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## Predictors of Latent Class Trajectories of Internalizing Symptoms in Latinx Adolescents

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### Abstract

Guided by ecodevelopmental theories, the present study examined how both culture-specific and general risk and protective factors across contexts predicted trajectories of Latinx youth's internalizing symptoms during early and middle adolescence. Participants included 547 Latinx youth ( $M$  age = 12.80; 55% females) recruited in middle school and followed prospectively across four time points spanning two years. Youth reported on their internalizing symptoms at all four time points, and risk and protective factors were measured at Time 1 (T1). Latent class growth curve modeling was used to examine heterogeneous trajectories of change in internalizing symptoms separately for females and males, and risk and protective factors were examined as predictors of class membership. Three classes based on symptom trajectories emerged for both females and males, with most adolescents falling into classes characterized by low symptoms that remained stable or decreased over time. Risk and protective factors were predictive of class membership in theoretically meaningful ways. Some predictors of internalizing symptom trajectories differed between females and males. Findings inform our understanding of factors that influence developmental trajectories in Latinx youth and can contribute to the refinement of prevention and intervention efforts to help ensure the well-being of this population.

### Keywords

Latinx youth; Internalizing symptoms; Trajectories; Risk and protective factors

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**Compliance with Ethical Standards**

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**Consent for Publication** Parents provided oral or written consent and adolescents provided written assent.

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Latinx youth, the largest and fastest growing segment of the youth population in the United States (U.S.; U.S. Census Bureau, 2019), are at heightened risk for internalizing problems during adolescence (Ghandour et al., 2019). Risk and protective factors related to Latinx youth's internalizing symptomology include those rooted in culture-specific as well as more general experiences across multiple contexts (McCord et al., 2019; Nair et al., 2018). Few studies have examined cultural and general risk factors in tandem and even fewer have examined both risk and protective factors in relation to trajectories of internalizing symptoms among Latinx youth.

Ecodevelopmental perspectives emphasize that the salience of risk and protective factors may be greater during sensitive periods of development (García Coll et al., 1996). Grounded in this framework, the present study examines how culture-specific and general risk and protective factors across multiple contexts predict Latinx youth's changes in internalizing symptoms during a developmentally sensitive time for the onset of these problems. In terms of culture-specific risk factors, we examine how youth's stress responses to anti-immigration actions and news and acculturative family distancing relate to longitudinal changes in internalizing symptoms. We also examine how peer victimization and peer support, general risk and protective factors respectively, relate to longitudinal changes in symptoms as Latinx youth progress through early adolescence. We intentionally label peer victimization as a general risk factor to acknowledge that all youth can experience peer victimization, and experiences of bullying can and do have negative effects for youth regardless of ethnic background. Further, the bullying that Latinx youth experience may or may not be related to their ethnic background. Identifying how these factors uniquely predict Latinx youth's mental health trajectories may elucidate modifiable processes critical to positive adjustment for an important segment of the U.S. population.

## Internalizing Symptoms in Latinx Youth

Adolescence is a developmental period when risk for internalizing symptoms increases across ethnic groups (Ghandour et al., 2019). This risk is even greater for Latinx youth who report higher rates of anxiety and depressive symptoms than their European American, African American, and Asian American peers (Centers for Disease Control & Prevention, 2017). Although symptoms of anxiety and depression generally peak in adolescence, not all youth experience an emergence and/or increase in symptoms during this developmental period. In fact, research has found varying trajectories of internalizing symptoms among both White and Latinx adolescents (Cruz et al., 2019; Hill et al., 2017; Shore et al., 2018), with most youth showing decreases in symptoms. In the only study to our knowledge to examine multiple trajectories within an adolescent Latinx sample, Arizaga and colleagues (2020) identified three trajectories of depressive symptoms: "stable-low" (i.e., low symptom that decreased; 76% of sample), "recovery" (i.e., high symptoms that decreased; 15% of sample) and "escalating" (i.e., moderate symptoms that increased; 8.3% of sample). Additionally, higher youth-reported familism (i.e., cultural value emphasizing family togetherness and unity) predicted membership in the "stable-low" class. Gender did not predict class membership, though symptom trajectories were not examined separately for females and males. Given initial work showing gender differences in internalizing symptom trajectories (Zeiders et al., 2013a, b), there is a need for research examining

trajectories by gender. In sum, although rates of internalizing symptoms may decrease across adolescence for the majority of Latinx youth, this growing population is at higher risk for mental health challenges due to experiences of both culture-specific and general risk factors, and widely documented racial/ethnic disparities in numerous facets of daily living (for review, Benner et al., 2018). Studies that identify trajectories within Latinx youth can advance understanding of risk and protective factors that explain within-group variability in developmental outcomes.

## **Culture-Specific and General Risk and Protective Factors**

### **Stress Responses to Anti-Immigration Actions and News**

In recent years, the U.S. has implemented changes in immigration policy and attitudes that have contributed to fear and stress among Latinx youth and their families (Barajas-Gonzalez et al., 2018). The impact of changes in immigration policy and attitudes has been documented in multiple contexts that Latinx youth encounter. For example, teachers have reported increased bullying, including hostile, discriminatory remarks about minorities and immigrants (Barajas-Gonzalez et al., 2018). Roche and colleagues (2018; 2020) found that in the context of an increasingly hostile anti-immigrant environment, Latinx parents and adolescents reported a range of stress responses to anti-immigration actions and news, including heightened worries and behavioral withdraw from critical social institutions (e.g., healthcare). These stress responses were associated with higher depressive symptoms. Indeed, youth report that because of anti-immigration actions and news they sometimes avoid leaving the house or engaging in community settings (McConnell et al., 2020; Roche et al., 2018). Such responses, though stressful, may represent ways that Latinx families protect themselves in the context of xenophobia and increasingly restrictive immigration policies. The present study expands upon this timely work and examines how Latinx youth's stress responses to anti-immigration actions and news relate to trajectories of internalizing symptoms across a key developmental period.

### **Acculturative Family Distancing**

Acculturative family distancing refers to the distancing that occurs between immigrant parents and their children stemming from differences in cultural values and attitudes (Hwang et al., 2010) and has been identified as a cultural stressor for Latinx youth (McCord et al., 2019). The acculturation gap-distress hypothesis posits that differential rates in acculturation between youth and their immigrant parents can have an impact on family functioning, and in turn youth's mental health (Nair et al., 2018; Toro & Farver, 2020). Parents often acculturate more slowly than their children (Tezler, 2010), and theory posits that acculturative family distancing may increase as youth age. Adolescents spend more time with peers compared to earlier in childhood and have increased exposure to mainstream society, which may contribute to shifts in values and behaviors due to increased acculturation. However, the literature is mixed regarding the relation between acculturative family distancing and youth's internalizing symptoms (Nair et al., 2018; Tezler et al., 2016). Discrepancies in findings may be due to an overreliance on cross-sectional work or limited empirical consideration of how the effects of acculturative family distancing on youth's mental health differ by youth gender (Schwartz et al., 2016). In general, Latino males are expected to be

a financial provider and leader and to stand up for the family, whereas Latina females are expected to provide physical and emotional support to the family and take the responsibility for raising children and managing housework (Arciniega et al., 2008). Although traditional Latino cultural values have been shown to predict fewer internalizing symptoms in some studies (e.g., Cruz et al., 2019), discrepancies or gaps between parent and youth cultural values and roles may increase risk for poor outcomes (Huq et al., 2016; Toro & Farver, 2020), particularly for females whose values appear less consistent with shifting Western values. Understanding how acculturative family distancing may increase risk for mental health problems during this developmental period for Latinx females and males separately is critical.

### **Peer Victimization**

Peer victimization, or bullying, is a general risk factor for mental health problems that relates to higher levels of internalizing symptoms among Latinx adolescents (Lutrick et al., 2020). Using a nationally representative sample of Latinx youth in grades 6 through 12, researchers found that 16% of youth reported being bullied at school in the past year (U.S. Department of Education, 2019). Further, Latinx adolescents report higher rates of bullying on school grounds compared to other forms of victimization such as bullying via technology (Basile et al., 2020). Latinx youth may experience peer victimization due to anti-immigrant attitudes and challenges with acculturation such as language barriers and financial hardship (Lutrick et al., 2020). A recent systematic review on the relation between bullying and depressive symptoms in Latinx youth emphasized the importance of considering culture-specific stressors when studying experiences of victimization (Lutrick et al., 2020). However, few studies have considered how peer victimization predicts changes in internalizing symptoms when accounting for culture-specific risk factors.

### **Peer Support**

Peer support is particularly critical during adolescence. Youth place more weight on the importance of peer relationships and spend more time with peers than with family during this period of development than earlier in childhood (Way & Greene, 2006). However, most work with Latinx populations has studied the importance of family support (Vera et al., 2020), with a paucity of research examining peer support in relation to Latinx youth's mental health. Peers may provide verbal and emotional support that enhances youth's coping resources (e.g., problem-solving and emotion regulation strategies) and increases feelings of being cared for by others outside of the family. Further, peer support positively relates to a sense of school-belonging and self-efficacy, and negatively relates to depressive symptoms and discrimination in Latinx adolescents (Gonzalez et al., 2014). As Latinx youth navigate the culture-specific (e.g., acculturation) and more general stressors, peer support may be particularly important.

### **Present Study**

Guided by an ecodevelopmental framework, this study provides a contextually and developmentally grounded approach to understanding risk and protective factors in relation to Latinx youth's internalizing symptoms. The study addresses a critical gap in the field by

examining heterogeneous trajectories of internalizing symptoms in Latinx youth. We examine culture-specific (i.e., stress responses to anti-immigration actions and news, acculturative family distancing) and general (i.e., peer victimization, peer support) risk and protective factors as predictors of youth's symptom trajectories. Examining these risk and protective factors in the same model will advance our understanding of how factors uniquely relate to changes in internalizing symptoms when accounting for other relevant contextual factors. The inclusion of stress responses to anti-immigration actions and news, a novel and timely construct, will help to identify the role of the contemporary immigrant environment alongside other culture-specific and general risk and protective factors to gain a better understanding of mental health trajectories for today's Latinx youth. Important covariates (i.e., mother education, youth age, youth generation status, and youth Latino acculturation) were also included. Research yields mixed findings regarding the impact of youth's generation status and degree of Latino acculturation on their mental health (for review see Lawton, 2014); nonetheless, because the impact of cultural and general risk factors likely varies based on youth's immigrant generational status and degree of acculturation, they are entered as covariates. Analyses were conducted separately for females and males given documented gender differences in internalizing symptoms during adolescence for Latinx youth (Zeiders et al., 2013a, b).

We hypothesized that youth would show variability in their initial level of symptoms and their trajectory of change, and that classes of youth would emerge within both females and males. For females, we expected at least three trajectories (i.e., classes) would emerge: trajectories characterized by 1) moderate to high symptoms at T1 that increased; 2) moderate symptoms at T1 that remained stable; and 3) low symptoms at T1 that remained stable or slightly decreased. We expected the latter two classes to be larger than the first (Arizaga et al., 2020; Shore et al., 2018). For males, we hypothesized at least two trajectories (i.e., classes) would emerge: trajectories characterized by 1) moderate symptoms at T1 that remained stable and 2) moderate to low symptoms at T1 that decreased. We expected the latter class to be larger (Arizaga et al., 2020).

Risk and protective factors were then examined as predictors of internalizing symptom classes using logistic regression. We expected that higher levels of stress responses to anti-immigration actions and news, acculturative family distancing, and peer victimization would predict membership in classes characterized by higher symptoms at T1 that increased or remained stable over time compared to classes characterized by moderate or lower symptoms at T1 that did not increase. Conversely, higher levels of peer support were expected to predict class membership in classes characterized by moderate or lower symptoms at T1 that did not increase compared to classes with higher T1 symptoms that increased or remained stable.

## Method

### Participants

Participants included 547 Latinx early adolescents (55% female). At T1, youth were, on average, 12.80 years of age ( $SD = 1.03$ ) with the vast majority 11 to 14 years old (3.1% were 15 or 16 years) and enrolled in middle school (9% were in 9<sup>th</sup> grade). The majority of youth

(68%) are second-generation immigrants (i.e., born in the U.S. to foreign-born parents), 20% are third- or later-generation immigrants, and 12% are first-generation immigrants. Roughly half (52%) of mothers were born in Mexico. Most youth reported living with two parents (80%). The sample was socioeconomically diverse, indicated by the fact that 38% of mothers had less than a high school education, 28% had completed high school, and 24% completed college. There were no statistically significant differences between the subsamples of females and males on these youth-reported demographic characteristics (Supplementary Information (SI) Table 1).

## Procedures

Youth in this study are part of the *Pathways to Health/Caminos al Bienestar* (“*Caminos*”) longitudinal study, which recruited Latinx adolescents and their mothers from a suburb outside of a large southeastern U.S. city (masked, blind review). Students identified as “Hispanic” were selected from middle school enrollment lists using a stratified, random sampling design to ensure equal representation across grade level (i.e., 6, 7, 8), gender, and school Latinx concentration (i.e., low, moderate, high). English and Spanish recruitment materials were sent home from school with youth for parental completion. Two-thirds (65.2%; 547/839) of parents provided permission, and of those, 95.3% (547/574) of adolescents provided assent and participated in the study. The majority of study participants (77%) completed their T1 survey in school from February – June 2018. The school district unexpectedly requested an end to in-school data collection by May 2018; the remaining 23% of the sample completed the survey online via a mailing sent to their homes and completed data collection from September 2018 – January 2019. Questionnaires were administered exclusively online using individualized weblinks for the Time 2 (T2), Time 3 (T3), and Time 4 (T4) follow-ups. Retention rates at six-month (T2), one-year (T3), and 18-month (T4) follow-ups were, 81.5%, 76.5%, and 78.6%, respectively.

All adolescents completed surveys on a computer or mobile phone using the *Qualtrics XM Research Core Survey Software* program. Investigators obtained a Certificate of Confidentiality from the National Institutes of Health and Institutional Review Board (IRB) approval from MASKED FOR BLIND REVIEW. For youth who did not return signed written parental consent forms, parents were contacted via telephone to provide IRB-approved oral consent. Youth provided written assent. A small number of youth ( $n = 25$ ; 4.6%) chose to complete the survey in Spanish. For materials not already translated into Spanish (i.e., measures of peer victimization and peer support), we translated them using the double-translation and double back-translation method combined with a review team approach (Knight et al., 2009). Youth were compensated with a \$25 gift-card for survey completion.

## Measures

**Internalizing Symptoms**—At all four time points, youth reported on their internalizing symptoms using the Youth Self-Report (YSR; Achenbach, 1991), which has been widely used with Latinx youth (e.g., Sirin et al., 2015). Raw total internalizing scores were used in analyses (T1  $\alpha = 0.92$ , T2  $\alpha = 0.93$ , T3  $\alpha = 0.94$ , T4  $\alpha = 0.94$ ), and *T*-Scores were used to contextualize results. Roughly 20% of females and 15% of males reported borderline or

clinical levels of symptoms at each time point (i.e., *T*-Scores above 65; females T1 = 20%, T2 = 23%, T3 = 22%, T4 = 23%; males T1 = 14%, T2 = 13%, T3 = 18%, T4 = 14%).

**Stress Responses to Anti-Immigration Actions and News**—At T1, youth responded to 14 items from a modified version of the Political Climate Scale (Roche et al., 2018). Youth reported how often they or their families had been affected (e.g., worried about having contact with police or authorities; been affected at school) by anti-immigrant news stories and official actions on a 5-point scale (1 = “almost never or never,” 5 = “almost always or always”;  $\alpha = 0.92$ ). This measure has demonstrated strong psychometric properties with another Latinx adolescent sample (i.e., Roche et al., 2020).

**Acculturative Family Distancing**—Youth reported on perceived acculturative family distancing at T1 using the 10-item General Cultural Values Incongruity scale (Fujimoto & Hwang, 2014; Hwang, 2006). Youth responded using a 5-point scale (1 = “almost always or always,” 5 = “almost never or never”). Sample items include “my parents and I share the same values, beliefs, ideas, and opinions.” Higher scores indicate greater acculturative family distancing ( $\alpha = 0.85$ ). This measure has demonstrated good psychometric properties in studies with Latinx adolescents (Nair et al., 2018).

**Peer Victimization**—Youth reported on their experience of peer victimization at T1 using 10 items (i.e., 4 items, overt victimization; 6 items, relational victimization) drawn from the Social Experience Questionnaire (Crick & Grotpeter, 1996) and the Revised Problem Behavior Frequency Scale (Miller-Johnson et al., 2004). Youth indicated how often they experience overt (e.g., being hit by another kid) and relational (e.g., being purposefully excluded, left out, or lied about) forms of victimization using a 5-point scale (1 = “almost never or never,” 5 = “almost always or always”). Higher total scores indicate more peer victimization ( $\alpha = 0.91$ ). This measure has acceptable psychometric properties in studies with Latinx youth (Mehari & Farrell, 2015).

**Peer Support**—Youth completed the Child and Adolescent Social Support Scale (CASSS; Dickson et al., 2016; Malecki & Demaray, 2003) at T1. Youth responded to 12 items using a 5-point scale (1 = “almost never or never,” 5 = “almost always or always”) that assessed how often they experience support from peers (e.g., “classmates treat me nicely”). Higher scores indicate more perceived peer support ( $\alpha = 0.92$ ). This measure has strong psychometric properties in studies with Latinx adolescents (Dickson et al., 2016).

**Covariates**—Covariates at T1 include mother education (0 = less than high school degree, 1 = high school degree or higher, youth age, youth generation status (1 = first-generation, 2 = second-generation, 3 = third- or higher-generation), and youth Latino acculturation. Youth reported on their Latino acculturation using the Latino acculturation scale from the Brief Acculturation Rating Scale for Mexican Americans-II (ARSMA-II; Bauman, 2005). Consistent with previous studies, “Latinos” was substituted for “Mexican” in the items to address the diversity of the sample (Sabina et al., 2015).

## Analytic Plan

Statistical analyses were conducted in *Mplus* version 8.2 (Muthén & Muthén, 1998, 2017). Descriptive statistics were examined to inspect assumptions of normality and the occurrence of missing data. Analyses then proceeded in three steps, and separate but identical analyses were conducted for females and males.

**Step 1: Latent Growth Curve Analyses**—Following procedures outlined by Wickrama and colleagues (2016), we began by applying a single latent growth curve model to test the assumptions of latent growth curve analyses. No-growth, linear, quadratic, and latent basis models were examined. The optimal growth function was identified using the nested model comparison test ( $\chi^2$ ), the comparative fit index (CFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). A non-significant nested model comparison test indicates that the reduced (e.g., the linear model) and full model (e.g., quadratic model) fit equally well from a statistical perspective and thus the reduced, more parsimonious model should be selected as the better fitting model. Values of CFI and TLI  $\geq 0.95$  indicate good fit. For RMSEA and SRMR, values  $\leq 0.06$  and  $\leq 0.08$ , respectively, are generally considered to indicate good fit and values greater than 0.10 indicate poor fit (Hu & Bentler, 1999). Variance for the growth factors (i.e., intercept and slope) were also examined, as significant variance provides evidence for the existence of heterogeneity in symptom change within the sample.

**Step 2: Latent Class Growth Curve Analyses**—Using the optimal growth function in step 1, models with two to five classes were estimated to determine which number of classes, or trajectories, best described patterns observed in the sample. Model fit was evaluated using the Bayesian Information Criterion (BIC), the Lo-Mendel-Rubin adjusted likelihood ratio test (LMR-LRT), the bootstrapped likelihood ratio test (BLRT), and entropy (Nylund et al., 2007). Lower BIC values suggest better model fit, non-significant LMR-LRT and BLRT statistics indicate a model with one fewer class is preferred, and higher entropy indicates better model fit (e.g., above 0.8 indicates strong fit). If these indicators did not uniformly suggest one model over the other, sample size of the classes was evaluated and models with classes comprising less than 10% of the sample were excluded.

**Step 3: Predictors of Class Membership using Logistic Regression Analyses**—Using the optimal number of classes in step 2, logistic regression was used to examine how risk and protective factors predict likelihood of class membership, accounting for class assignment uncertainties (Vermunt, 2010). Each predictor was first examined individually in relation to class membership using a univariate approach, then predictors were entered into one multivariate model simultaneously to examine each factor's unique contribution after accounting for other factors. In the univariate and multivariate models, a significant effect indicates that the predictor explains a significant amount of between-class variation. The effect itself represents the increase in log-odds (i.e., logit) of being in a specific class versus the reference class for a one-unit increase in the predictor. All covariates were included in univariate and multivariate models.



## Missing Data

Youth lost to attrition from T1 to T2 were more likely to be male and live in a single parent vs a two-parent household, and youth lost from T2 to T3 were more likely to report higher peer relational victimization. There were no other significant differences on study variables between those who dropped out and those who participated across time points. Thus, data were considered to be missing at random and were analyzed using full information maximum likelihood (FIML). Using FIML 542 youth (99%) had sufficient data to model their trajectory of internalizing symptoms (females  $n = 302$ , males  $n = 240$ ). Based on Monte Carlo simulations (Tein et al., 2013) and prior studies using latent class growth analysis (e.g., Arizaga et al., 2020), our sample size for each gender was adequately powered to conduct latent class growth analyses.

## Results

Table 1 presents descriptive statistics, mean gender differences, and bivariate correlations.

### Step 1: Unconditional Latent Growth Curve Model

**Females**—Fit indices and the nested model comparison test indicated that the linear growth model fit the data best and demonstrated strong fit ( $\chi^2(df) = 5.01 (5)$ ; CFI = 1.00, TLI = 1.00; SRMR = 0.02, RMSEA = 0.003). The mean and variance for the intercept of internalizing symptoms were significantly different from zero. The mean intercept ( $M = 15.63$ ,  $p < 0.001$ ) represented females' average level of symptoms at T1, and the significant intercept variance ( $s^2 = 83.28$ ,  $p < 0.001$ ) suggested sample heterogeneity in the initial levels of symptoms at T1. The mean slope was not significantly different from zero for the overall sample ( $M = 0.26$ ,  $p > 0.05$ ), but there was significant variance in the slope ( $s^2 = 2.75$ ,  $p = 0.02$ ) suggesting that females exhibited differences in their rate and/or direction of change over time.

**Males**—Fit indices and the nested model comparison test indicated that the linear growth model fit the data best and demonstrated strong fit ( $\chi^2(df) = 10.36 (5)$ ; CFI = 0.99, TLI = 0.98; SRMR = 0.04, RMSEA = 0.07). The mean and variance for the intercept of internalizing symptoms were significantly different from zero. The mean intercept ( $M = 10.36$ ,  $p < 0.001$ ) represented males' average level of symptoms at T1, and the significant intercept variance ( $s^2 = 47.83$ ,  $p < 0.001$ ) suggested sample heterogeneity in the initial levels of symptoms at T1, supporting the possibility of subpopulations. The mean slope ( $M = -0.10$ ,  $p > 0.05$ ) and slope variance ( $s^2 = 2.06$ ,  $p = 0.06$ ) were not significantly different from zero.

### Step 2: Unconditional Latent Class Growth Analyses

**Females**—Although BIC continued to decrease as the number of classes increased, LMR-LRT indicated that the three-class model fit better than the two- and four-class models (Table 2). Entropy was 0.83 for the three-class model, which together with the high classification probabilities (i.e., probably that an individual belongs to their assigned class; *Range* = 0.90–0.94) suggested reliable identification of the latent classes. Further, all classes consisted of greater than 10% of the sample, whereas smaller class sizes were identified in the four-

and five-class models. Thus, the three-class model was chosen; estimated trajectories and slope estimates for the classes are displayed in Fig. 1, left and SI Table 2. Symptom levels were contextualized based on established *T*-Scores for internalizing symptoms (i.e., 65–69 = borderline clinical, 70+ = clinical). Class 1 contained nearly half of the female adolescents (53%) and demonstrated a relatively low and stable trajectory of subclinical symptoms (i.e., average *T*-Scores, T1 = 47, T2 = 46, T3 = 46, T4 = 46); Class 2 contained nearly a third (34%) of the female sample and demonstrated a slightly higher but stable trajectory of subclinical symptoms (i.e., average *T*-Scores, T1 = 60, T2 = 61, T3 = 60, T4 = 62); Class 3 (12%) exhibited a high and stable trajectory of clinical-level symptoms (i.e., average *T*-Scores, T1 = 72, T2 = 74, T3 = 75, T4 = 76).

**Males**—BIC continued to decrease as the number of estimated classes increased; however, LMR-LRT suggested that the three-class model fit better than the two- and four-class models (Table 2). Although entropy was lowest for the three-class model, the high classification probabilities (i.e., probably that an individual belongs to their assigned class, *Range* = 0.83–0.96) and degree of separation between latent classes suggested reliable identification of the latent classes. Further, the four- and five-class models contained classes with less than 10% of the sample. Together, these factors suggested that the three-class model fit the data best. Estimated trajectories and slope estimates for the three classes are presented in Fig. 1, right and SI Table 3. Class 1 contained over half of the male adolescents (57%) and demonstrated low and decreasing subclinical symptoms (i.e., average *T*-Scores, T1 = 47, T2 = 44, T3 = 43, T4 = 43); Class 2 contained a third (34%) of the males and exhibited a slightly higher but stable trajectory of subclinical symptoms (i.e., average *T*-Scores, T1 = 57, T2 = 57, T3 = 60, T4 = 58); Class 3 (12%) showed a trajectory of high and stable clinical-level symptoms (i.e., average *T*-Scores, T1 = 72, T2 = 71, T3 = 72, T4 = 73).

### Step 3: Predictors of Membership in Latent Class Trajectories

Due to the number of class comparisons, Bonferroni corrections were applied in univariate and multivariate analyses. The traditional significance level was divided by 3 to reflect the three classes, resulting in a new significant level of 0.017 (i.e.,  $0.05/3 = 0.017$ ).

**Females: Univariate and Multivariate Logistic Regression**—Logistic regression parameters are displayed in Table 3. In univariate analyses, higher stress responses to anti-immigration actions and news at T1 were associated with increased odds of being in Class 3 vs. Class 1 or Class 2, and of being in Class 2 vs. Class 1. Greater acculturative family distancing at T1 was associated with increased odds of being in Class 3 vs. Class 1. Higher peer victimization at T1 was associated with increased odds of being in Class 3 vs. Class 1 and of being in Class 2 vs. Class 1. Lastly, higher peer support was associated with increased odds of being in Class 1 vs. Class 2 or Class 3 and of being in Class 2 vs. Class 3.

Multivariate analyses indicated that the pattern of findings for latent classes mostly held even after accounting for the impact of other predictors. Stress responses to anti-immigration actions and news at T1 remained a significant predictor of class membership; higher stress responses to anti-immigration actions and news were associated with increased odds of being in Class 3 vs. Class 1 and Class 2. Higher peer victimization at T1 was associated with

increased odds of being in Class 2 vs. Class 1. Lastly, higher peer support was associated with increased odds of being in Class 1 vs. Class 3.

**Males: Univariate and Multivariate Logistic Regression**—Table 3 presents logistic regression parameters. In univariate analyses, higher stress responses to anti-immigration actions and news at T1 were associated with increased odds of being in Class 3 vs. Class 1 and of being in Class 2 vs. Class 1. Acculturative family distancing was not related to class membership. Higher peer victimization at T1 was associated with increased odds of being in Class 3 vs. Class 1 and of being in Class 2 vs. Class 1. Lastly, higher peer support was associated with increased odds of being in Class 1 vs. Class 2 and Class 3.

Multivariate analyses reflected a similar pattern of findings even after accounting for the impact of other predictors. Stress responses to anti-immigration actions and news at T1 remained a significant predictor of class membership; higher stress responses to anti-immigration actions and news were associated with increased odds of being in Class 3 vs. Class 1. Higher peer victimization at T1 was associated with increased odds of being in Class 3 vs. Class 1.

## Discussion

Guided by ecodevelopmental theories, this study examined risk and protective factors across multiple contexts as predictors of internalizing symptom trajectories in Latinx adolescents. Overall, there was strong support for our hypotheses. Three latent classes were identified based on symptom trajectories across the two-year period for both females and males. Further, culture-specific and general risk and protective factors related to trajectory-based class membership in theoretically expected ways.

Regarding symptom trajectories, both female and male adolescents showed variability in their initial level of symptoms at T1 and their trajectories of symptom change over time. This variability supported the value of examining latent classes within females and males and of using statistical approaches that consider within-sample variability. Consistent with hypotheses, three classes of internalizing symptom trajectories emerged for females. The largest class (i.e., Class 1) displayed a trajectory characterized by low, subclinical symptoms at T1 that remained stable over time, and the second largest class (i.e., Class 2) exhibited slightly higher, but subclinical symptoms at T1 that remained stable across the two-year period. Lastly, a smaller class of females (i.e., Class 3) had clinical levels of symptoms at T1 that remained stable. These results are generally consistent with previous work showing that most youth demonstrate low and stable symptoms across adolescence. However, contrary to expectations, results did not identify a group of females who showed increasing or decreasing levels of symptoms over time. Although prior work has found that a smaller proportion of youth have increasing or decreasing trajectories over a two-year period (Arizaga et al., 2020), this work did not examine females and males separately. Nonetheless, future work that examines trajectories into late adolescence is warranted to identify youth who may experience changes in symptoms later in development.

As with findings for females, three classes emerged for males. Consistent with hypotheses, the largest class of male adolescents (i.e., Class 1) displayed low, subclinical levels of symptoms that decreased, and the second largest class (i.e., Class 2) displayed slightly higher, but subclinical levels of symptoms that remained stable over the two years. Notably over 10% of males (i.e., Class 3) exhibited a trajectory of clinical-level symptoms that remained stable. As noted above, these results are generally consistent with prior work that finds the largest group of adolescents show low and decreasing symptoms over time (Arizaga et al., 2020).

Overall, the classes identified using latent class growth curve modeling are consistent with prior work using these methods; youth generally cluster into three or four classes based on symptom trajectories and the largest percentage of youth (i.e., Class 1) display low levels of symptoms that remain stable or decrease (Hill et al., 2017; Shore et al., 2018). Previous work has not examined males and females separately and consisted of mostly White samples. Our study addressed this critical gap and identified classes of symptom trajectories for both Latinx female and male adolescents. Results identified a decreasing symptom levels group only for males; information that may have been missed if the entire sample was examined together. The other two classes (i.e., Classes 2 and 3) for both genders showed stable trajectories; nearly a third of females and males (i.e., Class 2) showed stable but slightly higher subclinical symptoms than Class 1, and roughly 10% of each gender displayed clinical levels of symptoms that remained stable (i.e., Class 3). Given most youth experienced stable levels of symptoms across early adolescence, results highlight the importance of screening young adolescents to identify those at risk for symptom maintenance over time.

With regard to predictors of trajectories, predictors mostly related to class membership in similar ways among females and males. When anti-immigrant actions and news led to higher levels of worrying about the future and avoiding immigration authorities, females and males were more likely to be in the class characterized by stable, clinical-level symptoms. This is consistent with findings by Roche and colleagues (2020) showing that Latinx youth who experienced higher levels of worry and behavioral withdrawal in the context of anti-immigrant actions and news had higher depressive symptoms. Latinx youth and their families are exposed to discriminatory and anti-immigrant messages from a number of sources in their daily environment (e.g., media, community members, peers), which has significant consequences for Latinx youth's mental health (Bennett et al., 2020; Roche et al., 2020). Importantly, stress-based responses that take place in the context of an increasingly hostile anti-immigrant environment are a significant predictor of internalizing symptoms for females and males after accounting for other sources of risk and peer support. This further suggests that stress associated with the anti-immigration environment is an important and impactful predictor of internalizing symptoms.

In contrast to the findings for stress responses to anti-immigration actions and news, those for acculturative family distancing only predicted class membership for females, and that finding was no longer statistically significant after accounting for the influence of other risk factors and peer support. In part, this is consistent with our hypothesis that acculturative family distancing may be more impactful for females, given gender differences

in cultural values and expectations. Further, bivariate correlations show that acculturative family distancing was significantly correlated with symptoms for females at all four time points, whereas it was only related to symptoms for males at T1 and T2. However, when accounting for the impact of other sources of risk and peer support, acculturative family distancing did not predict class membership for females suggesting that this source of stress does not uniquely contribute to their internalizing symptoms when considering other risk and protective factors.

As expected, higher peer victimization predicted membership in the class characterized by stable, clinical-level symptoms for both females and males. Peer victimization has been shown to increase risk for internalizing problems in Latinx adolescents (Lutrick et al., 2020). Our study meaningfully expands upon this work by showing that peer victimization predicts internalizing symptoms above and beyond other significant contextual stressors. Although females reported higher levels of bullying than males (Table 1), bullying by peers at school represents a significant source of stress for both female and male Latinx youth. Importantly, peer victimization remained a significant predictor after accounting for peer support. Given the moderately high negative correlation between peer victimization and peer support in this study, youth who experience high levels of bullying may not receive much support from peers.

Lastly, as expected, higher levels of peer support predicted membership in the low-stable class and low-decreasing class for females and males, respectively (i.e., Class 1). However, after accounting for risk factors, peer support remained a significant predictor of symptoms only among females. This is relatively consistent with a meta-analysis that found the relation between peer support and psychological well-being was stronger for female than male adolescents (Chu et al., 2010). Receipt of peer support may be more salient and impactful among females who expect greater levels of support from close friends (Klimes-Dougan et al., 2014). Further, although females and males in the present study did not report significantly different levels of peer support (Table 1), correlations indicated that peer support was strongly negatively correlated with symptoms among females. Together with the findings for peer victimization, the results strongly highlight the peer context as critical for understanding Latinx youth adjustment.

This study had several meaningful strengths including a large, diverse population of Latinx adolescents who came from a range of socioeconomic backgrounds. Youth were intentionally sampled from schools that varied in their degree of Latinx population to ensure heterogeneity in school racial composition. Four waves of data roughly six months apart allowed us to apply growth curve modeling to conduct rigorous tests of symptom trajectories during a developmental period when extrafamilial settings, such as peer groups, become increasingly salient to youth adjustment. We also analyzed trajectories within gender, which is critical for advancing our understanding of unique trajectories within female and male adolescents. Results highlight the potential impact of anti-immigration policy implications for understanding adjustment in Latinx males and females and suggest that consideration of both family and peer contexts is critical for prevention and intervention efforts. Additionally, this study identified peer support as a potential buffer against increases in internalizing symptoms for females. Taken together, the results suggest that both culture-specific and

general risk and protective factors are critical when assessing and treating internalizing symptoms in Latinx youth.

We were most interested in adolescents' perception of their experience of contextual stressors, and the degree of peer support they receive. Further, adolescents are considered the most accurate reporters of their internalizing symptoms. Nonetheless, future research can incorporate multiple reporters, such as parents or teachers. We examined internalizing symptoms broadly, in part due to the high comorbidity of anxiety and depressive symptoms during early adolescence (for review see Cummings et al., 2014), and research suggesting similar trajectories of anxiety and depressive symptom change in Latinx youth (Cruz et al., 2019), including somatic complaints (Sirin et al., 2015). Future studies may consider trajectories of specific components of internalizing symptoms and associated developmental trends (e.g., increasing social anxiety vs decreasing separation anxiety across adolescence; Weems, 2008). Further, our assessment of bullying was a general measure that ignored whether the bullying was perpetrated by peers with more privileged social positions (e.g., White, cis-gender) toward Latinx youth with one or more less privileged social positions. Thus, some of the bullying experiences we captured may have been consistent with discrimination experienced in the context of racism, heterosexism, or combinations of systems of oppression. Work that disentangles discrimination from bullying is an important area for future research. Relatedly, we measured supportive peer relationships within the school setting; more nuanced assessments of peer support may facilitate understanding of the sources (e.g., other Latinx youth vs. other ethnic groups) and types of support experienced by these youth. Lastly, data was collected from one southeastern city, which prohibits generalizability to Latinx youth nationwide who may experience varying levels of culture-specific risk factors such as anti-immigration attitudes. In sum, this study advanced our understanding of risk and protective factors related to internalizing symptoms in Latinx youth; future research that identifies additional culture-specific and general risk and protective factors among this population is critical.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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## Data Availability

Data is available upon reasonable request.

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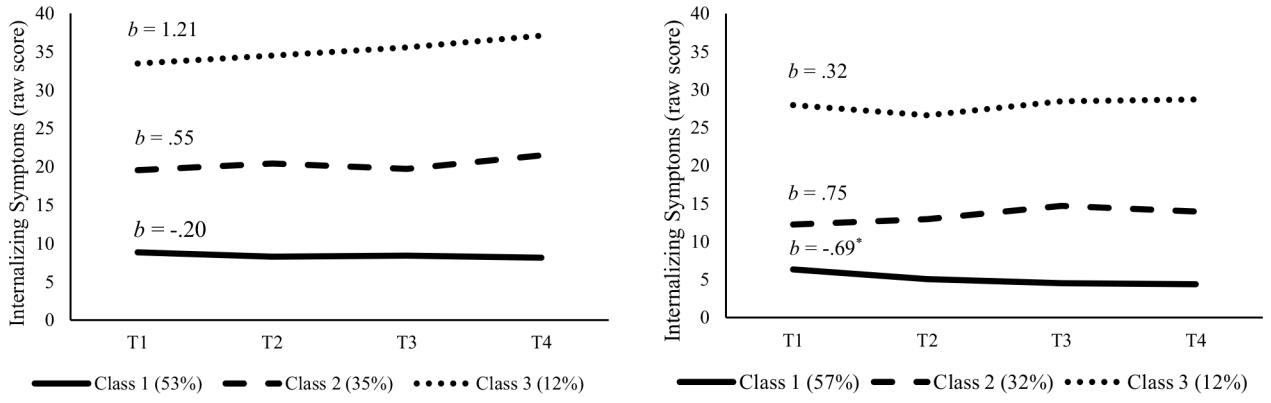
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**Fig. 1. Female and Male Three-Class Models.**

Female classes appear on the left; male classes appear on the right. Unstandardized slope estimates for each class are indicated. \* $p < .01$

*Note.* Female classes appear on the left; male classes appear on the right. Unstandardized slope estimates for each class are indicated.

\* $p < .01$

**Table 1**

Correlations and Descriptive Statistics by Gender

Variable	1	2	3	4	5	6	7	8	Females M (SD)	Males M (SD)
1. T1 Int	-	0.64**	0.62**	0.54**	0.35**	0.20**	0.46**	-0.25**	15.70 (11.06) <sup>d</sup>	10.71 (8.61)
2. T2 Int	0.72**	-	0.73**	0.61**	0.21**	0.16**	0.28**	-0.37**	16.29 (11.31) <sup>d</sup>	9.65 (8.45)
3. T3 Int	0.63**	0.72**	-	0.71**	0.21**	0.14	0.28**	-0.22**	16.26 (11.57) <sup>d</sup>	10.16 (9.24)
4. T4 Int	0.68**	0.76**	0.76**	-	0.14	0.14	0.24**	-0.22**	16.56 (11.67) <sup>d</sup>	9.83 (9.64)
5. Immigration	0.43**	0.39**	0.30**	0.32**	-	0.04	0.42**	0.01	1.91 (0.79)	1.83 (0.81)
6. Acc Fam Dist	0.33**	0.28**	0.18**	0.28**	0.20**	-	0.10	-0.39**	2.00 (0.65)	1.98 (0.66)
7. Peer Vic	0.51**	0.44**	0.42**	0.39**	0.45**	0.22**	-	-0.30**	3.05 (1.33) <sup>d</sup>	2.81 (1.13)
8. Peer Support	-0.50**	-0.48**	-0.42**	-0.43**	0.43**	-0.34**	-0.46**	-	3.58 (0.84)	3.69 (0.76)

Females are below the diagonal; males are above the diagonal

*Int* Internalizing Symptoms, *Immigration* Stress Responses to Anti-Immigration Actions and News, *Acc Fam Dist* Acculturative Family Distancing, *Peer Vic* Peer Victimization

\*\*  
\*\*\*  $p < 0.01$

<sup>d</sup> Significant difference between females and males determined via independent samples t-test ( $p < 0.05$ )

Table 2

Fit Indices Latent Class Growth Analyses

Classes	Females				Males			
	BIC	Entropy	LMR-LRT	BLRT	BIC	Entropy	LMR-LRT	BLRT
2	7614.200	0.85	p < 0.001	p < 0.001	5239.286	0.93	p < 0.001	p < 0.001
<b>3</b>	7455.275	0.83	p < 0.001	p < 0.001	5153.237	0.79	p = 0.03	p < 0.001
4	7435.884	0.74	p = 0.08	p < 0.001	5124.483	0.83	p = 0.10	p < 0.001
5	7432.496	0.75	p = 0.78	p < 0.001	5114.503	0.82	p = 0.61	p < 0.001

BIC Bayesian Information Criterion, LMR-LRT Lo-Mendel-Rubin adjusted likelihood ratio test, BLRT bootstrapped likelihood ratio test

**Table 3**  
 Predictors of Class Membership: Results from Univariate and Multivariate Logistic Regression Models

Predictors	Univariate Models						Multivariate Models					
	Class 3 vs Class 1 High vs Low		Class 3 vs Class 2 High vs. Moderate		Class 2 vs Class 1 Moderate vs Low		Class 3 vs Class 1 High vs Low		Class 3 vs Class 2 High vs Moderate		Class 2 vs Class 1 Moderate vs Low	
	Logit	P value	Logit	P value	Logit	P value	Logit	P value	Logit	pvalue	Logit	P value
Immigration	2.16	<0.001	2.01	0.001	0.87	0.004	1.53	<0.001	1.22	0.006	0.31	0.355
AFD	1.27	0.001	0.72	0.094	0.54	0.101	0.43	0.417	0.27	0.625	0.16	0.711
Peer Victim	1.50	<0.001	0.36	0.030	1.14	<0.001	0.75	0.027	0.03	0.910	0.77	0.012
Peer Supp	-2.24	<0.001	-1.12	0.001	-1.11	<0.001	-1.54	0.002	-0.81	0.084	-0.73	0.019
Immigration	1.94	<0.001	0.89	0.047	1.05	0.007	1.43	0.008	0.62	0.208	0.82	0.059
AFD	0.58	0.121	0.13	0.772	0.45	0.189	0.33	0.482	0.40	0.361	-0.08	0.877
Peer Victim	1.33	<.001	0.51	0.028	0.81	0.004	1.01	0.002	0.56	0.061	0.45	0.164
Peer Supp	-0.96	0.013	0.21	0.594	-1.18	0.010	-0.29	0.566	0.63	0.192	-0.92	0.065

Unstandardized logit coefficients (i.e., log odds) are reported. Reference class is the second class listed in each comparison (i.e., Class 3 vs Class 1 means Class 1 is the reference class, so a positive logit coefficient means an increase in the predictor increases the odds of being in the nonreference class. Univariate and multivariate models adjust for mother education, youth age, youth generation status, youth Latino acculturation. Immigration response to immigration, AFD acculturative family distancing, Peer Victim peer victimization, Peer Supp peer support. Bonferroni corrections were applied in univariate and multivariate analyses. The traditional significance level was divided by 3 to reflect the three classes, resulting in a new significant level of .017 (i.e., .05/3 = .017)