



Parenting Processes and Adolescent Adjustment in Immigrant Latino Families: The Use of Residual Centering to Address the Multicollinearity Problem

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Family cohesion and parental monitoring promote Latino adolescents' positive adjustment. For Latino immigrant families, these parenting processes tend to be interdependent due to shared roots in cultural values emphasizing family togetherness and parental authority. This covariance poses a significant methodological problem with respect to multicollinearity. The present article uses a novel technique—residual centering—to remove shared variance among family cohesion and parental monitoring constructs and, in turn, to identify how the unique variance of each is associated with Latino adolescent adjustment. Participants include 249 9th and 10th graders in Mexican and Central American immigrant families. We compared findings from structural equation models in which parenting constructs were examined simultaneously with residual-centered models, in which shared variance among parenting constructs was removed for each parenting variable. Findings from residual-centered models revealed that parents' monitoring of youth's daily activities was associated with less alcohol use and fewer youth depressive symptoms, and that parents' monitoring of youth's peer activities outside the home was associated with less marijuana use and more depressive symptoms. Family cohesion was unrelated to Latino youth outcomes in residual-centered models. By isolating specific, "pure" parenting effects, residual centering can clarify the ways in which family cohesion and parental monitoring behaviors matter for Latino adolescents' adjustment.

Keywords: Latino immigrant families, parenting, multicollinearity, adolescent, substance use, adolescent depressive symptoms

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For Latino immigrant families, family cohesion and parental monitoring are highly interdependent processes believed to protect young people from adverse environmental risks commonly faced by U.S. Latino immigrants (Hill, Bush, & Roosa, 2003; Pantin et al., 2003). Family cohesion signifies family members' strong emotional bonds, togetherness, and mutual affection (Behnke et al., 2008); parental monitoring refers to parents' limit setting, rules, and inquiring with the adolescent about activities and whereabouts (Tilton-Weaver, Burk, Kerr, & Stattin, 2013). These parenting processes reinforce important Latino cultural values, including family obligations and loyalty and respect for parental authority (Halgunseth, Ispa, & Rudy, 2006). When correlations among Latino family and parenting processes are noncausal—that is, not the result of one construct causing change in another—there exists a multicollinearity problem, indicated by “high levels of interdependence among predictors in a regression model” (Thompson, Kim, Aloe, & Becker, 2017, p. 82). The aim of this article is to demonstrate how a novel technique—residual centering—can overcome the multicollinearity problem inherent in examining family cohesion and parental monitoring among Latino immigrant families. The study of parenting provides just one example of how residual centering can be used to address multicollinearity. By removing shared variance among correlated variables, residual centering helps model the effect of the unique variance attributed to a single construct (in this case, parenting), absent its shared variance with other correlated variables (Geldhof, Pornprasertmanit, Schoemann, & Little, 2013; Lance, 1988). We will use the method to identify how the unique variance of any particular parenting variable (e.g., family cohesion; a form of parental monitoring) is associated with Latino adolescents' alcohol use, marijuana use, and depressive symptoms. In these ways, this article will offer important insights into the associations that distinct but interdependent family and parenting processes have with Latino adolescent substance use and mental health outcomes within immigrant families.

Family Cohesion and Parental Monitoring Influences on Latino Adolescent Adjustment

In the face of social marginalization, language discrimination, and economic adversity,

Latino immigrant parents often rely on strong family ties and parental monitoring to protect their children from risks external to the family (Behnke et al., 2008; Pantin et al., 2003). Family cohesion and parental monitoring behaviors align with Latino cultural values emphasizing the primacy of the family and of parents' authority over their children. In fact, research has shown that Latino youth tend to experience higher levels of family cohesion and more parental restrictions than do youth from other racial and ethnic backgrounds (Domenech-Rodríguez, Donovan, & Crowley, 2009; Driscoll, Russell, & Crockett, 2008; Halgunseth et al., 2006). Although defined and operationalized in varying ways, parental monitoring behaviors help structure youth's environment and ensure that parents are aware of youth's whereabouts and activities (Bendezú, Pinderhughes, Hurley, McMahon, & Racz, in press; Racz & McMahon, 2011). The present study focuses on two kinds of monitoring behaviors: (a) parental restrictions and limit setting, and (b) solicitation of information from youth. Some scholarship suggests that Latino parents are prone to using solicitation—inquiring about their adolescent child's whereabouts and activities—as a means of limiting youth's autonomy outside the home (Blocklin, Crouter, Updegraff, & McHale, 2011). For Latino families, parental monitoring around youth activities occurring outside the home, such as spending time with peers, may be distinct from monitoring of activities within the home. This likely is due to immigrant parents' strong interests in protecting their children from the negative influences of American culture and peer groups (Suárez-Orozco & Suárez-Orozco, 2009). Latino parents have reported stricter nighttime curfews than European American and to some degree, African American parents (Bulcroft, Carmody, & Bulcroft, 1996). Differences in the parenting of adolescent boys versus girls also have been indicated by research showing that parental interests in restricting youth's independence outside the home are pronounced for adolescent daughters, as compared with sons (Suárez-Orozco & Suárez-Orozco, 2009). Thus, both cultural and social environmental factors underscore the value of close and supportive family ties, as well as firm parental limits and restrictions, for reduced risk behaviors among Latino adolescents in immigrant families.

Beyond comprising an important part of family life, family cohesion and parental monitoring have been shown to reduce risks of Latino adolescent substance use and depressive symptoms (Bray, Adams, Getz, & Baer, 2001; Lac et al., 2011; Rajesh, Diamond, Spitz, & Wilkin-son, 2015; Yabiku et al., 2010). In a study examining changes in alcohol use behaviors and intentions among Mexican-origin middle school students, parental monitoring was found to predict youth's continued membership in a non-drinker category over 3 years. In this same study, monitoring predicted youth's 1-year transition from being in an experimenter group to a nondrinker group and from being in a potential drinker group to a nondrinker group (Shin, Lee, Lu, & Hecht, 2016). Higher levels of family cohesion also have been associated with declines in youth depressive symptoms and with less risk of binge drinking, cigarette use (Cano et al., 2016), and alcohol-related problems (Kopak, Chen, Haas, & Gillmore, 2012).

Findings demonstrating the benefits of family cohesion and parental monitoring for Latino adolescent adjustment are not without some important exceptions (for examples, see: Criss et al., 2015; Kerr, Stattin, & Burk, 2010; McCann, Perra, McLaughlin, McCartan, & Higgins, 2016; Tilton-Weaver et al., 2013). Latino-specific research also indicates mixed findings with respect to parental solicitation. Among Mexican American middle school students, research has shown virtually no association between parent solicitation and youth's alcohol, cigarette, and marijuana use (Parsai, Voisine, Marsiglia, Kulis, & Nieri, 2009) or youth's grade point average, delinquent behavior, and depressive symptoms (Blocklin et al., 2011). On the other hand, parental solicitation among a sample of predominately Mexican American families has been shown to be associated with decreases in boys' and girls' depressive symptoms, decreases in boys' risk behaviors, and increases in boys' educational expectations (Wheeler, Updegraff, & Crouter, 2015). Thus, there remains a need for research that can clarify the degree to which parental monitoring matters for Latino adolescents' mental health and substance use risks.

As is the case for research on parental monitoring, some studies of family cohesion contradict prior theory and research. Among participants in the National Longitudinal Study of

Adolescent Health, family cohesion was shown to be associated with fewer alcohol-related problems for White non-Hispanic youth, but *unrelated* to alcohol problems among Latino-origin youth (Reeb et al., 2015). Low and high, compared with moderate, levels of family cohesion also have been associated with elevated risks of Latino adolescents' alcohol use, including binge drinking. Scholars have speculated that a high level of family cohesion might increase stress and substance use risks for U.S. Latino adolescents who wish to attain behavioral autonomy and independence from parents but are simultaneously pulled to maintain loyalty and obligations to family (Marsiglia, Kulis, Parsai, Villar, & Garcia, 2009; Reeb et al., 2015).

Shared Variance Among Family and Parenting Processes Within Latino Families

Relatively little research attention focuses on the issue of covariance among variables such as family cohesion and monitoring within Latino immigrant families. Yet, such covariance is an empirically and theoretically salient feature of family relations for this population. Although distinct, family cohesion and parental monitoring share a common grounding in Latino cultural values emphasizing youth's connection to family, respect for parents, and interdependence of family members (Romero & Ruiz, 2007; White, Zeiders, Gonzales, Tein, & Roosa, 2013; Yabiku et al., 2010). Values such as *familismo*, referring to familial assistance, obligation and togetherness (Calzada, Tamis-LeMonda, & Yoshikawa, 2013) and *respeto*, stressing youth's respect for parental authority (Calzada, Fernandez, & Cortes, 2010; Fuligni & Yoshikawa, 2003), are believed to promote high levels of both family cohesion and parental monitoring (Halgunseth et al., 2006; Romero & Ruiz, 2007; White et al., 2013; Yabiku et al., 2010). These interdependent family and parenting processes comprise the kind of family context that immigrant Latino parents hope will protect their adolescent children from the economic, cultural, and social challenges commonly faced by U.S. Latinos (Romero & Ruiz, 2007; Schwartz et al., 2015).

An in-depth look at parenting studies examining Latino youth outcomes suggests considerable shared variance among parental support

and control variables; this covariance may result in instability of coefficients for parenting variables. Research conducted with Mexican-origin youth has shown that the correlations between parental control (i.e., monitoring and solicitation) and parental support (i.e., parent-child closeness and acceptance) range in value from .43 to .67 (Blocklin et al., 2011; Romero & Ruiz, 2007). Similarly, among Mexican American high school students, Cota-Robles and Gamble (2006) found correlations between mother-adolescent attachment and maternal monitoring ranging from .48 (boys) to .52 (girls) and between father-adolescent attachment and paternal monitoring ranging from .55 (girls) to .62 (boys). When Cota-Robles and Gamble (2006) examined each of these parenting constructs in separate regression models, they found that higher levels of mother-adolescent attachment (for boys), father-adolescent attachment, maternal monitoring, and paternal monitoring were associated with youth reporting less delinquency. However, in models with all four parenting variables included in the model simultaneously, only mother-adolescent attachment was associated with less delinquency for boys, and only maternal monitoring was associated with less delinquency for girls. Along these lines, methodologists have shown that even moderate correlations among independent variables (e.g., $r = .38-.58$) create instability and bias in standard errors (Cohen & Cohen, 1975). Research that adequately addresses the multicollinearity problem will provide more accurate estimates of parenting effects on Latino youth outcomes, thus, increasing the generalizability of findings.

Addressing Multicollinearity: A Residual Centering Approach

The multicollinearity problem often is not addressed in parenting research. Although studies that use structural equation modeling (SEM) to model the covariance among parenting variables facilitate examining the correlation among these variables, parameter estimates remain biased by shared variance among the correlated parenting constructs, preventing the modeling of unique variance for any one parenting construct. A second approach involves excluding one or more parenting constructs from inclusion in a model; again, this approach precludes iden-

tifying how the unique influence of a parenting construct is associated with youth outcomes. In the present article, we demonstrate use of the residual centering technique, applied within an SEM framework, for modeling the association between a parenting construct's unique variance and Latino adolescent outcomes. Geldhof et al. (2013) state the following about residual centering:

Residual centering removes shared variance by subtracting the expected value of target variable Y_j (i.e., Y_j) from the observed values of Y_j , where Y_j is conditioned on a set of variables one wishes to make Y orthogonal (i.e., unrelated) to Geldhof et al. (2013, p. 28).

In other words, removing shared variance among a set of correlated parenting variables helps eliminate unwanted variance in a particular parenting variable (Geldhof et al., 2013). When compared with SEM models in which covariances among predictors are estimated, SEM models that eliminate shared variance among constructs provides greater power to detect differences by virtue of smaller standard errors.

We illustrate how findings from models examining associations between parenting processes and Latino adolescent outcomes vary depending upon the handling of multicollinearity. Specifically, we compare findings from analyses based on two distinct approaches for investigating how family cohesion and parental monitoring are associated with Latino youth's substance use and depressive symptoms. In the first set of models, parenting and family processes are included as multiple, correlated latent variables within a single model. In the second set of models, we include residual-centered latent parenting/family process variables. In the later set of models, wherein constructs are orthogonalized to one another, we eliminate the unwanted common variance—that is, the proportion of variance in one parenting construct that is attributed to other parenting constructs. In this way, we examine how the unique variance of a particular parenting construct is associated with Latino adolescent outcomes.

Our investigation will account for youth, parent, and household correlates of parenting and Latino adolescent adjustment. We will control for adolescents' age and gender because levels of substance use, depression, and parental monitoring differ for adolescent males and females and for adolescents of varying ages (Negri &

Susman, 2011; Steinberg & Morris, 2001). National-origin and immigrant generation status differences among Latino families also represent important correlates of parenting and youth outcomes (Umaña-Taylor & Fine, 2001). When compared with second and third generation Latino adolescents, first-generation Latino immigrant youth report less substance use and more family cohesion (Prado et al., 2009). Models also will adjust for the adolescent's GPA, a correlate of effective parenting and less substance use, and for adolescents' caretaking of younger siblings. Although sibling care has both costs and benefits for youth's adjustment (East, 2010), its salience among Latino immigrant families is irrefutable (Orellana, 2003). Finally, we will account for household socioeconomic resources because socioeconomic advantage (e.g., higher parental education, home ownership) and living in a two-parent, as compared with single and stepparent, household have been associated with more positive parenting and family processes and with less risk for youth's substance use and mental health problems (Garcia Coll & Pachter, 2002; Zeiders, Roosa, & Tein, 2011).

Method

Data Source and Sample

Data derive from surveys administered in the Fall of 2014 to youth in Mexican and Central American immigrant families living in suburban Atlanta. The sampling frame included all Latino-origin ninth and 10th graders enrolled in a high school ($N = 507$), where roughly 30% of students are Latino. After stratifying students by grade and gender, we selected a random sample of $n = 335$ youth. Next, we excluded students considered ineligible by virtue of no longer being enrolled in school at the time of data collection or not having a parent who was reachable by phone, a requirement for obtaining parental permission. Among the 311 eligible students, the response rate was 81%. Refusals included students whose parents did not provide consent and students who did not show up for scheduled survey administrations. Among the 252 surveyed youth, one was excluded due to special education needs preventing survey completion (all students had to be literate in Spanish

or English) and two were excluded due to being South American.

Consistent with other data on Mexican and Central American immigrant youth, our sample was socioeconomically disadvantaged and mostly lived with both parents. In terms of socioeconomic status, 63% of youth reported that neither parent had completed high school, and 65% reported that the family did not own their home. Sixty-percent of adolescents lived with both a mother and father, 24% lived in a single parent family, and 13% lived in a stepparent family. The mean number of older siblings was 1.34 ($SD = 1.3$); youth were, on average, just over 15-years-old ($M = 15.21$, $SD = 1.02$), and the sample had an equivalent proportion of males and females. Most youth were born in the U.S., with 15% having moved to the U.S. after age five; and, youth mostly were of Mexican origin (74%), with the remaining being of Central American origin (26%). Just over half of adolescents (53%) reported caring for younger siblings *very often* or *all the time* as compared with *not at all* or *every once in a while* (47%). On average, youth's GPA was 2.78 ($SD = .86$).

Youth completed self-administered surveys on miniiPads using *Qualtrics* software, a password protected and encrypted web-based survey that integrates data collection with data downloads (Qualtrics, Inc., 2015). A small number of youth ($n = 8$; 3%) chose to complete the survey in Spanish. During the school day, groups of about 15 students completed the surveys in the school's media center, where there was a bilingual/bicultural research staff member available to hand out the miniiPads, obtain assent, and answer any questions students might have had. Survey completion took between 30 and 45 min; and, youth were provided with a \$20 gift card for participating. All study procedures were approved by the first author's university institutional review board.

Measures

The three outcome variables assessed adolescent substance use and mental health. Using items from the Monitoring the Future study (Johnston, O'Malley, Miech, Bachman, & Schulenberg, 2015), past 30-day marijuana use and past 30-day alcohol use were measured by recoding *never* responses on the original item to

0 = *no recent use* and recoding responses of *1–2 times*, *3–5 times*, *6–9 times*, *10–19 times*, *20–39 times*, and *40 or more times* to 1 = *recent use*. Depressive symptoms were assessed by a five-item shortened version of the Center for Epidemiological Studies Depression scale (Radloff, 1977) with strong cross-cultural validity, including for Latino-origin youth of different immigrant generations (Perreira, Deeb-Sossa, Harris, & Bollen, 2005). Items assessed youth's report of past week feeling lonely, depressed, sad, that life had been a failure, and not being able to shake off the blues, even with the help of family or friends (responses included 1 = *rarely or none of the time (less than 1 day)*; 2 = *some or a little of the time (1 to 2 days)*; 3 = *occasionally or a moderate amount of the time (3 to 4 days)*; and 4 = *most or all of the time*). Average summed scores ranged from 1 to 4 ($M = 1.61$, $SD = .75$), with higher scores indicating more depressive symptoms ($\alpha = .86$).

To assess parental monitoring, a key predictor variable, we began with a confirmatory factor analysis (CFA) of items from Stattin and Kerr's (2000) eight-item parental control scale and five-item parental solicitation scale. CFA results indicated two dimensions of parental monitoring. The first was a three-item measure of parental monitoring of youth's activities with peers. Youth reported on needing parental permission before going out with friends, parents asking where youth went and what they did when out with friends, and parents inquiring about where youth are going and with whom when going out with friends at night. This scale was reliable ($\alpha = .81$), and higher scores indicated greater monitoring of youth peer activities ($M = 4.25$; $SD = .89$). The second form of monitoring was a nine-item measure assessing monitoring of youth's daily activities. Youth reported how often the parent talks with parents of the adolescent's friends; makes sure homework gets done; checks to see if an adult is present when the adolescent goes to a friend's house; and, asks about the child's free time, schoolwork, time spent after school, activities with friends, and school day (responses ranged from 0 = *never* to 4 = *always*). The scale was reliable ($\alpha = .88$), and higher scores indicated more monitoring ($M = 2.45$; $SD = .78$).

Family cohesion, also a key predictor variable, was measured using a cohesion subscale of the Family Adaptation and Cohesion Evalu-

ation Scales (FACES) II inventory (Olson, Sprenkle, & Russell, 1979), a measure shown to be reliable and valid with Latino youth (Deng et al., 2006). The six-item measure indicated the frequency of family togetherness being very important, everyone being present for family activities, and family members asking each other for help, feeling very close, and consulting each other on decisions (responses ranged from 0 = *never or almost never* to 4 = *always or almost always*). The scale was reliable ($\alpha = .71$), and higher scores indicated more cohesion ($M = 3.41$, $SD = .92$).

Several youth and family characteristics were assessed. Youth immigrant status indicated adolescent arrival to the U.S. after age 5, with the reference group including youth who were U.S. born or had moved to the U.S. prior to age 5. Age 5 is considered an important cutpoint because children arriving to the U.S. prior to formal schooling are essentially socialized in the same way as occurs for U.S.-born children (Portes & Rumbaut, 2006). Youth's age in years was calculated using youth's reported date of birth, and gender was indicated by youth's report of being male or female, the reference group. National origin, based on youth report of parents' country of birth, indicated that a parent was from Central America, with Mexican as the reference group (small cell sizes prohibited retaining separate indicators for Central American countries). Additional youth variables included GPA, calculated from self-reported grades in main-subject area classes; number of older siblings (ranged 0 to 4); and, care for younger siblings, recoded from 1 to 4 into a binary indicator of *never* or *only every once in a while* (the omitted reference group) versus *pretty often* or *very often*. In terms of family characteristics, parent education was developed using youth's report of parents' educational attainment and indicated that at least one parent had graduated from high school, with the reference group of less than a high school degree. Household composition was measured by dummy variables indicating living in a two-biological parent family (the reference group); a stepparent family; or single parent family. Finally, home ownership was indicated by youth's report of the family owning the home, with renting the home as the reference group.

Analysis Plan

Our overarching purpose in the analyses was to compare the results from two sets of structural equation models. In one set of models, the three parenting predictors were included together without addressing multicollinearity. In the second set, each parenting/family process construct was included separately as residual-centered predictors.

Missing data. We used the three-form planned missing survey design as a cost-effective way to obtain valid survey data, while minimizing respondent burden (Graham, Taylor, Olchowski, & Cumsille, 2006; Jorgensen et al., 2014; Little & Rhemtulla, 2013; Rhemtulla, Jia, Wu, & Little, 2014). For this design, youth were randomly assigned to complete one of three surveys. All survey forms included common items (e.g., demographics, youth outcomes, a subset of items from each multiitem scale), but each of the three forms had different subsets of selected items for the multiitem scales. Data missing due to the three-form survey design (33%) is missing completely at random and thus completely unbiased. Data missing due to item nonresponse (ranging from 1% to 5%) were assumed to be missing at random based on their low correlations with variables in the dataset. All missing data were imputed using the Quark package in R (Lang, Little, & PcAux Development Team, 2017), appropriate for the type of missingness in the study. Principle components analysis (PCA) was used to create a set of auxiliary variables, which were then used in the multiple imputation procedure (Howard, Little, & Rhemtulla, 2015). As outlined by Howard et al. (2015) Lang and colleagues implemented the PCA procedure using the R program (Lang et al., 2017). For more specifics on that method, please contact the second author of the present study. Imputation was completed through the MICE package in R (Multiple Imputation by Chained Equations) and produced 100 multiply imputed data sets (Buuren & Groothuis-Oudshoorn, 2011). All analyses were run using the 100 multiply imputed data sets. Descriptive statistics were obtained using SPSS 22.0 (IBM Corps., 2013). Associations of interest were tested using structural equation modeling (SEM) with *Mplus* 7.12 (Muthén & Muthén, 1999-2013).

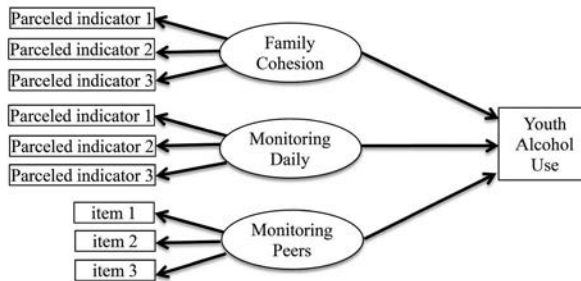
Measurement models. The scales for the latent variables were set using effects-coding methodology so that latent variable estimates

reflect the metric of observed variables (Little, 2013). For constructs measured by more than four items, we used parceling techniques. Parcels were averaged scores for pairs of items balanced by low and high item—scale correlations for all items. When compared with single items, parceled items have greater reliability, a higher ratio of common-to-unique factor variance, and greater communality, as well as fewer distributional violations and less chance for correlated residuals or dual loadings (Little, Rhemtulla, Gibson, & Schoemann, 2013). Measurement models were deemed to fit underlying data adequately when the root mean square error of approximation (RMSEA) was less than .08 and the comparative fit index (CFI) was at least .90 (Little, 2013).

Structural models. Structural models were examined separately for each youth outcome—alcohol use, marijuana use, and depressive symptoms. Due to the covarying nature of depressive symptoms with substance use, models predicting youth's alcohol and marijuana use controlled for depressive symptoms, and models predicting youth depressive symptoms controlled for adolescent alcohol use (marijuana use was not also included in order to avoid overcontrolling for substance use; Saraceno, Heron, Munafò, Craddock, & van den Bree, 2012). In Figure 1, we illustrate the two series of structural models for examining associations between parenting and adolescent outcomes. We run two kinds of models: (a) one in which the shared variance among parenting constructs is retained ("latent collinear models"); and (b) one in which we pull out this shared variance and only assess a construct's unique variance ("residual-centered models"). Our models with the single residual-centered predictor are not being directly compared to the latent collinear models. Rather, we are comparing the isolated parameters based on two separate models in order to evaluate the magnitude and significance of the isolated parameter, which represents the unique predictive variance of a construct. We illustrate these approaches in Figure 1, using adolescent alcohol use as an example.

1. The "latent collinear" models regressed each outcome on all latent parenting constructs in the same model, including background variables. We examined a total of

Model set 1: "Latent collinear"



Model set 2: "Residual centered"

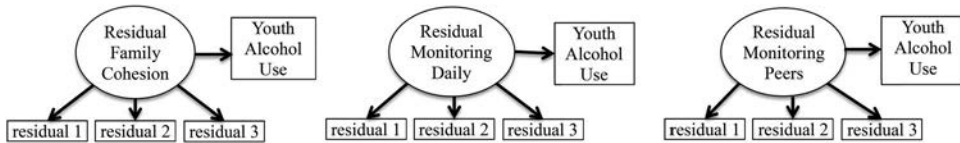


Figure 1. Analytic models to examine associations between parenting and adolescent outcomes: Alcohol use example.

three models (three outcomes by one set of parenting variables).

2. The "residual-centered" models entailed multiple analytic steps outlined by Geldhof et al. (2013). As an initial step, we examined ordinary least squares regression models in SPSS 22.0, whereby each indicator for a parenting construct was regressed on indicators measuring the other two parenting constructs. From the nine regression models, we saved the unstandardized residuals. For syntax used to obtain unstandardized residuals, we refer the reader to online supplemental material. The three unstandardized residuals for each parenting construct then were used as indicators for a residual-centered latent parenting variable. Each residual-centered latent parenting construct represented that particular parenting construct absent its shared variance with the other two parenting constructs. Finally, structural models regressed a particular youth outcome on each residual-centered parenting construct, as well as background variables, in separate models for a total of nine models. It is important to note that, mathematically, it is only possible to model one residual factor at a time.

Results

Bivariate Correlations

Table 1 presents results for descriptive statistics and correlation coefficients for all parenting variables and youth outcomes. Family cohesion was associated positively with parental monitoring of youth's peer activities ($r = .48, p < .001$) and parental monitoring of youth's daily activities, $r = .62, p < .001$. The two forms of parental monitoring also were positively correlated with each other, $r = .59, p < .001$. Higher levels of family cohesion and parental monitoring of youth's daily activities were associated with lower levels of youth depressive symptoms ($r = -.30$ and $r = -.26$, respectively, both at $p < .001$). All three parenting constructs were associated inversely with alcohol and marijuana use (correlation coefficients ranged from $-.16$ to $-.26$, with p values ranging from less than .05 to less than .001). Finally, alcohol and marijuana use were positively correlated with each other, $r = .44, p < .001$ and with depressive symptoms ($r = .20, p < .01$ for alcohol use and $r = .15, p < .05$ for marijuana use).

Results for rates of alcohol and marijuana use indicated lower levels of substance use in this sample than has been shown for Latinos nation-

Table 1
Correlations and Descriptive Statistics for Primary Study Variables

Variables	1	2	3	4	5	6
1) Family cohesion	1	.48***	.62***	-.30**	-.19**	-.16*
2) Parental monitoring, peers		1	.59***	-.04**	-.17**	-.21**
3) Parental monitoring, daily			1	-.26***	-.26***	-.18**
4) Depressive symptoms				1	.20**	.15***
5) Recent alcohol use					1	.44***
6) Recent marijuana use						1
Mean	2.55	3.91	3.50	1.54	.21	.09
SD	.76	.88	.96	.73	.41	.29

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

ally, possibly because our sample did not include third and later generation immigrants. Twenty-one percent of youth reported recent alcohol use, and 10% reported recent marijuana use. Females reported higher levels of depressive symptoms ($M = 1.70$, $SD = .75$) than males ($M = 1.51$, $SD = .73$; $F = 4.20$, $p < .05$).

Measurement Models

The measurement model including all latent constructs, when fit to the average of the 100 imputed data sets, indicated exceptional model fit ($\chi^2(66) = 893.86$, $p < .001$; RMSEA = .000, 90% CI [.00, .00]; CFI = 1.00). Table 2 provides standardized and unstandardized factor loadings indicators assessing parental monitoring of youth's peer activities, monitoring of daily activities, family cohesion, and youth depressive symptoms. Measurement models also were run to assess the measurement of residual-centered parenting constructs in separate models. The range of model fit across the 100 data sets for the residual centered models also was good. Strong model fit was evidenced by χ^2 values with 48 degrees of freedom ranging from 56.92 to 86.56 ($p < .001$); RMSEA values ranging from .027 to .053, with 90% CIs ranging from lows of .000 to .033 to highs of .052 to .075; and, CFIs ranging from .98 to .99. Standardized factor loadings from measurement models with the 100 imputed data sets ranged from .68 to .81 for parental monitoring of youth peer activities; .75 to .91 for monitoring of youth daily activities; .63 to .78 for family cohesion; and .79 to .93 for youth depressive

symptoms. Following Chen (2007; and see Little, 2013), changes in model fit indices (results available from first author) indicated strong measurement invariance (configural, unconstrained model; weak, constrained factor loadings; strong, constrained intercepts) across gender (Cheung & Rensvold, 2002).

Structural Model Results

Our first set of models (latent collinear) included all parenting constructs in the same model (see Table 2). Parental monitoring of youth peer activities outside the home was associated with greater monitoring of youth daily activities ($\psi = .56$, $p < .001$) and family cohesion ($\psi = .48$, $p < .001$). Monitoring of youth's daily activities was associated with greater family cohesion ($\psi = .73$, $p < .001$). With all parenting constructs in the model, one significant finding emerged for the associations between parenting and youth outcomes: Parental monitoring of youth peer activities was associated positively with adolescent depressive symptoms. That is, when youth reported that parents engaged in greater monitoring of the young person's peer activities, youth reported higher levels of depressive symptoms. From this same model, two coefficients for parenting constructs reached marginal statistical significance: (a) parental monitoring of youth's peer activities was associated with a lower likelihood of youth's recent marijuana use, and (b) parental monitoring of youth's daily activities was associated with lower levels of adolescent depressive symptoms.

Results from the second set of models (residual-centered) indicate how parenting was associ-

Table 2
Latent Variable and Unstandardized (Standard Error) and Standardized Factor Loadings from Final Measurement Model

Parameter estimate	<i>b</i> (SE)	β
Parental monitoring daily activities		
→ Parcel 1: Check to see if adult present at friend house + make sure get homework done + talk with parents of child's friends' parents	.90 (.04)	.75
→ Parcel 2: Ask about how spent time after school + ask about schoolwork such as homework, grades, tests	1.03 (.04)	.86
→ Parcel 3: Ask about day at school + ask about what child did with friends when spending time together + ask how spent free time	1.07 (.04)	.91
Parental monitoring peer activities		
→ Item 1: Ask where going and who will be with before going out with friends	1.00 (.05)	.80
→ Item 2: Ask where went and what did when out at night with friends	1.17 (.06)	.81
→ Item 3: Require child get permission before going out with friends	.82 (.05)	.68
Family cohesion		
→ Parcel 1: Like to do things with just immediate family + family members feel very close	1.14 (.12)	.77
→ Parcel 2: When family gets together, everybody present + family togetherness very important	.96 (.09)	.70
→ Parcel 3: Family members consult each other on decisions + family members ask each other for help	.90 (.12)	.63

Note. Measurement model including all latent constructs. Fit statistics included: $\chi^2 = 893.86$, $df = 66$, $p < .001$; CFI = 1.00; RMSEA = .000, 90% CI [.000, .000]. All parameter estimates significant at $p < .001$.

ated with youth outcomes after orthogonalizing parenting constructs to one another (see Table 3). As was the case with the first set of models, findings from residual-centered models indicated that monitoring of peer activities outside the home was associated with higher levels of youth depressive symptoms. Two of the findings which reached marginal statistical significance in the latent collinear models were shown to be statistically significant in residual-centered models: (a) parental monitoring of youth peer activities outside the home was associated with a lower likelihood of marijuana use; and (b) parental monitoring of youth daily activities was associated with fewer youth depressive symptoms. Finally, residual-centered model results indicated that parental monitoring of youth daily activities was associated with a lower likelihood of youth's alcohol use. Family cohesion was not associated significantly with any of the outcomes.

Several of the study's covariates also were significantly associated with adolescent depressive symptoms and substance use. Although we present and describe covariate findings from the

residual-centered model examining parental monitoring of youth peer activities, it is important to note that the findings for covariates did not differ substantively across all structural models (results available from the authors). As shown in Table 3, youth depressive symptoms were significantly higher among females compared to males; among youth whose parents had at least a high school education, as compared with less than a high school education, and among youth who reported recent alcohol use. Results from models predicting alcohol use and marijuana use indicated that a higher GPA was associated with a lower likelihood of both forms of substance use; higher levels of depressive symptoms were associated positively with likelihoods of both alcohol and marijuana use. Results for other covariates included in structural models—household structure, youth's age, parents' national origin, carrying for younger siblings, number of older siblings, home ownership, and recent immigrant status—were not associated significantly with any of the three youth outcomes. All structural models demon-

Table 3

Summary of Results From Structural Models Examining Associations Between Parenting and Latino Adolescent Alcohol Use, Marijuana Use, and Depressive Symptoms^a

		Alcohol use			Marijuana use			Depressive symptoms		
	Variable	<i>B</i>	(<i>SD</i>)	OR	<i>B</i>	(<i>SD</i>)	OR	<i>B</i>	(<i>SD</i>)	<i>B</i>
Latent collinear	Monitoring peer activities	−.12	(.35)	.88	−.79 [†]	(.45)	.45	.21 [*]	(.08)	.25
	Monitoring daily activities	−.56	(.51)	.57	−.21	(.69)	.81	−.20 [†]	(.12)	−.26
Residual-centered	Family cohesion	−.07	(.87)	.93	.24	(1.13)	1.27	−.17	(.18)	−.16
	Monitoring peer activities	−.19	(.30)	.83	−.87 [*]	(.40)	.42	.16 [*]	(.08)	.16
	Monitoring daily activities	−.72 [*]	(.39)	.49	−.22	(.51)	.80	−.21 [*]	(.10)	−.18
Covariates ^b	Family cohesion	.28	(.74)	11.32	.20	(1.06)	1.22	−.20	(.17)	−.13
	Parent education ^c	−.05	(.40)	.95	−.02	(.57)	.98	.20 [*]	(.10)	.14
	Male gender ^d	.51	(.38)	11.67	.38	(.53)	1.46	−.26 ^{**}	(.09)	−.19
	Grade point average	−.44 [*]	(.22)	.64	−.80 ^{**}	(.28)	.45	−.08	(.06)	−.10
	Depressive symptoms ^e	.84 ^{**}	(.26)	2.32	.82 [*]	(.34)	2.27	n/a	n/a	n/a
	Alcohol use ^f	n/a	n/a	n/a	n/a	n/a	n/a	.38 ^{**}	(.07)	.23

Note. Bolded values indicate that the coefficient was statistically significant at a probability level of less than .05.

^a Fit statistics from individual models available from authors. ^b Results for covariates shown include those that were statistically significant ($p < .05$) in any models. Covariates that were not statistically significant but included in all models were: youth's age; recent immigrant status; single-parent family, stepparent family (reference group: two-parent family); parents' Central American national origin (reference group: Mexican); home ownership (reference group: rent home); caring for younger siblings *most of the time* or *very often* (reference group: *never* or *once in awhile*); and number of older siblings. The coefficients for covariates shown in this table derive from the "monitoring peer activities" residual-centered models; substantive results for covariates do not differ across the multiple models run. ^c Reference group: Less than high school degree. ^d Reference group: female. ^e Depressive symptoms as a covariate was only included in models predicting marijuana use and alcohol use. ^f Alcohol use as a covariate was only included in models predicting depressive symptoms.

[†] $p < .10$. * $p < .05$. ** $p < .01$.

strated very strong model fit. CFIs ranged from .91 to .99 and RMSEAs ranged from .000–.046, with corresponding 90% confidence intervals ranging from lows of .00–.03 to highs of .018–.061 (full results available from authors).

Discussion

Disentangling interrelated parenting processes is important for studies of Latino immigrant families due to extensive shared variance among parental monitoring behaviors and family cohesion, processes rooted in the cultural values of *familismo* and *respeto*. Despite the demonstrated salience of these parenting and family processes to Latino adolescent risks of poor mental health outcomes and substance use, the multicollinearity problem raises important questions about the validity and generalizability of findings from parenting research conducted for this population.

In this article, we compared results from residual-centered models with those from models using conventional approaches to measurement and analysis. The results demonstrate how the mishan-

dling of correlated parenting variables can bias our understanding of parental influence on Latino adolescent adjustment. When all three latent parenting variables—parental monitoring of daily activities, parental monitoring of peer activities, and family cohesion—were examined together, one significant finding emerged: monitoring of youth's peer activities was associated with greater adolescent depressive symptoms. Had we stopped our analyses with this conventionally acceptable model, we would have concluded that there is little association between parental monitoring, especially in terms of monitoring of daily activities, and adolescent substance use and depressive affect in this Latino immigrant sample. Through residual centering, we were able to isolate otherwise correlated parenting processes and their associations with Latino youth's outcomes. Each residual-centered parenting construct represented the variance in the set of items for a single parenting construct *not* explained by items comprising the other two parenting constructs.

Numerous findings from residual-centered models advance our understanding of the spe-

cific kinds of parental monitoring behaviors that matter for different outcomes among Latino youth in immigrant families. Parents' inquiring about the child's day at school, making sure homework gets done, and checking to ensure adult supervision signify a type of daily monitoring that differs from parents asking where youth have been or are going with friends. The distinctions between these forms of parental monitoring further validate qualitative and quantitative studies of family life among Latino immigrants (Blocklin et al., 2011; Bulcroft et al., 1996; Suárez-Orozco & Suárez-Orozco, 2009). In the present study, we find that parents' monitoring of daily activities is associated with a lower likelihood of alcohol use and with lower levels of depressive symptoms among Latino adolescents. The stability and security conferred to adolescents by way of monitoring daily activities might limit Latino youth's opportunities to partake in alcohol use as well as help reduce depressive symptoms such as feelings of loneliness and sadness. Parental monitoring of peer activities also is associated with a lower likelihood of marijuana use but with elevated levels of youth depressive symptoms. We speculate that monitoring of a young person's unsupervised time with friends may help deter overtly risky behavior; immigrant Latino parents are often concerned that their adolescents' time with friends poses risks to safety and, as a result, they confer greater importance to ensuring oversight of their youth's peer activities (Kakihara, Tilton-Weaver, Kerr, & Stattin, 2010). Conversely, this form of monitoring may elevate youth's risks of internalizing symptomology. Youth tend to ascribe to the idea that activities and time with friends constitute a personal domain not under the jurisdiction of parents. As a result, youth may perceive parental oversight of peer activities as an intrusion into youth's personal lives.

As shown in other research (e.g., Prado et al., 2009), we find sparse evidence to suggest that family cohesion is associated with fewer adolescent problems once removing the variance shared between cohesion and parental monitoring. Thus, although our findings do not suggest any downsides of family cohesion for adolescent substance use or depressive symptoms, we do not find evidence to indicate that cohesion deters problematic youth outcomes. Some of the inconsistencies in prior research on family cohesion for Latino immigrant families may be rooted in the fact that cohesion is intertwined

with monitoring behaviors. In sum, the use of residual-centered methods provided accurate and generalizable findings that help identify potential intervention targets.

Although residual-centered models elucidated potential parenting effects on Latino youth outcomes not shown in the models with collinear parenting variables, residual centering led to only minor changes in some cases. For example, residual-centered findings indicating significant inverse associations between parental monitoring of youth's peer activities and marijuana use and between parental monitoring of youth's daily activities and depressive symptoms also had been suggested by marginally statistically significant findings in the latent collinear models. In fact, the magnitude of coefficients for parental monitoring of youth's daily activities as related to youth's depressive symptoms was essentially the same in both residual-centered and latent collinear models.

This study is not without limitations and our work suggests important directions in future research. First, the use of cross-sectional data prevents establishing directionality and causality between parenting and adolescent outcomes. Research using multiple time points is needed to examine how residual-centered parenting variables are associated with changes in adolescent risk over time. The need for longitudinal studies is underscored by evidence of bidirectionality, such as adolescent risk behaviors leading to changes in parents' monitoring behaviors (Kerr & Stattin, 2000; Laird, Pettit, Bates, & Dodge, 2003). Second, the present study is limited by the reliance on youth self-reports for study variables. Not only may youth be poor reporters for parent demographics, particularly home ownership and parental education, but the use of youth only reports inhibits examining parent-youth discrepancies in reports of parental monitoring. Given that greater parent-youth discrepancies in parental monitoring have been associated with greater alcohol use among youth (Abar, Jackson, Colby, & Barnett, 2015), it will be important for future research to investigate discrepancies on parent and youth reports of parenting. Finally, future work should examine the generalizability of findings across countries of origin, generational statuses, and socioeconomic backgrounds.

Although the study of parenting must be rooted in a cultural framework for Latino families, little has been learned about how interre-

lated culture-specific parenting dimensions uniquely influence youth. By isolating the most relevant risk and protective factors for youth outcomes using robust analytic techniques, family level preventive interventions can be culturally tailored and thus more effective for Latino-origin immigrant families (Marsiglia, Ayers, Baldwin-White, & Booth, 2016). This study's results suggest that relying on conventional methodological approaches for studying col-linear constructs can lead to a confusion of effects and inadequate recommendations for prevention and intervention efforts. By incorporating residual-centering and other improved analytic approaches, we can better advance our understanding of the specific effects of parenting on adolescent well-being. Identifying how correlated parenting processes are uniquely associated with adolescent outcomes can advance theoretical models and help identify the appropriate targets for parenting interventions.

Abstracto

La cohesión familiar y la supervisión de hijos promueven el bien estar de los adolescentes Latinos. Para las familias inmigrantes, estos procesos de crianza son interdependientes por que los valores de unidad y autoridad dentro de la familia son ambos culturales. Esta covarianza es un problema metodológico por que causa multicolinealidad. Este estudio usa una técnica innovadora ("residual centering") para resolver el problema de covarianza entre los constructos de la cohesión familiar y la supervisión de hijos; y de esta manera, identificar como la varianza única de cada constructo es asociada con el ajustamiento de los adolescentes. Participantes fueron 249 adolescentes del grado 9° y 10° de familias inmigrantes de México y Centroamérica. Comparamos los resultados de modelos de ecuaciones estructurales en que los dos constructos fueron examinados simultáneamente a los modelos de "residual centering" en que los constructos fueron examinados independientemente. Según los modelos de "residual centering," la supervisión de las actividades diarias de hijos es asociada con menos consumo de alcohol y síntomas de depresión, y la supervisión de las actividades fuera de casa es asociada con menos consumo de marihuana pero más síntomas de depresión. Sin embargo, la cohesión familiar no tuvo asociación con el ajustamiento de los adolescentes. En separar los efectos de los constructos, esta técnica de "residual centering" puede clarificar el impacto único de la cohesión familiar y la supervisión de hijos en los adolescentes.

References

- Abar, C. C., Jackson, K. M., Colby, S. M., & Barnett, N. P. (2015). Parent-child discrepancies in reports of parental monitoring and their relationship to adolescent alcohol-related behaviors. *Journal of Youth and Adolescence*, 44, 1688–1701. <http://dx.doi.org/10.1007/s10964-014-0143-6>
- Behnke, A. O., MacDermid, S. M., Coltrane, S. L., Parke, R. D., Duffy, S., & Widaman, K. F. (2008). Family cohesion in the lives of Mexican American and European American parents. *Journal of Marriage and the Family*, 70, 1045–1059. <http://dx.doi.org/10.1111/j.1741-3737.2008.00545.x>
- Bendezú, J. J., Pinderhughes, E. E., Hurley, S. M., McMahon, R. J., & Racz, S. J. (in press). Longitudinal relations among parental monitoring strategies, knowledge, and adolescent delinquency in a racially diverse at-risk sample. *Journal of Clinical Child and Adolescent Psychology*. <http://dx.doi.org/10.1080/15374416.2016.1141358>
- Blocklin, M. K., Crouter, A. C., Updegraff, K. A., & McHale, S. M. (2011). Sources of parental knowledge in Mexican American families. *Family Relations*, 60, 30–44. <http://dx.doi.org/10.1111/j.1741-3729.2010.00631.x>
- Bray, J. H., Adams, G. J., Getz, J. G., & Baer, P. E. (2001). Developmental, family, and ethnic influences on adolescent alcohol usage: A growth curve approach. *Journal of Family Psychology*, 15, 301–314. <http://dx.doi.org/10.1037/0893-3200.15.2.301>
- Bulcroft, R. A., Carmody, D. C., & Bulcroft, K. A. (1996). Patterns of parental independence giving to adolescents: Variations by race, age, and gender of child. *Journal of Marriage and the Family*, 58, 866–883. <http://dx.doi.org/10.2307/353976>
- Buuren, S., & Groothuis-Oudshoorn, L. (2011). mice: Multivariate Imputation by Chained Equations in R. *Journal of Statistical Software*, 45, 1–67. <http://dx.doi.org/10.18637/jss.v045.i03>
- Calzada, E. J., Fernandez, Y., & Cortes, D. E. (2010). Incorporating the cultural value of respeto into a framework of Latino parenting. *Cultural Diversity & Ethnic Minority Psychology*, 16, 77–86. <http://dx.doi.org/10.1037/a0016071>
- Calzada, E. J., Tamis-LeMonda, C. S., & Yoshikawa, H. (2013). Familismo in Mexican and Dominican families from low-income, urban communities. *Journal of Family Issues*, 34, 1696–1724. <http://dx.doi.org/10.1177/0192513X12460218>
- Cano, M. Á., Schwartz, S. J., Castillo, L. G., Unger, J. B., Huang, S., Zamboanga, B. L., . . . Szapocznik, J. (2016). Health risk behaviors and depressive symptoms among Hispanic adolescents: Examining acculturation discrepancies and family functioning. *Journal of Family Psychology*, 30, 254–265. <http://dx.doi.org/10.1037/fam0000142>

- Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling*, 14, 464–504. <http://dx.doi.org/10.1080/10705510701301834>
- Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling*, 9, 233–255. http://dx.doi.org/10.1207/S15328007SEM0902_5
- Cohen, J., & Cohen, P. (1975). *Applied multiple regression/correlation analysis for the behavioral sciences*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Cota-Robles, S., & Gamble, W. (2006). Parent-adolescent processes and reduced risk for delinquency: The effect of gender for Mexican American adolescents. *Youth & Society*, 37, 375–392. <http://dx.doi.org/10.1177/0044118X05282362>
- Criss, M. M., Lee, T. K., Morris, A. S., Cui, L., Bosler, C. D., Shreffler, K. M., & Silk, J. S. (2015). Link between monitoring behavior and adolescent adjustment: An analysis of direct and indirect effects. *Journal of Child and Family Studies*, 24, 668–678. <http://dx.doi.org/10.1007/s10826-013-9877-0>
- Deng, S., Lopez, V., Roosa, M. W., Ryu, E., Burrell, G. L., Tein, J. Y., & Crowder, S. (2006). Family processes mediating the relationship of neighborhood disadvantage to early adolescent internalizing problems. *The Journal of Early Adolescence*, 26, 206–231. <http://dx.doi.org/10.1177/0272431605285720>
- Domenech-Rodríguez, M. M., Donovan, M. R., & Crowley, S. L. (2009). Parenting styles in a cultural context: Observations of “protective parenting” in first-generation Latinos. *Family Process*, 48, 195–210. <http://dx.doi.org/10.1111/j.1545-5300.2009.01277.x>
- Driscoll, A. K., Russell, S. T., & Crockett, L. J. (2008). Parenting styles and youth well-being across immigrant generations. *Journal of Family Issues*, 29, 185–209. <http://dx.doi.org/10.1177/0192513X07307843>
- East, P. L. (2010). Children’s provision of family caregiving: Benefit or burden? *Child Development Perspectives*, 4, 1750–8606. <http://dx.doi.org/10.1111/j.1750-8606.2009.00118.x>
- Fulgini, A. J., & Yoshikawa, H. (2003). Socioeconomic resources, parenting, and child development among immigrant families. In M. H. Bornstein & R. H. Bradley (Eds.), (2003). *Socioeconomic status, parenting, and child development* (pp. 107–124). Mahwah, NJ: Erlbaum Publishers.
- Garcia Coll, C., & Pachter, L. M. (2002). Ethnic minority parenting. In M. H. Bornstein (Ed.), *Handbook of parenting: Vol. 4. Social conditions and applied parenting* (pp. 1–20). Mahwah, NJ: Erlbaum Publishers.
- Geldhof, G. J., Pornprasertmanit, S., Schoemann, A. M., & Little, T. D. (2013). Orthogonalizing through residual centering: Extended applications and caveats. *Educational and Psychological Measurement*, 73, 27–46. <http://dx.doi.org/10.1177/0013164412445473>
- Graham, J. W., Taylor, B. J., Olchowski, A. E., & Cumsille, P. E. (2006). Planned missing data designs in psychological research. *Psychological Methods*, 11, 323–343. <http://dx.doi.org/10.1037/1082-989X.11.4.323>
- Halgunsest, L. C., Ispa, J. M., & Rudy, D. (2006). Parental control in Latino families: An integrated review of the literature. *Child Development*, 77, 1282–1297. <http://dx.doi.org/10.1111/j.1467-8624.2006.00934.x>
- Hill, N. E., Bush, K. R., & Roosa, M. W. (2003). Parenting and family socialization strategies and children’s mental health: Low-income Mexican-American and Euro-American mothers and children. *Child Development*, 74, 189–204. <http://dx.doi.org/10.1111/1467-8624.t01-1-00530>
- Howard, W. J., Little, T. D., & Rhemtulla, M. (2015). Using principal component analysis (PCA) to obtain auxiliary variables for missing data estimation in large data sets. *Multivariate Behavioral Research*, 50, 285–299. <http://dx.doi.org/10.1080/00273171.2014.999267>
- IBM Corp. (2013). IBM SPSS Statistics for Windows (Version 22.0) [Computer software]. Armonk, NY: IBM Corp.
- Johnston, L. D., O’Malley, P. M., Miech, R. A., Bachman, J. G., & Schulenberg, J. E. (2015). *Monitoring the Future national survey results on drug use: 1975–2014: Overview, key findings on adolescent drug use*. Ann Arbor, MI: Institute for Social Research, The University of Michigan.
- Jorgensen, T. D., Schoemann, A. M., McPherson, B., Rhemtulla, M., Wu, W., & Little, T. D. (2014). Assignment methods in the three-form planned missing design. *International Journal of Behavioral Development*, 38, 397–410. <http://dx.doi.org/10.1177/0165025414531094>
- Kakihara, F., Tilton-Weaver, L., Kerr, M., & Stattin, H. (2010). The relationship of parental control to youth adjustment: Do youths’ feelings about their parents play a role? *Journal of Youth and Adolescence*, 39, 1442–1456. <http://dx.doi.org/10.1007/s10964-009-9479-8>
- Kerr, M., & Stattin, H. (2000). What parents know, how they know it, and several forms of adolescent adjustment: Further support for a reinterpretation of monitoring. *Developmental Psychology*, 36, 366–380. <http://dx.doi.org/10.1037/0012-1649.36.3.366>
- Kerr, M., Stattin, H., & Burk, W. J. (2010). A reinterpretation of parental monitoring in longitudinal perspective. *Journal of Research on Adolescence*,

- 20, 39–64. <http://dx.doi.org/10.1111/j.1532-7795.2009.00623.x>
- Kopak, A. M., Chen, A. C. C., Haas, S. A., & Gillmore, M. R. (2012). The importance of family factors to protect against substance use related problems among Mexican heritage and White youth. *Drug and Alcohol Dependence*, 124, 34–41. <http://dx.doi.org/10.1016/j.drugalcdep.2011.12.004>
- Lac, A., Unger, J. B., Basáñez, T., Ritt-Olson, A., Soto, D. W., & Baezconde-Garbanati, L. (2011). Marijuana use among Latino adolescents: Gender differences in protective familial factors. *Substance Use & Misuse*, 46, 644–655. <http://dx.doi.org/10.3109/10826084.2010.528121>
- Laird, R. D., Pettit, G. S., Bates, J. E., & Dodge, K. A. (2003). Parents' monitoring-relevant knowledge and adolescents' delinquent behavior: Evidence of correlated developmental changes and reciprocal influences. *Child Development*, 74, 752–768. <http://dx.doi.org/10.1111/1467-8624.00566>
- Lance, C. E. (1988). Residual centering, exploratory and confirmatory moderator analysis, and decomposition of effects in path models containing interactions. *Applied Psychological Measurement*, 12, 163–175. <http://dx.doi.org/10.1177/014662168801200205>
- Lang, K. M., Little, T. D., & PcAux Development Team. (2017). PcAux: Automatically extract auxiliary variables for simple, principled missing data analysis. R package version 0.0.0.9004. Lubbock, TX: Stats Camp.
- Little, T. D. (2013). *Longitudinal structural equation modeling*. New York, NY: Guilford Press.
- Little, T. D., & Rhemtulla, M. (2013). Planned missing data designs for developmental researchers. *Child Development Perspectives*, 7, 199–204. <http://dx.doi.org/10.1111/cdep.12043>
- Little, T. D., Rhemtulla, M., Gibson, K., & Schoemann, A. M. (2013). Why the items versus parcels controversy needn't be one. *Psychological Methods*, 18, 285–300. <http://dx.doi.org/10.1037/a0033266>
- Marsiglia, F. F., Ayers, S. L., Baldwin-White, A., & Booth, J. (2016). Changing Latino adolescents' substance use norms and behaviors: The effects of synchronized youth and parent drug use prevention interventions. *Prevention Science*, 17, 1–12. <http://dx.doi.org/10.1007/s11211-015-0574-7>
- Marsiglia, F. F., Kulis, S., Parsai, M., Villar, P., & Garcia, C. (2009). Cohesion and conflict: Family influences on adolescent alcohol use in immigrant Latino families. *Journal of Ethnicity in Substance Abuse*, 8, 400–412. <http://dx.doi.org/10.1080/15332640903327526>
- McCann, M., Perra, O., McLaughlin, A., McCartan, C., & Higgins, K. (2016). Assessing elements of a family approach to reduce adolescent drinking frequency: Parent-adolescent relationship, knowledge management and keeping secrets. *Addiction*, 111, 843–853. <http://dx.doi.org/10.1111/add.13258>
- Muthén, L. K. & Muthén, B. O. (1999–2013). *Mplus user's guide*, 7th edition. Los Angeles, CA: Author.
- Negriff, S., & Susman, E. J. (2011). Pubertal timing, depression, and externalizing problems: A framework, review, and examination of gender differences. *Journal of Research on Adolescence*, 21, 717–746. <http://dx.doi.org/10.1111/j.1532-7795.2010.00708.x>
- Olson, D. H., Sprenkle, D. H., & Russell, C. S. (1979). Circumplex model of marital and family system: I. Cohesion and adaptability dimensions, family types, and clinical applications. *Family Process*, 18, 3–28. <http://dx.doi.org/10.1111/j.1545-5300.1979.00003.x>
- Orellana, M. F. (2003). Responsibilities of children in Latino immigrant homes. *New Directions for Youth Development: Theory, Practice, Research*, 2003, 25–39. <http://dx.doi.org/10.1002/yd.61>
- Pantin, H., Coatsworth, D., Feaster, D. J., Newman, F. L., Briones, E., Prado, G., & Szapocznik, J. (2003). Familias Unidas: The efficacy of an intervention to increase parental investment in Hispanic immigrant families. *Prevention Science*, 4, 189–201. <http://dx.doi.org/10.1023/A:1024601906942>
- Parsai, M., Voisine, S., Marsiglia, F. F., Kulis, S., & Nieri, T. (2009). The protective and risk effects of parents and peers on substance use, attitudes and behaviors of Mexican and Mexican American female and male adolescents. *Youth & Society*, 40, 353–376. <http://dx.doi.org/10.1177/0044118X08318117>
- Perreira, K. M., Deeb-Sossa, N., Harris, K. M., & Bollen, K. (2005). What are we measuring? An evaluation of the CES-D across race/ethnicity and immigrant generation. *Social Forces*, 83, 1567–1602. <http://dx.doi.org/10.1353/sof.2005.0077>
- Portes, A., & Rumbaut, R. G. (2006). *Immigrant America: A Portrait* (3rd ed.). Oakland, CA: University of California Press.
- Prado, G. J., Schwartz, S. J., Maldonado-Molina, M., Huang, S., Pantin, H. M., Lopez, B., & Szapocznik, J. (2009). Ecodevelopmental x intrapersonal risk: Substance use and sexual behavior in Hispanic adolescents. *Health Education & Behavior*, 36, 45–61. <http://dx.doi.org/10.1177/1090198107311278>
- Qualtrics. (2014). *Qualtrics software*. Provo, UT: Qualtrics. Retrieved from <http://www.qualtrics.com>
- Racz, S. J., & McMahon, R. J. (2011). The relationship between parental knowledge and monitoring and child and adolescent conduct problems: A 10-year update. *Clinical Child and Family Psy-*

- chology Review*, 14, 377–398. <http://dx.doi.org/10.1007/s10567-011-0099-y>
- Radloff, L. S. (1977). The CES-D scale a self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385–401. <http://dx.doi.org/10.1177/014662167700100306>
- Rajesh, V., Diamond, P. M., Spitz, M. R., & Wilkinson, A. V. (2015). Smoking initiation among Mexican heritage youth and the roles of family cohesion and conflict. *The Journal of Adolescent Health*, 57, 24–30. <http://dx.doi.org/10.1016/j.jadohealth.2015.01.021>
- Reeb, B. T., Chan, S. Y. S., Conger, K. J., Martin, M. J., Hollis, N. D., Serido, J., & Russell, S. T. (2015). Prospective effects of family cohesion on alcohol-related problems in adolescence: Similarities and differences by race/ethnicity. *Journal of Youth and Adolescence*, 44, 1941–1953. <http://dx.doi.org/10.1007/s10964-014-0250-4>
- Rhemtulla, M., Jia, F., Wu, W., & Little, T. D. (2014). Planned missing designs to optimize the efficiency of latent growth parameter estimates. *International Journal of Behavioral Development*. Advance online publication.
- Romero, A. J., & Ruiz, M. (2007). Does familism lead to increased parental monitoring? Protective factors for coping with risky behaviors. *Journal of Child and Family Studies*, 16, 143–154. <http://dx.doi.org/10.1007/s10826-006-9074-5>
- Saraceno, L., Heron, J., Munafò, M., Craddock, N., & van den Bree, M. B. (2012). The relationship between childhood depressive symptoms and problem alcohol use in early adolescence: Findings from a large longitudinal population-based study. *Addiction*, 107, 567–577. <http://dx.doi.org/10.1111/j.1360-0443.2011.03662.x>
- Schwartz, S. J., Unger, J. B., Zamboanga, B. L., Córdova, D., Mason, C. A., Huang, S., . . . Szapocznik, J. (2015). Developmental trajectories of acculturation: Links with family functioning and mental health in recent-immigrant Hispanic adolescents. *Child Development*, 86, 726–748. <http://dx.doi.org/10.1111/cdev.12341>
- Shin, Y., Lee, J. K., Lu, Y., & Hecht, M. L. (2016). Exploring parental influence on the progression of alcohol use in Mexican-heritage youth: A latent transition analysis. *Prevention Science*, 17, 188–198. <http://dx.doi.org/10.1007/s11121-015-0596-1>
- Stattin, H., & Kerr, M. (2000). Parental monitoring: A reinterpretation. *Child Development*, 71, 1072–1085. <http://dx.doi.org/10.1111/1467-8624.00210>
- Steinberg, L., & Morris, A. S. (2001). Adolescent development. *Annual Review of Psychology*, 52, 83–110. <http://dx.doi.org/10.1146/annurev.psych.52.1.83>
- Suárez-Orozco, C., & Suárez-Orozco, M. M. (2009). *Children of immigration*. Cambridge, MA: Harvard University Press.
- Thompson, C. G., Kim, R. S., Aloe, A., & Becker, B. J. (2017). Extracting the variance inflation factor and other multicollinearity diagnostics from typical regression results. *Basic and Applied Social Psychology*, 39, p. 81–90. <http://dx.doi.org/10.1080/01973533.2016.1277529>
- Tilton-Weaver, L. C., Burk, W. J., Kerr, M., & Stattin, H. (2013). Can parental monitoring and peer management reduce the selection or influence of delinquent peers? Testing the question using a dynamic social network approach. *Developmental Psychology*, 49, 2057–2070. <http://dx.doi.org/10.1037/a0031854>
- Umaña-Taylor, A. J., & Fine, M. A. (2001). Methodological implications of grouping Latino adolescents into one collective ethnic group. *Hispanic Journal of Behavioral Sciences*, 23, 347–362. <http://dx.doi.org/10.1177/0739986301234001>
- Wheeler, L. A., Updegraff, K. A., & Crouter, A. (2015). Mexican-origin parents' work conditions and adolescents' adjustment. *Journal of Family Psychology*, 29, 447–457. <http://dx.doi.org/10.1037/fam0000085>
- White, R. M. B., Zeiders, K. H., Gonzales, N. A., Tein, J. Y., & Roosa, M. W. (2013). Cultural values, U.S. neighborhood danger, and Mexican American parents' parenting. *Journal of Family Psychology*, 27, 365–375. <http://dx.doi.org/10.1037/a0032888>
- Yabiku, S. T., Marsiglia, F. F., Kulis, S., Parsai, M. B., Becerra, D., & Del-Colle, M. (2010). Parental monitoring and changes in substance use among Latino/a and non-Latino/a preadolescents in the Southwest. *Substance Use & Misuse*, 45, 2524–2550. <http://dx.doi.org/10.3109/10826081003728256>
- Zeiders, K. H., Roosa, M. W., & Tein, J. Y. (2011). Family structure and family processes in Mexican-American families. *Family Process*, 50, 77–91. <http://dx.doi.org/10.1111/j.1545-5300.2010.01347.x>

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