the relationship between self-reported stress after the 'big move', which involved moving out of their parents' home and starting a new adult life, and membership in the different lifetime segmented assimilation trajectory groups. Results suggested that stress was not a significant predictor of membership in the different trajectory groups. It was also not a significant predictor of acculturative change across time.

The nature of our study could be one possible explanation for this unexpected non-significant finding. Through the retrospective interview, participants recalled their acculturative stress. It is possible that although respondents were able to recall the specific sources of stress associated with their move, the effects were temporary and had disappear by the assessment point. In addition, research has suggested that the harmful effects of acculturative stress can be buffered with parental support and active coping (Crockett et al., 2007). It is possible that participants who experienced high levels of stress also had good networks of support that help them avoid any detrimental consequences.

Another explanation for the null findings is the specific stressors assessed in the present study. Although our stressors encompassed a wide variety of possibilities, from financial stress, missing family back home, not feeling safe, discrimination issues, language barriers, etc., they are not as severe as some of the stressors assessed by other researchers. Previous studies have included stressors specifically related to trauma, violence and abuse that occurred as part of the immigrants' journey to U.S. territory

(Cervantes & Cordova, 2011). There can be a threshold of stress above which one starts seeing detrimental effects. Thus, if we assess below that threshold we would miss the main effect of stress. In addition, we did not assess sense of belonging in mainstream society, pressures to belong and to maintain their ethnic language or traditions. Pressures to maintain Spanish competence are particularly relevant to U.S.-born Latinos. All of these are stressors commonly reported and assessed in the literature (Kulis, Marsiglia, & Nieri, 2009; Rodriguez, Myers, Mira, Flores, & Garcia-Hernandez, 2002; Torres, 2010).

Health Outcomes

Given the increasing health disparities experienced by Latinos as compared to the general U.S. population, we evaluated differences in health outcomes (Kim & Fredriksen-Goldsen, 2012; Prado & Pantin, 2011; Vega, et al., 2009). We evaluated a path model in which segmented assimilation trajectory groups predicted two measures of health, depression and resilience. This model did not provide a good fit of the data. Model complexity could be partly attributed to the results. Several constraints were placed on the model in order to allow estimation, it is possible that those constraints were not justified and hence affected model fit. In addition, the two health measures were self-reported screening measures of depression and resiliency, which are limited in both scope and diagnostic ability. Finally, other relevant health measures (e.g. anxiety, measures of physical health, etc.) were not included. It could be possible that participants were experiencing health difficulties in areas not assessed by the present study.

Using chi-square testing, means of depression and resilience between classes were examined. C2 had the worse health outcome as exemplified by the highest depression symptoms and lower resilience as compared to the other three classes. C2 exhibited a pattern of downward social mobility trajectory. These individuals had the lowest change in terms of acculturation while exhibiting a downward trajectory over time in terms of social mobility. This result is consistent with literature associating downward mobility with greater depression symptomatology. For example, Steele (1978) reported that social mobility factors had greater relationship with depression than race factors.

In addition to higher social mobility, higher levels of acculturation have been related to better health. Cuellar and Roberts (1997) found that more acculturated Mexican Americans reported significantly less depression symptomatology. Additional research

with Mexican American women have also reported an inverse relationship between acculturation and depression (Masten, et al., 1994). Further, higher acculturation in Korean Americans was associated with decreased acculturative stress and in turn, lowered depression (Yunjin, Koeske, & Sales, 2002). Consistent with these results, individuals in C3, who exhibited the largest acculturative change, reported the lowest depression symptoms. In addition, analyses looking at acculturative change as a predictor of health outcome showed that after controlling for SES changes, higher acculturation over time predicted lower levels of depression and higher levels of resilience. In sum, findings support our initial hypothesis that downward trajectories will be associated with worse health outcomes while upward assimilation trajectories would predict better health outcomes.

There is some evidence in the literature that acculturation could be detrimental to health (Grant, et al., 2004; Page, 2007; Rosenberg, et al., 2005; Sanchez, et al., 2010). However, the evidence is only equivocal. Bromberger and colleagues (2004) found Hispanic women to have the highest odds of scoring above the cutoff for depressive symptoms on the CES-D compared to White, African American, Japanese and Chinese women (Bromberger, et al., 2004). Nonetheless, after adjusting for covariates such as SES, education and networks of support racial/ethnic differences disappeared. Thus, initial variation was linked to socioeconomic status. In addition, when looking at Latinos as an aggregate category, the immigrant paradox is supported. The immigrant paradox suggests that Latinos, despite their usually low socioeconomic status, minimal access to health care and added stressors related to the immigration and acculturation process, tend to show better health outcomes than their non-Latino White counterparts. However, support quickly disappears when groups are analyzed independently. When examining anxiety and depressive disorders among late and younger immigrants, there are no differences among Cubans, Puerto Ricans, Mexicans, and other Latinos. In this comparison, only substance use seems to be affected by longer stay and higher acculturation levels (Alegria, Shrout, et al., 2007). This controversy highlights the need for more comprehensive analyses that examines the complexities of acculturation process while incorporating important variables such as SES in a meaningful way. Cross-sectional designs with very few variables will likely miss important aspects of such a

complex processes. In turn, this can mislead future research and slow the advancement of the field in general.

Exploratory Analyses

Acculturative stress. We explored whether self-reported levels of stress affected health outcomes. Higher levels of self-reported stress significantly predicted lower resilience. Conceptualizing resilience as a person's abilities to cope with adversity (Cohen, 2011), then stress can be thought off as an additional barrier that interferes with coping, and thus, with resilience. Immigrants, and more generally Latinos and other ethnic minority groups, face numerous barriers in this country. Most often they face low economic resources, less access to education and health care, and also discrimination issues, isolation from their country of origin's networks of support, pressures to acculturate while keeping their competence in their original ethnic culture, and so on. All these barriers add up and stress could begin to take a toll on a person's cognitive capabilities and resources at large. Our results are consistent with these ideas. The more stressors a person is reporting, the less likely they would be to report feeling in control, being able to deal with difficulties, being able to stay focused, feeling strong or being able to handle negative emotions. All of these are statements assessed by our resilience measure.

Stress, however, was not significantly associated with depression levels. The lack of a positive relationship with depression runs counter to previous findings in the literature relating acculturative stress to mental health problems (Moyerman & Forman, 1992; Williams & Berry, 1991). Previous studies have found that acculturative stress is associated with higher levels of depression and anxiety (Crockett, et al., 2007). Latinos who reported acculturative stress, in the form of pressure to learn English, were two times more likely to exhibit high levels of depression (Torres, 2010).

Studies have also shown that ethnic pride, social support, religious coping and higher number of relatives in the U.S. can protect individuals against the negative effects of stress on perceived health (Finch & Vega, 2003; Jackson, Wolven, & Aguilera, 2013). Our model does not account for such variables. It is possible that our participants had some protective factors and hence were able to avoid the detrimental effects of stress.

Neighborhood effects. The present study also investigated the impact of neighborhood SES on depression and resilience using elementary school and adult SES. Elementary SES was not a significant predictor of current SES levels. Higher elementary SES levels were associated with lower levels of depression and lower levels of resilience. In contrast, higher levels of current SES levels were associated with more depression and as well as more resilience.

The lack of relationship between childhood SES and adult SES could be partly due to the large proportion of immigrants in the data set. Immigrants, by the nature of moving to a different country, may experience wide changes in their SES across their lifetime. We investigated this possibility via a regression analysis of elementary SES predicting current SES that excluded immigrants. This analysis also revealed a non-significant relationship. Childhood SES scores accounted for nearly zero percent of the variance in current SES.

The detrimental effects of poor neighborhood conditions have been well documented in the literature (Massey & Denton, 1993). Segregated neighborhoods concentrate high poverty rates, poor housing markets and low access to health care (Acevedo-Garcia, 2000). This neighborhood level poverty rates have been associated with individual-level outcomes (Massey, Gross, & Eggers, 1991). Exposure to a high percentage of households below the poverty line has been associated with psychological distress (Schulz, et al., 2000). This is consistent with our finding that higher childhood SES was protective against depression.

In our model, higher SES during adulthood was a risk rather than a protective factor for depression. This runs contrary to the previously discussed literature. Discrepancies may partly due to different ways of assessing SES (e.g. individual vs. neighborhood level). In addition, the literature on SES and health typically employs cross-sectional designs. Longitudinal findings that look at early life experiences as well as more proximal risk factors are rare.

Nonetheless, there are a few studies that support our results. Vine and colleagues (Vine et al., 2012) analyses of a Seattle cohort found that when looking at household income, adolescents in the lower income category experienced higher anxiety symptoms than their better-off counterparts. However, at equivalent household incomes, anxiety

symptoms were lower among adolescents in the low neighborhood income group as compared to the higher neighborhood income group. Analysis of the National Health and Nutrition Examination Survey has also shown that children from low-income households had lower prevalence of anxiety disorders than their wealthier counterparts (Merikangas et al., 2010). Others have also found that suburban adolescents exhibited higher anxiety and substance use than their inner-city peers (Luthar & D'Avanzo, 1999). A followed up of the same study suggest that the results may be related to achievement pressures experiences by the more affluent adolescents (Luthar & Becker, 2002). Finally, an analysis using Chinese individuals' SES trajectories, found that low childhood SES lowered the odds of obesity while low adult SES increased the odds of obesity but only among women (Malhotra, Malhotra, Chan, & Østbye, 2013). In this study, low SES was protective for children and only became a risk factor in adulthood for women.

Our results, combined with the literature discussed here, highlight the complexity of the association between SES and health-related risk. More longitudinal and multilevel analyses are needed, especially those that employ multiple SES indicators. It is worth noticing that our measure of neighborhood SES may not be broad enough to capture these effects. Important neighborhood characteristics such as aesthetics, food safety, walking environment and safety were not assessed. These have been reported as important when it comes to disease risk (Mahasin, Ana, Jeffrey, & Trivellore, 2007).

Implications

Clinical implications. The present study showed the advantages of using an eco-developmental model when it comes to analyzing health outcomes and individuals' life journey. We have shown the importance of earlier life experiences on later development. For example, early acculturation seems important for social mobility later in life. This is important when it comes to immigrant or Latino clients. Using a developmental type framework for assessment in order to understand where clients are coming from and their experiences related to their minority status could help guide case conceptualization and well as treatment plans.

Immigrants, despite coming from underdeveloped countries, did not report significantly lower socioeconomic status in their childhood as compared to non-Latino Whites. This finding highlights immigrants' resilience and their ability to strive and

function normally even in the face of adversity. Immigrants bring a lot of hope for a better future; in addition of the energy to fight for better opportunities. Clinicians may consider using resiliency as a component of a strength-based approach. Pointing out to our immigrant clients their accomplishments and their willingness to take a chance on opportunities may help given them a sense of purpose, pride and self-efficacy.

Family traditions were also an important component of our modeling strategies. Assessing family cohesion, traditions, and functioning could help give a better picture of the client's strength, cultural values and possible sources of support and/or conflict. Although familism is usually conceptualized as a protective factor for the Latino community, it can also be a source of distress. Additional pressures and obligations placed on the individual by the tight (and usually large) family, especially second generation adolescents, can increase levels of stress and feelings of overwhelmingness.

Acculturative stress is also important when dealing with Latino clients. In the present study, stress was not associated with membership in any of the trajectory groups. It was also not predictive of increased depression. These findings show that higher levels of stress are not deterministic of worse outcomes. A person's future opportunities of success and well being are still within reach. Educating clients about the realities and the diverse sources of acculturative stress in addition of teaching them some adaptive coping strategies could help buffer some of the detrimental consequences. We can also remind our clients that many of the stressor they face are transitory (e.g. language proficiency stress is characteristic of the first generation only, and young immigrants seem to learn the new language at a surprisingly fast rate; knowing how to navigate the school or health system can be learned; etc.).

Nonetheless, stress predicted lower resilience. This highlights the need for establishing networks of support for immigrants and their families. Connecting clients with programs such support groups and religious services could be helpful. These programs provide classes for English proficiency, to learn the credit system, the housing market in the U.S., etc.

Policy implications. The U.S. is becoming increasingly diverse. However, despite the growing numbers of Latinos, health disparities are widening (Vega, et al., 2009). The added cost of health care and premature deaths cost our country billions of

dollars in lost taxes and labor (LaVeist, Gaskin, & Richard, 2009). Understanding acculturation processes and their impact on Latino health is a fundamental step to breach the gap. Our results have implications not only for clinical work, but also for public and health policy.

Our findings highlight the complex interplay between neighborhood conditions, social mobility, acculturation and mental health. Policies that address income inequality and housing segregation will certainly help to reduce the mental health disparity gap (Alegria, Pérez, & Williams, 2003). These include Section 8 vouchers and the Earned Income Tax Credit. In addition, policies that target education will increase earning potential and health benefits across generations (Cutler & Lleras-Muney, 2006). These policies will unequivocally benefit minority individuals who are overrepresented in the lower SES stratum of our society.

In addition, our results showed that SES during childhood was not deterministic of adult SES. Those in the lower income categories can still benefit from multiple interventions that focus on parenting skills, education, family support, etc. Michael and colleagues (Michael, Farquhar, Wiggins, & Green, 2008) tested a community-based participatory intervention intended to increase social capital among Latinos and African Americans. The intervention increased social support, increased self-reported physical health and reduced levels of depression symptoms.

Strengths and Limitations

Some of the limitations of this study lie in the nature of doing interviews that rely on retrospective recalling. By using such methods we incur the risk of under or over reporting of symptoms or differential endorsing of items contingent on the participants' current situation. However, to account for biases in recall, memory induction techniques were used and unreliable cases were eliminated. In addition, the Corazón Life Journey Studies consisted of two studies, one with drug users and one with Hispanic community leaders and residents. Our full sample of non-Hispanic Whites consists of drug users with below average levels of education and income. This could have impacted some of the relationships examined, especially when socioeconomic status was investigated. Another limitation is the limited range of subjects in terms of location. These findings may or may not be representative of all Latino in different U.S cities, although general underlying

principles and mechanisms should not be inherently different for people living across the U.S. Additionally, given that our sample had a small percentage of females we did not perform in-depth gender comparisons. Our results could have changed if we had a more balance sample. Hence, they should be interpreted with caution.

In addition, growth mixture models have come under scrutinity for overextracting latent trajectory classes in nonnormal data (Bauer & Curran, 2003). Even if the data comes from a single population, due to nornormality, multiple classes would seem to provide better fit than a single class. In this sense, classes are explaining nonnormality and interpretation becomes mute. Others, like Muthén, argue that this is a problem of many of our models. Theory, auxiliary information and usefulness of the model should guide analysis (Muthén, 2003). GMM simply offers another way of looking at the same data. As long as researchers do not try to reify the classes, GMM can provide useful information.

Despite the limitations, the present study offers the possibility of advancing our understanding of the acculturation process by using a comprehensive model. Our analysis employs assimilation trajectories in order to construct a life journey of respondents' adaptation process. We aimed to answer the question of which and how early life experiences influence these assimilation processes. We also attempted to shed some light on the Immigrant Paradox debate by analyzing how different trajectories are related to health outcomes, and how it may differ depending on ethnicity. By introducing a comprehensive methodology based on grounded theorizing we were able to investigate in-depth processes that may be at play in the adaptation process of Latinos to the U.S mainstream society.

Future Directions

The present study offers the possibility of advancing our understanding of the acculturation process by using a more comprehensive model than what is commonly found in the literature. Future work in the field should include a more representative national sample of Latinos in order to increase the generalizability of findings. There is also a need to examine acculturative changes across generations. In addition, if possible

with given time and money constraints, following participants over time would be ideal in order to eliminate recall biases.

Studies have also highlighted the need to disaggregate our sample into Latino subgroups (Alegria, Sribney, Woo, Torres, & Guarnaccia, 2007). Given the heterogeneity of Latinos, being able to look at individual subgroups (e.g. Mexican Americans, Cuban American, Puerto Ricans, etc.) could help disentangle some of the contradictory findings in the literature with regards to acculturation's effect on health. Our findings also emphasize the need to assess SES' effects on health in more dynamic ways. Whether SES is assessed in childhood or in adulthood, and how SES is measured (household level vs. neighborhood income level) may lead us to different conclusions. Thus, future work should take into account such complexities.

There is also an imperative need of accounting for SES when studying acculturation (Negy & Woods, 1992). Acculturation studies who include SES as a variable, usually 'control' for it rather than making meaningful evaluations of the relationships among the two constructs (Conway, Swendsen, Dierker, Canino, & Merikangas, 2007). Studies that examine the relationship between acculturation and SES have found that SES is a better predictor of health than acculturation (Cuellar & Roberts, 1997). Similarly, others find that acculturation does not impact psychological distress directly (Valencia-Garcia, et al., 2012). It does so indirectly by increasing social capital and access to services, which work to decrease distress. In sum, these findings highlight the importance of including SES as a meaningful variable in our models, not simply controlling for it. In addition, they emphasize the need for interventions than increase social capital.

Acculturation has been a topic of research for nearly a century. However, the construct is still misunderstood and often inaccurately conceptualized. The lack of progress could be partially attributed to the continuous reliance on proxy measurements, cross-sectional designs and somewhat 'simple' data analysis strategies. Acculturation research has employed nearly unchanging methodologies despite extensive advances in statistical techniques and data analysis software. The present paper encourages researchers in the field to employ more complex models that can help reveal some of the mechanisms underlying Latinos' increased health inequities. Not doing so in the face of

the immense need for solutions would be an ethical violation. Our current state of knowledge is mixed and this can mislead future research efforts, as well as misguiding policy efforts.

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