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A Person-Centered Examination of Latino Youth Depressive Symptom Trajectories: The Role of Youth, Parent, and Dyadic Familism

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A Person-Centered Examination of Latino Youth Depressive Symptom Trajectories:
The Role of Youth, Parent, and Dyadic Familism

A Thesis

Presented in

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Requirements for the Degree of
Master of Arts

By

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Biography

The author was born in Culver City, California on July 31st, 1986. She graduated from Downey High School in 2004. In 2006, she received her Associates Degree in Liberal Arts from Long Beach City College, where she founded the Coalition for Latino Advancement. In 2007, she transferred to California State University, Long Beach where she was awarded the National Institute of Mental Health-Career Opportunities in Research fellowship and Sally Casanova predoctoral award, and graduated in 2010 with a Bachelor of Arts in Psychology. She relocated to Chicago in 2007 for graduate training in Clinical-Child Psychology at DePaul University. In 2015 she was designated a fellow under the Minority Fellowship Program Predoctoral Mental Health and Substance Abuse Services program.

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Abstract

A growing body of literature indicates Latino youth are at greater risk for depression relative to other racial/ethnic groups (CDC, 2014). Research examining predictors of Latino youth depression suggests higher familial values might buffer against youth depressive symptoms (Polo & Lopez, 2009; Zeiders et al., 2013b). However, longitudinal relationships between these variables remain largely unexamined. Furthermore, the literature on longitudinal youth depressive symptoms is mixed, with both increases and decreases being observed over time using group-centered analyses. The present study has three major aims: 1) map the trajectories of depressive symptomology among middle-school age Latino youth over the course of two years using person-centered analyses 2) examine if and how youth, parent, and dyadic (parent-youth) familism (derived using family-centered analyses) predict youth's depressive symptom trajectories and 3) examine the role of sex and test the interactive effect of sex and youth familism on depressive symptom trajectories. Participants consisted of 133 low-income Latino youth ($Mage = 11.90$, $SD = 0.94$) from an urban public middle school in the Midwest, and a subsample of their parents ($n = 91$). Results indicate three youth depressive symptom trajectories (low stable, recovery, and escalating). As youth familism increased, youth were more likely to belong to the stable low trajectory, relative to the recovery trajectory. Parent and dyadic familism were not related to youth depressive symptom trajectories. Girls were more likely than boys to belong to the recovery trajectory, relative to the stable low trajectory. Sex did not moderate the relation between youth familism and youth depressive symptom trajectories. Our findings suggest using person- and family-centered approaches to analyzing longitudinal and parent-youth data (GMM and LPA, respectively) might account for mixed findings in the literature.

A Person-Centered Examination of Latino Youth Depressive Symptom Trajectories: The Role of Youth, Parent, and Dyadic Familism

According to the 2010 United States Census, ethnic minorities comprise the majority (50.4%) of U.S. births (U.S. Census Bureau, 2012), largely due to the growth of the Latino population. The number of U.S. Latinos has burgeoned to more than 42 million persons, representing the largest ethnic minority group in the United States (Passel, Cohn, & Pew Hispanic Center, 2008). Driven by both birth and immigration, the Latino population now accounts for over 50% of the overall population growth since the year 2000. It is projected that by 2025, Latino youth will represent 30% of all persons under the age of 18 (Fry & Passel, 2009). The vast and fast growing cultural diversity found in the United States has led to interest in examining mental health disparities among racial/ethnic groups. Research has shown striking disparities, with ethnic minorities having less access to mental health services and being underrepresented in mental health research (Office of the Surgeon General, 2001). Understanding the role of culture in mental health enables the field to remedy such disparities through the design and delivery of services responsive to the needs of racial/ethnic minorities.

Although ethnic differences vary across different forms of psychopathology, internalizing problems among children and adolescents have shown consistent patterns. A growing body of literature strongly indicates Latino youth, and particularly Latino female adolescents, are at greater risk for depression relative to other racial/ethnic groups. In the latest national Youth Risk Behavior Surveillance (YRBS) from the Centers for Disease Control and Prevention (2014) among adolescents in grades 9-12, Latino adolescents were significantly more likely to experience persistent sadness and hopelessness than their African American and European American adolescent counterparts. The survey also found higher levels of reported sadness and hopelessness among females compared to males; however, the differences were

particularity prominent in Latino girls. Roughly less than 2 out of every 10 European American and African American males endorse persistent sadness and hopelessness, compared to more than 4 out of every 10 Latino girls (CDC, 2014; Wagstaff & Polo, 2012). Similar racial/ethnic disparities have also been found among elementary and middle school students (Roberts, Roberts, & Chen, 1997).

In addition, epidemiological data on lifetime prevalence rates of clinical levels of depressive disorders yielded similar results, with higher rates observed among Latino adolescents compared to European American adolescents (Merikangas et al., 2010). Notably, the findings concerning racial/ethnic differences remain even after partialling out the effects of age, sex, and socioeconomic status (Roberts & Sobhan, 1992; Twenge & Nolen-Hoeksema, 2002).

Course of Depression among Latino Youth

The mean onset of major depressive disorder (MDD; DSM-V; American Psychiatric Association, 2013) has been found to be 14.9 years of age (Lewinsohn, Rohde, & Seeley, 1998). A meta-analytic study found prevalence rates for adolescents are about twice as large as those for preadolescents (5.6% vs. 2.8%, respectively; Costello, Erkanli, & Angold, 2006). In a national comorbidity study, Merikangas et al. (2010) estimated the lifetime prevalence of MDD among adolescents is, 8.4% for 13-14 years of age, 12.6% for 15-16 years of age, and 15.4% for 17-18 years of age. Further, a longitudinal study by Hankin et al. (1998) corroborates that rates of MDD increase with age. The substantial amount of studies documenting depression rates increase during adolescence provide evidence that adolescence is a high-risk period for depression. Furthermore, some studies indicate adolescent depression is likely to continue into adulthood (Harrington, Fudge, Rutter, Pickles, & Hill, 1990; Weissman et al., 1999).

Use of self-report depression symptom scales in community epidemiologic studies find that between 20% and 50% of youth exceed thresholds for clinically significant depression (e.g., Offord et al., 1987; Reinherz et al., 1989). These findings suggest many adolescents who do not meet diagnostic criteria for MDD might still experience moderate to severe symptoms of depression. The occurrence of depression experienced at subclinical or moderate severity levels is also concerning as it has been linked to levels of impairment comparable to those seen in people with MDD (Harrington, Fudge, Rutter, Pickles, & Hill, 1992; Nolen-Hoeksema, Girgus, & Seligman, 1992; Susman, Dorn, & Chrousos, 1991).

Unlike with MDD, the evidence regarding the course of depressive symptoms is mixed. Some studies employing depressive symptom scales longitudinally have shown an increase in depressive symptoms during childhood and adolescence (e.g., Craighead, Smucker, Craighead, & Ilardi, 1998; Finch, Saylor, & Edwards, 1985; Smucker, 1982), whereas others have found decreasing symptoms (e.g., Angold et al., 1996a; Angold et al., 1996b; Cole, Peeke, Martin, Truglio, & Seroczynski, 1998; Finch Jr, Saylor, Edwards, & McIntosh, 1987; Nolen-Hoeksema et al., 1992; Twenge & Nolen-Hoeksema, 2002; Updegraff, Umaña-Taylor, McHale, Wheeler, & Perez-Brena, 2012). Longitudinal research on the course of depression among adolescents focusing on *non*-European American samples is particularly limited (McLoyd, 1998; Garcia Coll, 1996). Despite evidence showing Latinos at higher risk for depressive symptoms and the critical time period of adolescence for the development of mental health disorders, currently only two studies have examined depressive symptom trajectories (using three or more time points) solely among Latino youth. The first is a study examining trajectories among high school students conducted at four time points over three years in which no significant group changes were found over time (Zeiders et al., 2013a). The second study is among Mexican American

youth, which included four time points over the course of eight years (ages ranging from 12-22). The authors examined cubic growth patterns and found that the data revealed non-linear group trajectory marked by initial increases in symptoms and followed by declining symptoms (Zeiders et al., 2013b). When examining differences by sex, in the first study they found no change for males over time and decreasing symptoms for females; in the second study males' symptoms declined whereas females' symptoms increased from 12 years of age to about 15 to 16 years of age, decreased until age 20 years, and then increased again until age 22 years.

Despite various studies examining depressive symptoms among youth longitudinally, with some delving into sex and ethnicity specifically, the empirical evidence is largely inconclusive. Interestingly, increasing youth depressive symptoms are often undisputed (perhaps due to their resemblance of MDD trajectories and/or conceptual connections transitional changes), whereas observations of declining symptoms have met much speculation. Researchers have implicated testing or measurement effects as a potential cause of the observed decline in symptoms (Twenge & Nolen-Hoeksema, 2002). However, one study examining changes in depressive symptoms across two administrations spaced a decade apart also showed a decline in symptoms (Updegraff et al., 2012), potentially ruling out an effect of measurement. In an earlier study, Sharpe and Gilbert (1998) contended that these declines might be attributed to the use of coping mechanisms subsequent to the initial administration. Alternatively, another hypothesis, which might account for the mixed findings, is that there are in fact multiple developmental pathways (Raudenbush, 2001).

Jung and Wickrama (2008) have argued group-level analyses are limited in their ability to identify subpopulations of trajectories that diverge from the normative group pattern. Thus, assuming a group-level change trajectory for depressive symptoms is limiting. Analytical

approaches addressing this limitation might account for the heterogeneity of trajectories observed in the aforementioned studies, all of which utilized group-level statistics. Recent evidence suggests there is more than one trajectory of depressive symptoms (Brendgen et al., 2005; Costello et al., 2008; Repetto et al., 2004; Rodriguez et al., 2005; Stoolmiller et al., 2005; Wickrama et al., 2008).

In order to examine whether or not more than one trajectory exists, a *person-centered* approach needs to be employed. Wickrama, Conger, and Abraham (2008) provide emergent support for the hypothesis that person-centered approaches result in more nuanced population descriptions compared to group-level analyses. In their 10-year study of rural European American adolescents, group-level youth depressive symptoms increased over time. However, upon utilization of a person-centered approach, three distinct types of trajectories emerged. The majority of youth showed low depressive symptoms with only minor increases over time (stable low; 85%), another trajectory was characterized by a decline from high to low depressive symptoms (recovery; 10%), and the third by moderate symptoms that increase quickly over time (escalating; 6%). Other person-centered studies have also found a stable low and/or no depressed mood trajectory (Brendgen et al., 2005; Costello et al., 2008; Repetto et al., 2004; Rodriguez et al., 2005; Stoolmiller et al., 2005), declining symptoms (Costello et al., 2008; Repetto et al., 2004; Stoolmiller et al., 2005) and increasing symptoms (Brendgen et al., 2005; Costello et al., 2008; Repetto et al., 2004). Additional classes that have emerged are high-persistent (Brendgen et al., 2005; Repetto et al., 2004; Rodriguez et al., 2005; Stoolmiller et al., 2005), medium persistent (Brendgen et al., 2005; Rodriguez et al., 2005;), moderate declining (Stoolmiller et al., 2005). Most studies have thus far included primarily European American samples of low to average (Brendgen et al., 2005; Stoolmiller et al., 2005) or mixed (Costello et al., 2008;

Wickrama, Cogner, & Abraham, 2008) socioeconomic backgrounds. Although one study was conducted with an entirely African American sample (Repetto et al., 2004) from a low socioeconomic background, to our knowledge, no studies to date have examined person-centered depressive symptom trajectories with a Latino sample.

Collectively, these findings suggest that while changes in depressive symptoms have been thought and shown to typically follow singular developmental patterns as a group, there is evidence that indicates subsets of adolescents fall into trajectories that significantly differ from the overall population average (Wickrama et al., 2008). These findings suggest that patterns of individual changes in depressive symptoms over time are complex and support that perhaps avoiding group-level analyses (i.e., singular mean trajectory estimation) and instead using person-centered analyses (e.g., Growth Mixture Modeling) might better represent the data (Jung & Wickrama, 2008).

While a number of studies have examined person-centered trajectories of depressive symptoms among adolescents, generalizability of the findings to Latino adolescents is limited. Thus, the current study will employ a person-centered approach to examining depressive symptoms among Latino youth longitudinally with the goal of describing possible heterogeneity of trajectories.

Familial Values and Mental Health among Latino Youth

Presently, the majority of studies on adolescent depression have found ethnic/racial differences, yet little has been done to understand why these differences exist. Being that Latinos can be of any race, disparities may be attributable to cultural factors and the product of intersecting cultures (i.e., heritage and host culture). Despite the prevalent use of acculturation measures, in a content analysis of the most frequently cited acculturation measures, Zane and

Mak (2003) recommended that acculturation be deconstructed into specific psychological elements, because of the lack of overlap between conceptual notions of acculturation and the existing measurement tools. Furthermore, Betancourt and López (1993) argue for the adoption of a measurement of culture that is grounded in theory, and more specifically the measurement of sociocultural variables. Given the importance of careful alignment with theory and use of sound measures in research, the assertions from Zane and Mak (2003) and Betancourt and López (1993) provide a strong case for the importance of operationalizing culture into distinct measureable indicators as opposed to using global scales.

Of the many indicators considered defining of Latino culture in the United States, familism has been regarded as one of the most important (Arcia, Reyes-Blanes, & Vazquez-Montilla, 2000). Familism is an amalgamation of Latino cultural attitudes toward familial roles. Some scholars originally described familism as characterized by beliefs that family members are required to assist one another when they are in need (Burgess & Locke, 1945) and should remain in proximity to each other (George, 1986). The definition of familism has since been expanded to also capture a sense of closeness between family members, support, shared values, and the explicit roles and responsibilities assigned to members of the family (Vega, Gil, Warheit, Zimmerman, & Apospori, 1993; Steidel & Contreras, 2003).

Examining familial values among Latino adolescents is particularly important because they are related to lower levels of depression (Polo & Lopez, 2009). Youth reports of family cohesion has been linked to lower levels of depressive symptoms among Latino youth (Lorenzo-Blanco, Unger, Baezconde-Garbanati, Ritt-Olson, & Soto, 2012). Polo and Lopez (2009) also found higher youth reports of cultural orientation to familial values, marked by deference toward and respect for adults (i.e., affiliative obedience), was associated with lower internalizing problems

among youth and, specifically, lower depressive symptoms. Specific to familism, higher youth reported supportive and referent familism is associated with lower youth depressive symptoms (Zeiders et al., 2013b). In one study examining parent familism, it was found that higher youth's fathers' reports of familism were also associated with lower youth depressive symptoms (McHale, Updegraff, Kim, & Cansler, 2009). In a study that presented information on mothers' reports of familism and its relation to adolescent girls' internalizing symptoms and suicidality, no relation was found (Bauman et al., 2010).

Familism is also related to other positive mental health outcomes among Latino youth. Germán, Gonzales, and Dumka (2009) found youth reports of familism to assuage the negative impact of deviant peer affiliations on youth externalizing behavior. Youth reports on familism have also been found to protect youth from substance-use and disposition to violence (Gil, Wagner, & Vega, 2000; Vega & Gil, 1998). Moreover, in a longitudinal study, youth reports of high familism protected youth from future risky behavior in late adolescence (Updegraff et al., 2012).

It is also important to note that although depictions of Latino families as inflexibly traditional are erroneous (Baca Zinn, 1994), some families organize roles and responsibilities by sex. In particular, girls tend to provide more assistance and assume greater responsibilities than boys (Valenzuela, 1999). Latino girls also tend to report higher levels of familism than Latino boys (Lac et al., 2011). Thus, it is possible that the protective nature of familism might differ for females and males, and might not be as protective for males since low levels of familism might not necessarily violate a cultural expectation.

In sum, the literature suggests better relations with the family and higher orientation to familial values are positively related to youth adjustment and mental health, including depressive

symptoms. However, few studies have looked specifically at familism and of those that have, and only two (McHale, Updegraff, Kim, & Cansler, 2009; Bauman et al., 2010) were found that presented information on the relation between parent reports of familism and youth depressive symptoms. To understand Latino youth depression more completely, fuller examinations, extending beyond youth only reports to the contexts in which youth develop are needed.

The present study will extend previous research by assessing the links between youth and parent familism and depressive symptom trajectories, and as well examine the interaction between youth sex and familism on depressive symptoms.

Parent-youth dyadic perspectives on familism. Despite the protective role of familism for Latino youth, a prospective study of Mexican-origin youth found that familism decreased from age 12 to age 18 (Updegraff et al., 2012). Typically, children from immigrant families adopt the host culture more quickly than their parents (Szapocznik & Truss, 1978). For example, Spanish speaking Latino children acquire the English language more readily than their parents because they have less ability to control their exposure to cultural influences across contexts, such as school. This type of dyadic acculturative process whereby children and parents acculturate differently is labeled dissonant acculturation (Portes, 1996). Research has taken these findings a step further and more recently begun to examine the implications of this phenomenon, examining the relation of this phenomenon to family functioning and mental health. In the literature on dissonant acculturation (also called acculturative distancing), parents and children with divergent styles of acculturation have reported feelings of alienation and contempt (Szapocznik, Santisteban, Kurtines, Perez-Vidal, & Hervis, 1984). These examinations of parent-child experiences of acculturative processes have been shown to relate to maladjustment among Latinos and Asians (Lee, Choe, Kim, & Ngo, 2000; Szapocznik & Kurtines, 1993). When

immigrants come into contact with mainstream U.S. culture, they encounter new sets of values and behaviors that are often different from their own, at times incompatible with their traditional beliefs. The degree to which parents and children accept or reject these new values and behaviors might determine if conflict arises that engenders distress (Zayas & Dyché, 1995).

Research on the acculturation rates of children and their parents has largely focused on acculturation gap-distress models (how gaps lead to youth maladjustment). The evidence thus far is mixed (see Telzer, 2010 for review). Using global measures of acculturation, some studies examining parent-youth differential acculturation among Latino families have found that wider gaps are associated with higher youth externalizing problems (Schofield et al., 2008), and higher youth internalizing problems (Schofield et al., 2008), including substance use (Martinez, 2006). Others have found no association between global acculturation gaps and youth externalizing symptoms (Lau et al., 2005) or depressive symptoms (Céspedes & Huey, 2008).

Studies which have examined gaps in specific cultural domains and their relation to youth depressive symptoms, have found larger parent-child gaps in affiliative obedience (Stein & Polo, 2013) and perceived gender roles (Céspedes & Huey, 2008) to be related to higher youth depressive symptoms. However, gaps in language produced null results (Pasch et al., 2006). When specifically examining discrepancies in familism and their relation to youth depressive symptoms, null results were found (Bauman et al., 2010).

There is also some variability in how acculturation gaps are calculated. The most common methods for calculating acculturation gaps are match/mismatch and difference scores (Telzer, 2010). These calculations are limited in their ability to show the nature of the gap and in their conceptual applicability to some existing research. Neither approach accounts for both persons being low on a protective factor. For example, a family in which both the parent and youth are

low on familism would be considered as having a smaller gap, and therefore predicted to have similarly healthy profile as a family in which both parent and youth are high in familism (despite lower levels having been linked to youth maladjustment). As an alternative to this approach, Henry, Tolan, and Gorman-Smith (2005) recommend describing types of families along multiple dimensions simultaneously, via family-centered cluster analysis. Davies and Cummings (2004) found support for clustering techniques using multiple informants and other studies have used family-centered clustering techniques to identify family types and found conceptually solid results as well (Gorman-Smith, Tolan, & B. Henry, 2000; Gorman-Smith, Tolan, Henry, & Florsheim, 2000; Roosa et al., 2009). The study specifically examining discrepancies in familism and the relation to youth depressive symptoms (Bauman et al., 2010) used a difference score. In addition to examining youth (YF) and parent familism (PF) reports separately, the present study will attempt to strengthen the literature base by examining parent-youth dyadic familism (DF) using family-centered profiles.

Statement of Research Aims and Hypotheses

Research Aim 1: Identification of depressive symptom trajectories

The first aim of the present study is to determine the different trajectories of depressive symptoms among a sample of low-income Latino early adolescents employing a person-centered approach. While the nature of the exact number of classes, proportion of members, and defining characteristics cannot be determined a priori, it is anticipated that more than one group trajectory class will emerge. Combining previous literature on trajectories with what is known about Latino adolescent depression, it is predicted that classes with consistently high symptoms (high stable class), slightly increasing symptoms over time (escalating class), and consistently low symptoms over time (stable low class)

will emerge. If such classes emerge, it is predicted that a substantial proportion of youth will belong to the low stable class, followed by the escalating and high stable classes, respectively. The classes of trajectories will serve as one of the dependent variables for some of the subsequent aims.

Research Aim 2: Examining the links between familism and youth depressive symptoms

- 2A. The relation between YF and youth depressive symptoms will be examined cross-sectionally (i.e., Time 1 YF and Time 1 youth depressive symptoms) and with depressive symptom trajectories (i.e., Time 1 YF and depressive symptoms trajectories). It is predicted that higher YF will be related to lower youth depressive symptoms. The link between YF and depressive symptom trajectories will largely depend on the results of the aim proposed above. However, using the extant literature on the buffering relation between familism and youth depression, it is expected that youth with higher levels of familism will be more likely to belong to the low stable class and youth with lower levels of familism will be more likely to belong to the escalating or high stable class.
- 2B. The aforementioned aim (2A) will also be tested using PF. As with the YF, the relation between PF and youth depressive symptoms will be examined cross-sectionally (i.e., Time 2 PF and Time 2 youth depressive symptoms) and with depressive symptom trajectories (i.e., Time 2 PF and youth depressive symptom trajectories). The literature has shown only fathers' reports on familism to also buffer against youth depressive symptoms, and no relation between mothers' reports and their daughters' depressive symptoms. Being that our sample is mostly comprised of mothers, we predict that no relation will be found between PF and youth depressive symptoms, including depressive symptom trajectories.

2C. Parent-youth dyadic profiles will be examined using family-centered analyses (similar to those by Gorman-Smith, Tolan, & B. Henry, 2000; Gorman-Smith, Tolan, Henry, et al., 2000; Roosa et al., 2009). The literature provided little basis specifically for the different types of familism profiles that might emerge. Although exact predictions regarding the number, defining characteristics, or proportion of people per group cannot be made, given what is known from individual reports and research on cultural discrepancies between parents and youth (Bauman et al., 2010; Céspedes & Huey, 2008; Pasch et al., 2006; Stein & Polo, 2013), it is expected that classes characterized by high YF and PF will be related to a healthier youth depressive symptom trajectory (e.g., stable low class).

Research Aim 3: Examining the role of sex

3A. The role of sex will first be examined as it relates to the depressive symptom trajectories.

It is expected that girls will be more likely than boys to belong to classes characterized by high levels of depressive symptoms. For example, girls will be more likely than boys to belong to the high stable and escalating classes of depressive symptom trajectories.

3B. Sex will also be examined as a moderator of the relation between YF and depressive symptom trajectories. It is expected that relations between YF and trajectories characterized by high levels of depressive symptom (e.g., stable high and escalating) will be stronger for girls compared to boys.

Method

Participants

Youth for the current study were selected from a public school in Chicago, Illinois. Data for youth were collected at four time points. The initial sample (Time 1) was comprised of 133 youth of Latino backgrounds. The subsamples of youth who participated in the subsequent time

points are as follows: Time 2 = 108 (81.2%), Time 3 = 120 (90.2%), and Time 4 = 109 (82.0%). Parents of youth in the initial sample participated in Time 2 ($n = 89$; 66.9%) and Time 4 ($n = 91$; 68.4%) interviews, and a total of 82 parents completed both Time 2 and Time 4 interviews.

At the time of the Time 1 surveys, students were in grades 5th ($n = 36$; 27.1%), 6th ($n = 41$; 30.8%), and 7th ($n = 56$; 42.1%). Their mean age was 11.9 years ($SD = 0.94$, range = 10-14 years) and included 74 males (55.6%) and 59 females (44.4%). The majority of youth were born in the U.S. (84.2%). Youth were of Mexican American (60.9%), Puerto Rican (21.8%), or Central American (7.5%) backgrounds, and a few were of mixed Latino subgroups or mixed Latino and non-Latino backgrounds (9.8%). Most youth resided in homes with their biological mother and father (64.0%).

The vast majority of youth had parents both born in another country (66.9%). The remaining 15.0% had either one (15.0%) or both parents who were U.S.-born (18.0%). The majority of parents reported their annual family income was less than \$30,000 (66%) and average number of people living in the home being supported by the family income was 4.67 ($SD = 1.51$). About half of mothers (45.7%) and fathers (47.9%) did not graduate with the equivalent of a high school degree. Parent reports were mostly accounts from mothers (90.5%).

Measures

Demographics. A 23-item participant characteristics section was included in the youth classroom survey and was divided into questions about the youth and his or her family. Items relevant to the current study include the child's sex (male = 1, female = 2), grade in school, Spanish language proficiency, and household income. Spanish language proficiency was calculated averaging the mean of three items (spoken, written, and reading comprehension) on a 4-point Likert scale, ranging from 1 = Very Well to 4 = Not Very Well. To ease interpretation,

items were reverse coded so that higher values correspond to more Spanish language proficiency. An additional demographic variable collected from the parent interviews was household income, collected as ordinal data (\$5,000 - 10,000; \$10,000-20,000; \$20,000-30,000; \$30,000-40,000; \$40,000-50,000; \$50,000-75,000; \$75,000-100,000; \$100,000+).

Depressive symptoms. Levels of youth depressive symptoms were measured using the Children's Depression Inventory (CDI; Kovacs, 1992), a well-established self-report measure of depression in children. This 26-item survey (omitting the suicidality item) assesses symptoms of depression during the past two weeks. The internal consistency for the scale has been demonstrated to be excellent and test-retest reliability has been adequate (Weiss et al., 1991). Moreover, the CDI has been shown to be a valid measure of depressed mood among multiethnic (Kataoka et al., 2003) and Latino populations (Siegel, Aneshensel, Taub, Cantwell, & Driscoll, 1998). The CDI was administered to youth in this study across all four time points, and the internal consistency of the CDI in the present sample was found to be consistently high ($\alpha_{T1} = .88$; $\alpha_{T2} = .83$; $\alpha_{T3} = .88$; $\alpha_{T4} = .88$).

Familism. The Familism scale (Vega, Gil, Warheit, Zimmerman, & Apospori, 1993) was developed based on the work of Olsen et al. (1983). The scale measures family member's (in this case youth and a primary caregiver) feelings about their family, and, in particular, the degree of closeness, loyalty, support, and value of family. It is a 7-item measure with items such as "We share similar values and beliefs as a family." Both youth and parents rate the identical items. Youth rated the familism items on a 5-point Likert scale, ranging from Strongly Disagree (1) to Strongly Agree (5), while parents rated the familism items on a 4-point Likert scale also ranging from Strongly Disagree (1) to Strongly Agree (4). Youth familism was obtained during Time 1

($\alpha_{\text{youth T1}} = .85$) and Time 3 ($\alpha_{\text{youth T3}} = .92$), and parent familism during both Time 2 ($\alpha_{\text{parents T2}} = .89$) and Time 4 ($\alpha_{\text{parent T4}} = .89$).

Procedure

The study was reviewed and approved by DePaul University's Institutional Review Board. Participants in this study were recruited from a public elementary school in Chicago, Illinois. According to 2008–2009 enrollment data, the school enrolled 87.4% Latino students, and 89.7% of the students were classified as “low-income” by the Illinois State Board of Education (2009). Youth were initially recruited when they were in in grades 5th through 7th. The youth were asked to participate in two classroom surveys (Time 1 and Time 3) and two interviews (Time 2 and Time 4), over the span of approximately two years. Parents were invited to participate in two interviews conducted approximately one year apart (Time 2 and Time 4). The recruitment process began with presenting classrooms with information about the study. A total of 186 students were given information packets that included a letter from the school's principal stating support for the study and a consent form for parents. Signed consent forms were collected from 181 parents (97.3% of packets given to students) during the two weeks following the initial distribution of packets. Of those returned, 142 parents (78.5%) agreed to allow their child to participate in the Time 1 and Time 3 classroom surveys. Students who returned the signed consent form received a small prize (e.g., scented pencils) regardless of whether or not their parents agreed to allow them to participate. Assent from students was obtained on the date of the initial surveys. Nine of the 142 students who initially participated in the Time 1 classroom survey were not of Latino background (i.e., neither parent was Latino). Therefore, they were excluded for this study.

Surveys were administered during school hours and completed by all student participants. Students completing the initial survey were entered into a raffle drawing, which included various prizes worth \$5 to \$10. Participants in the classroom surveys were divided by grade level and surveyed on separate days, making this data collection phase span three days. For each day of data collection, students remained in their respective classrooms but were surveyed simultaneously. The survey was in a booklet, which was utilized by research staff as a means to read items out loud for students while they followed along with a duplicate copy of the booklet. Each room had two or more additional research team members to assist students as needed. The research staff included the principal investigator, doctoral level psychology students, and undergraduate level research assistants. The duration of the survey was approximately two hours.

Families of youth who participated in the survey were recruited to participate in the Time 2 and Time 4 interviews. Parents were contacted via phone to invite them to participate, along with the youth, to these one-on-one interviews, which were held at the school site. Separate consent was obtained from parents (and assent from youth). As with the surveys, research assistants read questionnaire items out loud and utilized response scale booklets to obtain clearer responses and increase participant comprehension. Monolingual Spanish speakers were administered the interview in Spanish. Although every effort was made to reach every family of the youth who participated in the interviews, some were not reached after multiple attempts and others were no longer enrolled in the school.

Results

Preliminary Analyses

Bias analyses were conducted to evaluate whether or not youth who enrolled in Time 2, Time 3, and Time 4 data collection points differed significantly from those initially recruited for

Time 1. As Table 1 indicates, there were no statistically significant differences across time points on youth's sex, grade in school, Spanish language proficiency, youth familism, and youth depressive symptoms. Bias analyses also compared youth who participated in Time 1 with those whose parents participated in Time 2 or Time 4 (Table 2), which resulted in no statistically significant differences. Those analyses served as a test of random missingness, allowing us to proceed with statistical tests capable of handling missing data (e.g., growth mixture modeling; Abrevaya, 2011).

Table 1

Bias Analyses for Demographic and Study Variables, Comparing Subsamples of Youth at Time 2, Time 3, and Time 4 to Full Sample of Youth at Time 1

Test Variable	Time 1 vs. Time 2 youth participants			Time 1 vs. Time 3 youth participants			Time 1 vs. Time 4 youth participants		
	<i>t</i>	<i>df</i>	<i>p</i>	<i>t</i>	<i>df</i>	<i>p</i>	<i>t</i>	<i>df</i>	<i>p</i>
Sex	-.48	131	.63	-.45	131	.66	.61	131	.54
Grade	.60	131	.55	.02	131	.99	1.49	131	.14
Spanish proficiency	1.12	131	.27	.47	131	.64	.84	131	.35
YF T1	-.23	131	.82	.80	131	.43	.24	131	.81
YDS T1	-1.11	130	.27	-.59	130	.55	-.99	130	.32

Note. Sex coded Male = 1, Female = 2. YF 1 = Youth familism at Time 1. YDS T1 = Youth depressive symptoms at Time 1. Sample sizes for time points are: Time 1 = 133, Time 2 = 109, Time 3 = 120, Time 4 = 109.

Table 2

Bias Analyses for Demographic and Study Variables, Comparing Subsamples of Youth Whose Parents Participated at Time 2 or Time 4 with Full Sample of Youth at Time 1

Test Variable	Time 1 vs. youth with parents participating at Time 2			Time 1 vs. youth with parents participating at Time 4		
	<i>t</i>	<i>df</i>	<i>p</i>	<i>t</i>	<i>df</i>	<i>p</i>
Sex	.18	131	.86	1.26	131	.21
Grade	-.14	131	.89	.16	131	.88
Spanish proficiency	.75	131	.45	.73	131	.47
YF T1	.70	131	.48	1.50	131	.14
YDS T1	-.71	130	.47	-.67	130	.50

Note. Sex coded Male = 1, Female = 2. YF 1 = Youth familism at Time 1. YDS T1 = Youth depressive symptoms at Time 1. Sample sizes for time points are: Youth at Time 1 = 133, Parents at Time 2 = 89, and Parents at Time 4 = 91.

Descriptive statistics for youth depressive symptoms at each time point (Time 1- Time 4) and YF (Time 1 and Time 3) and PF (Time 2 and Time 4) can be found in Table 3.

Table 3

Descriptive Statistics for Continuous Study Variables

	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>n</i>
YDS T1	8.42	7.07	28	132
YDS T2	5.82	5.02	25	108
YDS T3	6.52	6.16	30	120
YDS T4	4.50	5.31	26	109
YF T1	4.07	0.62	2.57	133
PF T2	3.57	0.54	2.43	89
YF T3	4.02	0.76	3.71	120
PF T4	3.53	0.52	2.14	91

Note. YDS T1-T4 = Youth depressive symptoms at Time 1/Time 2/Time 3/Time 4. YF T1/T3 = Youth familism at Time 1/Time 3. PF T2/T4 = Parent familism at Time 2/Time 4.

Pairwise Pearson's correlations between all study variables and demographics are presented in Table 4. Youth depressive symptoms were positively correlated at every time point. Youth familism was negatively correlated with youth depressive symptoms at all time points, such that youth with higher familism had lower levels of depressive symptoms. Parent familism at Time 2 and Time 4 were both negatively correlated with youth depressive symptoms at Time 4. Specifically, higher PF was related to lower youth depressive symptoms. There was no correlation between PF and youth depressive symptoms at Time 2. As expected, YF at Time 1 was positively correlated with YF at Time 3 and PF at Time 2 was positively correlated with PF at Time 4. However, YF and PF scores were not significantly correlated at any time point.

Of the demographic variables, sex (male = 1, female = 2) was positively correlated with youth depressive symptoms at Time 1, with girls showing higher levels of depressive symptoms than boys; but negatively correlated with YF, such that girls had lower levels of familism than boys, at both time points. Grade was negatively correlated with YF at Time 1 and Time 3; youth in higher grades had lower levels of familism. Spanish language proficiency was negatively

correlated with youth depressive symptoms at Time 2. Specifically, better Spanish language proficiency was related to lower youth depressive symptoms. Spanish language proficiency was also positively correlated with YF at Time 1 with better Spanish language proficiency related to higher familism. Between the demographic variables, only Spanish language proficiency and household income were related to each other; such that better Spanish language proficiency was associated with lower household incomes. Analyses were conducted with grade, Spanish language proficiency, and income as covariates. Analyses were also conducted without covariates to determine relations with power maximized.

Table 4

Correlations Between Study Variables and Demographics

	1	2	3	4	5	6	7	8	9	10	11	12
1. YDS T1	-	.66***	.57***	.40***	-.60***	.04	-.36***	-.17	.20*	.01	-.12	.03
		107	119	108	132	88	119	90	132	132	132	94
2. YDS T2		-	.70***	.56***	-.43**	-.12	-.31**	-.27*	.13	-.02	-.28**	.04
			102	102	108	89	102	88	108	108	108	93
3. YDS T3			-	.64***	-.41***	.05	-.38***	-.13	.09	.14	-.13	.02
				104	120	84	120	87	120	120	120	90
4. YDS T4				-	-.29**	.03	-.29**	-.22*	.12	.06	-.14	-.02
					109	85	104	91	109	109	109	91
5. YF T1					-	.04	.51***	.05	-.22*	-.19*	.19*	.01
						89	120	91	133	133	133	95
6. PF T2						-	.03	.53***	-.08	.09	.20	.03
							84	82	89	89	89	89
7. YF T3							-	.13	-.22*	-.34***	.17	-.01
								87	120	120	120	90
8. PF T4								-	-.12	.07	.11	.03
									91	91	91	86
9. Sex									-	.10	.06	.01
										133	133	95
10. Grade										-	.07	-.02
											133	95
11. Spanish proficiency											-	-.32**
												95
12. Income												-

Note. * $p < .05$. ** $p < .01$, *** $p < .001$. Sex variable coded Male = 1, Female = 2. n = values not bold. YDS T1-T4 = Youth depressive symptoms at Time 1/Time 2/Time 3/Time 4. YF T1/T3 = Youth familism at Time 1/Time 3. PF T2/T4 = Parent familism at Time 2/Time 4.

Research Aim 1: Identification of depressive symptom trajectories

Growth mixture modeling (GMM) in Mplus software was used to classify youth depressive symptom trajectories (Muthén & Muthén, 2000), using the youth scores on the CDI across all four time points. GMM is a person-centered approach, meaning the focus is on relationships among individuals within a sample, accounting for heterogeneity. Relative to conventional growth modeling approaches, the advantage of GMM is that it allows for the possibility of multiple mean growth curves, should distinct subgroups exist in a sample (Jung & Wickrama, 2008). Traditional approaches assume individuals come from a single population, however theoretical considerations and previous findings related to depressive symptoms suggest distinct subclasses (in which there is more homogeneity among individuals within groups than between) might exist within the larger population. Therefore, GMM gives distinct growth models for each latent class, such that each has a unique estimate of variance (Jung & Wickrama, 2008).

Current debates around GMM center on the problem of convergence (Hipp & Bauer, 2006) and which model-fit indices to use for determining the appropriate number of classes (see Nylund, Asparouhov, & Muthén, 2007 for discussion). The problem of local solutions refers to the largest or smallest values a function takes only being for a given area on the estimated curve, and not necessarily the entire curve (i.e., global minimum or maximum), a limitation due to the algorithm not being able to distinguish between the two (i.e., simply converges on the largest log-likelihood). To ensure the model converges on a global solution, Hipp and Bauer (2006) advise that the number of random start values be increased. Mplus software has ample flexibility for random start values. Therefore, Mplus will be used to ensure the model converges on global solution (Jung & Wickrama, 2008). As for determining the appropriate number of classes, current methods primarily use the Bayesian information criteria (BIC) value and likelihood ratio

test statistic (LMR-LRT; Lo, Mendell, & Rubin, 2001). Recent work has suggested also using the bootstrap likelihood ratio test (BLRT) because in simulations it has been observed to be a better indicator with all models considered. In the present study, the model fit indices were used in combination with substantive meaning of classes, parsimony, and theoretical justification (Muthén, 2003). The k -class trajectories that emerged from this aim served as the outcome variable in all subsequent analyses.

GMM was applied to identify subgroups of youth depressive symptom trajectories ($N = 133$). First, a single-class latent growth curve model was specified. The results of the single-class model indicated it should be rejected (BIC = 2867.09; AIC = 2841.08; Chi-Sq = 32.05, $p < .001$; CFI = 0.86; TLI = 0.83; SRMR = 0.08). Thus, models with two through four classes were estimated (see Table 5). All solutions had adequate values for entropy (greater than .85) and successfully converged. The four-class solution had a higher BIC relative to the three-class solution (lower is better). Additionally, the four-class solution had a class comprised of less than 5% of the sample, and did not differ significantly from the $k-1$ solution (i.e., three-class; Adjusted LMR-LRT, $p = ns$). Although the three-class solution did not differ significantly from the two-class solution (Adjusted LMR-LRT, $p = ns$), the two-class solution had significant within-class variability (indicating the solution was not optimal). Furthermore, the three-class solution had the lowest BIC compared to all other solutions examined. Thus, three-class solution was determined the best fitting solution and selected for use in all subsequent analyses.

The three trajectory classes are depicted in Figure 1. The first trajectory class was named “stable low” ($n = 102$; 76.7%; $M_{intercept} = 5.50$, $SE = .48$, $p < .001$; $M_{slope} = -.88$, $SE = .59$, $p < .001$), and consists of youth with low scores at Time 1 ($M_{T1} = 6.04$, $SD = 4.71$) that remain low, though decreasing slightly over time ($M_{T4} = 2.84$, $SD = 2.96$). The second trajectory class,

“recovery” ($n = 20$; 15.0% of the sample; $M_{intercept} = 18.27$, $SE = 1.24$, $p < .001$; $M_{slope} = -4.49$, $SE = .38$, $p < .001$), represents youth with a descending trajectory, high scores at Time 1 ($M_{T1} = 20.40$, $SD = 4.51$), and low scores at Time 4 ($M_{T4} = 4.71$, $SD = 3.95$). The third trajectory class, “escalating” ($n = 11$; 8.3%; $M_{intercept} = 8.51$, $SE = 2.00$, $p < .001$; $M_{slope} = 2.69$, $SE = .59$, $p < .001$), represents youth who reported moderate scores at Time 1 ($M_{T1} = 9.73$, $SD = 7.81$), but increased over time ($M_{T4} = 16.45$, $SD = 5.47$).

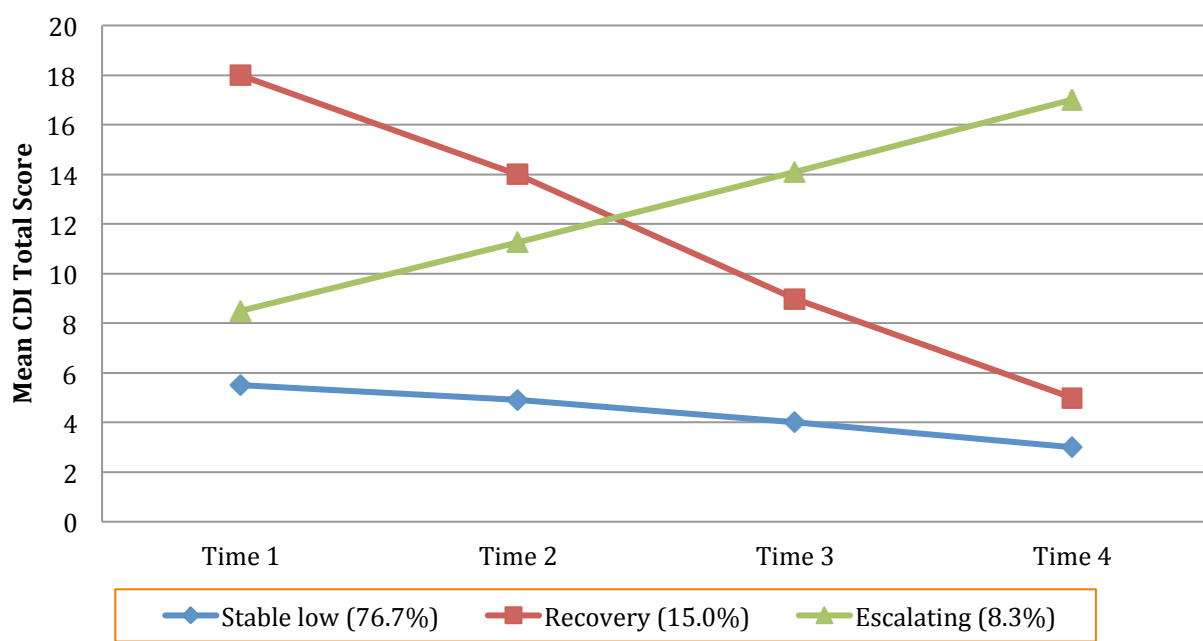
Table 5

Youth Depressive Symptoms Growth Mixture Modeling Solutions (N = 133)

	<i>BIC</i>	<i>AIC</i>	<i>LMR-LRT</i>	<i>Adj. LMR-LRT</i>	<i>BLRT</i>	<i>entropy</i>
2 classes	2833.04	2798.36	-1411.54*	45.61*	48.72***	0.92
3 classes	2820.54	2777.19	-1387.18	25.44	27.18***	0.87
4 classes	2825.34	2773.31	-1373.59	9.24	9.87*	0.90

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

Figure 1

Depiction of Three-Class Solution of Youth Depressive Symptom Trajectories (N = 133)

Research Aim 2A: Youth familism and youth depressive symptoms

Two hierarchical regression analyses examined the relation between YF and youth depressive symptoms cross-sectionally. The first model included youth depressive symptoms at Time 1 as the outcome variable and YF at Time 1 as a predictor, controlling for youth grade, Spanish language proficiency, and household income. The second model included youth depressive symptoms at Time 3 as the outcome variable and YF at Time 3 as a predictor, controlling for household income, youth grade and Spanish language proficiency. Both final models were statistically significant [Time 1: $F(4, 89) = 13.27, p < .001$; Time 3: $F(4, 85) = 3.73, p < .01$]. Two simple regression analyses examined the models without covariates. Both models without covariates were statistically significant [Time 1: $F(1, 130) = 73.44, p < .001$; Time 3: $F(1, 118) = 19.88, p < .001$].

Table 6

Summary of Cross-Sectional Hierarchical and Simple Regression Analyses for Youth Familism Predicting Youth Depressive Symptoms

	R^2	B	$SE(B)$	β	95% CI
YDS T1					
<u>Hierarchical Regression</u>	.37				
Grade		-.97	.74	-.11	-2.44, .50
Spanish proficiency		-.14	.75	-.02	-1.63, 1.34
Income		.09	.36	.02	-.62, .80
YF T1		-7.12	.99	-.63**	-9.09, -5.14
<u>Simple Regression</u>	.36				
YF T1		6.84	.80	-.60**	-8.41, -5.26
YDS T3					
<u>Hierarchical Regression</u>	.15				
Grade		.16	.80	.02	-1.44, 1.76
Spanish proficiency		-.52	.77	-.07	-1.01, 2.06
Income		-.02	.37	-.01	-.76, .72
YF T3		-2.94	.89	-.36*	-4.70, -1.18
<u>Simple Regression</u>	.14				
YF T3		3.09	.69	-.38*	-4.47, 5.26

Note. * $p < .05$. ** $p < .01$. ^ $p < .10$. YDS T1/T3 = Youth depressive symptoms at Time 1/Time 3. YF T1/T3 = Youth familism at Time 1/Time 3. Sample sizes for time points are: Youth familism at Time 1 = 133, Youth familism at Time 3 = 120.

In all cross-sectional analyses (with and without covariates), YF emerged as the only significant predictor of youth depressive symptoms; higher YF was associated with lower youth depressive symptoms. A summary of the hierarchical regression models with covariates and simple regression models without covariates can be found in Table 6.

A multinomial logistic regression (Hosmer & Lemeshow, 2004) model for youth depressive symptom trajectories was specified with YF at Time 1 as an indicator, and grade, Spanish language proficiency, and household income as covariates. The three depressive symptom trajectories (recovery, stable low, or escalating) were predicted using the stable low class as the reference group.

The main effects model for YF at Time 1 with covariates showed marginally significant better fit than the null model [LR χ^2 (8, N = 133) = 14.81, $p = .06$] and the overall model fit was good [Deviance χ^2 (180, N = 133) = 124.33, $p = .41$; Pearson χ^2 (180, N = 133) = 183.83, $p = .99$]. Collectively, the covariates and YF explained an adequate amount of variance (Nagelkerke $R^2 = .19$) in class membership. Youth familism emerged as a significant predictor [LR χ^2 (2, N = 133) = 12.91, $p < .01$]. Specifically, youth are more likely to belong to the stable low trajectory, relative to the recovery trajectory, as YF increases ($OR = .17$, 95%CI = .06, .55). There was no significant relation in the stable low versus escalating comparison.

A second multinomial logistic regression model was performed with YDS as the outcome and YF at Time 1 as the predictor, without covariates. The model for YF at Time 1 without covariates was statistically significant [LR χ^2 (2, N = 133) = 17.36, $p < .001$] and the overall model fit was excellent [Deviance χ^2 (34, N = 133) = 30.27, $p = .65$, and Pearson χ^2 (34, N = 133) = 24.51, $p = .88$]. Youth familism explained an adequate amount of variance (Nagelkerke $R^2 = .16$) in class membership [LR χ^2 (2, N = 133) = 17.36, $p < .001$]. As in the model with

covariates, youth are more likely to belong to the stable low trajectory, relative to the recovery trajectory, as YF increases (OR = .18, 95% CI = .07, .44). There was no significant relation in the stable low versus escalating comparison. A summary of the multinomial logistic regression models is presented in Table 7.

Table 7

Multinomial Logistic Regression Parameter Estimates for Youth Familism Predicting Youth Depressive Symptom Trajectories (N = 133)

	Youth Depressive Symptom Trajectories									
	Recovery					Escalating				
	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>p</i>	<i>Exp(B)</i>	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>p</i>	<i>Exp(B)</i>
<u>With covariates</u>										
Grade	-.56	.40	2.03	.15	.57	.23	.46	.25	.62	1.25
Spanish proficiency	-.14	.42	.10	.75	.87	.24	.46	.27	.60	1.27
Income	.12	.17	.52	.47	1.13	-.05	.23	.06	.81	.95
YF T1	-1.76	.59	8.96	.003	.17	.57	.70	.67	.41	1.77
<u>Without covariates</u>										
YF T1	-1.73	.46	14.24	<.001	.18	-.18	.55	.11	.74	.83

Note. Reference group = Stable low. YF T1 = Youth familism at Time 1.

Research Aim 2B: Parent familism and youth depressive symptoms

Two additional hierarchical regression analyses examined the relation between PF and youth depressive symptoms cross-sectionally, as was done with Aim 2A with YF. The first model included youth depressive symptoms at Time 2 as the outcome variable and PF at Time 2 as a predictor, controlling for youth grade, Spanish language proficiency, and household income. The second model included youth depressive symptoms at Time 4 as the outcome variable and PF at Time 4 as a predictor, again controlling for youth grade, Spanish language proficiency, and household income. The first overall model was statistically significant [Time 2: $F(4, 84) = 2.69$, $p = .04$]; however the second was not [Time 4: $F(4, 81) = 1.43$, $p = .23$]. In the first model, only youth Spanish proficiency emerged as significant; in the second model it was marginally significant. In both models, higher Spanish proficiency was associated with lower depressive

symptoms. Two additional simple regression models examined the relations without covariates. The Time 2 model without covariates was not significant [Time 2: $F(1, 87) = 1.30, p = .26$]. However, the Time 4 model was significant [Time 4: $F(1, 89) = 4.51, p < .05$]. Parent familism significantly predicted youth depressive symptoms at Time 4. Higher PF was associated with lower youth depressive symptoms. A summary of the hierarchical regression models with covariates and simple regression models without covariates can be found in Table 8.

Table 8

Summary of Cross-Sectional Hierarchical and Simple Regression Analyses for Parent Familism Predicting Youth Depressive Symptoms

	R^2	B	$SE(B)$	β	95% CI
YDS T2					
<u>Hierarchical Regression</u>					
Grade	.11	.04	.61	.00	-1.16, 1.25
Spanish proficiency		-1.94	.65	-.34**	.34, 3.24
Income		-.14	.31	-.05	-.75, .47
PF T2		-.49	.97	-.05	-2.41, 1.44
<u>Simple Regression</u>					
PF T2	.02	-1.11	.97	-.12	-3.04, .82
YDS T4					
<u>Hierarchical Regression</u>					
Grade	.07	.31	.62	.05	-.93, 1.54
Spanish proficiency		-1.33	.67	-.23^	-.01, 2.66
Income		-.25	.32	-.09	-.88, .39
PF T4		-1.04	1.13	-.10	-3.28, 1.20
<u>Simple Regression</u>					
PF T4	.05	-2.24	1.06	-.22*	-4.34, -.14

Note. * $p < .05$. ** $p < .01$. ^ $p < .10$. YDS T2/T4 = Youth depressive symptoms at Time 2/Time 4. PF T2/T4 = Parent familism at Time 2/Time 4. Sample sizes for time points are: Parent and youth at Time 2 = 89, Parent and youth at Time 4 = 91

As with the youth models, two multinomial logistic regression models were specified with PF at Time 2 as indicators. Youth grade, Spanish language proficiency, and household income were entered into the first model as covariates to control for their influence on depressive symptom trajectories. The second model was with PF at Time 2 only. Again, the reference group was the stable low class.

The main effects model for PF at Time 2 with covariates showed a non-significant difference compared to the null model [LR χ^2 (8, N = 89) = 6.02, $p = .65$; Deviance χ^2 (164, N = 89) = 121.05, $p = .99$, and Pearson χ^2 (164, N = 89) = 178.64, $p = .21$; Nagelkerke $R^2 = .09$]. Neither the covariates nor PF predicted youth depressive symptom trajectories. The model without covariates was also non-significant [LR χ^2 (2, N = 89) = 2.37, $p = .31$; Deviance χ^2 (26, N = 89) = 14.09, $p = .97$, and Pearson χ^2 (26, N = 89) = 13.29, $p = .98$; Nagelkerke $R^2 = .04$]. A summary of both models is presented in Table 9.

Table 9

Multinomial Logistic Regression Parameter Estimates for Parent Familism Predicting Youth Depressive Symptom Trajectories (n = 89)

	Youth Depressive Symptom Trajectories									
	Recovery					Escalating				
	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>p</i>	<i>Exp(B)</i>	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>p</i>	<i>Exp(B)</i>
<u>With covariates</u>										
Grade	-.29	.35	.69	.41	.75	.37	.53	.49	.49	1.45
Spanish proficiency	.44	.37	1.42	.23	1.56	.09	.56	.02	.88	1.09
Income	.05	.17	.08	.78	1.05	.13	.24	.32	.57	1.14
PF T2	.97	.71	1.85	.17	2.63	.99	1.09	.83	.36	2.68
<u>Without covariates</u>										
PF T2	.74	.66	1.23	.27	2.09	.96	1.03	.92	.34	2.68

Note. Reference group = Stable low. PF T2 = Parent familism at Time 2.

Research Aim 2C: Dyadic familism and youth depressive symptoms

Dyadic (parent-youth) familism classes were created using Latent Profile Analysis (LPA). Similar to latent class analysis (LCA), LPA is grounded on the notion that different item endorsement profiles can exist and be explained by mutually exclusive respondent classes (Lazarsfeld & Henry, 1968). Unlike LCA, which only uses dichotomous indicator variables, LPA allows for use of continuous and ordinal type data. The principal LPA is based on that of conditional independence, which edicts statistical independence within classes. A combination of multiple indices of fit and conceptual interpretability was used to identify the best solution (i.e.,

number of classes). The primary fit indices used were the sample-size adjusted Bayesian Information Criteria (SABIC; Sclove, 1987) and the Akaike Information Criteria (AIC; Akaike, 1987). The most optimal solution was determined by lower values on each index. Given that local solutions can arise as issues when estimating mixture models (Hipp & Bauer, 2006) multiple random-generated start values were used.

Latent profile analysis was used to determine how many profiles of familism existed in the data for parent-youth dyads, using Time 1 youth familism and Time 2 parent familism. LPA was performed using Mplus. Four LPA models (two-profile through five-profile models) were tested iteratively, examining the Bayesian Information Criteria (BIC) fit statistic, entropy, and percent per class to determine which model fit the data best. The final model was chosen based on a combination of empirical fit and conceptual validity (Linzer & Lewis, 2011). As recommended, each solution was estimated repeatedly (50 iterations), each time using different randomly chosen initial parameter values. This approach produces the most robust estimates and avoids susceptibility to local maxima. For each model tested, Mplus selects the iteration that produces the greatest log-likelihood value. Each model's fit statistics are presented in Table 10.

Table 10

Dyadic Familism Latent Profile Analysis Solutions (n = 91)

	<i>BIC</i>	<i>Adj. BIC</i>	<i>AIC</i>	<i>Adj. LMR-LRT</i>	<i>Entropy</i>
2 classes	317.78	295.69	300.36	23.87*	0.94
3 classes	302.47	270.91	277.58	26.79	0.93
4 classes	307.88	266.85	275.52	7.50*	0.95
5 classes	311.27	260.78	271.46	9.37	0.92

Note. * $p < .05$.

Entropy values were adequate (near 1.0) for each two- through five-class solution and all models converged successfully. The five-class and four-class models had one or more classes comprised of less than 5% of the sample. Thus, only the two- and three-class models were

examined further. The three-class model had the lowest BIC and good entropy. The model was not significantly different from the two-class model, however it was theoretically sound; therefore, the three-class model was considered the best solution.

Relative to the grand mean, youth familism was moderate in all of the classes. The first of the three classes ($n = 65$; 71.4% of the sample), was comprised of dyads wherein parents were slightly high relative to the grand mean ($M_{parent} = 3.87$, $SD = .16$; $M_{youth} = 4.03$, $SD = .64$). The second class ($n = 21$; 27% of the sample) was comprised of parents that were slightly low ($M_{parent} = 3.12$, $SD = .22$; $M_{youth} = 4.03$, $SD = .66$). The third class was the smallest ($n = 5$; 5.6% of the sample) and characterized by very low parent familism ($M_{parent} = 2.03$, $SD = .34$; $M_{youth} = 4.00$, $SD = .66$).

Two ANCOVA models tested the effect of DF as the between subjects factor on youth depressive symptoms at Time 3 and Time 4, controlling for income, youth grade and Spanish proficiency. There was no main effect of DF on youth depressive symptoms at either time point [Time 3: $F(2, 78) = 1.56$, $p = .22$, $\eta_p^2 = .04$; Time 4: $F(2, 79) = .48$, $p = .62$, $\eta_p^2 = .01$]. Youth Spanish proficiency significantly predicted Time 3 youth depressive symptoms [$F(1, 78) = 5.51$, $p < .05$, $\eta_p^2 = .07$, $B = 2.10$, $SE = .89$, $p < .05$, 95%CI = .32, 3.88], with higher levels of Spanish proficiency related to lower levels of depressive symptoms. Youth grade was marginally significant at Time 4 [$F(1, 79) = 3.85$, $p = .05$, $\eta_p^2 = .05$, $B = 1.09$, $SE = .56$, $p = .05$, 95%CI = -.55, 1.84], with higher grade being related to higher depressive symptoms. In addition, two One-way ANOVAs were performed on youth depressive symptoms at Time 3 and Time 4 with DF as the predictor, without covariates. Neither model was significant [Time 3: $F(2, 81) = .97$, $p = .38$; Time 4: $F(2, 82) = .60$, $p = .34$].

Regression analyses including covariates could not be performed due to there being instances of zero cases observed when DF and trajectory classes were crosstabulated. Thus, a chi-square test of independence was performed to examine the relation between DF classes and youth depressive symptom trajectories. Despite cells with zero cases being *sampling zeros*, it should be noted that the test could be unreliable being that more than 20% of the cells have observations with fewer than five cases. The relation between these variables was not significant [$\chi^2 (4, n = 89) = 3.46, p = .48$], thus no interpretation was derived from this result. The cross tabulation of DF and youth depressive symptoms can be found in Table 11.

Table 11

Cross tabulation of Dyadic Familism Classes by Youth Depressive Symptom Trajectories (N = 91)

Depressive Symptom Trajectory	Dyadic Familism Class			Total
	Mod YF/High PF	Mod YF/Low PF	Mod YF/Very low PF	
Recovery	11 (12.09%)	3 (3.30%)	0 (0.00%)	14 (15.38%)
Stable low	46 (51%)	17 (19%)	5 (5.49%)	68 (74.73%)
Escalating	8 (8.79%)	1 (9.89%)	0 (0.00%)	9 (9.89%)
Total	65 (71.43%)	21 (23.08%)	5 (5.49%)	91

Note. Mod YF = Moderate levels of youth familism. PF = Parent familism.

Research Aim 3: Examining the role of sex

A multinomial logistic regression model was tested using sex as an indicator, and youth grade, Spanish language proficiency and household income as covariates. As shown in Table 12, the model did not show a better fit than the null model [LR $\chi^2 (8, N = 133) = 2.83, p = .95$; Deviance $\chi^2 (152, N = 133) = 116.91, p = .98$, and Pearson $\chi^2 (152, N = 133) = 161.60, p = .28$; Nagelkerke $R^2 = .04$].

A chi-square test of independence examined the relation between sex and youth depressive symptom trajectories, without covariates. The relation between these variables was marginally significant [$\chi^2 (2, n = 133) = 5.01, p = .08$]. Males were more likely to belong to the

stable low class, whereas females were more likely to belong to the recovery class (see Table 13 for cross tabulation).

Table 12

Multinomial Logistic Regression Parameter Estimates for Sex Predicting Youth Depressive Symptom Trajectories, Controlling for Covariates (N = 133)

	Youth Depressive Symptom Trajectories									
	Recovery					Escalating				
	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>p</i>	<i>Exp(B)</i>	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>p</i>	<i>Exp(B)</i>
<u>With covariates</u>										
Grade	-.21	.34	.38	.54	.81	.11	.43	.07	.80	.98
Spanish proficiency	.33	.34	.83	.36	1.39	.14	.45	.10	.75	1.15
Income	.09	.16	.27	.60	1.09	-.02	.22	.01	.94	.98
Sex	.56	.58	.92	.34	1.74	.14	.72	.04	.84	1.15

Note. Reference group = Stable low. Sex variable coded Male = 1, Female = 2.

Table 13

Cross tabulation of Youth Depressive Symptom Trajectories by Sex without Covariates (N = 133)

Depressive Symptom Trajectory	Sex		Total
	Male	Female	
Recovery	7 (5.26%)	13 (9.77%)	20 (15.04%)
Stable low	62 (46.61%)	40 (30.08%)	102 (76.69%)
Escalating	5 (3.76)	6 (4.51%)	11 (8.27%)
Total	74 (55.64)	59 (44.36%)	133

Two additional multinomial logistic regression models examined the interaction between sex and youth familism at Time 1. The first model with sex, youth familism at Time 1 and the interaction between the two, controlling for covariates was not significant [LR χ^2 (12, N = 133) = 15.01, $p = .24$; Deviance χ^2 (176, N = 133) = 124.13, $p = .99$, and Pearson χ^2 (176, N = 133) = 181.73, $p = .37$; Nagelkerke $R^2 = .19$]. The second model was conducted without covariates and although it was significant [LR χ^2 (6, N = 133) = 19.76, $p < .01$; Deviance χ^2 (62, N = 133) = 60.15, $p = .54$, and Pearson χ^2 (62, N = 133) = 56.56, $p = .67$; Nagelkerke $R^2 = .18$], none of the

predictor variables significantly predicted the depressive symptom trajectories. The summary of the multinomial logistic regression models is presented in Table 14.

Table 14

Multinomial Logistic Regression Parameter Estimates for Sex by Familism Interaction Predicting Youth Depressive Symptom Trajectories, With and Without Covariates (N = 133)

	Youth Depressive Symptom Trajectories									
	Recovery					Escalating				
	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>p</i>	<i>Exp(B)</i>	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>p</i>	<i>Exp(B)</i>
<u>With covariates</u>										
Grade	-.57	.40	2.05	.15	.56	.26	.46	.25	.62	1.25
Spanish proficiency	-.14	.43	.10	.75	.87	.26	.47	.31	.58	1.30
Income	.12	.17	.51	.48	1.13	-.06	.23	.06	.80	.94
Sex	.76	3.97	.04	.85	2.13	.35	5.60	.00	.95	1.42
YF T1	-1.50	1.06	.81	.37	.22	.64	2.16	.09	.77	1.89
Sex*YF T1	-.17	1.06	.02	.88	.86	-.02	1.31	.00	.99	.98
<u>Without covariates</u>										
Sex	.48	3.53	.02	.89	1.61	3.29	4.90	.45	.50	26.92
YF T1	-1.70	.94	.00	.95	1.06	.96	1.99	.23	.63	2.62
Sex*YF T1	.06	.94	.00	.95	1.06	-.65	1.16	.31	.58	.52

Note. Reference group = Stable low. Sex variable coded Male = 1, Female = 2. YF T1 = Youth familism at Time 1.

Discussion

A growing body of literature indicates Latino youth are at greater risk for depression relative to other racial/ethnic groups (CDC, 2014; Merikangas et al., 2010; Roberts, & Chen, 1997; Roberts & Sobhan, 1992; Twenge & Nolen-Hoeksema, 2002). Research examining predictors of Latino youth depression suggests adoption of sociocultural variables, higher familial values in particular, might buffer against youth depressive symptoms (Bauman et al., 2010; McHale, Updegraff, Kim, & Cansler, 2009; Lorenzo-Blanco, Unger, Baezconde-Garbanati, Ritt-Olson, & Soto, 2012; Polo & Lopez, 2009; Zeiders et al., 2013b). Using person- and family-centered approaches, the present study has three major aims: 1) map the trajectories of depressive symptomology among middle-school age Latino youth over the course of two

years 2) examine if and how youth, parent, and dyadic familism predict youth's depressive symptoms and depressive symptom trajectories and 3) examine the role of sex and test the interactive effect of sex and youth familism on depressive symptom trajectories.

Youth depressive symptom trajectories. Many studies have examined Latino youth depressive symptoms in cross-sectional designs but only a few have examined depressive symptoms longitudinally among these youth (Zeiders, 2013a; Zeiders 2013b). To our knowledge, this is the first study examining Latino youth depressive symptoms with a person-centered approach, using Growth Mixture Modeling to map youth depressive symptoms trajectories. Our results indicate three distinct trajectories of depressive symptoms for Latino youth: generally low depressive symptoms with a minor decline over time (stable low; 76.7%), depressive symptoms that dropped from high to low (recovery; 15%), and moderate symptoms that increased to a high level of symptoms over time (escalating; 8.3%). The stable low and escalating classes emerged as predicted, however where we had hypothesized a stable high class, a recovery class emerged instead.

Group-centered longitudinal examinations of depressive symptoms have found mixed results. Studies have shown both escalating and declining depressive symptoms among adolescents (Craighead, Smucker, Craighead, & Ilardi, 1998; Finch, Saylor, & Edwards, 1985; Smucker, 1982; Angold et al., 1996a; Angold et al., 1996b; Cole, Peeke, Martin, Truglio, & Seroczynski, 1998; Finch Jr, Saylor, Edwards, & McIntosh, 1987; Nolen-Hoeksema, et al., 1992; Twenge & Nolen-Hoeksema, 2002; Updegraff, Umaña-Taylor, McHale, Wheeler, & Perez-Brena, 2012). Using a person-centered approach, Wickrama, Conger, and Abraham (2008) obtained results similar to ours with a sample of rural European American adolescents. Analogous trajectories were found, however the percentage of youth categorized in each

trajectory differed. Relative to our Latino adolescent sample, the rural European American youth had a larger stable low group (85% vs. 76.7%), and smaller recovery (10% vs. 15%) and escalating groups (6% vs. 8.3%). Collectively, these results suggest that several trajectories indeed exist, providing support for studies showing increasing and decreasing symptoms.

Latino youth appear to belong to trajectories marked at some point by high depressive symptoms, more often than European American adolescents. These discrepancies are in line with research indicating Latino youth endorse symptoms of depression more often than other ethnic groups, however this is difficult to ascertain without direct comparisons and consideration of other factors that might account for the differences. In line with existing research using person-centered approaches to youth depressive symptoms, the present study suggests the assumption that there is a singular trajectory for all adolescents, is not supported by the evidence. The findings as well highlight the strengths of using a person-centered approach and of identifying groups of youth who share trajectories, instead of estimating a singular trajectory.

Our results also indicate a majority of Latino youth are and remain without significant depressive symptoms throughout the middle school period. However, over 20% belonged to a trajectory marked by high depressive symptoms, underscoring the importance of identifying children at-risk of developing depression in grade school populations and support for developing prevention programs for such populations. Moreover, given youth in the “escalating” class had moderate symptoms at the first administration, this study substantiates the use of providing resources to youth with subclinical symptoms as well. In our sample, youth with moderate symptoms hit a clinically significant peak later on in adolescence, also lending support for continually assessing youth well-being and mental health.

Links between familism and youth depressive symptoms. Much of the research examining the role cultural values play in youth adjustment employs the use of global acculturation indices. Due to the lack of conceptual overlap amongst global measures of acculturation, researchers have argued for unpacking culture into specific sociocultural variables grounded in theory (Zane & Mak, 2003; Betancourt & López, 1993). Researchers have also urged fellow investigators to move beyond examining the relation between youth self-reports of culture and adjustment (Gonzales et al. 2002). Addressing conceptual concerns and gaps in the literature base, the present study examines Latino youth, parent, and dyadic familism as distinct indicators of youth depressive symptoms. To our knowledge this study is the first to examine whether youth, parent, and/or dyadic (parent-youth) familism predict the odds of youth belonging to one depressive symptom trajectory over the others.

In the current study, higher youth familism was associated with lower depressive symptoms cross-sectionally. Youth familism also predicted the aforementioned depressive symptom trajectories. Specifically, as youth familism increases, the odds of youth being classified as having a stable low depressive symptom trajectory (relative to the recovery trajectory) also increase. Comparisons between the stable low and escalating trajectories were non-significant. The results support our hypothesis that youth with higher familism would have lower depressive symptoms and be more likely to belong to the stable low class. The comparison between the stable low and escalating trajectories might not have resulted in a significant relation due to limitations of power; although the escalating class accounted for 8.3% of the sample, it was comprised of 11 cases.

Familism has been found to buffer against Latino youth's internalizing symptoms (Smokowski & Bacallao, 2006) and specifically depressive symptoms (Zeiders et al., 2013b).

Although previous studies have focused on familism's association with depressive symptoms in cross-sectional and longitudinal designs, this is the first study to examine whether familism can predict membership in depression symptom trajectories. As with previous studies, the role of youth familism appears to be protective.

With regard to parent familism, cross-sectional analyses between parent familism and youth depressive symptoms showed a negative relation only for the second of the two time points. Parent familism was not related to youth depressive symptom trajectories. Our prediction that no relation would be found between parent familism and youth depressive symptoms was partially supported, with only one significant relationship between the variables at Time 4. Other studies have examined only mothers' reports (Bauman et al., 2010), or mothers' and fathers' reports separately (McHale, Updegraff, Kim, & Cansler, 2009). Specifically, higher paternal reports of familism are associated with lower youth depressive symptoms (McHale, Updegraff, Kim, & Cansler, 2009), whereas maternal reports of familism and its relation to adolescent girls' internalizing symptoms and suicidality showed no relation (Bauman et al., 2010). In the current study, parent familism was not separated by parent gender due to limitations in the sample size, however the parent sample consisted primarily of mothers. It is also important to note parent familism might be related to parent reports of youth symptoms, which was not examined as part of this study as it was outside its scope. Despite its limitations, the present study fills a gap in the literature by examining the relation between parent familism and youth depressive symptom trajectories.

Using a family-centered approach, this study also examined parent and youth familism collectively (dyadic familism). Results of a latent profile analysis of dyadic familism indicate three profiles. Youth familism was moderate, relative to the grand mean, in all of the classes. The

largest group was characterized by parents with slightly high familism (71.4%), the second with slightly low familism (27%), and the smallest with very low familism (5.6%). Contrary to our hypothesis, dyadic familism did not predict youth depressive symptoms cross-sectionally or youth depressive symptom trajectories.

To date, research on parent-youth acculturation gaps and youth maladjustment is mixed (see Telzer, 2010 for review). Our results are consistent with studies finding null relations in gap-distress models (Bauman et al., 2010; Céspedes & Huey, 2008; Lau et al., 2005; Pasch et al., 2006). However, some studies have found relations between parent-youth gaps and youth depressive symptoms (Céspedes & Huey, 2008; Stein & Polo, 2013). It should be noted there are numerous analytical approaches for quantifying differences between reporters. The studies found in our review of the literature have mostly used difference scores. Few studies employ the use of family-centered analyses that provide subpopulation categorization. Using such an approach, no relation was found between dyadic profiles of familism and youth depressive symptoms. This result is similar to studies using a match design, which deconstructs gaps, accounting for both reporters being low on a potentially protective factor (Pasch et al., 2006). To our knowledge, our study is the first to examine dyadic familism using family-centered analyses and examine its relation to youth depressive symptom trajectories.

Although not a central aim of our study, we found no relation between parent and youth familism; contrary to what one might expect. This finding might indicate constraints in measurement. One possibility is the definition of family may vary depending on the reporter. During our interviews many parents actually requested guidance on this point (asking for clarification on whether or not “family” also included their own family of origin). Another possibility however is that there is indeed no relation between youth and parent reports,

potentially an indication of contextual (e.g., peer) relations during the middle school period influencing youth's values more strongly than the home environment. Unfortunately, this information is not readily provided in the literature. In one study where the information was presented (Bauman et al., 2010), no relation between parent and youth reports of familism was also found. Future studies might explore, perhaps qualitatively, why there is no correlation across reporters.

The role of sex. Our final aim was to include gender in the analyses, examining the role of sex, as well as the interaction between sex and youth familism, on youth depressive symptom trajectories. As expected, females were more likely to belong to a class marked by high levels of depressive symptoms, the recovery class, relative to males. Contrary to our predictions however, sex differences did not interact with familism to predict familism cross-sectionally or youth depressive symptom trajectories. Our results extend the literature on gender and depressive symptoms indicating females have higher levels relative to males (Twenge & Nolen-Hoeksema, 2002), by finding support for the relation with depressive symptom trajectories in a Latino adolescent sample. As for our findings indicating girls are more likely than boys to belong to a recovery class. It is possible girls are more likely to recover because they have more symptoms, and it is also possible girls might seek support more than boys and/or are more likely to receive services or treatment.

Limitations and Future Research

As with all empirical research, our study is not without limitations important to consider for future research. For instance, the sample was limited to a two-year range (youth participating in the study were of middle school age and in the 6th or 7th grade at baseline). Given the high levels of depressive symptoms observed at baseline in youth from the recovery class and at the

final assessment in youth from the escalating class, studies might want to examine depressive symptoms longitudinally between transitions from grade school to middle school and through high school. As well, it is important to bear in mind the heterogeneity of cultural and acculturative experiences among people classified as Latino. In our study, the sample was predominately Mexican American and low income, and the trajectories may be different among other groups of Latinos with different demographic profiles.

Though the low level of attrition in the present study is commendable, the findings relied on a moderate sample size. The results of the LPAs were interpretively interesting; however, many models did not meet criteria for consideration due to one or more of the classes comprising less than 5% of the sample. Larger samples might have more variability and might produce a more nuanced depiction of profiles. Moreover, the mode of administration (in class survey vs. in person interview) might have biased the differences observed between youth and parents. Also, parent reports were mostly conducted by mothers, limiting our ability to examine the role of familism on youth depressive symptoms, by parent gender. Lastly, the low levels of parent familism in the latent profile analysis of dyadic familism are specific to our sample; in several cases, low familism derived relative to the grand mean was still above the center point for the range of the measure. The narrow variability observed especially among parents warrants further analysis of response patterns and other factors contributing to these results.

Future studies should continue to examine factors accounting for the trajectories with particular attention to factors that predict recovery trajectories, and rule out potential measurement effects. Studies might also seek to tease apart measurement issues in familism constructs by defining family for reporters. Additionally, studies might examine how dyadic familism profiles relate to other mental health outcomes, as well as how the approaches to

quantifying gaps might be contributing to the lack of conclusiveness in the literature. Lastly, research examining the family (e.g., parenting, warmth, cohesion, support) and social contexts (e.g., extended families, social networks) is necessary to better understand how cultural differences between parents and adolescents function.

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