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Objective  Examine general emotion expression and sibling–parent emotion communication among Latino and non-Latino white (NLW) siblings of children with intellectual disabilities (ID) and matched comparisons.  Methods  200 siblings (ages 8–15 years) completed the newly developed Sibling–Parent Emotion Communication Scale and existing measures of general emotion expression and psychosocial functioning. Preliminary analyses evaluated scale psychometrics across ethnicity.  Results  Structure and internal consistency of the emotion expression and communication measures differed by respondent ethnicity. Latino siblings endorsed more general emotion expression problems and marginally lower sibling–parent emotion communication than NLW siblings. Siblings of children with ID reported marginally more general emotion expression problems than comparisons. Emotion expression problems and lower sibling–parent emotion communication predicted more internalizing and somatic symptoms and poorer personal adjustment, regardless of ID status. Siblings of children with ID endorsed poorer personal adjustment.  Conclusion  Cultural differences in emotion expression and communication may increase Latino siblings’ risk for emotional adjustment difficulties.

Key words  emotion communication; emotion expression; intellectual disability; Latino; sibling.

Introduction

Childhood intellectual disability (ID) has the potential to alter families’ day-to-day routines, emotional climate, and patterns of functioning across the lifespan. Effects of disability-related stressors extend to all family members. Elevated levels of depressive symptoms have been well documented in parents of children with disabilities, with the majority of work focusing on mothers (Bailey, Golden, Roberts, & Ford, 2007). Effects on typically developing siblings have received less empirical attention, but existing research suggests that siblings of children with disabilities are at increased risk for adjustment problems, including increased internalizing symptoms (Barlow & Ellard, 2006; Hastings, 2007). Although findings have been mixed, a meta-analysis integrating the small body of work on the psychosocial functioning of siblings of children with ID concluded that there is a small negative effect on siblings, particularly for elevated depression symptoms (Rossiter & Sharpe, 2001).

Research on sibling adjustment historically has focused on comparing rates of psychopathology symptoms in siblings of children with disabilities or chronic health conditions versus siblings of typically developing children. More recently, a small body of work has begun to examine...
risk or protective factors likely to influence sibling adjustment trajectories. For example, a recent meta-analysis of siblings of children with various chronic illnesses reported that siblings’ internalizing or externalizing symptoms were not moderated by sibling gender, age, or birth order, but that more intrusive treatments and higher mortality risks were associated with higher internalizing and externalizing symptoms in siblings (Vermaes, van Susante, & van Bakel, 2012). Within the family context, associations between poorer family or parent functioning and worse sibling adjustment have been documented in the context of sickle cell disease (Gold, Treadwell, Weissman, & Vichinsky, 2008), disabilities (Giallo & Gavidia-Payne, 2006), Down Syndrome (van Riper, 2000), and diabetes (Jackson, Richer, & Edge, 2008).

In general, existing work assumes that difficulties expressing emotions or poorer communication with parents about emotional topics may place siblings at higher risk for emotional adjustment difficulties in the context of a brother’s or sister’s chronic condition (Havermans & Eiser, 1994). General emotion expression is characterized by the extent to which individuals are aware of their internal experiences and are willing to express their emotions, and sibling–parent emotion communication refers to the openness of communication between siblings and parents about emotional topics related to the child with the chronic condition.

Qualitative work has reported themes of adolescent siblings’ reluctance to express negative feelings about their brother/sister with a disability (Opperman & Alant, 2003). Further, findings from a study of 62 mother–sibling pairs from families of children with chronic physical disorders showed that maternal awareness of siblings’ attitudes and perceptions was associated with better sibling adjustment (Taylor, Fuggle, & Charman, 2001), suggesting that sibling–parent emotion communication may be protective for siblings. However, the extant literature has not examined whether patterns of general emotion expression or sibling–parent emotion communication differ between siblings of children with ID and siblings of typically developing children, nor has it assessed associations of these constructs with sibling distress.

In addition to a relatively narrow focus on psychopathology symptoms, a second limitation of the literature examining sibling adjustment to childhood chronic conditions is the lack of consideration of cultural factors (Hodapp, Glidden, & Kaiser, 2003). Few studies have examined sibling functioning as a function of culture or ethnicity, but initial work from our laboratory has found that Latino siblings of children with ID have less accurate information about the disability, endorse more emotional problems and personal adjustment difficulties, and report poorer relationships with parents than matched non-Latino white (NLW) siblings (Lobato, Kao, & Plante, 2005; Lobato et al., 2011). Inattention to cultural factors is problematic on several levels. From an etiological standpoint, it is possible that risk factors for poorer sibling adjustment may differ across ethnicity or culture. Patterns of functioning that are adaptive for one group may be problematic for another. Cultures also may differ regarding “appropriate” expressions of distress, with some work suggesting that Latino children are more likely to express emotions somatically (Canino, 2004). From a methodological standpoint, many common measures, including those used to assess general emotion expression, have not been validated in diverse samples. Together, this suggests that the extant literature examining sibling functioning may not generalize across ethnicity or culture.

Previous work with Latino families of individuals with disabilities has emphasized the central role of familism (Magaña, 1999), which is characterized by interdependence and prioritizing the needs of the family over those of the individual (Marín & Marín, 1991) and which persists across acculturation (Sabogal, Marín, Otero-Sabogal, Marín, & Perez-Stable, 1987). This strong family orientation may contribute to the increased salience of sibling relationships and caretaking responsibilities typical in Latino families (Updegraff, McHale, Thayer, & Delgado, 2005), and in turn, may influence siblings’ day-to-day experiences of having a brother/sister with a disability. For example, familistic values may contribute to increased acceptance of caretaking responsibilities in Latino versus NLW siblings but may decrease the degree to which Latino siblings feel comfortable discussing emotions, such as anger or jealousy (DeRosier & Kupersmidt, 1991). Associations of familism with sibling emotion expression problems or sibling–parent emotion communication have not been examined.

Taken together, existing research suggests that siblings of children with disabilities, particularly those from Latino families, are at elevated risk for adjustment problems. Possible risk factors for poorer adjustment include problems with general emotion expression and reduced sibling–parent communication of emotions related to the child with the ID. Further, familistic values may increase expectations for Latino siblings to maintain harmonious relationships and decrease discussion of self-focused negative emotions about their brothers/sisters compared with NLW siblings. These associations have not been examined empirically.

To address these gaps, we examined general emotion expression and sibling–parent emotion communication
among Latino and NLW siblings of children with ID and matched comparisons. Primary aims were to (1) examine general emotion expression and sibling–parent emotion communication according to ethnicity, familism, and disability status, and (2) assess associations of general emotion expression and sibling–parent emotion communication with siblings’ psychosocial functioning. We hypothesized that Latino siblings (1) would be higher in familism, and (2) would endorse more problems with general emotion expression and lower levels of sibling–parent emotion communication. We also hypothesized that siblings with more emotion expression problems and decreased emotion communication with parents would endorse more adjustment difficulties. To facilitate examination of these primary aims, preliminary analyses assessed the factor structure and reliability of an existing measure of general emotion expression and a new measure of sibling–parent emotion communication among Latino and NLW siblings.

**Method**

**Participants**

Families (N = 200) were recruited based on ethnicity and disability status such that half of the sample consisted of families of a child with an ID (n = 50 Latino, n = 50 NLW) and the other half were matched comparisons (n = 50 Latino, n = 50 NLW). For this study, “Latino” was defined as one or both parents self-identifying as first- or second-generation Latino. All NLW families self-identified as Caucasian. Inclusion criteria included having at least one child aged 8–15 years (the sibling in this study) and another child aged 3–18 years (the index child) who were biologically related and lived in the same household. In the ID subgroup, the index child had to have an ID diagnosis made at least 6 months before participation in the study (confirmed by research staff). Exclusion criteria included an ID or serious medical illness in the siblings in the ID group or in any children in the comparison group. One parent (97% mothers) and one sibling from each family participated in the study.

With parental consent, research staff obtained educational or medical records documenting the index child’s ID diagnosis and most recent developmental assessment results. The median length of time between diagnosis and study enrollment was 6.5 years. All children with ID had below-average cognitive abilities (48% mild, 30% moderate, 15% severe, and 7% profound levels of impairment). Research staff also administered the Vineland-II Adaptive Behavior Scales (VABS-II) Daily Living Skills: Personal subdomain (Sparrow, Cicchetti, & Balla, 2005) to parents; scores ranged from 1 to 11 (mean $[M] = 6.28$, standard deviation $[SD] = 2.69$). Some (but not all) children with ID had additional diagnoses, as follows: chromosome disorders such as Down syndrome (Latino ID = 30%, NLW ID = 50%), autism spectrum disorders (Latino ID = 16%, NLW ID = 24%), neuromuscular disorders such as cerebral palsy (Latino ID = 8%, NLW ID = 2%), or neurological disorders such as seizure disorder (NLW ID = 8%). Additional demographic characteristics of the four groups are presented in Table I.

**Measures**

Standard Spanish translations were used when available from the test publisher. For the remaining measures, a translation committee/back-translation approach was used to develop translations (Matias-Carrelo, Chavez, Negron, Canino, Aguilar-Gaxiola, & Hoppe, 2003).

**Demographic Form**

Parents provided information about the gender and date of birth for all household members. They also reported the family size; the parents'/primary caregivers’ education level, occupation, and marital status; and the place of birth and ethnicity of the parents/primary caregivers and siblings. Per capita income was calculated by dividing parent-reported total household income by the number of people living in the home.

**Emotion Expression Scale for Children**

Siblings completed this 16-item measure of awareness of and willingness to express emotions (e.g., “I often do not know how I am feeling” or “When I’m sad, I try not to show it.”) (Penza-Clyve & Zeman, 2002). Higher scores reflect more emotion expression problems. Based on the validation sample of 208 9–13-year-olds (95% European American), reliability was reported to be high for the “poor awareness” (alpha = 0.83) and “reluctance to express” (alpha = 0.81) subscales, and 2-week test–retest reliability was adequate (alphas = 0.56–0.59). Convergent validity was demonstrated by comparison with the Children’s Sadness Management Scale and Children’s Anger Management Scale (Zeman, Shipman, & Penza-Clyve, 2001). For the present sample, reliability information is presented in the Results section.

**Sibling–Parent Emotion Communication Scale**

This 10-item questionnaire was developed to measure sibling communication of specific emotions about a brother/sister (e.g., sadness, jealousy, pride) to parents (see Appendix) (Lobato, Kao, Houck, Plante, & Seifer, 2007). A literature review was carried out to identify emotions commonly reported by siblings in reference to
brothers/sisters who are typically developing and/or who have chronic illnesses or disabilities. This empirical information was integrated with the clinical experiences of the study team to identify the emotions of both positive and negative valence that are most salient to siblings, including those emotions that reflect concern for their brother/sister.

Item response was modeled after the Harter scales (Harter, 1982). For each of the ten emotions assessed, siblings first indicated whether they were more like Child A (“Some kids don’t tell their parents, they keep their feelings to themselves”) or Child B (“but other kids tell their feelings to their parents”). Then, they indicated whether the response was “sort of true” or “really true” for them. Thus, siblings obtained a score of 1 (do not tell parents–really true) to 4 (do tell parents–really true) for each item. Items were read aloud to allow for clarification of format or content, and a visual depiction of each queried emotion was provided.

The Sibling–Parent Emotion Communication Scale (SPECS) measure was piloted in 2007 as part of a battery of measures administered to children and young adolescents who were being screened for participation in a psychoeducational group for siblings of children with disabilities or chronic illnesses (Lobato & Kao, 2002). Nineteen siblings aged 8–13 years (M(SD) = 11.70[2.41] years, 58% male, 89% white, 69% older than the index child) completed the original 14-item SPECS during this pilot, and items were removed (n = 4) or revised according to their qualitative feedback. Based on qualitative feedback about siblings’ general reticence to discuss their emotional experiences, the SPECS items are framed in terms of hypothetical sibling experiences rather than as direct probes.

See the Results section for reliability information with the present sample.

Siblings completed the Behavior Assessment System for Children, Second Edition: Self-Report, a standardized self-report measure of child emotional and behavioral functioning (Reynolds & Kamphaus, 2004). Siblings aged 8–11 years completed 139 items and siblings aged ≥12 years completed 176 items requiring a true or false response or a 4-point rating from never to almost always (e.g., “I often worry about something bad happening to me” or “If I have a problem, I can usually work it out”). This measure has good test–retest reliability (alpha = 0.78–0.83) and internal consistency for the English (alpha = 0.85–0.96) and Spanish (alpha = 0.78–0.93) versions, and adequate concurrent and discriminant validity have been documented (Reynolds & Kamphaus, 2004). Composite T-scores for Internalizing Problems and Personal Adjustment were used in the present study.

Children’s Somatization Inventory-24
Siblings completed this 24-item self-report measure of somatic complaints experienced during the previous 2 weeks (e.g., “headaches” or “feeling low in energy or slowed down”) (Walker, Beck, Garber, & Lambert, 2009). They rated the extent to which they experienced each symptom on a 5-point scale ranging from not at all to a whole lot. Coefficient alpha of the Children’s Somatization Inventory (CSI) was reported to be 0.88 (Walker et al., 2009). The previous version of the CSI has been used extensively, and

### Table I. Demographic Characteristics of Sample According to Ethnicity (Latino, NLW) and ID Status of the Index Child

<table>
<thead>
<tr>
<th></th>
<th>Brother/sister with ID</th>
<th>Brother/sister with no ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latino</td>
<td>n = 50</td>
<td>n = 50</td>
</tr>
<tr>
<td>Sibling age: M(SD)</td>
<td>11.70(2.41) years</td>
<td>12.05(2.51) years</td>
</tr>
<tr>
<td>Sibling gender:</td>
<td>52% female</td>
<td>52% female</td>
</tr>
<tr>
<td>Sibling birth order:</td>
<td>82% older than index child</td>
<td>72% older than index child</td>
</tr>
<tr>
<td>Parent age: M(SD)</td>
<td>36.49(5.51) years</td>
<td>38.67(5.94) years</td>
</tr>
<tr>
<td>Per capita income:</td>
<td>M(SD) = $6149(4474)</td>
<td>M(SD) = $8493(4881)</td>
</tr>
<tr>
<td>Family structure:</td>
<td>66% two-parent</td>
<td>74% two-parent</td>
</tr>
<tr>
<td>NLW</td>
<td>n = 50</td>
<td>n = 50</td>
</tr>
<tr>
<td>Sibling age: M(SD)</td>
<td>11.38(2.19) years</td>
<td>11.81(2.30) years</td>
</tr>
<tr>
<td>Sibling gender:</td>
<td>62% female</td>
<td>58% female</td>
</tr>
<tr>
<td>Sibling birth order:</td>
<td>74% older than index child</td>
<td>84% older than index child</td>
</tr>
<tr>
<td>Parent age: M(SD)</td>
<td>42.02(5.18) years</td>
<td>40.22(6.74) years</td>
</tr>
<tr>
<td>Per capita income:</td>
<td>M(SD) = $15,706(6071)</td>
<td>M(SD) = $11,325(5993)</td>
</tr>
<tr>
<td>Family structure:</td>
<td>98% two-parent</td>
<td>58% two-parent</td>
</tr>
</tbody>
</table>

Note: NLW = non-Latino white; ID = intellectual disabilities; SD = standard deviation; M = mean.
adequate reliability and validity have been demonstrated (Garber, Walker, & Zeman, 1991; Walker, Garber, & Greene, 1991). The CSI-24 had good reliability in the present combined sample (alpha = 0.94), as well as for Latino (alpha = 0.95) and NLW (alpha = 0.91) subsamples.

The Familism Scale

Parents completed the Spanish or English version of this 14-item measure of familistic cultural values and attitudes, including obligation (e.g., “Aging parents should live with their relative”), support (e.g., “One can count on help from his/her relatives to solve most problems”), and families as referents (e.g., “One should be embarrassed about the bad things done by his/her brothers or sisters”). Higher scores reflect greater familism. The Total Familism score was used in current analyses. Validity has been demonstrated with Mexican, Central American, Cuban, and Puerto Rican families (Sabogal et al., 1987). Reliability was acceptable for the present sample of Latino (alpha = 0.81) and NLW (alpha = 0.69) families.

**Procedure**

The data presented here are derived from a larger study of siblings of children with ID. While the previous publication from this study focused on establishing differences in sibling functioning according to ethnicity and/or disability status (Lobato et al., 2011), the current work examined possible risk factors including emotion expression and communication.

ID and comparison families were recruited over 2.5 years via hospital-based general and specialty pediatric programs, community agencies, pediatricians’ offices, public and private schools, and word of mouth. Medical practices and community organizations in southeastern New England were identified, and recruitment procedures were implemented in all practices and organizations that agreed to participate. All recruitment materials had English and Spanish versions. We attempted to match comparison families to ID families based on gender of the sibling and index child, the sibling’s birth order relative to the index child, the sibling’s age, and the family’s socio-economic status. Due to the multiple inclusion criteria, 57% of families who were screened were eligible for the study; 87% of eligible families enrolled (see Kao et al., 2011, for additional details). There were no significant differences in enrollment rates among the groups.

Families provided consent and assent before completion of research tasks and chose whether data collection would occur at the family’s home (74%), the research offices (24%), or another location (2%). Parents and siblings were interviewed separately, and questionnaires were read aloud to all participants in the language of their choice. The majority of Latino parents were interviewed in Spanish (72% of the ID subgroup, 84% of the comparisons), while the majority of Latino siblings were interviewed in English (90% and 96%, respectively). All NLW families were interviewed in English. The interview-based method of data collection ensured that we had complete data for each participating family. Families were compensated for participation. All procedures were approved by the Institutional Review Board.

**Data Analysis**

Preliminary analyses used chi square or independent samples t-tests to compare Latino versus NLW and index versus comparison families on demographic variables (sibling age and gender, index child age and gender, sibling birth order relative to the index child, caregiver age, per capita income, number of children and caregivers in the home, and primary caregiver type). Demographic variables found to be significantly different between Latino and NLW families were entered as covariates in subsequent analyses. Next, the assumption that Latino families would endorse greater familism than NLW families was evaluated using independent samples t-tests. Associations between demographic variables and sibling emotion expression and communication were evaluated using chi square and independent samples t-tests.

To use emotion expression and sibling–parent emotion communication instruments to assess the primary aims, the principal components analysis (PCA) method was used to analyze the factor structure of these measures. Factors were identified through examining the shapes of the scree plots and by extracting factors with eigenvalues > 1. Then, items with factor loadings ≥0.4 were retained on each (sub)scale. For the Emotion Expression Scale for Children (EESC), the factors derived from the present analyses were compared with the published “poor awareness” and “reluctance to express” subscales. Alpha values were calculated to assess the internal consistency of derived (sub)scales on both measures. These procedures were carried out with the entire sample and were repeated using the Latino versus NLW subsamples and the ID versus comparison subsamples. Then, overlap among emotion expression and emotion communication scales were assessed using Pearson correlations.

Using the scales derived through the factor analyses, associations of ethnicity and disability status with general emotion expression and sibling–parent emotion communication were assessed using multiple regression. Covariates were entered into Step 1, ethnicity and disability status were entered into Step 2, and the ethnicity-by-disability
status interaction term was entered into Step 3 of separate regressions predicting general emotion expression problems and sibling–parent emotion communication. These analyses then were repeated substituting familism for ethnicity.

Finally, associations of general emotion expression and sibling–parent emotion communication with siblings’ psychosocial functioning were assessed using multiple regression. Covariates were entered into Step 1, disability status and general emotion expression (or sibling–parent emotion communication) were entered into Step 2, and the interaction between disability status and general emotion expression (or sibling–parent emotion communication) was entered into Step 3 of separate regressions predicting siblings’ internalizing and somatic symptoms and personal adjustment. These analyses were repeated controlling for ethnicity.

Results
Preliminary Analyses
Owing to matching procedures, Latino and NLW subgroups did not differ according to age or gender of the sibling or index child, sibling birth order relative to the index child, type of primary caregiver (e.g., biological mother), or number of adults in the home (p-values > .05). On average, Latino families had younger parent age (t(198) = 4.23, p < .001), more children in the home (X^2 = 10.59, p = .03), and lower per capita income (t(198) = 7.53, p < .001) than NLW families. These variables were entered as covariates in subsequent analyses. Families of children with ID were more likely to be two-parent households than comparisons (82% vs. 66%, X^2 = 6.65, p = .02); ID and comparison groups did not differ according to sibling gender or birth order relative to the index child. Latino families endorsed higher levels of familism than NLW families (t(198) = 6.94, p < .001). Finally, siblings older than the child with the ID had more problems with general emotion expression than those younger than the child with the ID (t(98) = 2.43, p = .02); however, this finding should be interpreted cautiously owing to the small percentage of siblings (18% of Latino, 26% of NLW) who were younger than the index child. Emotion expression and communication were unrelated to sibling age or ID severity, as assessed by the VABS-II scores.

Factor Analyses
The Emotion Expression Scale for Children
The PCA method resulted in a one-factor solution, which accounted for 38.8% of the variance in the EESC measure (Penza-Clyve & Zeman, 2002). All 16 items had adequate loading values (≥0.40). The same pattern of results was obtained when the factor analysis was repeated for the Latino and NLW subsamples, for which the one-factor solution accounted for 38.7% and 36.9% of the variance, respectively. When the PCA analysis was repeated for the subsample of siblings of children with intellectual disabilities, a similar pattern of results emerged. However, one item (Question 6, “I usually do not talk to people until they talk to me first”) had a loading value of 0.20 and therefore was dropped from the emotion expression problems scale. The resulting 15-item emotion expression problems scale had good reliability in the combined sample (alpha = 0.89) and in the Latino (alpha = 0.89) and the NLW (alpha = 0.88) subsamples.

Next, we attempted to recreate the published emotion expression problems subscales by specifying a 2-factor solution in the factor analysis. In the NLW subsample, the derived 2-factor solution accounted for 46.7% of the variance and resembled the published two-subscale structure such that one factor included all eight of the “poor awareness” items, and the other factor included five of the eight “expression reluctance” items; the remaining three “expression reluctance” items did not load highly onto either scale (loading values < 0.40). In the Latino subsample, the derived two-factor solution accounted for 46.3% of the variance. However, each of the two derived factors included an equal number of items from the published “expression reluctance” and “poor awareness” subscales. Thus, the published factor structure of the EESC was not reproduced in our sample of Latino families.

Sibling–Parent Emotion Communication Scale
Using the entire sample, the PCA procedure resulted in a two-factor solution, which accounted for 47.0% of the variance in the 10-item SPECS measure (Lobato et al., 2007). These factors were termed “Concern for Others” (e.g., proud, happy) and “Concern for Self” (e.g., mad, jealous) according to the reference of the emotional experience. Using a varimax rotation, the “Concern for Others” factor accounted for 27.3% of the variance, and the “Concern for Self” factor accounted for 19.7% (Table II). The two factors were orthogonal but significantly correlated (r = 0.38). Based on the two-factor solution obtained for the full sample, the “Concern for Others” subscale had adequate psychometric properties for Latino (alpha = 0.72) and NLW (alpha = 0.77) siblings; the “Concern for Self” subscale had adequate reliability for the NLW sample (alpha = 0.70) but poor reliability for Latino siblings (alpha = 0.49).

Next, the factor analysis was repeated separately for the NLW and Latino subsamples. In the NLW subsample,
results were similar to those obtained for the full sample. PCA resulted in a 2-factor solution, which accounted for 53.3% of the total variance in the SPECS measure. Using a varimax rotation, the “Concern for Others” factor accounted for 28.3% of the variance, and the “Concern for Self” factor accounted for 25.1% of the variance. In contrast, the PCA factor analysis for Latino siblings suggested a one-factor solution that accounted for 25.1% of the variance in the SPECS measure. The following items did not load highly on the factor: Question 1 (“mad about not being able to do what they want because of their brother/sister”), Question 6 (“mad because they have to do more around the house than their brother/sister does”), and Question 9 (“jealous because their brother/sister gets more attention than they do”).

Owing to the different factor structures that emerged for Latino versus NLW subsamples and the poor reliability of the “Concern for Self” subscale for Latino siblings, the factor analysis of the SPECS measure was repeated specifying a one-factor solution. The total SPECS accounted for 33.5% of the variance for the combined sample. Nine of the ten items loaded onto this scale; Question 6 (“mad because they have to do more around the house than their brother/sister does”) had a loading value <0.40 and therefore was not included in the final scale. The same pattern of results was obtained when the factor analysis and reliability calculations were conducted using data only from the siblings of children with ID.

**Summary: Factor Analyses**
The factor analysis of the existing EESC measure in the present sample suggested that the published “poor awareness” and “expression reluctance” subscales were supported for the NLW subsample, but not for the Latino subsample. The 15-item “emotion expression problems” total scale was used in subsequent analyses. Factor analysis of the SPECS measure yielded different outcomes for the Latino and NLW subsamples. Items related to anger and jealousy appeared less relevant for the Latino siblings; accordingly, the “Concern for Self” scale had poor reliability for this subsample. The 9-item “sibling–parent emotion communication” total scale was used in subsequent analyses.

**Overlap of Emotion Expression and Communication Constructs**
Emotion expression problems and sibling–parent emotion communication scores were moderately correlated ($r = −.32$), suggesting that these scales are measuring distinct constructs. Therefore, the analyses that follow were conducted separately for the emotion expression problems and sibling–parent emotion communication constructs.

**Ethnicity and Disability Status: Predictors of General Emotion Expression and Sibling–Parent Emotion Communication**
Using the scales derived through the factor analyses, associations of ethnicity and disability status with general emotion expression and sibling–parent emotion

<table>
<thead>
<tr>
<th>Combined sample</th>
<th>Latino subsample</th>
<th>NLW subsample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Factor 1:</td>
<td>Factor 2:</td>
</tr>
<tr>
<td></td>
<td>concern for others</td>
<td>concern for self</td>
</tr>
<tr>
<td>Item 1 (mad: can not do)</td>
<td>0.24</td>
<td>0.58</td>
</tr>
<tr>
<td>Item 2 (sad)</td>
<td>0.71</td>
<td>0.09</td>
</tr>
<tr>
<td>Item 3 (happy)</td>
<td>0.70</td>
<td>0.04</td>
</tr>
<tr>
<td>Item 4 (worried)</td>
<td>0.38</td>
<td>0.42</td>
</tr>
<tr>
<td>Item 5 (embarrassed)</td>
<td>0.31</td>
<td>0.63</td>
</tr>
<tr>
<td>Item 6 (mad: do more)</td>
<td>−0.26</td>
<td>0.72</td>
</tr>
<tr>
<td>Item 7 (proud)</td>
<td>0.71</td>
<td>0.17</td>
</tr>
<tr>
<td>Item 8 (upset)</td>
<td>0.71</td>
<td>0.21</td>
</tr>
<tr>
<td>Item 9 (jealous)</td>
<td>0.21</td>
<td>0.66</td>
</tr>
<tr>
<td>Item 10 (have fun)</td>
<td>0.59</td>
<td>0.21</td>
</tr>
</tbody>
</table>

Note: NLW = non-Latino white.
communication were examined using multiple regression. After controlling for parent age, income, and number of children in the home, Latino siblings reported more difficulties expressing emotions ($\beta = 0.24, p = .003$) and endorsed marginally lower levels of sibling-parent emotion communication of topics related to their brother/sister ($\beta = 0.16, p = .06$) than NLW siblings, independent of disability status (Figure 1). There was a trend for siblings of children with ID to report more difficulties expressing emotions than comparisons ($\beta = 0.14, p = .06$), independent of ethnicity. Interactions between ethnicity and disability status were nonsignificant. The same pattern of findings was obtained when also controlling for sibling birth order relative to the index child.

When analyses were repeated substituting familism for ethnicity, higher familism predicted emotion expression problems ($\beta = 0.15, p = .05$), independent of disability status. Results for sibling-parent emotion communication were no longer significant.

**Associations Among General Emotion Expression, Sibling–Parent Emotion Communication, and Psychological Functioning**

Associations of general emotion expression, sibling-parent emotion communication, and disability status with sibling psychosocial functioning were examined using multiple regression. After controlling for covariates, more emotion expression problems predicted higher levels of sibling internalizing ($\beta = 0.69, p < .001$) and somatic symptoms ($\beta = 0.67, p < .001$) and poorer personal adjustment ($\beta = -0.44, p < .001$), independent of socio-demographic covariates and disability status. Main effects for disability status (controlling for emotion expression problems) and interactions between disability status and emotion expression problems were nonsignificant.

Higher levels of sibling-parent emotion communication significantly predicted lower levels of internalizing ($\beta = -0.27, p < .001$) and somatic symptoms ($\beta = -0.15, p = .04$) and better personal adjustment ($\beta = 0.41, p < .001$), independent of socio-demographic covariates and disability status. Siblings of children with ID had lower personal adjustment ($\beta = 0.17, p = .01$), independent of sibling-parent emotion communication; main effects of disability status on siblings’ internalizing and somatic symptoms were nonsignificant. Interactions between disability status and emotion communication were nonsignificant.

Finally, analyses were repeated to assess the role of sibling ethnicity. Findings indicated higher levels of internalizing symptoms in Latino versus NLW siblings ($\beta = 0.22, p = .006$). This association held independently of emotion communication ($\beta = 0.18, p = .02$) but was no longer significant after entering emotion expression into the regression model. Ethnicity was not significantly associated with personal adjustment or somatic symptoms. Interactions of ethnicity with emotion expression problems or sibling-parent emotion communication were nonsignificant.

**Discussion**

The present study examined emotion expression and sibling-parent emotion communication as potential risk factors for poorer adjustment among Latino and NLW siblings of children with ID and matched comparisons. Findings showed that Latino siblings in both the ID and comparison groups endorsed more problems with emotion expression and marginally lower levels of sibling-parent emotion communication than NLW siblings, independent of ID status. Siblings of children with ID endorsed marginally higher levels of emotion expression problems than comparisons, independent of ethnicity. In turn, more emotion expression problems and lower levels of sibling-parent emotion communication each was associated with poorer personal adjustment and higher levels of internalizing and somatic symptoms among siblings.

Emotion expression and communication have not been examined previously in siblings of children with ID. Current results indicate that siblings of children with ID endorsed marginally higher levels of general emotion expression problems than matched comparison siblings, but results do not support a main effects model in which all siblings of children with ID experience difficulties in the

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Table III. Item Loading Values for the One-Factor “Emotion Communication” Scale for the Combined Sample and the Latino and NLW Subsamples, Collapsed Across Disability Status

<table>
<thead>
<tr>
<th>Item</th>
<th>Combined sample</th>
<th>Latino subsample</th>
<th>NLW subsample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total variance explained</td>
<td>33.5%</td>
<td>32.3%</td>
<td>35.6%</td>
</tr>
<tr>
<td>Item 1 (mad can not do)</td>
<td>0.52</td>
<td>0.40</td>
<td>0.62</td>
</tr>
<tr>
<td>Item 2 (sad)</td>
<td>0.64</td>
<td>0.64</td>
<td>0.62</td>
</tr>
<tr>
<td>Item 3 (happy)</td>
<td>0.60</td>
<td>0.59</td>
<td>0.62</td>
</tr>
<tr>
<td>Item 4 (worried)</td>
<td>0.54</td>
<td>0.62</td>
<td>0.56</td>
</tr>
<tr>
<td>Item 5 (embarrassed)</td>
<td>0.61</td>
<td>0.60</td>
<td>0.60</td>
</tr>
<tr>
<td>Item 6 (mad: do more)</td>
<td>0.18</td>
<td>0.07</td>
<td>0.31</td>
</tr>
<tr>
<td>Item 7 (proud)</td>
<td>0.68</td>
<td>0.62</td>
<td>0.72</td>
</tr>
<tr>
<td>Item 8 (upset)</td>
<td>0.71</td>
<td>0.74</td>
<td>0.66</td>
</tr>
<tr>
<td>Item 9 (jealous)</td>
<td>0.54</td>
<td>0.41</td>
<td>0.66</td>
</tr>
<tr>
<td>Item 10 (have fun)</td>
<td>0.60</td>
<td>0.69</td>
<td>0.60</td>
</tr>
</tbody>
</table>

Note. NLW = non-Latino white.
domains of emotion expression or communication. Rather, findings suggest that poorer emotion expression and sibling–parent emotion communication may be risk factors for adjustment difficulties. These findings are particularly relevant in the context of childhood disability due to siblings’ tendency to protect parents from knowledge of their own distress (Schuntermann, 2007).

Mechanisms linking emotion expression and sibling–parent emotion communication to poorer sibling adjustment were not addressed in the current work. It is possible that siblings who feel comfortable talking about their emotions may have a family environment in which emotion expression is acceptable. In these cases, emotion expression or communication may be part of a broader construct encompassing positive family or parenting dynamics. Alternately, discussion of emotional material may be therapeutic by allowing siblings to process strong emotions about their relationship with their brother or sister. By encouraging siblings to openly discuss their feelings, families may send the message that siblings’ emotional experiences are important. Emotion communication is a dyadic process. Therefore, it is likely that other factors, such as parental psychological functioning and the quality of the sibling–parent relationship, contribute to siblings’ willingness to discuss emotional material with parents. It is also possible these findings reflect respondent bias such that siblings who experience more distress also perceive problems with emotion expression and/or sibling–parent emotion communication.

When ethnicity was considered, results suggested that Latino siblings tend to de-emphasize self-referential negative emotions about a family member and are reluctant to discuss strong emotions with parents. These findings are consistent with Latino values reflecting familism and interrelatedness (Marin & Marin, 1991). Indeed, current findings showed that higher levels of familism predicted emotion expression problems. Given that emotion expression problems and lower sibling–parent emotion communication appear to be risk factors for sibling adjustment difficulties, more problems in these domains may contribute to previously reported elevations in internalizing symptoms and personal adjustment problems among Latino siblings of children with ID (Lobato et al., 2011).

The primary strength of the present work was the preliminary examination of the factor structure and internal consistency of an existing measure of general emotion expression (EESC; Penza-Clyve & Zeman, 2002) and a newly developed measure of sibling–parent emotion communication (SPECS; Lobato et al., 2007). The factor analysis of the EESC measure supported the published “poor awareness” and “expression reluctance” factors for NLW but not Latino siblings. Similarly, factor analysis of the SPECS measure suggested that items on the “Concern for Self” subscale (e.g., anger, jealousy) were less relevant for Latino siblings compared with their NLW counterparts. This pattern of results was consistent across siblings in the ID and comparison groups.

To enable cross-cultural comparisons, instruments should be able to measure similar psychological constructs across groups that differ culturally and/or linguistically. Common psychosocial measures have been translated into Spanish, and there have been some preliminary efforts to establish normative comparison samples across different cultures (Achenbach et al., 2008). Despite these gains, limitations remain regarding the extent to which nuanced, culturally specific language is maintained across translations, and few efforts have been made to identify how psychological constructs may be expressed differently across groups. Cross-cultural validation of psychosocial measures has received limited empirical attention, but the small body of work examining this topic has documented differences according to respondent ethnicity (e.g., Kim, Chiriboga, &

Figure 1. Latino siblings endorsed more problems with emotion expression and marginally lower levels of sibling–parent communication of brother-/sister-related emotions than non-Latino white (NLW) siblings. Siblings of children with intellectual disabilities (ID) endorsed marginally more problems with emotion expression than comparison siblings. Ethnicity-by-disability interactions were nonsignificant.
Jang, 2009). Together, these methodological limitations raise questions about the validity of findings reported for ethnically diverse samples and about whether observed between-group variance in psychosocial outcomes reflects true differences in the construct of interest versus inadequate measurement thereof.

Additional strengths of the current study include grounding in family systems and cultural theories and attending to psychometric differences across respondent ethnicity. Despite these strengths, findings should be considered in light of conceptual and methodological limitations. The cross-sectional design limits the extent to which questions of causality could be addressed. Given that emotion expression and communication and sibling adjustment were measured using self-reported instruments, it is possible that associations between these constructs reflect common method variance rather than a true effect. With regard to the SPECS, the relatively brief 10-item measure may not capture more nuanced aspects of discussions about emotions. Further, this instrument probes hypothetical (rather than reported) experiences of emotions. From a theoretical standpoint, the SPECS measure is limited by its unilateral approach to measuring dyadic communication processes. The current study does not consider parents’ perceptions of sibling general emotion expression or sibling–parent emotion communication. Future work should address this limitation, and the preliminary validation findings reported here should be repeated in a larger sample and compared with other emotion communication measures. Given the relatively small research base examining emotion communication, future work also should incorporate observational methodology. Associations of emotion expression and communication with sibling psychosocial functioning also should be examined within a larger contextual framework that incorporates additional aspects of parental and family functioning. Finally, future work should address whether current findings generalize to families of other racial or ethnic backgrounds or to other chronic illness groups, and more efforts should be made to enroll fathers.

Overall, the present research is an important step in examining the intersection of culture, emotional expression, and sibling–parent emotion communication and their influence on sibling adjustment in the context of a brother’s or sister’s ID. Findings underscore the importance of using sound measures that are validated across ethnicity and suggest that cultural differences in emotional expression and communication may place Latino siblings at higher risk for emotional adjustment difficulties. The current findings may be useful in identifying at-risk siblings and designing culturally sensitive interventions. In this regard, emotion expression and sibling–parent communication may be promising treatment targets.

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**Conflicts of interest:** None declared.

**References**


**Appendix**

**Format and Items From the Sibling–Parent Emotion Communication Scale**

**General Format**

When kids feel mad about not being able to do what they want because of their brother/sister, some kids:

**Items**

1. When kids feel mad about not being able to do what they want because of their brother/sister: Some kids do not tell their parents, they keep their feelings to themselves, but other kids tell their feelings to their parents. Which kid is most like you?
2. When kids feel sad when their brother/sister is having a hard time or struggling with something: Some kids do not tell their parents, they keep their feelings to themselves, but other kids tell their feelings to their parents. Which kid is most like you?
3. When kids feel happy that something good happened to their brother/sister: Some kids do not tell their parents, they keep their feelings to themselves, but other kids tell their feelings to their parents. Which kid is most like you?
4. When kids feel worried that something bad might happen to their brother/sister: Some kids do not tell their parents, they keep their feelings to themselves, but other kids tell their feelings to their parents. Which kid is most like you?
5. When kids feel embarrassed by something their brother/sister does: Some kids do not tell their parents, they keep their feelings to themselves, but other kids tell their feelings to their parents. Which kid is most like you?
6. When kids feel mad because they have to do more around the house than their brother/sister does: Some kids do not tell their parents, they keep their feelings to themselves, but other kids tell their feelings to their parents. Which kid is most like you?
7. When kids feel proud because their brother/sister did something well: Some kids do not tell their parents, they keep their feelings to themselves, but other kids tell their feelings to their parents. Which kid is most like you?
8. When kids feel upset because their brother/sister is getting teased: Some kids do not tell their parents, they keep their feelings to themselves, but other kids tell their feelings to their parents. Which kid is most like you?
9. When kids feel jealous because their brother/sister gets more attention than they do: Some kids do not tell their parents, they keep their feelings to themselves, but other kids tell their feelings to their parents. Which kid is most like you?
10. When kids have fun playing or hanging out with their brother/sister: Some kids do not tell their parents, they keep their feelings to themselves, but other kids tell their feelings to their parents. Which kid is most like you?