



# Family Violence, PTSD, and Parent–Child Interactions: Dyadic Data Analysis with Mexican Families

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## Abstract

**Background** Family violence has been shown to have a dramatic impact on individual and family life in the United States and other countries. Numerous studies have assessed the influence that exposure to violence can have on family dynamics and parent–child relationships. However, less is known about the association between family violence and parent–child relationships with Mexican families.

**Objective** Guided by social interaction learning theory, the purpose of this study was to explore the link between family violence, PTSD, and mother–child interaction patterns.

**Methods** Eighty-seven mother–child dyads from Mexico completed assessments for exposure to family violence and PTSD symptoms. We coded and analyzed observational tasks to assess prosocial parent–child interactions, such as positive communication and problem solving. We conducted an actor-partner independence model (APIM) to examine the association between exposure to family violence, PTSD and mother–child relationship dynamics.

**Results** As expected, higher exposure to family violence was linked to higher PTSD symptoms for mothers. Unexpectedly, higher maternal PTSD symptoms were associated with better communication during dyadic interaction tasks with their children.

**Conclusions** The present study suggests that individuals from certain cultures (i.e., Mexico) may respond differently to experiencing family violence. The use of multiple measurement methods to assess the relational effects of trauma on family dynamics can advance the scientific understanding of trauma affected families.

**Keywords** Trauma · Latina/o · Latinx · Posttraumatic stress disorder (PTSD) · Observational data

Rates of family violence are estimated to be high within Mexican families (Baker et al. 2005; Mercaei 2011). According to the Mexico National Survey on the Dynamics of Household Relationships, 66% of women reported experiencing at least one violent event in their lifetimes (Instituto Nacional de Estadística y Geografía 2016). This is highly

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problematic because exposure to family violence is linked with negative individual and family outcomes, such as posttraumatic stress disorder (PTSD; Evans et al. 2008) and disruptions in parent–child relationships (Van EE et al. 2012). In fact, an increasing segment of the literature has explored the link between family violence and negative parent and child outcomes (e.g., Evans et al. 2008; Sternberg et al. 2006). However, less is known about the association between family violence and parent–child relational processes, such as problem solving or positive engagement (Van EE et al. 2012; Williamson et al. 2017). Even less is known about Mexican families, who are disproportionately affected by family violence (Baker et al. 2005; Hillis et al. 2016). To address these gaps in the literature, this study examined how exposure to family violence and trauma symptoms were associated with parent–child interactions among Mexican families.

## Theoretical Framework

Social interaction learning (SIL) theory (Patterson et al. 2010) guided our study's aims and hypotheses. SIL theory suggests that child behavior is shaped through interactions with parents within a social environment (Patterson et al. 2010). Stressful environments increase parents' use of coercive parenting. Coercion, in turn, increases children's problematic behavior and negative outcomes, while positive parenting increases prosocial behavior and reduces negative outcomes (Domenech Rodriguez et al. 2011; Patterson et al. 2010). This theory guided our hypothesis that higher exposure to family violence would be associated with worse parent–child outcomes. SIL theory also guided the structure of our literature review. First, we will explain the negative effects of stress on the individual (i.e., PTSD symptoms), then, we will discuss the interactional effects of stress (family violence and PTSD) on parent–child dynamics.

## Family Violence, PTSD, and Parent–child Relationships

Family violence is defined as any type of controlling, coercive behavior that inflicts emotional or physical pain on family members living in the same household (Evans et al. 2008). This can include witnessing or directly experiencing intimate partner violence or child maltreatment (i.e., child abuse). These types of experiences are very common. For example, over 25% of individuals have reported physical abuse from an intimate partner (National Coalition Against Domestic Violence 2015). Likewise, global estimates of child abuse range from 16 to 36% (World Health Organization 2014).

Researchers have found that exposure to family violence (e.g., child maltreatment, intimate partner violence) increases the risk of developing a mental health disorder, such as PTSD (Dutton et al. 2006; Evans et al. 2008; Humphreys et al. 2020; Sternberg et al. 2006). For example, Breslau et al. (2014) found that severe maltreatment prior to age 10 was associated with 2.64 greater odds of developing PTSD as compared to those with no maltreatment. A study of women residing in a domestic abuse shelter found that 67% of the sample met the criteria for PTSD (Peterson 2013). Family violence and PTSD symptoms are associated with a variety of negative interpersonal and mental health-related outcomes.

Parent–child interactions are particularly relevant in the context of family violence/PTSD because literature and theory suggest that trauma-related symptoms can negatively affect parenting and interpersonal skills (e.g., communication, social problem solving; Chu

and Lieberman 2010; Maddoux et al. 2014; Mclean et al. 2013; Reich et al. 2015). One study found that abused women with PTSD had worse self-reported social problem solving skills (Reich et al. 2015). Research also suggests that parent PTSD symptoms can spill-over, negatively influencing their children (Palmer 2008). Brockman et al. (2016) found that fathers' PTSD symptoms, specifically experiential avoidance, were associated with less positive social engagement and more distress avoidance during conversations with their children. Another study found that refugee mothers' PTSD symptoms were associated with more negative interactions with their child as well as with worse psychosocial functioning in their child (Van EE et al. 2012). Similarly, theory and literature suggest that child psychopathology (e.g., internalizing/ externalizing symptoms) can negatively influence their parents' behavioral and mental health outcomes (e.g., Patterson et al. 2010; Snyder et al. 2016). For example, Snyder et al. (2016) found that lower levels of youth adjustment (i.e., internalizing and externalizing symptoms) were predictive of their parents' PTSD symptoms one year later. Despite the growing literature on the effects of trauma/ PTSD on parent–child dynamics, few studies have been conducted with Mexican or Latin American samples, who may experience higher rates of family violence (Hillis et al. 2016).

## Family Violence and PTSD Within Mexican Families

Estimates suggest that family violence may be highly prevalent among Mexican families (Baker et al. 2005; Mercaei 2011). Prevalence estimates for Latin America as a whole indicate that at least 58% of children were exposed to violence during the past year (Hillis et al. 2016). Although data is limited on the exact rates of PTSD and violence exposure in Mexico, a 2012 survey revealed about 31% of Mexican households reported experiencing criminal violence, which amounts to over 9 million households (Lohmuller 2014). Moreover, a probability sample of 2,509 adults from four cities in Mexico reported lifetime violence exposure rates of 34% (Baker et al. 2005). Approximately 12% of individuals in this study who were exposed to violence met the DSM-IV criteria for PTSD. These reports highlight the need for research examining the effects of violence and PTSD on Mexican families. Examining family processes (e.g., parent–child interactions) related to violence exposure may be especially relevant for Mexican families, who often place greater importance on family relationships as compared to other groups (Atherton et al. 2016; Stein et al. 2014).

## The Present Study

We decided to conduct this study for two important reasons. First, despite the high estimated rates of family violence in Mexico, few studies have assessed the impact of violence within Mexican families. Second, several authors of this study were contacted by Mexican clinicians requesting that we examine the role of trauma exposure (e.g., family violence) on parent–child dynamics. Hence, the purpose of this study was to explore the associations between family violence, PTSD, and mother–child relationships (i.e., positive interactions and problem solving) using observational interactions between Mexican mothers and their children. The use of multiple measurement methods, such as combining child-report, parent-report and observational data, is suggested in conducting effective family-level research (Miller and Johnson 2014). We tested our hypotheses (described below)

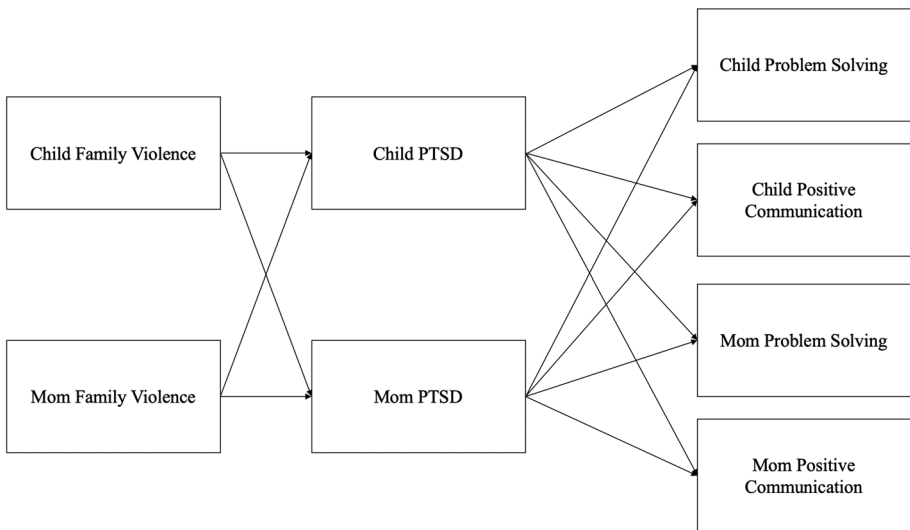
using an actor-partner interdependence model (APIM; Kenny et al. 2006). We controlled for the effects of gender and age based on past literature suggesting the importance of these constructs for shaping responses to violence and trauma (Olf et al. 2007). Our hypotheses included (see Fig. 1):

**Actor Effects**

- (a) Higher scores on mothers’ reported frequency of experiencing family violence will be associated with higher scores on mothers’ reported PTSD symptoms and, in turn, be associated with lower scores on mothers’ positive communication and problem solving during observed interactions with their children.
- (b) Higher scores on child reported frequency of experiencing family violence will be associated with higher scores on child reported PTSD symptoms and, in turn, be associated with lower scores on children’s positive communication and problem solving during observed interactions with their mothers.

**Partner Effects**

- (a) Higher scores on mothers’ reported family violence will be associated with higher scores on child reported PTSD symptoms.
- (b) Higher scores on child reported family violence will be associated with higher scores on mothers’ reported PTSD symptoms.
- (c) Higher scores on mothers’ reported PTSD symptoms will be associated with lower scores on children’s observed positive communication and problem solving.
- (d) Higher scores on child reported PTSD symptoms will be associated with lower scores on mothers’ observed positive communication and problem solving.



**Fig. 1** Conceptual Model: Effects of Family Violence on PTSD and Parent–child Positive Communication and Problem Solving. *Note.* Control variables (age and child gender) and covariances were estimated in the analysis but were omitted in the figure for parsimony

## Method

### Sample

Data from this manuscript comes from the assessment protocol described in Erolin et al. (2014). This study included 87 Mexican mother–child dyads from Monterrey where the parent or child had witnessed a traumatic event. Children (50 boys, 37 girls) were between seven and 14 years old. Mothers and children completed several assessments including individual quantitative self-report measures, individual qualitative interviews, and structured interaction tasks designed to elicit psycho-socio-emotional and behavioral responses to trauma. The interaction tasks were based on observational work developed at the Oregon Social Learning Center with coercive parent–child relationships. Families had an average household income of about 9,500 Mexican pesos (\$500 USD) per month, which is above what is defined as living in poverty according to the Mexican government (Reuters 2015). About 80% of mothers were married or cohabitating and about half of the families lived with a friend or relative. Only 10% of mothers had a college degree and 69% had not finished high school.

### Procedures

The data for this study were collected at Centro de Investigación Familiar, AC (CIFAC), a family therapy training and research center in Monterrey, Mexico in 2008. Some of the participants were recruited from a previous epidemiological study of child maltreatment in 2007 with fifth graders in the state of Nuevo León. Others were referred to the study by the Nuevo León Department of Child and Protective Services after being reported for child maltreatment. Researchers obtained IRB approval and informed consent from participants prior to the study.

Families were included in the study if (a) the child were school-aged (7–14 years old), (b) their mother agreed to participate in the interview, and (c) the mother did not score within the psychotic range of the Brief Symptom Inventory (no participants met this exclusion criterion). The interviews were conducted in Spanish by trained family therapists, psychologists, and social workers, lasting about 2.5 h. The first 1.5 h of the interview involved reviewing informed consent, completing family demographic information, and conducting individual-level self-reported assessments. In the second half of the interview, mother–child dyads were filmed doing four interaction tasks: discussing a positive life event, discussing a negative life event, and problem solving a moderate conflict selected by the parent and another chosen by the child. A more detailed description of the study procedures can be found in Erolin et al. (2014).

### Measures

Four self-reported measures of family violence and PTSD were used. These measures were evaluated for cross-cultural equivalency according to five dimensions indicated by Flaherty et al. (1988): content, semantics, technical, criterion, and conceptual. All scales had been previously validated with Latinx populations in the United States and other countries, except for the Family Violence Checklist (Catani et al. 2008). Spanish versions were used, and local research team members and clinicians reviewed items for unique dialectical

variations, which were then revised for accuracy of meaning. See [Appendix](#) for full item descriptions.

*Child family violence exposure* Child exposure to family violence was measured using a 31-item subscale of the Family Violence Checklist (Catani et al. 2008). Questions from the instrument were dichotomous (0 = *No*, 1 = *Yes*) and focused on various types of abuse including, physical, sexual, emotional, and neglect experienced over a child's lifetime and in the past month to assess for ongoing exposure. Items asked about direct experiences of violence (e.g., "Have you ever been punched/kicked in the face?" "Have you ever been shouted, screamed or sworn at?") and witnessing violence (e.g., "Have you ever seen a family member being hit with an object?"). Two bilingual research team members translated and back translated the English version of the instrument and it was modified to the local and cultural context in Monterrey, Mexico. The scale was computed by using the mean of all items ( $\alpha = .80$ ).

*Mother family violence exposure* Mother exposure to family violence was assessed using the 30-item version of the Composite Abuse Scale (CAS) (Hegarty 2007). Questions from the instrument focus on various types of intimate partner violence including physical, emotional, harassment, and severe combined abuse experienced over the past 12 months. Respondents report how often a particular event occurred within the past year on a six-point Likert scale: 0 (*never*), 1 (*only once*), 2 (*several times*), 3 (*monthly*), 4 (*weekly*), and 5 (*daily*). For example, questions asked how often their partner had "told me I wasn't good enough," "shook me," and "raped me." A scale score was computed using the mean of all items ( $\alpha = .95$ ).

*Posttraumatic stress disorder* The UCLA PTSD Index for DSM-IV (Child Version, Revision 1; Pynoos et al. 1998) was used to assess the severity of child PTSD symptoms. The UCLA consists of 20 items assessing children's exposure to traumatic events and the 17 DSM-IV PTSD symptoms in criteria "B (re-experiencing), C (avoidance), and D (arousal)," as well as the PTSD associated feature of trauma-related guilt. Respondents indicated frequency of symptoms in the past month on a five-point Likert scale: 0 (*never*), 1 (*2 times a month*), 2 (*1–2 times a week*), 3 (*2–3 times a week*), and 4 (*almost every day*). The 49-item Posttraumatic Stress Diagnostic Scale (PDS; Foa et al. 1997) was used to examine mothers' exposure to traumatic events (e.g., war, sexual assault) and the presence of PTSD symptoms. The PDS includes seventeen items that correspond to the DSM-IV PTSD criteria B, C, and D. Respondents indicated how often each symptom had bothered them within the past month using a four-point Likert scale of 0 (*not at all*), 1 (*once a week or less*), 2 (*2–4 times a week*), and 3 (*almost always*). Total PTSD severity scores were used to assess mother ( $\alpha = .93$ ) and child PTSD ( $\alpha = .94$ ) by calculating the sum of the PTSD symptom items.

*Observational coding* Although all 87 mother–child dyads completed the assessment protocol, only 60 videos were available for dyadic coding at the time of data analysis due to technical issues. Observational measures were based on the Coder Impressions Inventory (COIMP; Dishion et al. 2004). The COIMP focuses on coder impressions of verbal (e.g., praise, criticism, positive humor) and non-verbal relationship dynamics (e.g., warmth, physical affection) as well as problem-solving skills. The COIMP evaluates several aspects of parent–child interactions, including relationship quality, negative parent–child interactions, and problems solving. These scales were adapted to fit the local context and mother–child interview format (e.g., father-child questions were removed). Items were rated on a five-point Likert scales (1 = *not at all* to 5 = *very much*).

*Problem solving* Videotaped interactions of child and mother problem-solving skills were assessed based on the problem-solving scale from the Coder Impressions Inventory

(COIMP; Dishion et al. 2004). Eight items for the child and 10 items for mothers were used to evaluate mother and child's ability to discuss solutions and reach agreement during two problem-solving tasks. Problem-solving scales contained items such as "Did the mother/child propose clear and specific solutions?" and "Did the mother/child seem flexible and open to trying new ways to solve the problem?" Items were averaged to obtain a scale score. The internal consistencies of these scales were high ( $\alpha = .93$  for mother,  $\alpha = .85$  for child).

*Positive communication* Mother–child positive communication was assessed using items from the general family interaction subscale of the COIMP (Dishion et al. 2004). The original subscale had 146 items. We used only the items that reflected positive aspects of communication (13 items for the child and 16 items for the mother), such as the level of engagement, responsiveness and affection demonstrated between members of the dyad. We removed items that asked about father–child interactions (56 items), drug use (18 items), negative aspects of communication items (39 items), and several other items that did not reflect positive communication (4 items; e.g., do family members seem to be overly concerned with looking good or masking problems?). Examples of our positive communication items included, "Did child/mother acknowledge or respond to ideas (listening, being receptive, responding in a positive manner)?" and "How much warmth is evident in mother's/child's discussion (positive talk, positive interpersonal, shows caring and understanding)?" Items were averaged to obtain a scale score. These scales demonstrated adequate internal consistency ( $\alpha = .94$  for mother,  $\alpha = .92$  for child).

## Data Analysis Plan

Our data analysis involved three phases. First, we calculated descriptive statistics using SPSS Version 23. Descriptive statistics were calculated to describe the population and present the overall, average functioning of the sample across the variables of interest (i.e., exposure to family violence, PTSD symptoms, and prosocial behaviors between mother and child) and to evaluate association between these variables (Pearson correlations). Second, we coded videos of four dyadic structured interaction tasks. Tasks were coded by one graduate student, two faculty members and one masters-level research assistant. Two researchers were native Spanish speakers and two were fluent in Spanish. After achieving agreement greater than 80% in a training dataset, videos were independently coded. Agreement allowed for one-point discrepancies (e.g., coder 1 rated an interaction as a "3," and coder 2 rated it as a "4"). Twenty percent of the parent–child interaction tasks were double coded to measure coder reliability during the coding process and prevent coder drift. Raters achieved 82% overall agreement.

Third, we conducted an actor-partner interdependence model (APIM) to test the hypothesis that family violence would be associated with higher PTSD, which would be associated with worse parent–child interactions (see Fig. 1). APIM is a recommended approach to examine dyadic patterns (Fitzpatrick et al. 2016). This analysis was conducted using Mplus software (Version 8; Muthén and Muthén 2017) and a maximum likelihood (ML) estimator. We calculated 2,000 bootstraps to test indirect effects using 95% confidence intervals to determine if zero was included within the interval (Anderson et al. 2014). Good model fit was interpreted when chi-square values for model fit were nonsignificant ( $p > .05$ ), the comparative fit index (CFI) exceeded .95, and the root mean square error of approximation (RMSEA) was below .06 (Kline 2016). We assessed associations between child and mother variables by examining unstandardized and standardized coefficients. Effect sizes

can be understood by evaluating the standardized betas ( $b$ ), such that a  $b$  near .1 or  $-.1$  is a small effect size, .3 or  $-.3$  is a moderate effect size, and greater than .5 or  $-.5$  is a large effect size (Cohen, 1988).

Mother and child PTSD had 2% missing data. As previously described, video recordings of interaction tasks had 31% missing data (27 videos). To address the considerable amount of missing data in the four observed outcome variables, we explored missing data assumptions required for dyadic data analysis and followed the principle of parsimony (Raykov and Marcoulides 1999) to limit the amount of parameter estimates in our model. This consisted of iteratively removing non-significant paths between control variables and model outcomes. To confirm the missing at random (MAR) assumption required for dyadic data analysis, we conducted Little's MCAR test. This tests the null hypothesis that data is missing completely at random (MCAR). The chi-square statistic was non-significant (chi-square = 44.77,  $p > .05$ ), proving support for the MCAR assumption. Despite non-significant findings in the omnibus test, one variable (i.e., child PTSD) was significantly associated with missing data in the four observational outcomes in our model. Data are considered MAR when the probability of missing data on a given variable (e.g., child PTSD) is related to study variables (e.g., the four observational outcomes), but not to the variable itself (e.g., child PTSD; Enders 2010). Therefore, by including child PTSD as a predictor in our model, we can account for the missing data and avoid violating the MAR assumption. Missing data were handled using full information maximum likelihood (FIML) and all analyses included the full sample with 87 dyads.

## Results

### Preliminary Analyses

Mothers and children reported similar levels of family violence; 87.4% of children and 78.2% of mothers reported exposure to family violence. Youth PTSD scores ranged from 0 to 64, with an average score of 12.13 ( $SD = 14.11$ ). Mothers PTSD scores ranged from 0 to 46, with an average score of 8.83 ( $SD = 11.40$ ). Thirty-six children and 10 mothers met full DSM IV diagnostic criteria for PTSD. Mothers had an average score of 2.48 ( $SD = .78$ , range = 1.20–4.30) on problem solving and an average score of 2.72 ( $SD = .77$ , range = 1.06–4.56) on positive communication. Children had an average score of 1.98 ( $SD = .57$ , range = 1.00–3.50) on problem solving and an average score of 2.05 ( $SD = .65$ , range = 1.15–3.77) on positive communication.

Results from bivariate correlations showed that the link between family violence and PTSD was only significant for mothers ( $r = .57$ ,  $p < .01$ ). Additionally, the link between PTSD and parent–child interactions was only significant for mothers. Specifically, higher levels of mothers' PTSD scores were associated with higher levels of mothers' positive communication ( $r = .28$ ,  $p < .05$ ). Mother and child positive communication and problem solving were all significantly related to one another. Mothers' age was only associated with mothers' PTSD and child age was not associated with any of the focal variables. Child gender was associated with child communication and problem solving. See Table 1 for all bivariate correlations.



**Table 1** Bivariate Correlations

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Child FV	–										
2. Mom FV	.04	–									
3. Child PTSD	.19	.11	–								
4. Mom PTSD	.02	.57**	.00	–							
5. Child Com	.06	.09	–.04	0.18	–						
6. Mom Com	.25	.17	.02	.28*	.66**	–					
7. Child PS	.09	.05	.01	.05	.68**	.51**	–				
8. Mom PS	.21	.10	.07	.25	.48**	.82**	.63**	–			
9. Child Age	–.02	–.14	–.12	–.08	–.06	–.10	–.19	–.08	–		
10. Mom Age	–.03	–.11	0.14	–.25*	–.05	–0.19	–.10	–.18	.43**	–	
11. Child Gender	–.13	.12	0.10	.07	.40**	.21	.32*	.21	–.02	–.03	–

\* $p < .05$ . \*\* $p < .01$ . FV = Family Violence. PS = Problem Solving. Com = Communication

## Dyadic Data Analysis

Results of the APIM demonstrated that the model adequately fit the data (Kline 2016):  $\chi^2(26) = 23.77$ ,  $p > .05$ , CFI = 1.00, TFI = 1.02, RMSEA = .00, 95% CI [.00, .08], SRMR = .078. See Table 2 for all estimated path coefficients and Fig. 2 for a path diagram showing the significant relationships. In the subsequent sections, we will present the actor and partner effects of the model.

**Actor effects** Actor effects included the associations between child family violence, child PTSD and child prosocial behaviors (i.e., positive communication, problem solving), and the associations between mother family violence, mother PTSD, and mother prosocial behaviors. Child and mother actor effects will be discussed below.

**Child effects** No child pathways were significant. However, one pathway was marginally significant ( $p < .10$ ) and had a moderate effect size. Youth who reported greater family violence had marginally higher PTSD scores ( $B = 23.72$ ,  $p < .10$ ,  $b = .19$ ). In other words, as child family violence increased by one unit, child PTSD scores increased notably by an average of 23.72 units. However, this increase was not significant because the standard error was large ( $SE = 14.23$ ). Child PTSD scores were not associated with child communication or child problem solving.

**Mother pathways** Two mother pathways were found to be significant. As predicted, mother family violence was positively associated with mother PTSD ( $B = 9.19$ ,  $p < .001$ ,  $b = .55$ ). Stated differently, with each one unit increase in family violence exposure, mothers' PTSD scores rose by 9.19 units. Additionally, one actor effect was significant and one was marginally significant, however, both in the opposite direction than we predicted. Higher mother PTSD symptoms were linked to higher positive communication ( $B = .02$ ,  $p < .05$ ,  $b = .29$ ) and were marginally linked to higher problem solving ( $B = .02$ ,  $p < .10$ ,  $b = .25$ ).

**Partner effects** Partner effects represent the influence that members of the dyad have on each other. Based on the results from the path analysis, no partner effects were significant. See Table 2 for all parameter estimates of the partner effects.

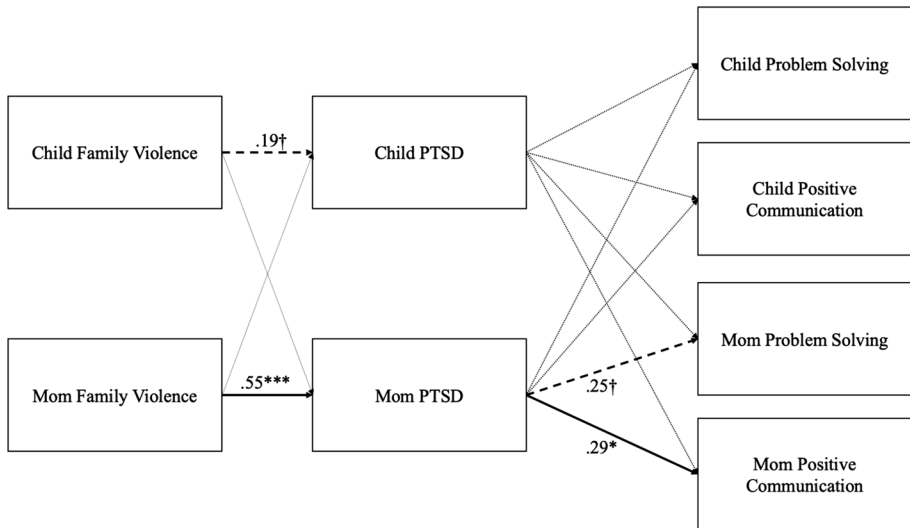
Family violence (and control variables) explained 34% of the variance in mothers' PTSD and 10% of the variance in children's PTSD. Mother and child PTSD accounted for

**Table 2** Unstandardized, Standardized, and Significance Levels for Model in Fig. 1 (Standard Errors in Parentheses; N = 87 Mother–Child Dyads)

Parameter Estimate	Unstandardized	Standardized	<i>p</i>
<i>Actor Paths</i>			
Child FV → Child PTSD	23.72 (14.23)	.19	< .10
Child PTSD → Child Com	.00 (.01)	-.04	.84
Child PTSD → Child PS	.00 (.01)	.03	.84
Mom FV → Mom PTSD	9.19 (1.91)	.55	< .001
Mom PTSD → Mom Com	.02 (.01)	.29	.04
Mom PTSD → Mom PS	.02 (.01)	.25	< .10
<i>Partner Paths</i>			
Child FV → Mom PTSD	-.80 (10.76)	-.01	.94
Child PTSD → Mom Com	.00 (.01)	-.04	.87
Child PTSD → Mom PS	.00 (.01)	.05	.77
Mom FV → Child PTSD	2.19 (2.34)	.11	.35
Mom PTSD → Child Com	.01 (.01)	.16	.28
Mom PTSD → Child PS	.00 (.01)	-.01	.92
<i>Control Paths</i>			
Mom Age → Mom PTSD	-.32 (.16)	-.19	< .05
Mom Age → Child PTSD	.51 (.26)	.24	.05
Child Age → Child PTSD	-1.32 (.68)	-.20	.05
Child Age → Child PS	-.04 (.02)	-.15	.04
Child Gender → Child PS	.29 (.14)	.25	.04
Child Gender → Child Com	.38 (.12)	.30	< .01
<i>Covariances</i>			
Child FV with Mom FV	.00 (.01)	.04	.64
Child PTSD with Mom PTSD	-3.19 (16.59)	-.03	.85
Child Com with Mom Com	.28 (.08)	.64	< .001
Mom PS with Mom Com	.46 (.09)	.81	< .001
Mom PS with Child Com	.20 (.08)	.43	.01
Child PS with Mom Com	.20 (.07)	.51	< .01
Child PS with Child Com	.21 (.07)	.66	< .01
Child PS with Mom PS	.25 (.07)	.63	< .001
<i>Residuals</i>			
Child PTSD	176.47 (37.45)	.90	< .001
Mom PTSD	82.70 (13.26)	.66	< .001
Child Com	.36 (.07)	.89	< .001
Mom Com	.56 (.09)	.92	< .001
Child PS	.29 (.05)	.91	< .001
Mom PS	.57 (.09)	.94	< .001

$\chi^2(26) = 23.77$ ,  $p = .59$ , CFI = 1.00, TFI = 1.02, RMSEA = .00, 95% CI [.00, .08], SRMR = .078. FV = Family Violence. PS = Problem Solving. Com = Communication

9% of the variance in mothers' positive communication, 6% in mothers' problem solving, 11% in children's positive communication, and 9% in child problem solving, including control variables in the model. Finally, no indirect actor or partner effects were found between mother or child exposure to family violence and parent–child interactions.



**Fig. 2** Results of Actor-partner Interdependence Model (N=87 Mother–Child Dyads). *Note.* Solid lines represent significant paths and dashed lines represent marginally significant paths. Non-significant path coefficients, covariances, and control variables (age and child gender) were tested, but were omitted in the figure for parsimony.  $***p < .001$ ,  $*p < .05$ ,  $^\dagger p < .10$ .

## Discussion

Results of this study provide partial support for the link between family violence, PTSD, and parent–child interactions in a sample of Mexican mothers and their children. Higher exposure to family violence was associated with higher PTSD symptoms for mothers. This finding supported our hypotheses and aligned with past literature on the risks of experiencing family violence (e.g., Evans et al. 2008; McLaughlin et al. 2013; Santiago et al. 2013). However, child exposure to family violence was not related to child PTSD at the  $p < .05$  level. In assessing the relation between two variables, the effect size is important to consider because it provides information about the strength of the association. This tells us not only if two variables are related, but the magnitude of that association. Unlike  $p$ -values, effect size is not influenced by sample size. For these reasons, many scholars argue that reporting effect sizes is equally if not more important than reporting  $p$ -values (Sullivan and Feinn 2012). As such, the effect size between child exposure to family violence and child PTSD was moderate and in the predicted direction. Our results indicated that with each additional event of family violence that children reported experiencing, their PTSD scores increased by an average of 23.72 points. This is a notable increase considering that PTSD scores on the UCLA PTSD Index can range from 0 to 80 and the minimum score for meeting criteria for PTSD is 15.

Several hypotheses were not supported by the results of this study. For example, increases in mother PTSD were not related to worse mother–child communication and problem solving. Unexpectedly, we found that higher levels of maternal PTSD were associated with better maternal communication. Additionally, higher levels of maternal PTSD were marginally associated with better maternal problem solving. Also unexpected, was the finding that child PTSD was not related to observed mother–child interactions (i.e., communication and problem solving). These findings diverge from most theory and literature

suggesting that family violence and PTSD have adverse effects on parent–child processes (Brockman et al. 2016; Maddoux et al. 2014; Mclean et al. 2013; Reich et al. 2015). Prior literature has found a link between PTSD symptoms and impaired social problem-solving skills (Maddoux et al. 2014) and parent–child relationships (Van EE et al. 2012). Moreover, social interaction learning theory (Patterson et al. 2010) assumes interdependency of the effects of family violence and that family violence can impair positive parenting. Our results suggesting that higher PTSD symptoms were related to better parent–child communication directly contrast with this theory.

### Posttraumatic Growth

Possible explanations for these unexpected findings include: (a) the relationship between trauma-exposure and posttraumatic growth, (b) the influence of cultural context, and (c) potential untested moderating variables. Literature on posttraumatic growth and PTSD has increased in past decades (Shakespeare-Finch and Barrington 2012; Shakespeare-Finch and Lurie-Beck 2014). A meta-analysis reported a significant relationship between PTSD symptoms and posttraumatic growth (Shakespeare-Finch and Lurie-Beck 2014). Shakespeare-Finch and Barrington (2012) reported that 79.5% of individuals in a trauma-exposed sample reported positive changes in “relating to others.” Likewise, Williamson et al. (2017) found in their meta-analysis on the effects of parent PTSD on child outcomes, that three of the 10 studies they reviewed reported positive associations between positive parenting (e.g., warmth) and child PTSD. Therefore, it is possible that mothers who have experienced family violence may work extra hard to make sure their child does not suffer as a consequence of their traumatic experience, and that these mothers may actually increase their investment in caring for their children. Mothers who experienced family violence may also become more attentive and focused on protecting their family and supporting their children as a way of coping. However, until this finding is replicated, immense caution should be used in generalizing the possibility that mothers who have experienced family violence may become better communicators or problem solvers.

### Cultural Explanations

Another potential reason for our unexpected findings could be due to cultural factors unique to the study population. Although few studies have examined the effects of culture on trauma-exposed families and family interactions, some have suggested that the effects of trauma could be culture dependent (DiGangi et al. 2016; Phipps and Degges-White 2014). For example, two studies including non-Western samples provided findings that countered the common assumption that parent trauma negatively impacts child adjustment (Punamäki et al. 2001; Roth et al. 2014). Roth et al. (2014) examined the transgenerational effects of PTSD in mothers exposed to Rwandan genocide and found that maternal PTSD did not relate to child maladjustment. Similarly, a study in Israel found that children that perceived their mothers as loving and supportive reported higher levels of PTSD (Punamäki et al., 2001). These studies highlight the complex influences that traumatic stress can have on family relationships depending on cultural context.

Additionally, the unexpected results could be, in part, due to Latinx cultural values moderating the association between PTSD and parent–child interactions. For example, research suggests religiosity is protective against traumatic stress (Meyerson et al. 2011) and is an important predictor of Latinx health (Lerman et al. 2018). *Familismo* is the Latinx belief

that one must sacrifice individual needs for the needs of the family (Stein et al. 2014). *Marianismo* is the belief that women must sacrifice for the males of their family to be seen as “good” and “pure” (Stevens 1973). These cultural beliefs could explain why Latina mothers strive for positive family relationships despite their symptomatology. However, more research is absolutely needed to explore the effects of family violence and trauma on Latinx cultural values and parenting before any definite claims can be made.

## Limitations

Several limitations are worth noting in this study. The small sample size limited (a) our study’s power to detect potential significant effects and (b) our ability to control for potential confounders such as type of family violence exposure, which have been shown to be linked with family violence and child outcomes (Sternberg et al. 2006). Another limitation was that not all measures (i.e., the family violence scale for children and the observational measures) in this study were previously validated with Latinx families. Therefore, we cannot be certain that all instruments fully captured mother and child family violence exposure and parent–child interactions. In addition, as a result of this study’s cross-sectional design, we cannot be sure about how family violence affects mother–child relationships over time or the causal relation between these variables. For example, an alternative possibility is that negative parent–child interactions (e.g., poor problem-solving skills) could predict increases in mothers’ use of harsh discipline or violence with their children.

Family violence was assessed differently in children and mothers. Children reported whether they had experienced family violence in their lifetimes and in the past month, whereas mothers reported their experience of family violence in the past year. Moreover, mothers and children were reporting on violence that came from different sources. Children reported on violence perpetrated by their parents, whereas mothers reported on violence perpetrated by their husbands. Future studies using data from multiple informants would preferably have identical periods of assessment and the same source of family violence. Our measure of PTSD was based on the DSM-IV criteria. However, due to the minor differences between the DSM IV and DSM 5, we would not expect our results to change using the DSM 5 criteria for PTSD. Finally, based on the critical role Mexican mothers play in their children’s lives and the greater time spent with their children, we focused our study on mother–child relationships. Nonetheless, we believe that fathers also have a unique role in the family and recognize that generalizations cannot be made from our study about how father–child relationships are influenced by family violence exposure and PTSD symptoms.

## Implications

This study has implications for researchers, clinicians and other professionals working with Mexican families. Findings suggest that family violence is associated with PTSD symptoms for mothers and may have effects on mother–child relationships. Future research could further contribute to the literature by exploring moderators of family violence in the context of dyadic family relationships. Subsequent studies could also examine the varying effects of different types of family violence and the differences between witnessing and directly experiencing family violence (e.g., Sternberg et al. 2006).

Despite growing literature on the effects of trauma on individual and interpersonal functioning, few studies have explored how family violence and PTSD symptoms influence parent–child relationships in Latinx families. This is problematic because ethnic

minority families experience trauma at higher rates than the general population (Figley and Burnett, 2017) and immigrant families experience additional stressors such as relocation, poverty, acculturation, and discrimination (Phipps and Degges-White 2014). Some argue that the effects of trauma and violence on families cannot be understood without examining contextual factors, such as community cohesion and differential resilience processes (Ungar 2013). Researchers, clinicians, or legal professionals should consider how cultural strengths might influence the expression of PTSD symptoms when working with Latinx families (Phipps and Degges-White 2014). Additional research is needed to better understand the effect of PTSD symptoms on parent–child relationships in diverse samples and contexts.

Finally, past research on trauma and parent–child relationships has primarily tested the indirect effects of parent PTSD on child functioning via impairments in positive parenting (Snyder et al. 2016; Van EE et al. 2012). Ecological frameworks (e.g., Bronfenbrenner and Morris 2006) and social interaction learning theory (Patterson et al. 2010) posit that one family member’s actions will influence their other family members (i.e., interdependence). Examining the bidirectional effects between parent and child trauma symptoms and between parent and child prosocial behaviors could reveal important information about the interdependent nature of family relationships and the intergenerational effects of trauma symptoms.

## Conclusion

This study examined the indirect effects of family violence exposure on mother–child interactions using dyadic data analysis. The use of multiple measurement methods to assess the relational effects of trauma on family dynamics can advance scientific understanding of trauma-affected families. The present study provided some evidence that individuals from certain cultures (i.e., Mexico) may respond differently to experiencing family violence. However, additional research with larger samples is needed to substantiate this finding. Future investigations should explore how expressions of PTSD symptoms may differ across cultural groups and the protective factors that may be unique to Latinx families.

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**Code Availability** SPSS syntax and Mplus code is available upon request.

## Compliance with Ethical Standards

**Conflict of interest** We have no conflict of interests to report at this time.

**Availability of Data and Materials** These data are not publicly available.

**Consent to Participate** We obtained informed consent from all participants prior to the study.

**Consent for Publication** Study participants were made aware that data would be used for publication and that no personal identifiers would be included in the manuscript.

## Appendix: Survey Items

See Tables 3, 4, 5, 6, 7, 8, 9 and 10

**Table 3** Child Family Violence: Family Violence Checklist (Catani et al. 2008)

Have any of these events happened to you at home?	No	Yes
1. Had your arms twisted or have you been pulled by the hair	0	1
2. Been verbally threatened	0	1
3. Been slapped on the body, arms or legs	0	1
4. Been punched/kicked on body, arms or legs	0	1
5. Been punched/kicked in the face	0	1
6. Been hit with an object (e.g. belt, board, stick)?	0	1
7. Been burned with hot water or cigarette?	0	1
8. Had things thrown at you	0	1
9. Been tied up or locked up	0	1
10. Had someone attempt to strangle or burn you	0	1
11. Been threatened with an object or weapon	0	1
12. Been threatened to be killed	0	1
13. Been injured with a weapon (gun, knife)	0	1
14. Been shouted, screamed, or sworn at	0	1
15. Been told that you are not good?	0	1
16. Been ignored by your parents/guardians	0	1
17. Been made fun of in front of others	0	1
18. Had to wear dirty/ragged clothes	0	1
19. Not been given enough food/Did you go hungry	0	1
20. Not been given anything to drink	0	1
21. Seen a family member being punched/hit/kicked	0	1
22. Seen a family member being hit with an object	0	1
23. Seen a family member being burned/strangled	0	1
24. Seen a family member being injured with a weapon	0	1
25. Seen a family member being threatened to be killed	0	1
26. Been touched in your intimate/private body parts by someone much older than you	0	1
27. Been forced by an adult person to insert something in any part of your body	0	1
28. Been forced to kiss someone (in a sexual way)	0	1
29. Been forced to touch the intimate parts of someone much older than you	0	1
30. Seen someone being touched on intimate body parts against his/her will	0	1
31. Been forced to watch sexual acts	0	1

**Table 4** Mother Family Violence: Composite Abuse Scale (Hegarty 2007)

Actions	How Often it Happened					
	Never	Only once	Several times	Once/month	Once/week	Daily
Did your partner do any of the following in the past 12 months?						
1. Told me that I wasn't good enough	0	1	2	3	4	5
2. Kept me from medical care	0	1	2	3	4	5
3. Followed me	0	1	2	3	4	5
4. Tried to turn my family, friends and children against me	0	1	2	3	4	5
5. Locked me in the bedroom	0	1	2	3	4	5
6. Slapped me	0	1	2	3	4	5
7. Raped me	0	1	2	3	4	5
8. Told me that I was ugly	0	1	2	3	4	5
9. Tried to keep me from seeing or talking to my family	0	1	2	3	4	5
10. Threw me	0	1	2	3	4	5
11. Hung around outside my house	0	1	2	3	4	5
12. Blamed me from causing their violent behavior	0	1	2	3	4	5
13. Harassed me over the telephone	0	1	2	3	4	5
14. Shook me	0	1	2	3	4	5
15. Tried to rape me	0	1	2	3	4	5
16. Harassed me at work	0	1	2	3	4	5
17. Pushed, grabbed or shoved me	0	1	2	3	4	5
18. Use a knife or gun or other weapon	0	1	2	3	4	5
19. Became upset if dinner/housework wasn't done	0	1	2	3	4	5
20. Told me that I was crazy	0	1	2	3	4	5
21. Told me that no one would ever want me	0	1	2	3	4	5
22. Took my wallet and left me stranded	0	1	2	3	4	5
23. Hit or tried to hit me with something	0	1	2	3	4	5
24. Did not want me socialize with my female friends	0	1	2	3	4	5
25. Put foreign objects in my vagina	0	1	2	3	4	5



**Table 4** (continued)

Actions	How Often it Happened					
	Never	Only once	Several times	Once/month	Once/week	Daily
Did your partner do any of the following in the past 12 months?						
26. Refused to let me work outside the home	0	1	2	3	4	5
27. Kicked me, bit me or hit me with a fist	0	1	2	3	4	5
28. Tried to convince my friends, family or children that I was crazy	0	1	2	3	4	5
29. Told me that I was stupid	0	1	2	3	4	5
30. Beat me up	0	1	2	3	4	5

**Table 5** Child PTSD: UCLA PTSD Index (Pynoos et al. 1998)

Items	None	Little	Some	Much	Most
1. I watch out for danger or things that I am afraid of	0	1	2	3	4
2. When something reminds me of what happened, I get very upset, afraid or sad	0	1	2	3	4
3. I have upsetting thoughts, pictures, or sounds of what happened come into my mind when I do not want them to	0	1	2	3	4
4. I feel grouchy, angry or mad	0	1	2	3	4
5. I have dreams about what happened or other bad dreams	0	1	2	3	4
6. I feel like I am back at the time when the bad thing happened, living through it again	0	1	2	3	4
7. I feel like staying by myself and not being with my friends	0	1	2	3	4
8. I feel alone inside and not close to other people	0	1	2	3	4
9. I try not to talk about, think about, or have feelings about what happened	0	1	2	3	4
10. I have trouble feeling happiness or love	0	1	2	3	4
11. I have trouble feeling sadness or anger	0	1	2	3	4
12. I feel jumpy or startle easily, like when I hear a loud noise or when something surprises me	0	1	2	3	4
13. I have trouble going to sleep or I wake up often during the night	0	1	2	3	4
14. I think that some part of what happened is my fault	0	1	2	3	4
15. I have trouble remembering important parts of what happened	0	1	2	3	4
16. I have trouble concentrating or paying attention	0	1	2	3	4
17. I try to stay away from people, places, or things that make me remember what happened	0	1	2	3	4
18. When something reminds me of what happened, I have strong feelings in my body, like my heart beats fast, my head aches, or my stomach aches	0	1	2	3	4
19. I think that I will not live a long life	0	1	2	3	4
20. I am afraid that the bad thing will happen again	0	1	2	3	4

**Table 6** Mother PTSD: Posttraumatic Stress Diagnostic Scale (Foa et al. 1997)

PTSD Symptom Items	Not at all	1/week or less	2–4 times a week	Almost always
1. Having upsetting thoughts or images about the traumatic event that came into your head when you didn't want them to	0	1	2	3
2. Having bad dreams or nightmares about the traumatic event	0	1	2	3
3. Reliving the traumatic event, acting or feeling as if it was happening again	0	1	2	3
4. Feeling emotionally upset when you were reminded of the traumatic event	0	1	2	3
5. Experiencing physical reactions when you were reminded of traumatic event	0	1	2	3
6. Trying not to think about, talk about or have feelings about the traumatic event	0	1	2	3
7. Trying to avoid activities, people, or places that remind you of the traumatic event	0	1	2	3
8. Not being able to remember an important part of the traumatic event	0	1	2	3
9. Having much less interest or participating much less often in important activities	0	1	2	3
10. Feeling distant or cut off from people around you	0	1	2	3
11. Feeling emotionally numb (i.e., being unable to cry)	0	1	2	3
12. Feeling as if your future plans or hopes will not come true	0	1	2	3
13. Having trouble falling or staying asleep	0	1	2	3
14. Feeling irritable or having fits of anger	0	1	2	3
15. Having trouble concentrating	0	1	2	3
16. Being overly alert (e.g., checking to see who is around you)	0	1	2	3
17. Being jumpy or easily startled	0	1	2	3

**Table 7** Mother Problem Solving: Adapted from the Coder Impressions Inventory (Dishion et al. 2004)

Item	Not at all	A little	Somewhat	Quite	Very much
1. Did the mother discuss topics in a positive tone in task 1?	1	2	3	4	5
2. Did the mother discuss topics in a positive tone in task 2?	1	2	3	4	5
3. Did mother seem open/flexible to trying new solutions in task 1?	1	2	3	4	5
4. Did mother seem open/flexible to trying new solutions in task 2?	1	2	3	4	5
5. Did mother propose clear and specific solutions in task 1?	1	2	3	4	5
6. Did mother propose clear and specific solutions in task 2?	1	2	3	4	5
7. Did mother provide emotional support or encouragement in task 1?	1	2	3	4	5
8. Did mother provide emotional support or encouragement in task 2?	1	2	3	4	5
9. Was the mother actively engaged in the problem solving?	1	2	3	4	5
10. Was the mother actively engaged in the problem solving?	1	2	3	4	5

**Table 8** Child Problem Solving: Adapted from the Coder Impressions Inventory (Dishion et al. 2004)

Item	Not at all	A little	Somewhat	Quite	Very much
1. Did child discuss topics in a positive tone in task 1?	1	2	3	4	5
2. Did child discuss topics in a positive tone in task 2?	1	2	3	4	5
3. Did child seem open/flexible to trying new solutions in task 1?	1	2	3	4	5
4. Did child seem open/flexible to trying new solutions in task 2?	1	2	3	4	5
5. Did child propose clear and specific solutions in task 1?	1	2	3	4	5
6. Did child propose clear and specific solutions in task 2?	1	2	3	4	5
7. Was child actively engaged in the problem solving?	1	2	3	4	5
8. Was child actively engaged in the problem solving?	1	2	3	4	5

**Table 9** Mother positive communication: Adapted from the Coders Impressions Inventory (Dishion et al. 2004)

Item	Not at all	A little	Somewhat	Quite	Very much
1. Did mother suggest ideas? (e.g., new thoughts, input, not giving commands)	1	2	3	4	5
2. Did mother acknowledge or respond to ideas? (e.g., listening, being receptive, responding in a positive manner)	1	2	3	4	5
3. Did mother show non-verbal expressions of engagement? (e.g., smiles, leaning in, nodding, etc.)	1	2	3	4	5
4. Did mother show positive physical engagement? (e.g., high-fives, hugs, pats on the back)	1	2	3	4	5
5. Did mother use positive humor? (e.g., appropriate to the context)	1	2	3	4	5
6. Did mother use clear communication? (e.g., direct, staying on topic)	1	2	3	4	5
7. Any supportive talk or offers to cooperate and help?	1	2	3	4	5
8. Any empathy or understanding of child's feelings?	1	2	3	4	5
9. How much does mother actively listen to the child? (e.g., active listening; leaning forward, nodding, giving signs of listening)	1	2	3	4	5
10. Does mother seem open to new thoughts and ideas?	1	2	3	4	5
11. Does mother seem to share thoughts openly with the child?	1	2	3	4	5
12. How much warmth is evident in the mother's discussion?	1	2	3	4	5
13. Does the mother use questions to gather important information from the child?	1	2	3	4	5
14. How mature does the mother seem? (mature: chooses words carefully, takes responsibility, does not hurt other's feelings while also saying what needs to be said)	1	2	3	4	5
15. Does the mother provide rationale and/or instruction in a positive manner to support her viewpoints? (e.g., gives an explanation for her requests, respects the child's viewpoint, expectation of behaviors are clear, shows genuine concern)	1	2	3	4	5
16. Does mother control her own reactions to allow the child to finish talking? (e.g., does not interrupt, waits for her turn to speak)	1	2	3	4	5

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