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Mindy Herman-Stahl
RTI International, Research Triangle Park, NC, mindy@rti.org

Lissette M. Saavedra
RTI International, Research Triangle Park, NC

Antoio A. Morgan-Lopez
RTI International, Research Triangle Park, NC

Scott P. Novak
RTI International, Research Triangle Park, NC

Tara D. Warner
University of Nebraska-Lincoln, twarner2@unl.edu

See next page for additional authors

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Maternal Depressive Symptoms and Adolescent Alcohol Use: The Mediating Role of Youth Depressive Symptoms

Mindy Herman-Stahl,1, Lissette M. Saavedra,1 Antonio A. Morgan-Lopez,1 Scott P. Novak,1 Tara D. Warner,2 and Diana H. Fishbein3

1 RTI International, Research Triangle Park, NC, USA
2 University of Nebraska–Lincoln, USA
3 Pennsylvania State University, University Park, USA

Corresponding author — Mindy Herman-Stahl, RTI International, 3040 Cornwallis Road, Research Triangle Park, NC 27709, USA; email mindy@rti.org

Abstract
The purpose of this study was to explore the influence of maternal depressive symptoms on adolescent alcohol use among a sample of Latino/Latina youth aged 10 to 16 years from a high-risk community. Direct and mediating effects of youth depressive symptoms, controlling for levels of concurrent emotion dysregulation, on alcohol use were examined. Participants consisted of 525 children and their mothers randomly sampled from low-income schools with high rates of substance use. The panel design included four waves, and we used structural equation modeling with a longitudinal mediational framework. Results indicated that the relationship between maternal depressive symptoms and adolescent alcohol use was mediated by adolescents’ symptoms of depression for girls only. Findings are discussed in the context of the development of skills to cope with negative affect and the influence parental depressive symptoms may have on this process.

Keywords: adolescent depression, alcohol, maternal depression, Latino/Latina
Early adolescence is a sensitive developmental period when exposure to family adversity can shift developmental trajectories toward negative outcomes, such as substance use (Haller & Chassin, 2011). Maternal depression is a prevalent type of family adversity; approximately one in 10 children experience maternal depression every year (Ertel, Rich-Edwards, & Koenen, 2011). The present study investigated the relationship between maternal depressive symptoms and adolescent alcohol use in a high-risk sample of Latino/Latina youth.

Maternal Depression and Adolescent Alcohol Use

Maternal depression is associated with a host of negative child outcomes. Findings across clinical and community longitudinal studies show that children of depressed mothers are much more likely to experience depression and/or to become addicted to substances than children of non-psychiatrically ill parents (Campbell, Morgan-Lopez, Cox, & McLoyd, 2009; Cummings & Davies, 1994; Downey & Coyne, 1990; Ertel et al., 2011; Goodman, 2007; Goodman & Gotlib, 1999; Hammen & Brennan, 2003; Herman-Stahl et al., 2008; Weissman, Warner, Wickramaratne, Moreau, & Olsson, 1997; Weissman et al., 2006). Girls appear especially sensitive to the influence of maternal depression (Davies & Windle, 1997), more often developing psychiatric disorders than boys as a result. Although there is a sizable body of research exploring the influence of maternal depression on child depression, little attention has been focused on substance use among children of depressed mothers. The limited available research suggests that maternal depression is associated with early initiation of alcohol use, binge drinking, and early episodes of heavy drinking; however, maternal depression is not associated with escalation of alcohol use (Cortes, Fleming, Mason, & Catalano, 2009; Herman-Stahl et al., 2008; Lamis, Malone, Lansford, & Lochman, 2012). Furthermore, a longitudinal study of 151 children of depressed mothers observed over 20 years found that children of depressed mothers were much more likely to develop alcohol dependence during adolescence and young adulthood compared with control children (Weissman et al., 2006). Maternal involvement was found to mediate the relationship between mothers’ serious psychological distress and daughters’ illicit drug use but not daughters’ alcohol use (Herman-Stahl et al., 2008).

Maternal Depression and Parental Sensitivity

Exposure to maternal depression appears to specifically interfere with the development of emotion regulation in youth. Parents coping with
depressive symptoms have been found to be less sensitive to children’s emotional expression and may offer less encouragement, support, and modeling of positive affect and effective coping (Silk, Shaw, Forbes, Lane, & Kovacs, 2006; Silk, Shaw, Skuban, Oland, & Kovacs, 2006). Depressed mothers are also more likely to use harsher and more punitive parenting practices (Downey & Coyne, 1990). And, harsh parenting has been found to mediate the influence of maternal depression on adolescent alcohol use (Lamis et al., 2012). Youth raised in environments that do not support their self-regulatory development often exhibit overly reactive and poorly regulated behavior, as well as maladaptive stress responses, increasing children’s likelihood of engaging in, maintaining, and escalating high-risk behaviors (Bell & Wolfe, 2004; Repetti, Taylor, & Seeman, 2002). These risks are amplified in low-income minority families who face numerous contextual stressors relating to poverty, racism, fear of deportation, or reduced access to prevention and treatment resources (Bacio, Mays, & Lau, 2013; Prado et al., 2009; Pumariega, Rothe, & Pumariega, 2005). Although there is no research that specifically focuses on the potentially distinctive influence of Latina mothers with depressed mood on adolescent alcohol use, work by Wahl and Eitle (2010) suggests that positive family relationships are a stronger protective factor on binge drinking for Latina girls compared with Latino boys.

Maternal Depression and Child Affect Regulation

Researchers posit that childhood symptoms of depression reflect deficits in regulating affect. Children with depressed mothers exhibit greater negative mood states as well as difficulty reining in intense affective responses and shifting attention away from negative cues (Lengua, 2002). These difficulties with “mood repair” leave youth particularly vulnerable to stress, increasing risk for maladaptive behaviors to relieve the negative feelings. This view is consistent with the self-medication model in which individuals use alcohol to alleviate distress and negative affect (Hussong, Gould, & Hersh, 2008; Kovacs, Joormann, & Gotlib, 2008). It is plausible that child depressive symptoms may mediate the relationship between maternal depressive symptoms and adolescent alcohol use. To our knowledge, Lamis and colleagues (2012) were the first to test this causal pathway. They hypothesized that childhood depression would mediate the relationship between maternal depressive symptoms and adolescent alcohol use. Results indicated that maternal depression predicted child depression, and maternal and child depression predicted early onset of adolescent alcohol use. However, child depression did not mediate these relationships. The authors speculate that methodological factors
may have influenced this result. Specifically, in this study, both maternal depression and child depression were assessed by maternal report only. Our study extends this literature by investigating how maternal depression (mother reported) may influence children’s alcohol use through child depression (child reported). Relationships between maternal depressive symptoms and subsequent adolescent alcohol use may be particularly pronounced in Latina families because of the importance placed on familial characteristics such as cohesion, parental authority, and solidarity, all of which are known to be taxed in the presence of maternal depression (Bacio et al., 2013). Add to the mix the special challenges that many Latino/Latina mothers have in the United States, the ability of depressed mothers to be supportive and responsive parents may be especially strained. For example, Latino/Latina youth are often exposed to more poverty-related risks, including community violence, residential crowding, and low residential quality, as well as increased acculturation conflicts with parents (Ojeda, Patterson, & Strathdee, 2008; Prado et al., 2009; Pumariega et al., 2005; Wagner, 2003). The clustering of these adversities has been linked to depression in Latino/Latina mothers, and the simultaneous occurrence of these familial, social, and emotional conditions during the adolescence is, in turn, associated with negative developmental trajectories (e.g., Lerner & Galambos, 1998; Maradiegue, 2010).

**The Present Study**

We hypothesize that maternal depressive symptoms will predict child depressive symptoms, which in turn will predict subsequent child alcohol use. And based on literature showing a higher rate of depression in girls commencing in puberty and a stronger link between depressive symptoms between mothers and daughters (Goodman et al., 2011; Nolen-Hoeksema & Girgus, 1994), we hypothesize that the mediational relationship will be stronger for girls than boys. Alcohol use was selected as the primary outcome because (a) alcohol use is a highly prevalent risk behavior among younger adolescents (Center for Behavioral Health Statistics and Quality, 2014), (b) there is research supporting the influence of negative affect on drinking behaviors (Hussong et al., 2008), and (c) early alcohol use is a predictor of young adult alcohol dependence and other mental health problems (Palmer et al., 2009).

**Method**

The present study extends from a 5-year longitudinal panel study to identify the cognitive and psychosocial precursors and consequences of alcohol and drug use in a group of youth from a high-risk Latino/Latina community.
Procedures

**Sampling.** Data from the National Evaluation of the Safe Schools/Healthy Students (SS/HS) Initiative were used to inform site selection in Cicero, Illinois. Schools were selected based on high prevalence of inhalant use, a major focus of the larger study, to increase the likelihood that we would have the opportunity to investigate the onset of inhalant and other drug use during the course of the study. The selected schools reflect the demographic profiles of the Cicero School District (e.g., schools’ populations are more than 90% Latino/Latina, more than 70% of students are classified as low income, and schools’ overall test scores are at or slightly above the district averages). Children aged 10 to 12 were selected because of the low likelihood of drug or alcohol use at baseline testing; however, this age group includes children who are on the threshold of manifesting the behavioral problems of interest to the larger study. The school district provided public domain information including the name, date of birth, school attended, grade level, parents’ names, home address, telephone number, and learning disability status of all the fourth-, fifth-, and sixth-grade students who were enrolled in the five target schools in the spring of 2004.

**Recruitment.** A stratified random sample of children aged 10 to 12 was recruited from five public schools. Letters were mailed and telephone calls placed to the homes of sampled dyads (parent/guardian and child). Once contact was made with a primary caregiver, the project and its procedures were explained, and an appointment to visit their home was scheduled to obtain consent and conduct the interviews. Of the 658 parent-child dyads who were eligible to participate, (84%) participated, (15%) did not participate (e.g., refused, were lost to follow up, were disinterested, moved out of the area), and (1%) were ineligible because of an identified learning disability. Of the 553 dyads recruited for the study, we excluded another 28 pairs who were not Latino/Latina.

The final sample consisted of 525 Latino/Latina youth and their mothers. The youth sample was fairly evenly split by gender—48% of the sample were male, and 52% were female. Of the sample, 84% of youth were Mexican or of Mexican descent, 2% were Puerto Rican or of Puerto Rican descent, 8% were of other Latino/Latina descent, and 6% did not report their country of descent. Almost one quarter of the sample of youth (24%) were not born in the United States, and 69% of the youth could be classified as scoring low on acculturation as measured by language use with parents. The mean age of youth respondents was 11.13 ($SD = 0.74$) years old. The average yearly combined income reported by the primary caregiver was approximately US$33,000.
Data collection. The interview instruments were administered in English and Spanish (68.3% and 31.7%, respectively, for children; 18.6% and 81.5%, respectively, for caregivers), using laptop computers and computer-assisted personal interviewing technology (Weeks, 1992). Each interview item was forward- and back-translated for Spanish administration. For both Waves 3 and 4, the data on substance use were collected using audio computer-assisted self-interviewing technology to increase the likelihood that youth would respond honestly. Audio computer-assisted self-interviewing has been proven to increase comprehension, data quality, and honesty because respondents answer in complete privacy (Caspar, 1999). A parent or primary caregiver was interviewed at baseline only, with data collected on demographics, parental substance use and depressive symptoms, experiences with domestic violence, and attitudes about the participating child. Parent consent and child assent were obtained, and the instruments were approved by the Institutional Review Board of RTI International.

Longitudinal sample. The youth who participated at baseline were contacted at approximately 12-month intervals for follow-up interviews over the next 3 years. The Wave 2 conditional response rate (i.e., the response rate among those who participated at baseline) was 91.9%. The conditional response rate was 89.4% at Wave 3. At Wave 4, the conditional response rate was 62.9%. Because of budget shortfalls at Wave 4, the time frame for data collection was shortened and fewer participants were reached than in prior waves. We conducted regression analyses to determine whether the youth who participated were different from those that attrited. An analysis of baseline differences between respondents with complete data and those with at least one variable missing showed that four of six baseline variables (gender, country of origin, baseline child depression, baseline emotion dysregulation) were not significantly different ($p > .16$). Children who did not complete the full assessment were more likely to have mothers with higher levels of depression ($p = .058, r^2 = .006$) and were more likely to use alcohol at Wave 2 ($p = .046, r^2 = .008$), although the effect sizes for this impact were smaller than what Cohen would consider a small effect size (i.e., $r^2 = .10$). Based on this analysis, we would conclude that the differences across missing data patterns are negligible at best.

Measures

Maternal depressive symptoms. Maternal depressive symptoms were measured only at baseline using the Beck Depression Inventory (Beck, Steer, & Brown, 1996), one of the most widely used measures of depressive symptoms among adults. This 21-item inventory has been used in
Maternal Depressive Symptoms and Adolescent Alcohol Use

both clinical and research samples, and its Spanish version has been shown to be valid and reliable with Latino/Latina samples (Wiebe & Penley, 2005). Example items that tap low mood ("I do not feel sad" to "I feel so sad and unhappy that I can't stand it") and hopelessness ("I am not particularly discouraged about the future" to "I feel the future is hopeless and that things cannot improve"). Items were rated on a scale from 0 (no experience of symptom) to 3 (high experience of symptom). Scores were summed, with higher scores indicating higher levels of depressive symptoms. Scores ranged from 0 to 48. Table 1 displays mean depression scores for the sample. The majority of caregivers (80.5%) had minimal or no depression, 6.9% scored within the borderline clinical range, 6.9% scored within the range of moderate depression, and 5.8% reported a score that indicated severe depression. Cronbach’s alpha for our sample was .93.

**Table 1.** Descriptive Statistics for Analytic Sample Study Variables at Assessment Waves.

<table>
<thead>
<tr>
<th>Variable</th>
<th>$\bar{X}$ or %</th>
<th>$SD$</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W2</td>
<td>6.25%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>W3</td>
<td>22.58%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>W4</td>
<td>27.14%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Youth depressive symptoms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W1</td>
<td>13.57</td>
<td>8.05</td>
<td>0-31</td>
</tr>
<tr>
<td>W2</td>
<td>11.54</td>
<td>7.35</td>
<td>0-31</td>
</tr>
<tr>
<td>W3</td>
<td>11.16</td>
<td>6.97</td>
<td>0-31</td>
</tr>
<tr>
<td>Maternal depressive symptoms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W1</td>
<td>6.83</td>
<td>9.68</td>
<td>0-48</td>
</tr>
<tr>
<td>Youth emotional dysregulation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W1</td>
<td>25.57</td>
<td>13.54</td>
<td>1-80</td>
</tr>
<tr>
<td>W2</td>
<td>21.74</td>
<td>12.36</td>
<td>1-68</td>
</tr>
<tr>
<td>W3</td>
<td>21.07</td>
<td>12.10</td>
<td>1-68</td>
</tr>
</tbody>
</table>

**Child depression.** Childhood depression was obtained using the *Children’s Depression Inventory* (CDI; Kovacs, 1981), which was administered at Waves 1, 2, and 3. The CDI contains 27 items designed to assess cognitive, affective, and behavioral symptoms of youth depression. Each item is rated on a 3-point scale. For example, “I am sad all the time,” “Nothing will ever work out for me,” and “I do everything wrong.” The CDI is one of the most widely used childhood self-report depression instruments. The CDI has acceptable test-retest reliability and internal consistency (e.g., coefficient alpha of .83; Smucker, Craighead, Craig-
The Cronbach’s alpha for our sample was .95. The CDI has been shown to be valid with Latino/Latina samples (Twenge & Nolen-Hoeksema, 2002) and to discriminate between psychiatric and nonclinic samples. The CDI also has been found to correlate with clinicians’ independent global depression ratings ($r = .55$; Kovacs, 1981). Items were summed to create a total score with higher scores indicated greater levels of depressive symptoms.

**Child emotion dysregulation.** Emotion dysregulation was obtained from the Emotion Dysregulation Index subscale of the Dysregulation Inventory (Mezzich, Tarter, Giancola, & Kirisci, 2001), which was administered at Waves 1, 2, and 3. This well-established instrument has been used with children, college students, and adults. The Emotion Dysregulation Index comprises three subscales: Arousability, Negative Affectivity, and Irritability. The scale comprises 13 items, including items such as, “When I am emotionally upset, it lasts for 1 or 2 hours, even if the problem goes away”; “It is very difficult for me not to think about my fears and worries”; and “It is very hard for me to get over bad experiences very quickly.” Response options were 0 = never true, 1 = occasionally true, 2 = mostly true, and 3 = always true. Scores were summed and higher scores indicate greater dysregulation. The Cronbach’s alpha at all three waves was greater than .82. Table 1 presents mean scores at each wave. The Dysregulation Inventory has been shown to be valid with Latino/Latina samples (Mezzich et al., 2001).

**Child alcohol use.** Alcohol use was selected as the outcome of interest because it generally precedes illicit drug use, is more pervasive, and is more readily measured in this age group (Van Ryzin, Fosco, & Dishion, 2012). Alcohol use was measured at each wave by a dichotomous indicator for any alcohol use during the past 12 months. This information was obtained from two questions. Respondents were first asked, “Have you ever, even once, had a drink of any type of alcohol beverage? Please do not include times when you only had a sip or two from a drink.” Respondents who answered affirmatively were asked a series of follow-up questions regarding the recency and frequency of alcohol use (e.g., “How long has it been since you last had an alcoholic drink?”). The response options were “within the past 30 days,” “more than 30 days ago but within the past 12 months,” and “more than 12 months ago.” Most respondents who reported drinking also reported that their last drink occurred either within the past 30 days or within the past 12 months. These respondents were coded 1 on the dependent variable for past year alcohol use at that wave. Binary measures of past year use are commonly used in youth research (Grant et al., 2006).
Mother alcohol use. Maternal alcohol misuse (used as a covariate) was operationalized as a binary (yes/no) measure of binge drinking (i.e., consuming four or more alcoholic beverages on a single occasion) in the past month.

Data Analytic Plan

The present study examined the relationships between maternal and child depressive symptoms, emotional dysregulation, and alcohol use. Specifically, we investigated whether youth depressive symptoms mediate the relationship between maternal depressive symptoms and adolescent alcohol use (controlling for concurrent emotion dysregulation) by analyzing four waves of panel data. We fit a multiple-group structural equation model (with separate models for boys and girls) with probit link function to account for an underlying continuous normal variable structure underlying the binary alcohol use outcome. We structured the model under the longitudinal mediation framework described in Cole and Maxwell (2003), whereby the set of repeated measures for youth depressive symptoms (mediator) and alcohol use (outcome) have a first-order autoregressive structure, chosen based on the annual observational design. To establish temporality between maternal depressive symptoms and adolescent alcohol use, we restricted our analyses to youth reporting no alcohol use at Wave 1, thus excluding 22 (4.2%) of youth.

The paths tests in the fitted models are shown in Figure 1. We tested paths from Maternal Depressive symptoms at Time 1 (Mat Dep1) to youth depressive symptoms at Times 1 to 3 (Child Dep1-Child Dep3; with these paths constrained to equality). Paths were also modeled from child depressive symptoms at Time \( t \) to alcohol use at time \( t + 1 \) (Alc Use2-Alc Use4). The independent effects of emotion dysregulation (Emot Dys1-Emot Dys3) on child depression were covaried out (paths from Emot Dys to Child Dep). We controlled for emotional dysregulation because it is highly correlated with the CDI \( (r = .52, p < .001) \). Moreover, depression is considered by some researchers as a specific type of emotion dysregulation, thus the effects of depressive symptoms on youth outcomes need to be isolated from the effects of general emotion regulatory deficits so that interventions can target the specific emotion regulatory skills needed to cope with maternal depression (Kovacs et al., 2008). Direct effects of maternal depressive symptoms on alcohol use were also modeled and autoregressive effects on youth depressive symptoms and alcohol use were included. The models controlled for mothers’ alcohol misuse, mothers’ acculturation (born in United States or not) and maternal education (not shown in Figure 1).

Mediated effects were estimated as the product of the path coefficient linking maternal depressive symptoms to the mediator (youth
Mediation was tested by using the Asymmetric Confidence Interval test developed by MacKinnon, Lockwood, and Williams (2004). Missingness was modeled under the missing-at-random assumption (using full information maximum likelihood estimation), assuming that missingness is predictable by variables that are available, but conditionally unrelated to variables that are missing (Schafer & Graham, 2002).

The structural equation modeling when fit for categorical outcomes in Mplus v6 only displays the log-likelihood value and the Bayesian information criterion (BIC); thus, no fit statistics that compare model adequacy against a baseline or saturated model (e.g., confirmatory fit index [CFI], root mean square error approximation [RMSEA]) are available. However, we tested the relative fit of a model that allowed parameters to vary across waves versus a model that constrained parameters across time to equality, but we treated alcohol use as continuous instead of categorical so that estimates of the \( \chi^2 \) test of fit were available for each wave.

**Figure 1.** Fitted model predicting adolescent alcohol use from maternal and child depressive symptoms across four waves. Mat Dep = maternal depressive symptoms; Emot Dys = emotional dysregulation; Child Dep = child depressive symptoms; Alc Use = alcohol use.
model to assess differences in $\chi^2$. Specifically, we tested whether (a) autoregressive parameters (e.g., Wave 1 $\rightarrow$ Wave 2 depression compared against Wave 2 $\rightarrow$ Wave 3 depression) and (b) conceptual parameters related to the hypothesized mediation effects (e.g., maternal depression at Time $t$ $\rightarrow$ youth depression at $t+1$ $\rightarrow$ youth alcohol use at $t+2$) differed across time and compared the two models, with the model without constraints over time fitting significantly worse, $\Delta\chi^2(13) = 51.9, p < .001$. So for the final model, we used a multiple-group model to assess possible gender differences in the conceptual parameters while allowing all parameters to vary across time and across gender; test for gender differences in conceptual paths were conducted across each wave using $t$ tests executed in Mplus via the Model Constraint command.

### Results

**Predictive Pathways for Maternal Depressive Symptoms, Youth Depressive Symptoms, and Youth Alcohol Use**

We begin by showing the correlations between the primary variables. Correlations between all variables are significant at the $p < .0001$ level. As seen in Table 2, child depressive symptoms and emotional dysregulation were moderately stable from Wave 1 to Wave 2 and Wave 3 and highly correlated with each other. The associations between material depressive symptoms and child depressive symptoms and emotional dysregulation were less robust than the relationship between child depressive symptoms and emotional dysregulation but still highly significant.

#### Table 2. Correlations Between Child Depressive Symptoms, Emotional Dysregulation, and Maternal Depressive Symptoms Across Three Waves

<table>
<thead>
<tr>
<th>Measures</th>
<th>W1 child dep</th>
<th>W1 emot dys</th>
<th>W2 child dep</th>
<th>W2 emot dys</th>
<th>W3 child dep</th>
<th>W3 emot dys</th>
<th>W1 mat dep</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1 child dep</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>W1 emot dys</td>
<td>.52</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>W2 child dep</td>
<td>.50</td>
<td>.39</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>W2 emot dys</td>
<td>.40</td>
<td>.56</td>
<td>.56</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>W3 child dep</td>
<td>.39</td>
<td>.23</td>
<td>.56</td>
<td>.33</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>W3 emot dys</td>
<td>.32</td>
<td>.46</td>
<td>.43</td>
<td>.61</td>
<td>.51</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>W1 mat dept</td>
<td>.19</td>
<td>.11</td>
<td>.26</td>
<td>.17</td>
<td>.19</td>
<td>.20</td>
<td>—</td>
</tr>
</tbody>
</table>

child dep = child depressive symptoms; emot dys = emotional dysregulation; mat dep = maternal depressive symptoms. All correlations are significant at $p < .001$. 

---

Maternal Depressive Symptoms and Adolescent Alcohol Use
The link between maternal depressive symptoms at Wave 1 and youth depressive symptoms was significant for girls only (controlling for the autoregression of youth depressive symptoms and concurrent emotion dysregulation) both for Wave 1 depressive symptoms, $b = 2.64$ (0.79), $t = 3.33$, $p < .001$ and Wave 2 depressive symptoms, $b = 2.25$ (1.09), $t = 2.051$, $p = .04$. The link between maternal depressive symptoms and youth depressive symptoms among boys was non-significant across all three waves. The link between youth depressive symptoms at time $t$ and alcohol use at $t + 1$ (controlling for the autoregression of alcohol use over time and concurrent emotion dysregulation) also was significant for girls only, and only the link between Wave 2 child depressive symptoms and Wave 3 alcohol use was significant, $b = 0.011$ (0.004), $t = 2.63$, $p = .008$, thus establishing the necessary pathways for assessing mediation among girls (i.e., maternal depressive symptoms at T1 were linked to youth depressive symptoms at T2 and youth depressive symptoms at T2 were consequently linked to adolescent alcohol use at T3). Direct effects from maternal depressive symptoms to youth alcohol use...
were non-significant for both boys and girls. When testing for mediation in the maternal depressive symptoms \( \rightarrow \) youth depressive symptoms \( \rightarrow \) alcohol use pathway for girls, the asymmetric confidence interval was found to be significant with a mediated effect = .024 (.0002, .060) (see Figures 2 and 3.) Figures 2 and 3 show the standardized coefficients for significant paths for girls and boys, respectively.

**Variation in conceptual paths across gender.** All nine conceptual paths were tested for differences across gender and only the path from maternal depression at Time 1 to youth depressive at Time 1 approached significance in terms of gender differences, \( b = -1.90 \) (1.11), \( t = 1.705, p = .08 \), though within gender the girls parameter estimate was significant (as noted above) and the boys parameter estimate was non-significant.

**Discussion**

Results from the present study suggest that the influence of maternal depressive symptoms on adolescent alcohol use may be indirect; a function of depressive symptomatology in the youth, at least for girls. The association between maternal depressive symptoms and adolescent al-
alcohol use was significantly and fully mediated by girls’ symptoms of depression above and beyond girls’ level of emotion dysregulation. These results support the hypothesis that maternal depressive symptoms increase risk for alcohol use onset during adolescence when youth are increasingly autonomous and have more opportunities for high-risk behaviors such as drinking (Dahl, 2004; Steinberg et al., 2004). This risk also coincides with the onset of puberty which is a transition known to be linked with escalation of depressive symptoms among girls (Nolen-Hoeksema & Girgus, 1994). The relation between maternal depressive symptoms and adolescent alcohol use was significant across the lagged waves, indicating a robust association over early to middle adolescence suggesting that this form of family adversity places Latino/ Latina children at risk for substance use through the adolescent transition.

A second finding from this investigation is that girls’ symptoms of depression play a significant role as a mediator between maternal depressive symptoms and the onset of alcohol use levels over and above levels of emotion dysregulation. Emotion regulation is considered an influential component of resiliency; dysfunctions in this domain, reflecting over- or underregulation, are a critical feature of almost all child psychopathologies (Greenberg, 2006). It is possible that family risk is transmitted vis-a-vis an impairment of a very specific emotional regulatory mechanism—difficulties with attenuating sadness. Our results showed that even with emotion regulation in the model, depressive symptoms still remain a powerful impact on alcohol use initiation for girls. Girls’ symptoms of depression were prospectively linked to alcohol use, suggesting that depressive symptoms among Latina youth may predispose them to alcohol use.

Consistent with theory and research, we found that internalizing pathways to maladaptation were particularly robust for girls whose mothers experience depressive symptoms. Research is inconclusive on the heterogeneity of outcomes, but a number of studies including meta-analytic work indicate that girls with depressed mothers were more likely than boys with depressed mothers to report depressed mood (Goodman et al., 2011). There is also evidence that even at subclinical levels, girls whose mothers reported consistent, depressed mood were more likely to report higher levels of internalizing and externalizing symptoms and dysphoria compared with boys whose mothers reported similar patterns of depressive symptoms (Campbell et al., 2009).

There is further evidence that difficulties specifically regulating sadness—as opposed to coping with other negative emotions such as anger or anxiety—may comprise a distinct pathway to alcohol use (Hussong & Chassin, 1994). Individual differences in self-regulation of sadness may constitute an important risk factor through which stress disrupts developmental pathways (Kovacs et al., 2008). Research sup-
ports the self-medication model as a specific pathway to alcohol use and disorders reflecting an internalizing and behaviorally inhibited pathway appear distinct from an externalizing and behaviorally disinhibited pathway (Hussong, Jones, Stein, Baucom, & Boeding, 2011). And, girls appear particularly sensitive to this internalizing pathway to alcohol use (Armstrong & Costello, 2002).

The present study fills another gap by extending the association of these relationships to Latino/Latina families, a largely understudied population. Most investigations of parental depression have included clinical samples with White, middle-class mothers. Although this study does not specifically explore the cultural values and contexts that influence the relation between maternal depression and youth adjustment, the results imply that maternal depressive symptoms influence Latina girls in ways similarly deleterious to those revealed in studies of other cultural groups (Brody, Murry, Kim, & Brown, 2002; Hill & Herman-Stahl, 2002). Given the unique characteristics associated with Latino/Latina families (e.g., familism, respeto, machismo, acculturation), more research is needed to explicitly examine how these cultural values shape maternal mental health, parenting behaviors, and youth risk behaviors (Szapocznik, Prado, Burlew, Williams, & Santisteban, 2007).

**Limitations**

Several limitations should be considered. The sample site was identified due to the high rates of substance use in that region based on data from a national sample and the sample is not nationally generalizable. Moreover, the Latino/Latina culture comprises numerous subgroups with distinct ties to diverse countries, dialects, historical influences, and cultural beliefs. As such, more research is needed to determine whether there are variations within Latino/Latina subgroups in different regions and across other race/ethnicities.

Although the primary measures in this study have been frequently used with Latino/Latina samples, it is possible that the study was influenced by cultural construct, linguistic, and measurement nonequivalence. That is, the major constructs may have different meanings within this cultural context, or the measures may have elicited a different response (in frequency or relationship to other variables) within this cultural group compared with others (Knight & Hill, 1998). Because our study focused on associations rather than raw scores and did not compare findings across racial/ethnic groups, these issues likely have less impact on our results.

In addition, the only assessment of maternal depressive symptoms was taken at baseline, so we could not explore how changes in levels of depressive symptoms influenced changes in youth emotion regulation and subsequent use of alcohol over time. However, several stud-
ies document the stability of maternal depression particularly after the early childhood years with Latina and non-Latina mothers (Campbell et al., 2009).

Another limitation is the lack of sensitivity in our measures with regard to the state-dependent nature of the relation between youth depressive symptoms, emotion dysregulation, and alcohol use. Although the measures of depressive symptoms and emotion dysregulation are specific to the current state of the child, the alcohol measure asks about alcohol use across the entire past year, which makes inferences regarding the emotional-state-dependent use of alcohol in response to internalizing symptoms (at least from these data) tenuous. Approaches that collect ecological momentary (i.e., daily diary) data on the links between mood and substance use would better address these links from a perspective of alcohol use as a direct result of current mood state.

Finally, many other constructs contribute to adolescent substance use and likely play important mediating and/or moderating roles in the relationships under study; these include genetics, cognitive functioning, parenting behaviors, family environment, acculturation, father involvement and father mental health, neighborhood characteristics, and child temperament (Donovan, 2004; Tyndale, 2003). Exploring the role of other influences on youth emotion dysregulation, depressive symptoms, and risk for alcohol use is essential for future research.

Overall, our findings suggest that Latina girls of depressed mothers may be at risk for the development of depression and alcohol use disorders and should be targeted for selective interventions. The research points to the importance of intervening with families with a depressed mother to prevent the intergenerational transmission of psychopathology. The literature suggests that to be effective, interventions should be culturally informed and relevant (Szapocznik, Santisteban, Río, Perez-Vidal, & Kurtines, 1989). Providing girls with gender-specific and culturally-sensitive support that focuses on managing negative affect and coping with stress may help redirect negative developmental trajectories. Intervention developers should note that Latino/Latina families may have specific stressors that should be addressed in family interventions that relate to poverty, racism, acculturation stress, conflict within the family, and fears relating to immigration status. Furthermore, interventions should target cultural factors indicated as protective in Latino/Latina families including familism, social support, kinship networks, and religious involvement (Bermudez & Mancini, 2013; Gallo, Penedo, Espinosa de los Monteros, & Arguelles, 2009).

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Maternal Depressive Symptoms and Adolescent Alcohol Use

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Author Biographies

Mindy Herman-Stahl is a research psychologist at RTI International. Her research interests include the etiology and prevention of substance use and the individual, family, and neighborhood factors that influence its onset and escalation. She is particularly interested in these trajectories among vulnerable youth.

Lissette M. Saavedra is a research psychologist specializing in mental health and life span developmental psychology with ethnically diverse clinical and community samples. She has extensive expertise in assessment and treatment of psychiatric conditions including anxiety disorders, post-traumatic stress disorder, depression, and substance use disorders.

Antonio A. Morgan-Lopez has a PhD in quantitative psychology and is an expert in methodological issues in substance abuse and mental health prevention and treatment. His expertise includes mediational models, longitudinal growth models, structural equation models, and general growth mixture models.

Scott P. Novak’s research interests lie in the causes, correlates, and consequences of psychiatric disorders. His work focuses on characterizing the epidemiological trends and identifying the at-risk populations for prescription drug abuse. He also has interests in the personal and organizational factors that influence treatment seeking and retention.

Tara D. Warner is an assistant professor at the University of Nebraska–Lincoln. Her research examines the influence of context on human development, health, and well-being. She has pursued this line of inquiry along three dimensions of adolescent health risk behavior—delinquency, intimate relationships and sexual activity, and substance use.

Diana H. Fishbein is the C. Eugene Bennett Chair in prevention research at Penn State University. Prior to this, she was the director of the Center for Translational Research on Adversity, Neurodevelopment and Substance abuse in the Department of Psychiatry at the University of Maryland School of Medicine. She leads numerous studies using interdisciplinary methods and a developmental approach to understanding interactions between neurobiological functions and environmental factors with the goal of informing translational research.