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Racial/Ethnic Differences in the Relationship Between Stressful  
Life Events and Quality of Life in Adolescents

A Thesis submitted in partial satisfaction of the requirements for the degree of  
Master of Arts in Psychological Sciences by Gerald (Martin-Gutierrez) Eisman

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The thesis of Gerald (Martin-Gutierrez) Eisman is approved, and it is acceptable in quality and form for publication on microfilm and electronically:

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## **Abstract**

### **Racial/Ethnic Differences in the Relationship Between Stressful Life Events and Quality of Life in Adolescents**

by Gerald (Martin-Gutierrez) Eisman for the partial satisfaction of the requirements for the degree of Master of Arts in Psychological Sciences University of California,

Merced 2020

Dr. Jan Wallander, Chair

Stressful life events (SLEs) increase allostatic load and require adaptation. Experiencing SLEs has been associated with decreased health-related quality of life (HRQOL) among adolescents. This study examined racial/ethnic and developmental differences in the relationship between SLEs and HRQOL from preadolescence to mid adolescence. Data were from 4,824 participants in the Healthy Passages project, a population-based prospective longitudinal survey of fifth, seventh, and 10th grade adolescents in the U.S. HRQOL was measured with Pediatric Quality of Life Inventory and SLEs with items addressing family-related SLEs (e.g., the parent's death, separation, and divorce; family member's injury/illness; residential change; new child in the household). Adolescents, regardless of race/ethnicity, reported the highest SLEs and the lowest HRQOL in early adolescence. Analysis of an autoregressive model with cross-lagged effects showed that the concurrent relationships between SLEs and HRQOL were significantly negative across preadolescence, early adolescence, and mid adolescence in African-American, Latinx, and white groups. Furthermore, adolescents had a negative cross-lagged association from SLEs in early adolescence to HRQOL in preadolescence, but this was not the case among the other racial/ethnic groups. Because the negative relationship between family-related SLEs and HRQOL persisted throughout stages of adolescent development, health services targeting adolescents should provide comprehensive family-centered care to alleviate the impact of family-related life stress. Relationships between family life stress and HRQOL varied by racial/ethnic groups, which should be considered by health professionals, teachers, and parents, and in prevention efforts. Latinx adolescents may be particularly vulnerable to time-lagged effects of such family-related stress.

## Introduction

Stressful life events (SLEs) can negatively influence health, such as psychological well-being, depressive behavior, and quality of life (Ge et al., 2009; Villalonga-Olives et al., 2010). Some SLEs are unique to adolescence because they are related to normative biological and social developments, for example the onset of puberty and initiation of romantic relationships (Compas, 1987; Huebner et al., 2005). After transition into middle school, SLEs generally increase, and some struggle adapting with negative effects on their health (Booker et al., 2008; Compas, 1987; Villalonga-Olives et al., 2010). Moreover, major changes in the family environment (e.g., new family member, parental separation) can be common stress experiences in adolescence. Such family-related SLEs (FRSLEs) have been examined either separately (Coker et al., 2011; Villalonga-Olives et al., 2010) or jointly with other types of SLEs (Beautrais et al., 1982; Berden et al., 1990; Booker et al., 2008; Kaczmarek et al., 2017; Ge et al., 2009, Grant et al., 2006; Howland et al., 2000), showing negative influences on health and adjustment that can affect trajectories across the life course (Due et al., 2011; Paavola et al., 2004; Trzesniewski et al., 2006).

Exposure to SLEs can result in unhealthy biopsychological processes for adolescents (Berden, Althaus, & Verhulst, 1990) that become more arduous as they accumulate (Evans, Li, & Whipple 2013). A large body of research support the cumulative risk model (Evans, Li, & Whipple 2013), demonstrating that as exposure to risk factors including FRSLEs increases, health and development deteriorates. The allostatic load model (McEwen & Gianaros, 2010) can explain how cumulative stress negatively impact the body as multiple physiological systems are strained over time caused by repeated mobilizations in response to stress exposure (Ganzel, Morris, & Wethington, 2010; Juster et al., 2011). More frequent and persistent exposures accelerate this impact, regardless of what specific events occur (Kaczmarek et al., 2017). However, this has primarily been examined in young adolescents (Coker et al., 2011; Kaczmarek et al., 2017; Thoits, 2010). Although FRSLEs are linked to reduced health when examined concurrently in preadolescence (Coker et al., 2011), it is unknown whether this relationship persists through adolescence and furthermore, whether exposure to SLE earlier in development is associated with negative health outcomes later in adolescence. We are not aware of studies examining this relationship developmentally in adolescence, which requires prospective longitudinal study of adolescents.

Health-related quality of life (HRQOL) is a valuable indicator of overall health because it addresses functioning in important life domains including physical, emotional, social, and school functioning (Varni, Seid, & Kurtin, 2001). HRQOL complements traditional health information, such as prevalence of disease, because it provides the perspectives of adolescents' own experience (Wallander & Koot, 2016). Youths who experience low HRQOL are unlikely to catchup over time (Kaczmarek & Trambacz-Oleszak, 2017). The effects on HRQOL may be exacerbated as adolescents develop and experience more FRSLEs over time. However, prior research has not examined whether there are racial/ethnic differences in these relationships.

African-American and Latinx youths report lower HRQOL than white youths (Limbers, Newman, & Varni, 2009), even after accounting for family resource inequities (Wallander et al., 2012). African-American adolescents may be especially vulnerable to

the negative effects of FRSLEs because they experience increased allostatic load (Brody et al., 2013; Brody et al., 2014), which may negatively affect health (Bogart et al., 2013; Tobler et al., 2013). Even less is known about the effects of FRSLEs specifically on Latinx adolescents, even though this is now the largest non-white group in the U.S. and for whom family connections may be especially important (Cauce & Domenech-Rodriguez, 2002). Yet, as another often disadvantaged group (Tobler et al., 2013), Latinx adolescents are also vulnerable to experiencing increased stress exposure (Booker et al., 2013; Rubens et al., 2013). Considering that African-American and Latinx adolescents experience disparities on most indicators of health (Flores, 2010), the effects of FRSLEs on HRQOL across adolescent development among non-white youth warrant focused examination.

To address these limitations in prior research, this study examines associations between FRSLEs and HRQOL across a 5-year period of adolescent development. More specifically, we extend longitudinally the cross-sectional study initiated by Coker et al. (2011), which found that FRSLEs were inversely related to HRQOL among preadolescents (fifth grade). We applied a cross-lagged path model to estimate the persistence of the relationships between FRSLEs and HRQOL across preadolescence, early adolescence, and mid adolescence. As outlined in Figure 1 and based on the cumulative risk and allostatic load models (Evans et al., 2013; McEwen & Gianaros, 2010), we hypothesize that (1) concurrent associations between FRSLEs and HRQOL will be inverse persistently at preadolescence, early adolescence, and mid adolescence; (2) cross-lagged associations from FRSLEs to HRQOL will be inverse, that is from preadolescence to early adolescence and from early adolescence to mid adolescence; and (3) FRSLEs exposure will have a stronger association with HRQOL in African-American and Latinx adolescents because of their experiencing numerous other stressful processes already in development, for example, higher likelihood of experiencing discrimination and exposure to violence (Bogart et al., 2013; Schuster et al., 2012).

## Methods

We used data from Healthy Passages, a multisite prospective longitudinal community cohort study of health and health behaviors in adolescents initiated in 2004 (Schuster et al., 2012; Windle et al., 2004). Time 1 data were collected when participants were in fifth grade, considered here as pre-adolescence; time 2 data two years later in early adolescence when most were in seventh; and time 3 data another three years later in mid adolescence when most were in tenth grade. Institutional review boards at each data collection site and the Center for Disease Control and Prevention approved the study.

### Participants

Participants were recruited from public schools with  $\geq 25$  students enrolled in regular classrooms in schools in and around metropolitan areas of Birmingham, Alabama, Houston, Texas, and Los Angeles County, California. A two-stage probability sampling procedure was used to select schools and students. Stratification sampling was used to attain similar proportions of African-American, Latinx, and non-Latinx White participants. Design and nonresponse weights were created to ensure that results represented the population of students in the public schools of each area (as detailed in Windle et al., 2004).

Study information was disseminated to the parents of all 5th grade students in 118 sampled schools. A total of 6,663 parents (or caregivers) returned permissions to be contacted, of whom 5,147 completed parent and child interviews because not all eligible families could be fully pursued in a limited time frame. Exclusion criteria for the study included not attending a regular academic classroom or not being able to complete interviews in English or Spanish. The 6% of adolescents who did not identify as African-American, Latinx, and White were eliminated from the current analysis, which resulted in 4,824 in the analysis sample with the unweighted distributions of 37% African-American, 37% Latinx, and 26% White and 51% females. Additional demographics are provided in Table I. The retention rate after two years, at the 7th grade assessment, was 93% and 89% after another three years, at the 10th grade assessment, resulting in 4,293 in the longitudinal sample, which had a distribution that was essentially identical across race/ethnicity and gender as in 5th grade. Demographic characteristics are reported in Table 1.

### Procedures

Two trained interviewers completed the full Healthy Passages assessment protocol with the parent and adolescent either at their home or a research site. Assessments were administered with parent and adolescent individually in a private space using a computer assisted personal interview method. A Spanish version could be chosen by either at each assessment, except for adolescents at 10th grade (applied partly or fully at 5th grade: 8% of adolescents, 23% of parents; 7th grade: 4% of adolescents, 30% of parents; 10th grade: 30% of parents). The same procedures were repeated at each assessment.

### Measures

**Family-related stressful life events (FRSLEs)** were measured using an abbreviated version of the Adolescent Life Change Event Scale, which has been used in several studies assessing adolescent stressful life events (e.g., Coker et al., 2011; Yeaworth, McNamee, & Pozehl, 1992). This scale consists of 31 items addressing life-

change events. For the present study, eight FRSLEs were considered at time 1 and nine at times 2 and 3, which in addition were selected not likely to be caused by adolescent behavior or be related to the adolescent's mental or physical health (e.g., we did not include failing a subject in the school as an FRSLE because this could have been due to health-related absences). Adolescent-reported FRSLEs were (1) person move in/out of household; (2) alcohol/drug problems in a family member; (3) parent/relative being sick or injured; (4) loss of pet, and family member (other than parent) died. Three additional nonoverlapping FRSLEs were reported by parents: (5) recent residence change; (6) parent death; and (7) parent separation/divorce. At times 2 and 3, adolescents were additionally asked about having a (8) family member in combat. Events were reported if they occurred within the last 12 months for time 1 and since last interview at times 2 (2 years) and 3 (3 years). Adolescent-reported FRSLEs were combined with the parent-reported one into a total reported FRSLE at each assessment (range 0e8 at time 1 and 0e9 at times 2 and 3), which was collapsed into five categories (0, 1, 2, 3, and  $\geq 4$ ) given the rare occurrence of values  $> 4$  being reported (.5%, 5.1%, and 2.7% at times 1, 2, and 3, respectively).

**Health-related quality of life (HRQOL)** was measured with the self-report form of the Pediatric Quality of Life Inventory (PedsQL),- version 4.0 (Varni, Seid, & Kurtin, 2001), a widely used measure of children's HRQOL with high construct validities (Varni et al., 2003). In addition, the PedsQL has demonstrated factorial invariance across racial/ethnic groups (Limbers, Newman, & Varni, 2009) in English and Spanish (Newman, Limbers, & Varni, 2010). Each item asks respondent to rate how much a certain behavior has been a problem in the past month using a 5-point scale (0 = never a problem, 4 = always a problem). A sum score is linearly transformed to a 0-100 scale with higher scores indicating better HRQOL. Here, we present results for the total scale score based on all 23 items ( $\alpha = .82- .87$  across the three time points), which collectively address physical, emotional, social, and school functioning. We also completed all analyses separately for Physical and Psychosocial HRQOL subscales of the PedsQL (Varni, Seid, & Kurtin, 2001).

**Race/ethnicity** was based on parents' response (supplemented by the child's response as needed) when asked first whether the child belonged to any of several Latinx groups, followed by seven race categories. Using Census-style classification, the adolescent was classified as Latinx if so indicated regardless of race category. Adolescents not categorized as Latinx were classified as African-American, white, or other (including multiracial adolescents), but the latter category was not included in the analysis sample.

**Demographics.** To describe the sample (See Table 1), additional demographic information was collected from parent report at Time 1. Level of parental education was based on the highest level of education completed. Total household income combined the income from all household members while considering 14 income sources. This was transformed as percentage of federal poverty level, which takes into account the number of people in the home. Household composition was based on parents' response which was transformed into one parent, two parents, or other household type.

## Statistical Analyses

Sampling weights accounting for the complex survey design were used in all analyses, which accounted for the effects of design, non-response, attrition, clustering of adolescents within schools in each area, and stratification by site (Schuster et al. 2012). Consequently, results are generalizable to the population from which the sample was originally drawn.  $\chi^2$  was used to compare categorical variables, whereas confidence intervals (95th percentile) around the means were examined for differences of reported FRSLEs and HRQOL across racial/ethnic groups and development. Autoregressive cross-lagged path model analysis was conducted of the conceptual model (see Figure 1) through Mplus (v7), using the full information maximum likelihood estimation option to deal with missing data. Structural equation model (SEM) analyses estimated paths among the variables in the model across the three assessments. First, the model was estimated with the entire sample (Figure 2). Then, a multiple-group structural equation model was estimated with the inclusion of race/ethnicity (African-American, Latinx, White) as a grouping variable (Figure 3). The common standards for goodness of fit recommended by Hue and Bentler (1999) were applied.

We investigated two additional sensitivity analyses. First, FSLE was treated as a full count variable (not truncated for  $\geq 4$ ), implemented in Mplus via a mixture model with known classes and Monte Carlo integration. Because these model results were virtually identical to the results of the primary analysis, only the results from the primary analysis are reported. Second, to control for the potential effects of socioeconomic status (SES) disparities among racial/ethnic groups, we attempted to add parental education and/or percentage of federal poverty level to the model as covariates, but these models did not converge.

## Results

As detailed in Table 1, African-American and Latinx adolescents were more likely to be reported with lower household income and parental education than white adolescents. African-American adolescents were more likely to live in a single-parent household compared with Latinx and White adolescents.

### **Racial/ethnic comparisons for SLEs and HRQOL**

As detailed in Table 2, there were significant differences among racial/ethnic groups in the number of reported FRSLEs at every assessment. White adolescents consistently experienced significantly fewer FRSLEs than Latinx adolescents, who in turn experienced significantly fewer than African-American adolescents except at preadolescence provides prevalence for discreet FRSLEs at each assessment. As detailed in Table 3, white adolescents almost always were less likely to experience each event than the other groups on each occasion.

As shown in Table 3, white adolescents reported significantly higher HRQOL than Latinx and African-American adolescents in preadolescence and early adolescence, whereas Latinx adolescents exceeded African-American adolescents only in early adolescence. However, in mid adolescence African-American adolescents reported higher HRQOL than the other two groups, which did not differ from one another.

### **Developmental comparisons for FRSLEs and HRQOL**

As detailed in Table 2, both FRSLEs and HRQOL reflected the same developmental pattern across the racial/ethnic groups. The FRSLEs was lowest in preadolescence, increased in early adolescence, and was in between in mid adolescence; HRQOL was highest in preadolescence, lowest in early adolescence, and in between in mid adolescence.

### **Total sample cross-lagged path models**

Significant cross-lagged path model results for the total sample are shown in Figure 2, and all model coefficients are reported in Table 4. This model had marginally good fit (CFI = 0.92, TLI = 0.83, RMSEA = 0.07, SRMR = 0.07). Consistent with the first hypothesis, all concurrent paths were significant. Specifically, FRSLEs at each assessment were inversely associated with concurrent HRQOL during preadolescence, early adolescence, and mid adolescence. Partially consistent with the second hypothesis, the cross-lagged path from FRSLEs in preadolescence to HRQOL in early adolescence showed a significant inverse association, but the association from early adolescence to mid adolescence was not significant. In addition, the time-lagged within-variable associations were consistently significantly positive for FRSLEs and HRQOL, indicating a generally moderate within-person stability in reported level of each over these periods in adolescence.

### **Racial/ethnic groups cross-lagged path models**

Significant cross-lagged path model results for the racial/ethnic multi-group analysis are shown in Figure 3, and all model coefficients are reported in Table 4. This multigroup model had marginally good fit (CFI = 0.96, TLI = 0.80, RMSEA = 0.07, SRMR = 0.07). The concurrent associations between FRSLEs and HRQOL were all significant identically across racial/ethnic groups, which was inconsistent with the third hypothesis. Only 1 cross-lagged path was significant and only for Latinx adolescents, where SLEs in preadolescence had a significant inverse association with HRQOL, which was partially

consistent with the third hypothesis. Again, time-lagged within-variable associations were consistently significantly positive for SLEs and HRQOL in each racial/ethnic group.



## Discussion

Overall, adolescents, regardless of race/ethnicity, reported the highest FRSLEs and the lowest HRQOL in early adolescence, around ages 12-13 years, which in both cases then improved by mid adolescence, 3 years later. The focus of this study was to examine a model (see Figure 1) of developmental associations, from preadolescence to mid adolescence, between FRSLEs and HRQOL. Consistent with our first hypothesis, an increase in the number of FRSLEs was associated with lower concurrent HRQOL persistently from preadolescence through mid adolescence. Partially consistent with our second hypothesis, prospective cross-lagged effects were detected from FRSLEs during preadolescence to HRQOL in early adolescence in the total sample, but this was not replicated from early adolescence to mid adolescence. When tested across race/ethnicity, this association was observed only among Latinx and not among African-American nor White adolescents. The latter results were partially consistent with our third hypothesis.

This research extends developmentally previous cross-sectional research (Coker et al., 2011) showing here that experiencing FRSLE may influence HRQOL prospectively at least at the start of adolescence. These findings are consistent with previous research that has shown that experiencing a higher number of SLE contributes to the allostatic load (Evans et al., 2013). It should be illuminating in future research to test the allostatic load model more directly. Early adolescence is also the period when HRQOL was the lowest, suggesting this period may be especially sensitive and stressful experiences more impactful. That these stressful experiences are not associated with HRQOL three years later in mid adolescence may suggest that as they mature, adolescents' ability to cope with and adapt to family life changes improves.

At the same time, future research will need to consider the role of race/ethnicity to fully understand the relationship between FRSLE and HRQOL as it may vary. Latinx was the only group for which we found significant evidence of the cross-lagged association from FRSLEs on HRQOL in early adolescence. This effect may be due to our focus here on family-related stress as family dynamics may differ on average among racial/ethnic groups (Hardway & Fuligni, 2006). Stressors that were more commonly experienced by Latinx adolescents in early adolescence include person moving in or out of the home (including new baby) and family member having trouble with alcohol or drugs or being sick or badly injured (see Table 3). *Familismo*, a Latinx cultural belief that promotes family connectiveness and obligation, is usually interpreted as promoting resilience among Latinx adolescents (Hardway & Fuligni, 2006). However, given that *familismo* involves a high level of involvement with the family, FRSLE may have longer term effects on the HRQOL in Latinx adolescents, which may give rise to the cross-lagged association noted only for this group. It is possible that the experience of stressful events in the family may especially disrupt healthy development among Latinx adolescents. However, as these adolescents mature, they may be less influenced by family-related stress and more influenced by other factors, such as those occurring among their peer groups. This hypothesized developmental differentiation should be examined in future research.

## Limitations

Adolescents not enrolled in school were not among the participants, who would generally be exposed to more SLEs and experience worse HRQOL. In addition, this

study examined only family-related stress, and results may not extrapolate to other kinds of stress, such as from discrimination and exposure to violence that may be more salient among non-white youths. Future research should consider the range of SLEs that may influence adolescent HRQOL. The cross-lagged path model analysis could not control for SES differences, so some of the observed effects attributed to race/ethnicity may be related to SES. Future research is needed to disentangle the relative role of race/ethnicity and SES. Latinx adolescents in this study were predominately from Mexican and Central American heritage. Therefore, caution should be exercised when generalizing to Latinx groups with other origins. This study did not examine factors that may mitigate exposure to SLEs, which could be addressed in future research. Although the longitudinal design applied here generally is an improvement on prior research, this remains an observational study, which cannot support causal inferences.

Although the current examination allowed for a detailed study of the relationship between FRSLEs and HRQOL, there are limitations to what we were able to learn with the autoregressive cross-lagged model that we implemented. Whereas this model allowed for an assessment of the variable relationship while accounting for within-person change over time, it has limitations that make it difficult to disentangle the within- and between-person effects. An alternative approach would be to use an autoregressive latent trajectory model, which allows for a more detailed assessment of the relationship between a longitudinal outcome and a time-varying covariate. However, given the constraints of three time-points in our design, this alternative model cannot be implemented due to model specification issues when covariates are included. Future work could focus on examining these variable relationships in the context of this autoregressive latent trajectory if more time-points were available. Nonetheless, it may be that an alternative modeling approach could further improve the model fit obtained here.

### **Implications**

Health professionals should benefit from increased awareness of the complexities that race/ethnicity and developmental stage bring to the experience of stress in adolescence and effects on health. For example, Latinx adolescents may still experience decreased HRQOL during early adolescence due to SLE that occurred during pre-adolescence. This suggests that health services targeting adolescents should provide comprehensive family-centered care when they are exposed to family changes that are stressful. To this extent, healthcare services that view families as partners in adolescents' health care may be able to address their decreased HRQOL due to family-related stress (Coker et al., 2011). Because family-related stress occurs to some extent to every child, it is important that adolescents receive support when are confronted with multiple FRSLE. Social support, such as from teachers and other adults, may moderate the negative association between SLE and HRQOL (Grant et al., 2006). Further, because interpersonal relationships can influence coping (Grant et al., 2006), providing adolescents with social support can increase healthy adaptive mechanisms, instead of unhealthy coping, such as alcohol and tobacco use. To this extent, programs that foster adolescents' healthful ways to cope with stress should be beneficial, which may also establish healthy lifelong patterns. Finally, because adolescents may be more open to social support when faced with stressors that are appraised to be uncontrollable (Grant et al., 2006), such as many FRSLE, healthcare professionals, teachers, and parents

need to collaborate in encouraging help-seeking behaviors among adolescents. It will be important that all services be culturally sensitive and address any language barriers to increase the likelihood of success for adolescents from different backgrounds.

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Table 1 Demographics at 5th grade for Total Sample and by Racial Ethnic Groups

	Total sample ( <i>n</i> = 4,824)		African American ( <i>n</i> = 1,755)	Latinx ( <i>n</i> = 1,813)	White ( <i>n</i> = 1,256)	Group Comparisons  $\chi^2$
	<i>N</i> <sup>a</sup>	% <sup>b</sup>	% <sup>b</sup>	% <sup>b</sup>	% <sup>b</sup>	
Child's age (years)						40.76***
≤10	2,113	45	45	45	45	
11	2,333	49	47	47	53	
≥12	342	7	8	8	3	
Household income % FPL						1612.66***
<100 %	1426	34	44	47	5	
100-199 %	908	22	25	28	9	
200-299 %	565	14	15	13	12	
300-399 %	318	8	6	5	13	
400-499 %	290	7	5	3	15	
≥500 %	653	16	5	4	46	
Highest parental education						2050.64***
Less than HS diploma	1108	25	12	54	3	
HS graduate	862	20	28	20	9	
Some college or 2-year degree	1205	27	41	20	21	
Four-year degree or more	1225	28	19	9	67	
Household composition						627.47***
1 parent	2220	50	71	42	32	
2 parents	2046	46	22	56	65	
Other	198	4	8	3	3	

Note: FPL, Federal Poverty Level; HS, High School

<sup>a</sup>Unweighted; <sup>b</sup>Weighted by complex sampling design; \*\*\**p* < .001.

Table 2. Descriptive Statistics for Family-Related Stressful Life Events and Health Related Quality of Life and Comparisons Across Racial/Ethnic Groups and Development

	Total Sample	African American	Latinx	White	Group Comparison
<i>FRSLE Distribution</i>					
Time 1: Pre-Adolescence (%)					$\chi^2 = 72.18^{***}$ W < L, AA
0	32	28	32	36	
1	35	34	34	38	
2	21	22	22	19	
3	9	12	9	5	
≥4	3	4	3	1	
Time 2: Early Adolescence (%)					$\chi^2 = 144.42^{***}$ W < L < AA
0	14	11	12	20	
1	27	24	25	33	
2	27	26	28	27	
3	17	19	19	13	
≥4	15	20	16	8	
Time 3: Mid Adolescence (%)					$\chi^2 = 108.96^{***}$ W < L < AA
0	22	18	21	30	
1	31	28	31	35	
2	25	27	25	21	
3	14	17	14	9	
≥4	9	11	9	5	
<i>FRSLE M (CI)</i>					
Time 1: Pre-Adolescence	1.16 (1.12-1.21)	1.26 (1.20-1.33)	1.19 (1.14-1.24)	0.99 (0.88-1.10)	W < (L, AA)
Time 2: Early Adolescence	1.95 (1.88-2.01)	2.16 (2.09-2.23)	2.01 (1.96-2.06)	1.57 (1.45-1.68)	W < L < AA



Time 3: Mid Adolescence	1.57 (1.51-1.63)	1.80 (1.74-1.87)	1.59 (1.52-1.65)	1.29 (1.18-1.39)	W < L < AA
Developmental Comparisons	T1 < T3 < T2	T1 < T3 < T2	T1 < T3 < T2	T1 < T3 < T2	
<i>HRQOL M (CI)</i>					
Time 1: Pre-Adolescence	77.47 (76.70-78.25)	76.99 (76.07-77.92)	75.83 (74.93-76.74)	81.00 (79.75-82.26)	W > (L, AA)
Time 2: Early Adolescence	83.22 (82.68-83.77)	83.95 (83.14-84.76)	81.37 (80.74-81.97)	86.07 (85.21-86.94)	W > L > AA
Time 3: Mid Adolescence	80.15 (79.73-80.56)	80.72 (79.96-81.48)	80.11 (79.56-80.66)	79.68 (78.79-80.63)	AA > (L, W)
Developmental Comparisons	T2 > T3 > T2	T2 > T3 > T2	T2 > T3 > T2	T2 > (T1, T3)	

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Note: FRSLE, family-related stressful life events; W, White; L, Latinx; AA, African American; HRQOL, health-related quality of life

Table 3. Prevalence of discreet family-related stressful life events

Family-related Stressful Life Events	Reporter	Total Sample %	AA %	Latinx %	White %	$\chi^2$	$p$	Significant Group Differences
Time 1: Pre-Adolescence								
1 New baby or child moved in/out of home	A	13	13	15	9	25.33	<.001	W < AA < L
2 Family member trouble with alcohol or drugs	A	13	15	14	9	20.63	<.001	W < L < AA
3 Parent/relative sick or badly injured	A	28	34	28	22	47.34	<.001	W < L < AA
4 Lost a pet	A	33	31	36	33	10.21	.006	W < AA < L
5 Brother/sister/grandparent/close friend died	A	30	38	25	25	84.21	<.001	W < L < AA
6 Parent passed away	P	<1	<1	<1	<1	1.23	NS	
7 Parents' divorce/separate	P	<1	<1	<1	<1	1.26	NS	
8 Recent relocation	P	14	18	13	10	44.52	<.001	W < L < AA
Time 2: Early Adolescence								
1 Person move in/out of home	A	33	33	39	24	71.33	<.001	W < AA < L
2 Family member trouble with alcohol or drugs	A	12	11	14	9	14.32	.001	W < AA < L
3 Parent/relative sick or badly injured	A	29	33	30	22	41.61	<.001	W < AA < L
4 Lost a pet	A	41	37	45	42	20.80	<.001	W < AA < L
5 Brother/sister/grandparent died	A	43	51	39	37	74.40	<.001	W < L < AA
6 Parent passed away	A	3	4	2	2	11.10	.004	W < L < AA
7 Parents' divorce/separate	A	11	14	11	6	50.24	<.001	W < L < AA
8 Recent relocation	P	21	27	21	12	100.24	<.001	W < L < AA
9 Family member in combat zone	A	10	13	8	9	26.27	<.001	W < L < AA
Time 3: Mid Adolescence								
1 Person move in/out of home	A	32	33	35	25	28.85	<.001	W < AA < L
2 Family member trouble with alcohol	A	15	14	17	14	4.17	NS	
3 Parent/relative sick or badly injured	A	24	28	22	20	25.52	<.001	W < L < AA
4 Lost a pet	A	26	23	30	25	23.20	<.001	W < AA < L

5 Brother/sister/grandparent died	A	29	37	25	25	62.07	<.001	W < L < AA
6 Parent passed away	A	1	1	<1	<1	8.03	.018	W < L < AA
7 Parents' divorce/separate	A	7	9	8	5	13.32	.001	W < L < AA
8 Recent relocation	P	17	24	18	7	139.83	<.001	W < L < AA
9 Family member in combat zone	P	9	13	5	7	54.17	<.001	W < L < AA

Note: A=adolescent; P=parent, AA=African American, W=White, L=Latinx

Table 4. Path coefficients for cross-lagged model

Path	Total Sample Coefficient (SE)	African American Coefficient (SE)	Latinx Coefficient (SE)	White Coefficient (SE)
FRSLE1→FRSLE2	0.19 (0.02) ***	0.15 (0.03) ***	0.16 (0.03) ***	0.24 (0.03) ***
FRSLE2→FRSLE3	0.28 (0.02) ***	0.19 (0.03) ***	0.28 (0.02) ***	0.30 (0.03) ***
HRQOL1→HRQOL2	0.34 (0.01) ***	0.31 (0.02) ***	0.38 (0.02) ***	0.30 (0.02) ***
HRQOL2→HRQOL3	0.43 (0.02) ***	0.39 (0.04) ***	0.48 (0.03) ***	0.42 (0.04) ***
FRSLE1→HRQOL1	-0.17 (0.02) ***	-0.20 (0.03) ***	-0.15 (0.02) ***	-0.12 (0.04) ***
FRSLE2→HRQOL2	-0.20 (0.02) ***	-0.17 (0.03) ***	-0.24 (0.03) ***	-0.12 (0.04) ***
FRSLE3→HRQOL3	-0.12 (0.02) ***	-0.13 (0.02) ***	-0.14 (0.02) ***	-0.10 (0.05) *
FRSLE1→HRQOL2	-0.04 (0.01) ***	-0.01 (0.02)	-0.07 (0.02) ***	-0.01 (0.04)
FRSLE2→HRQOL3	0.02 (0.02)	0.01 (0.03)	0.04 (0.02)	-0.06 (0.04)

*Note.* The number associated with each variable (e.g., SLE1) indicates time point; SE = standard error; FRSLE = family-related stressful life events; HRQOL = health-related quality of life.

\* $p < .05$

\*\*\* $p < .001$ .

Figure 1. Hypothesized cross-lagged path model of family-related stressful life events (SLE) and all health-related quality of life (HRQOL) across (1) pre-, (2) early-, and (3) mid-adolescence.

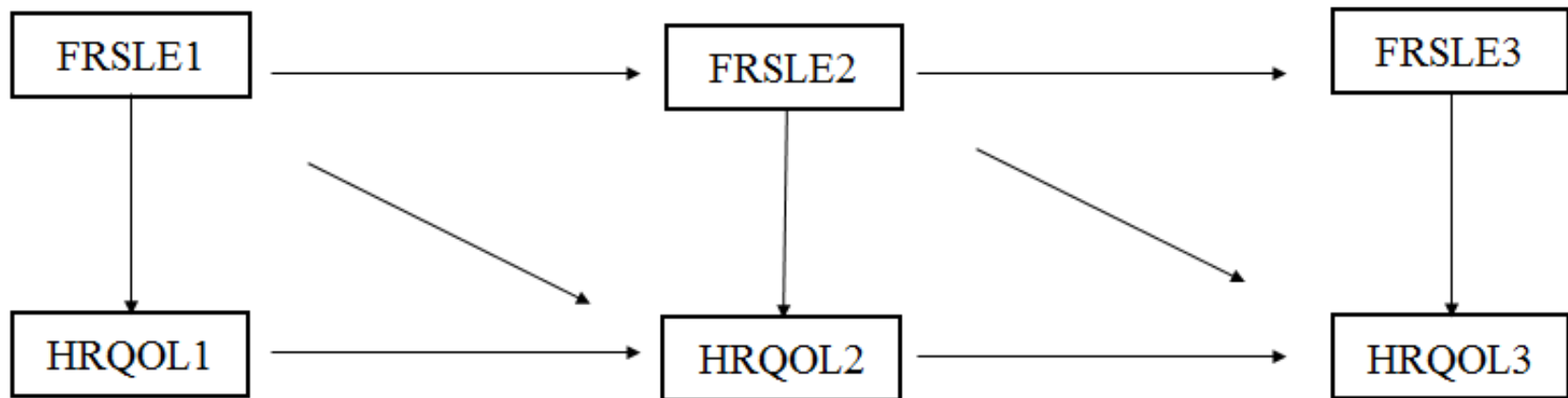


Figure 2. Means for total health-related quality of life (HRQOL) by race/ethnicity across (Time 1) pre-, (Time 2) early-, and (Time 3) mid-adolescence.

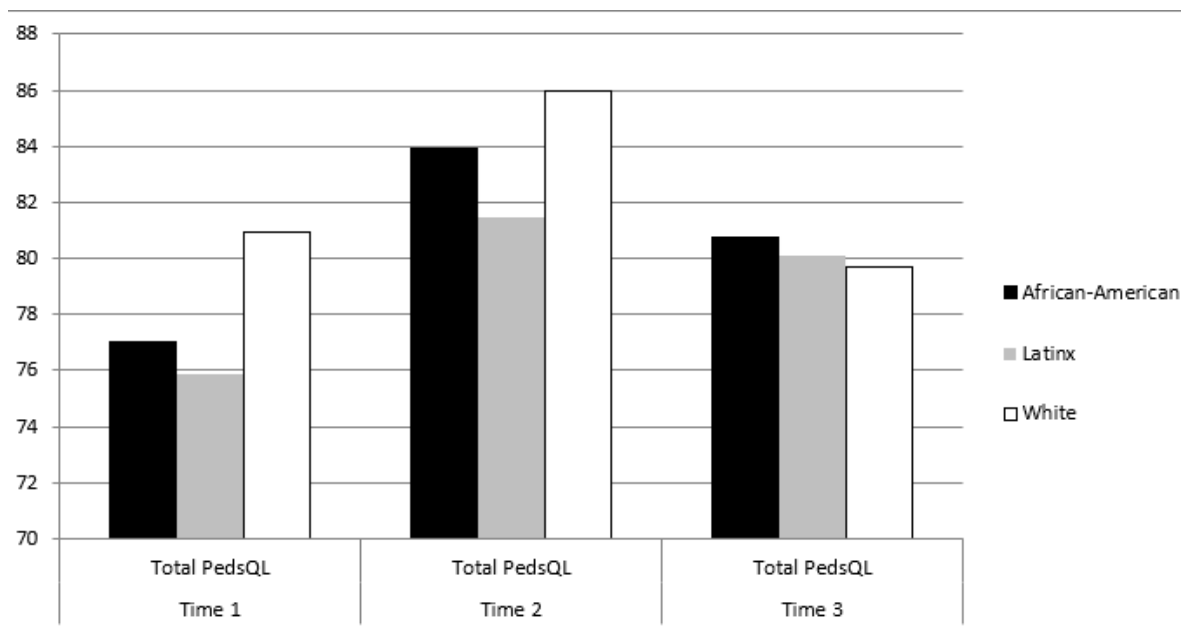
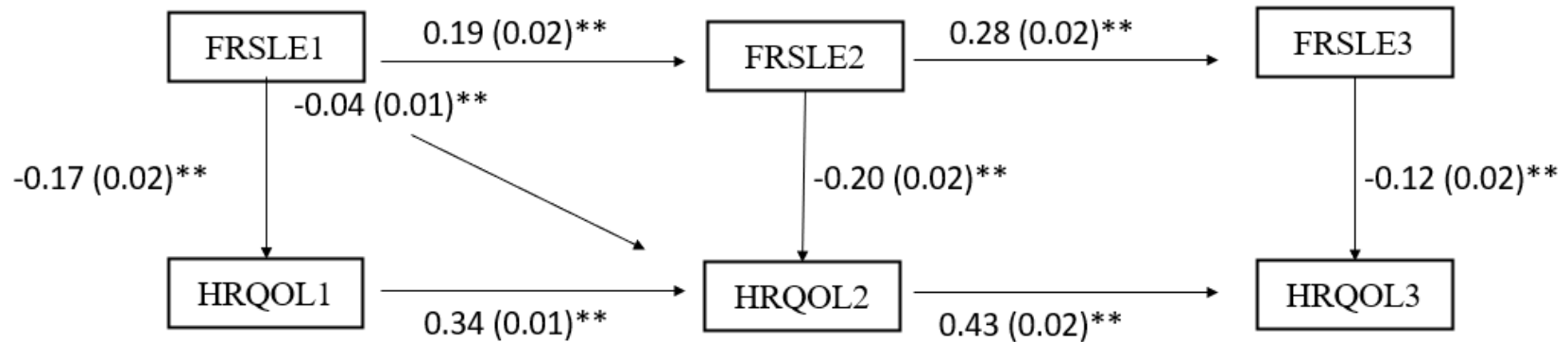
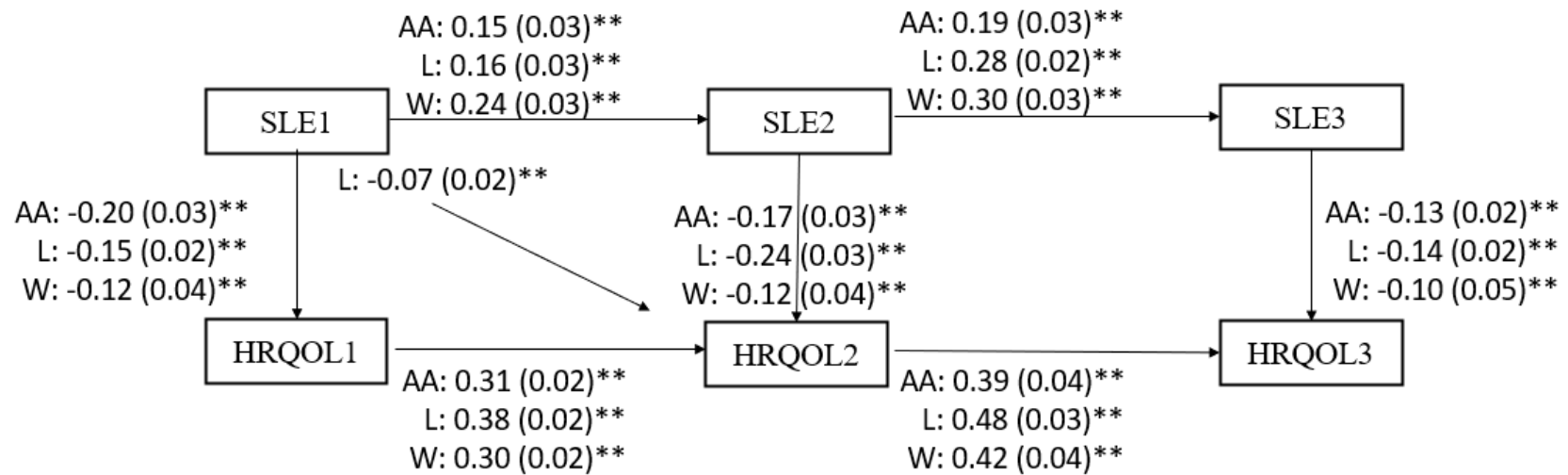


Figure 3. Total sample model results across (1) pre-, (2) early-, and (3) mid-adolescence for total HRQOL, showing all significant paths.



*Note.* Numbers by paths represent path coefficient (and standard error). FRSLE, family-related stressful life events; HRQOL, health-related quality of life. \*\* $p < .01$ .

Figure 4. Racial/ethnic group model results across (1) pre-, (2) early-, and (3) mid-adolescence for total HRQOL, showing all significant paths.



Note. Numbers by paths represent, path coefficient (and standard error). FRSLE, family-related stressful life events; HRQOL, health-related quality of life; AA, African-America; L, Latinx; W, White. \*\*p < .01.