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Not in front of the kids: Effects of parental suppression on socialization behaviors during cooperative parent-child interactions

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Abstract

Parents often try to hide their negative emotions from their kids, hoping to protect them from experiencing adverse responses. However, suppression has been linked with poor social interactions. Suppression may be particularly damaging in the context of parent-child relationships because it may hinder parents' ability to support children's emotion regulation. Immediately after completing a stressful task, 109 parents of 7–11 year olds were randomly assigned to a suppression condition or a control condition during an interaction with their child. Children were given a set of instructions with pictures to build a Lego house and told to verbally instruct their parent without touching the Legos themselves. Trained research assistants coded parents' and children's positive and negative mood, responsiveness, warmth, parents' guidance, and the quality of the interaction. We found that suppression decreased parents' observed positive mood, responsiveness, warmth, and guidance, as well as children's observed positive mood, responsiveness, and warmth, and decreased the overall dyadic interaction quality. However, parent sex played a significant role in moderating these effects. Fathers in the suppression condition were less responsive and warm than control fathers, though children interacting with their fathers did not exhibit decrements in responsiveness or warmth. In contrast, children of suppressing mothers appeared less warm than children of mothers in the control condition, though suppressing mothers did not exhibit decrements in their observed warmth or responsiveness relative to control mothers. Taken together, these findings suggest that the desire to hide one's feelings from one's children may have unwanted negative consequences but may differ for fathers versus mothers.

Keywords

Suppression; Parenting; Parent Sex; Socialization

Suppression, an emotion regulation strategy that involves the inhibition of emotional expression (Gross, 1998), is often associated with negative physiological, social, and cognitive outcomes (John & Gross, 2004). While suppression effectively decreases negative

emotional *expressions*, suppression leaves negative emotional *experiences* intact (Gross & Levenson, 1993), decreases memory (Richards & Gross, 2000), and increases sympathetic nervous system activation (Gross & Levenson, 1997). The negative outcomes associated with suppression may be particularly significant in the context of the parent-child relationship because parents often feel the need to shield children from their negative emotions (Le & Impett, 2016). Suppression, used in the face of challenging interactions with their children, may hinder parents' ability to respond appropriately to children's needs. No research, to our knowledge, has tested the effects of suppression in the context of in vivo parent-child interactions. In the present study, we experimentally manipulated parents' use of suppression during a cooperative parent-child interaction and examined the consequences of parents' suppression on parents' socialization and children's behaviors.

Effects of Suppression

Intrapersonal effects.

Previous research has largely examined the intrapersonal effects of suppression. Because suppression occurs relatively late in the emotion generative process, after an emotional experience has begun to unfold, it is hypothesized to be effortful to implement (Gross, 1998). Previous studies have found that suppression used in the context of emotional film clips or images increases sympathetic nervous system activation (Gross & Levenson, 1993; Gross & Levenson, 1997; Gross, 1998) and reduces memory (Richards & Gross, 1999; Richards & Gross, 2000). These results indicate that suppression leads to greater stress and taxes individuals' cognitive resources, which may have important implications for social interactions.

Interpersonal effects.

The costs of suppression may be pronounced in social contexts, where emotion regulation is most likely to take place (Gross, Richards, & John, 2006). However, only a few studies have examined the effects of suppression during social interactions. In a study of dating couples, one member of each dyad was assigned to suppress their emotions or act naturally during a conflict conversation (Richards, Butler, & Gross, 2003). After the conversation, participants wrote down what they could remember from the conversation and their responses were coded for conversational utterances (facts about the conversation) and recalled feelings (how they had felt during the conversation). Consistent with previous research showing that suppression can impair memory, participants in the suppression condition remembered less conversational utterances than those in the control condition. However, they recalled more feelings, and this effect was partially mediated by self-monitoring, indicating that suppression may increase self-focus. These findings suggest that suppression may have downstream consequences for social interactions because suppressors may miss important social cues by their partners.

One of the downstream consequences of suppression on social interactions may be that suppression hinders responsiveness to one's interaction partner. In a study of unacquainted pairs of women assigned to discuss an emotional film clip, individuals assigned to a suppression condition exhibited less responsiveness to their partner than those assigned to a

control condition (Butler et al., 2003). Partners of suppressors also reported lower rapport, and this association was mediated by suppressors' observed lack of responsiveness. When relationships between interaction partners are close and ongoing, the consequences of suppression may be more extreme. Only one study, to our knowledge, has tested the effects of suppression on responsiveness in interactions between dyads in a close relationship. Dating couples in which one of the members of the dyad was assigned to suppress their emotions during a conversation about an emotional film clip reported that their partner was less responsive than couples in which one partner was assigned to express their emotions (Peters & Jamieson, 2016). These same couples also exhibited less physical intimacy in a novel implicit intimacy task (see West et al., 2017). Replicating Butler et al., (2003), suppressors, but not their partners, were coded as being less responsive. These studies demonstrate that the cognitive toll that suppression takes is detrimental to social interactions by reducing suppressors' responsiveness. In turn, partners of suppressors like their partners less, and experience less intimacy with their partners. These findings highlight the need to examine effects of suppression on both members of a dyad, given the reciprocal nature of social interactions, and suggest that suppression may have profound consequences in close relationship contexts.

Parent Suppression and Socialization

The parent-child relationship is an important context to study suppression effects on responsiveness because responsiveness is one critical element of socialization. Emotion socialization is defined as behaviors that directly or indirectly influence children's experience, expression, and regulation of emotion and include parents' own expressions of emotion, responsiveness, and guidance (scaffolding the child's autonomy in a healthy, age-appropriate way) (Eisenberg, Cumberland, & Spinrad, 1998). Responsiveness, warmth, and guidance have all been positively associated with children's greater self-regulation (see Eisenberg, Spinrad, & Eggum, 2010 for a review). Parents must attend to many demands during interactions with their children, including scaffolding, managing their own emotions in front of their children, and helping their children manage their emotions (Kienhuis et al., 2010). Given the intrapersonal and interpersonal costs of suppression, using suppression during these challenging interactions may hinder parents' ability to respond appropriately to the demands of the situation. Few studies have examined links between suppression and socialization, despite long-standing calls to consider the integral role of emotion regulation in parenting (Dix, 1991).

Parents who are skilled at managing their emotions may be buffered from stress during challenging parent-child interactions and have greater resources to deal with situations that call for them to be responsive, warm, and supportive to their children (Crandall, Deater-Deckard, & Riley, 2015). Only two articles that we are aware of have examined whether suppression is related to emotion socialization in the parenting context. In one study, parents' greater use of habitual suppression was associated with more punitive and dismissive parenting (Hughes & Gullone, 2010). In Le and Impett (2016), parents recalled a time when they used suppression during an interaction with their child compared to a time when they interacted with their child normally and reported being less responsive to their child when they had used suppression. In a second study, using a daily diary design, on days

in which parents used greater suppression during an interaction with their child, parents reported being less responsive to their children. These findings suggest that parents' use of suppression might be harmful to their ability to engage in socialization.

Gaps in the Literature

Our study builds on previous research in a number of ways. First, very few studies have experimentally examined suppression within parent-child interactions. Thus, our study will seek to replicate previous research demonstrating negative effects of suppression on responsiveness in social interactions and extend prior research to the parent-child relationship. Second, our study will add to the limited research on the relationship between parental emotion regulation and socialization. Previous studies have primarily examined self-reports of parenting behaviors in relation to parents' emotion regulation, which are subject to social desirability biases. Our study employed observational measures of parenting behaviors, which are relatively objective and critical for examining effects of suppression, an emotion regulation strategy that targets expressions. Third, previous research on the relationship between parents' emotion regulation and parenting behaviors has primarily relied upon samples of mothers (Crandall, Deater-Deckard, & Riley, 2015). Although we had no a priori hypotheses regarding parent sex differences, we aimed to recruit an equal number of fathers and mothers to address possible sex differences. Because men are more likely to engage in habitual suppression (John & Gross, 2003) than women, they may be more skilled at using suppression and be buffered from suppression's cognitive toll. As such, men may exhibit no differences in their responsiveness, warmth, and guidance. To examine this possibility, among others, we explored whether the negative effects of suppression on socialization apply to fathers as well as mothers. Fourth, we examined whether the effects of suppression were observable in both parents' and their children's behaviors to assess whether the effects of suppression are observable in partners of suppressors (e.g., Butler et al., 2003; Peters, Overall & Jamieson, 2014; Peters & Jamieson, 2016). Lastly, we tested suppression in the context of a cooperative parent-child interaction, which was designed to challenge parents and children to work in a highly coordinated fashion to accomplish a goal. This context is akin to real-life experiences in which parents and children work together to accomplish a task, like cooking.

The Present Study

In the present study, we recruited 114 parents (48% fathers) who completed a validated laboratory stressor and after were randomly assigned to suppress their emotions or act naturally during an interaction with their child. Parents' behavior was then coded by research assistants, unaware of condition, for parent and child negative and positive mood, responsiveness, and warmth, and dyadic relationship quality and parent guidance. Informed by prior research demonstrating negative effects of suppression on cognitive resources and responsiveness (Richards, Butler, & Gross, 2003; Butler et al., 2003), we hypothesized that parents in the suppression condition would 1) express less negative and positive mood, 2) exhibit less responsiveness, 3) exhibit less warmth, and 4) exhibit less guidance than parents in the control condition. We also expected children to show more negative mood when interacting with a suppressing parent than a control parent. Moreover, we hypothesized that

dyads in the suppression condition would have lower quality interactions than dyads in the control condition. Using actor-partner interdependence models, we tested whether the effects of suppression dually influenced parent and child and explored unique and interactive effects of parent sex. Lastly, we conducted exploratory analyses to unpack the interaction between condition, parent sex, and role on warmth/support.

Methods

Participants

Parents ($N = 114$; 48% male; $M_{\text{age}} = 40.86$ years, $SD = 6.32$) and their 7–11 year old child ($M_{\text{age}} = 8.71$ years, $SD = 1.40$; 61% male) were recruited from the local community. Three dyads dropped out after completing online consent, but before arriving for the laboratory visit, two dyads dropped out because the parent did not consent to the speech, and one dyad dropped out before completing the cooperative task. Four dyads did not have audiovisual data due to equipment malfunction or participant non-consent to video recording. The final sample consisted of 104 dyads. Twenty-six percent of dyads were mother-daughter pairs, 27.9% of dyads were mother-son pairs, 13.5% of dyads were father-daughter dyads, and 32.7% of dyads were father-son pairs. Parents were 53.8% White, 10.6% Latinx, 24% Asian, 8.7% African American, and 2.9 percent Mixed ethnicity. The majority of parents (69.2%) had a bachelor's degree or higher, while 20.2% had a high school diploma and 10.6% had an associate's degree. Family income ranged widely with 5.8% of families earning less than \$25,000 per year, 28.8% earning between \$25,000 and \$75,000 per year, 21.2% earning between \$75,000 and \$100,000 per year, and 44.2% earning over \$100,000 per year. Sample size was set by a combination of the funds available and the amount of time set aside to conduct the study (two years).

Procedures

Upon arrival at the laboratory, parents completed consent procedures for themselves and their child. Participants' physiological responses, not reported here, were recorded during a baseline with their child (see Waters, Karnilowicz, West, & Mendes, under review). Afterward, the child was brought to another room to complete a battery of questionnaires.

Parents completed a modified Trier Social Stress Test (TSST; Kirschbaum & Hellhammer, 1994), a validated stress induction in which participants received negative nonverbal feedback from two evaluators during a speech and Q&A session (Akinola & Mendes, 2008). Afterward, parents were randomly assigned to the suppression ($n = 51$) or control condition ($n = 53$) and told that they would be reunited with their child. In the suppression condition, parents were given the following instructions, based on procedures used by Richards, Butler, and Gross (2003):

“During the following interactions with your child, try to behave in such a way that your child DOES NOT KNOW that you are feeling anything at all. Try NOT to show any emotion in your face or your voice. In other words, mask any emotion you may feel so that your child is NOT AWARE of them.”

In the control condition, parents were instructed to act naturally with their child, as they would at home. Upon the child's return, dyads completed three interaction tasks: a conflict task, a cooperative task, and a free play period. Because we were primarily interested in the effects of suppression on parents' responsiveness, warmth, and guidance behaviors in the context of a cooperative interaction we focus on the second task. Analyses of the conflict task are presented in a different paper (Waters, Karnilowicz, West, & Mendes, under review). Before beginning the cooperative task, parents in the suppression condition were reminded of the suppression instructions both verbally and in written format to ensure that the strength of the suppression manipulation was consistent across tasks. During the cooperative task, parents and children were told to work together to build a Lego structure for 6 minutes and given a timer that would ring when their time was up. Children were given a visual guide for building the structure and told to verbally instruct their parent through building without touching the Legos themselves. Parents were told to follow children's instructions without looking at the visual guide. Thus, parents and children needed to coordinate their communication and behavior to accomplish the task. This was followed by a 6-minute free play task in which parents in the suppression condition were told they could interact with their child naturally. Upon completion of the study, dyads were debriefed and compensated. Study procedures were approved by the Institutional Review Board of the University of California, San Francisco.

Measures

Observed behavior.—An adaptation of the Iowa Family Interaction Scales (Melby & Conger, 2001) was used to capture parent and child affect and behavior during the cooperative task. The Iowa Family Interaction Scales give examples of behaviors that could be categorized as *negative mood*, *positive mood*, *listener responsiveness*, *warmth/support*, and *relationship quality*. *Negative mood* is characterized as the degree to which the focal partner appears unhappy, dissatisfied, sad, pessimistic, angry, and/or expresses negative sentiments unrelated to the other partner or the current task, *positive mood* is characterized as the degree to which the focal appears content, happy, and optimistic and/or expresses positive sentiments unrelated to the other partner or the current task, *listener responsiveness* is characterized as attending to, showing interest in, acknowledging, and validating the other's verbalizations, and *warmth/support* is characterized as liking, appreciation, praise, care, concern, or support for the other partner. These variables were coded separately for parents and children (i.e. each dyad received two codes for each variable—one for parent and one for child). *Relationship quality* (the degree to which the dyad exhibits ease, camaraderie, and comfortableness in being together) was coded jointly for the dyad (i.e. each dyad received one code). Each code is on a 1 to 9 scale and was global (i.e., there was one code per variable for the whole task). Two independent raters established reliability on 20% of the sample before coding the remaining sample individually. Reliability statistics are as follows: for parents, $ICC_{negativemood} = .99$, $ICC_{positivemood} = .99$, $ICC_{listenerresponsiveness} = .90$, $ICC_{warmth/support} = .99$, for children, $ICC_{negativemood} = .97$, $ICC_{positivemood} = .97$, $ICC_{listenerresponsiveness} = .88$, $ICC_{warmth/support} = .94$, and for relationship quality $ICC = .99$.

Raters also coded parents' *guidance frequency* on a scale of 0 (no guidance observed) to 3 (extensive degree of guidance observed ~75% of the time) and *guidance quality* using the

following scale: 0 = No guidance observed, 1 = Gives some feedback, but it is not structured (e.g. “where do I put it?”, “here?”), 2 = Gives constructive feedback, makes suggestions, but does not engage in scaffolding (e.g. “use your words”), 3 = Elaborates on instructions, provides suggestions and gives feedback, asks questions that elaborate on the task (e.g. “describe the color”, “start from the bottom”). Raters achieved high reliability ($ICC = .79$ for both scales). Guidance frequency and guidance quality were statistically significantly correlated, $r(104) = .60$, and thus averaged to create a composite, called *parental guidance* ($\alpha = .74$).

Self-reported habitual suppression.—Parents completed the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) suppression subscale as a measure of their habitual use of suppression. The suppression subscale of the ERQ consists of 4 items and participants responded using a 1–7 scale ($M=3.39$, $SD=1.17$). Alpha reliability for habitual suppression was consistent with previous studies ($\alpha=.77$).

Analytic Strategy

For observed parent and child positive and negative mood, listener responsiveness, and warmth/support, data were analyzed using distinguishable dyad as unit of analysis to control for nonindependence in responses (Kenny, Kashy, & Cook, 2006). For each behavior, we included the main effects of condition (control vs. suppression), role (parent vs. child), parent sex (mother vs. father) and all 2-way and 3-way interactions (see Table 3). To further investigate statistically significant main effects and interactions, we used pairwise *t*-tests corrected for family-wise error rate using Tukey’s method. For relationship quality and parental guidance, we used univariate analysis of variance to examine unique and interactive effects of condition and parent sex. The data and syntax needed to re-create the primary analyses are available here: https://osf.io/ustzc/?view_only=ae68a79c2ea0418ab807b76afbac16e6.

Results

Preliminary Analyses

We first examined associations between the study variables (Table 1). Consistent with increases in children’s cognitive and socioemotional development as they get older, child age was positively correlated with parental guidance, such that older children received less parental guidance than younger children. Though positive mood, warmth, and relationship quality were highly correlated, we kept these variables separate for theoretical and practical reasons. First, positive mood, warmth, and relationship quality are related, yet distinct constructs. Positive mood and warmth/support are coded at the level of the individual, the former addressing the individual’s current affective state unrelated to the partner or task and the latter addressing the nature of the interaction with the partner. Relationship quality is a dyadic code that addresses the openness and emotional connection between the partners. Combining relationship quality with warmth/support or positive mood would keep us from being able to disentangle effects on each partner. Consistent with previous research, habitual suppression was positively correlated with parent gender, such that fathers reported using habitual suppression more often than mothers. Habitual suppression was also negatively

correlated with dyadic relationship quality, parent warmth/support and listener responsiveness, and child positive mood and listener responsiveness.

Observed Relationship Quality and Parental Guidance

We observed a significant main effect of condition on relationship quality, $F(1,100) = 16.70$, $p < .001$, partial $\eta = .14$, and parent sex, $F(1,100) = 5.22$, $p = .024$, partial $\eta = 0.05$. Dyads in the parental suppression condition exhibited lower relationship quality, ($M = 4.56$, $SE = 0.24$, 95% $CI[4.09, 5.02]$) than control dyads, ($M = 5.90$, $SE = 0.23$, 95% $CI[5.45, 6.36]$). Mother-child dyads ($M = 5.61$, $SE = 0.22$, 95% $CI[5.16, 6.05]$), exhibited higher relationship quality than father-child dyads ($M = 4.85$, $SE = 0.24$, 95% $CI[4.38, 5.33]$).

We observed a significant main effect for condition on parental guidance, $F(1,100) = 6.15$, $p = .015$, partial $\eta = 0.06$, such that parents in the suppression condition exhibited less guidance ($M = 1.79$, $SE = 0.11$, 95% $CI[1.58, 1.99]$) than control condition parents ($M = 2.16$, $SE = 0.10$, 95% $CI[1.95, 2.36]$). No differences by parent sex emerged ($p = .85$). See Table 2 for a summary of the results.

Observed Parent and Child Mood

Negative mood.—A main effect of role was found for observed negative mood, $t(100) = -2.68$, $p < .001$. Parents ($M = 1.56$, $SE = 0.16$, 95% $CI[1.25, 1.87]$) appeared less negative than children ($M = 2.00$, $SE = 0.16$, 95% $CI[1.68, 2.30]$), consistent with superior emotion regulation in adults. No other significant effects were found ($ps > .08$), suggesting that the suppression manipulation and parent sex did not affect parents' or children's negative mood.

Positive mood.—A main effect of condition, $t(100) = 2.30$, $p = .024$, and Role, $t(100) = 2.62$, $p = .01$, was found for positive mood. As expected, parents and children appeared more positive in the control condition ($M = 3.07$, $SE = 0.27$, 95% $CI[2.55, 3.60]$) than in the suppression condition ($M = 2.21$, $SE = 0.27$, 95% $CI[1.67, 2.74]$). This effect was not significantly moderated by role ($p = .08$). Parents ($M = 2.91$, $SE = 0.22$, 95% $CI[2.48, 3.33]$) appeared more positive than children ($M = 2.37$, $SE = 0.22$, 95% $CI[1.94, 2.80]$). However, this effect was moderated by parent sex, $t(100) = -2.04$, $p = .044$, such that children of mothers ($M = 2.84$, $SE = 0.29$, 95% $CI[2.26, 3.42]$) expressed more positive mood than children of fathers ($M = 1.90$, $SE = 0.32$, 95% $CI[1.27, 2.52]$), though mothers and fathers exhibited no differences in positive mood.

Observed Parent and Child Listener Responsiveness

A main effect of condition, $t(100) = 2.15$, $p = .034$, role, $t(100) = 5.06$, $p < .001$, and parent sex, $t(100) = 4.49$, $p < .001$, was found for listener responsiveness. As expected, parents and children appeared more responsive in the control condition ($M = 6.01$, $SE = 0.24$, 95% $CI[5.54, 6.49]$) than in the suppression condition ($M = 5.28$, $SE = 0.24$, 95% $CI[4.80, 5.76]$). Consistent with the mood findings above, parents ($M = 6.14$, $SE = 0.20$, 95% $CI[5.75, 6.53]$) appeared more responsive than children ($M = 5.16$, $SE = 0.20$, 95% $CI[4.77, 5.55]$). Mothers ($M = 6.41$, $SE = 0.23$, 95% $CI[5.95, 6.87]$) also appeared more responsive than fathers ($M = 4.89$, $SE = 0.25$, 95% $CI[4.39, 5.38]$). However, a significant condition x role x parent sex interaction was found, $t(100) = -2.56$, $p = .012$. We broke down the interaction for parents

and children separately. See Figure 2 for a depiction of the estimated marginal means by condition, role, and parent sex.

Parents.—Fathers in the suppression condition appeared significantly less responsive than fathers in the control condition, $b=1.63$, $t(100) = 2.83$, $p = .03$. In contrast, mothers were no less responsive in the suppression condition than the control condition ($p = .98$).

Children.—Neither children of mothers nor children of fathers differed in their responsiveness as a function of condition ($ps > .41$).

Observed Parent and Child Warmth/Support

A main effect of condition, $t(100) = 3.66$, $p < .001$, and role, $t(100) = 9.52$, $p < .001$, was found for warmth. As expected, parents and children appeared warmer in the control condition ($M = 4.29$, $SE = 0.24$, 95% $CI[3.81, 4.77]$) than in the suppression condition ($M = 3.02$, $SE = .25$, 95% $CI[2.54, 3.51]$). Parents ($M = 4.69$, $SE = 0.20$, 95% $CI[4.29, 5.10]$) appeared warmer than children ($M = 2.62$, $SE = 0.20$, 95% $CI[2.22, 3.03]$). However, a condition by role interaction was observed, $t(100) = 2.58$, $p = .011$, as was the three-way interaction between condition, role and parent sex, $t(100) = -3.26$, $p = .002$. We deconstructed the three-way interaction by examining the effects of condition and parent sex separately for parents and then children (Figure 3).

Parents.—Fathers in the suppression condition appeared less warm than fathers in the control condition, $b=2.46$, $t(100) = 4.11$, $p < .001$, but this difference was not statistically significant for mothers, $b=1.19$, $t(100) = 2.15$, $p = .14$.

Children.—Children of mothers in the suppression condition appeared less warm than children of mothers in the control condition, $b=1.49$, $t(100) = 2.69$, $p = .041$, but this difference was not observed for children of fathers, $b=-0.08$, $t(100) = -0.14$, $p > .99$.

Exploratory Analyses

To understand why children's warmth/support was affected by suppressing mothers but not suppressing fathers, we ran exploratory analyses examining two possibilities: 1. that the habitual use of suppression may have accounted for the discrepancy in mothers' and fathers' warmth/support, and 2. that children's warmth/support was more contingent on mothers' warmth/support than fathers'.

Ruling out habitual suppression as a potential confound.—Habitual suppression was added as a covariate to the model predicting warmth/support from parent sex, condition, and role. Consistent with primary analyses, we found a main effect of condition, $t(98) = 3.67$, $p < .001$, and role, $t(99) = 9.60$, $p < .001$, such that suppression dyads expressed less warmth/support than control dyads and parents expressed more warmth/support than children. We also found a significant interaction between condition, role, and parent sex, $t(99) = -3.15$, $p = .002$. The pattern of results replicated the primary analyses, such that fathers' warmth/support was negatively affected by the suppression condition, but not mothers'; children's warmth/support was also negatively affected by the suppression

condition for mother-child dyads but not father-child dyads. Thus, the differences in fathers compared to mothers do not seem to be solely explained by chronic tendencies to suppression emotions.

Is children's warmth/support more contingent on mother's warmth/support than fathers'?—Using moderated multiple regression, we predicted children's warmth/support from parents' warmth/support, parent sex, and the interaction between parents' warmth/support and parent sex controlling for condition. We found a significant interaction between parents' warmth/support and parent sex, $\beta = -0.26$, $p = .003$. Simple slopes analyses (Aiken & West, 1991) were used to examine the two-way interaction. Mothers' warmth/support was significantly positively associated with their children's warmth/support, $\beta = 0.64$, $p < .001$, whereas fathers' warmth/support was not significantly related to their children's warmth/support, $\beta = 0.13$, $p = 0.311$. Furthermore, children whose mothers exhibited high warmth/support exhibited higher warmth/support than children whose fathers exhibited high warmth/support, $\beta = -.49$, $p < .001$ (see Figure 3).

Discussion

Parents often feel the need to shield their children from their negative emotions, inherent in a 'not in front of the child' maxim. However, suppression, or the inhibition of emotional expressions, is typically associated with negative outcomes (John & Gross, 2004). Little research has directly tested whether suppression used in parent-child interactions has negative effects on the tenor and quality of parent-child cooperative interactions. The present study experimentally manipulated parents' use of suppression during a cooperative parent-child interaction and examined effects of suppression on both parent and child mood, responsiveness, and warmth, and parent guidance and quality of the interaction. We found that not only did suppression decrease parents' positive mood, responsiveness, warmth, and guidance, but it also had negative effects on children's positive mood, responsiveness, and warmth and decreased the overall quality of the interaction. However, parent sex played a significant role in moderating these effects. Fathers were less responsive and warm when suppressing their emotions, though their children did not exhibit decrements in their responsiveness or warmth. In contrast, children of suppressing mothers appeared less warm than children of mothers in the control condition, though their mothers did not exhibit decrements in their warmth or responsiveness. Suppression may not have influenced parents' negative mood due to a floor effect in negative mood—both parents and kids expressed relatively little negative mood during the cooperative task. Taken together, these findings suggest that the desire to hide one's feelings from their children has unwanted negative consequences, but these consequences may differ for fathers versus mothers.

Consistent with previous research (Butler et al., 2003; Peters, Overall, & Jamieson, 2016), we found that both suppressing parents and their children exhibited decreased positive mood, responsiveness, and warmth, suggesting that the effects of suppression impact both suppressors and their partners. Furthermore, we found that suppression decreased the quality of the interaction. These findings indicate that suppression may alter the behaviors of the individual suppressing, which in turn alters the behaviors of their interaction partner. Due to the give-and-take nature of social interactions, an initial disjointed interaction may lead to

future disjointed interactions, which become exacerbated over time. In close relationships, like that of parent and child, the altered behavior of the suppressor may be especially salient because the interaction partners have a shared history. As such, suppression may damage the quality of the relationship in addition to the interaction. Our findings highlight this potential—the strongest effect of the suppression manipulation was on relationship quality, a global indicator of how coordinated or at ease the dyad appears.

While we found that suppression had negative effects on both parents and children, parent sex also shaped parents' and children's behaviors in response to the suppression manipulation. Fathers, but not their children, appeared less responsive and warm when suppressing their emotions. Furthermore, mothers' responsiveness appeared to be less affected by suppression than fathers. One possible explanation is that mothers may be more adept at handling the demands of emotion regulation in parenting contexts. However, children of suppressing mothers appeared less warm than children whose mothers were in the control condition. Though it is unclear what mechanisms may be at work given the dearth of research on emotion regulation of fathers versus mothers in the context of parent-child interactions, we tested two possibilities.

One possibility is that children may pick up on their mothers altered emotional expressions, but not their fathers. This may be due to fathers' greater use of habitual suppression—the suppression manipulation may not have been a deviation from fathers' normal expressiveness and therefore, may not have appeared unusual to their children. However, when including habitual suppression as a covariate, our findings were unchanged. This suggests that gender differences in habitual suppression may not be responsible for the differences in children's warmth/support. Alternatively, children may be more sensitive to their mothers' emotional expressions and respond in kind. Our results provide some preliminary evidence that this could be true—mothers' warmth/support was positively associated with their children's warmth/support whereas fathers' warmth/support was not significantly related to their children's warmth/support. Future studies should examine how interactions unfold over time differently for fathers and mothers to understand to whether children or their parents are guiding the affective tone of their interactions and whether children are more sensitive to their mothers' affective behavior than their fathers'. Overall, our findings highlight the need to consider how suppression affects socialization behaviors of fathers differently than mothers.

Limitations and Future Directions

The present study expanded prior research by including fathers and manipulating parents' suppression use in a cooperative parent-child interaction; however, the conclusions drawn from this study are limited in at least two ways. First, we used solely observational measures of parent and child mood and behavior. While the cognitive consequences of suppression are well-established (Richards & Gross, 2000), we do not know whether the decrements in suppressing parents' socialization behaviors are due to accompanying cognitive decrements. Our audiovisual data did not allow us to examine condition effects on performance in the cooperative task, for example, but future research would benefit from testing suppression's effects on cognitive functioning and social interactions in the same study. Similarly, it is

unclear how suppression's effects were transmitted from parent to child. In previous research, partners of suppressors reported lower rapport with their interaction partner, which was partially mediated by an observational measure of suppressors' responsiveness (Butler et al., 2003). This finding suggests that interaction partners of suppressors may perceive them to be less amiable. Future research should examine whether children perceive differences in their parents' behaviors as a function of suppression.

Second, we focused on parent factors related to socialization behaviors (parent sex and suppression). However, recent research has begun to address both parent and child factors in predicting social interactions. In one study using second-by-second observational measures of parent-child discussions about children's emotions, parents were more likely to respond supportively to children's adaptive emotion regulation, and in turn, children were more likely to respond with adaptive emotion regulation when parents responded to them in supportive ways (Morelen & Suveg, 2012). While our experimental design provides causal evidence that parents' use of suppression influences both parents and their children, it is possible that some child factors exacerbate their parents' use of suppression. In the future, studies should examine protective and risk factors of children whose parents engage in suppression.

Conclusion and Implications

Though emotion regulation is used in a majority of social interactions (Gross, Richards, & John, 2006), previous research has largely examined the intrapersonal effects of suppression. We extended previous research by examining suppression in parent-child interactions. The parent-child context is critical for examining effects of suppression because parents shape their children's emotion regulation via sensitive and responsive parenting (Eisenberg, Fabes, & Murphy, 1996). Consistent with our hypotheses, we found that suppression decreased parents' positive mood, responsiveness, warmth, and guidance. Children of parents in the suppression condition also exhibited decreased positive mood, responsiveness, and warmth, suggesting that parents' suppression is noticeable to their children and may have downstream consequences on children's developing emotion expressions and regulation.

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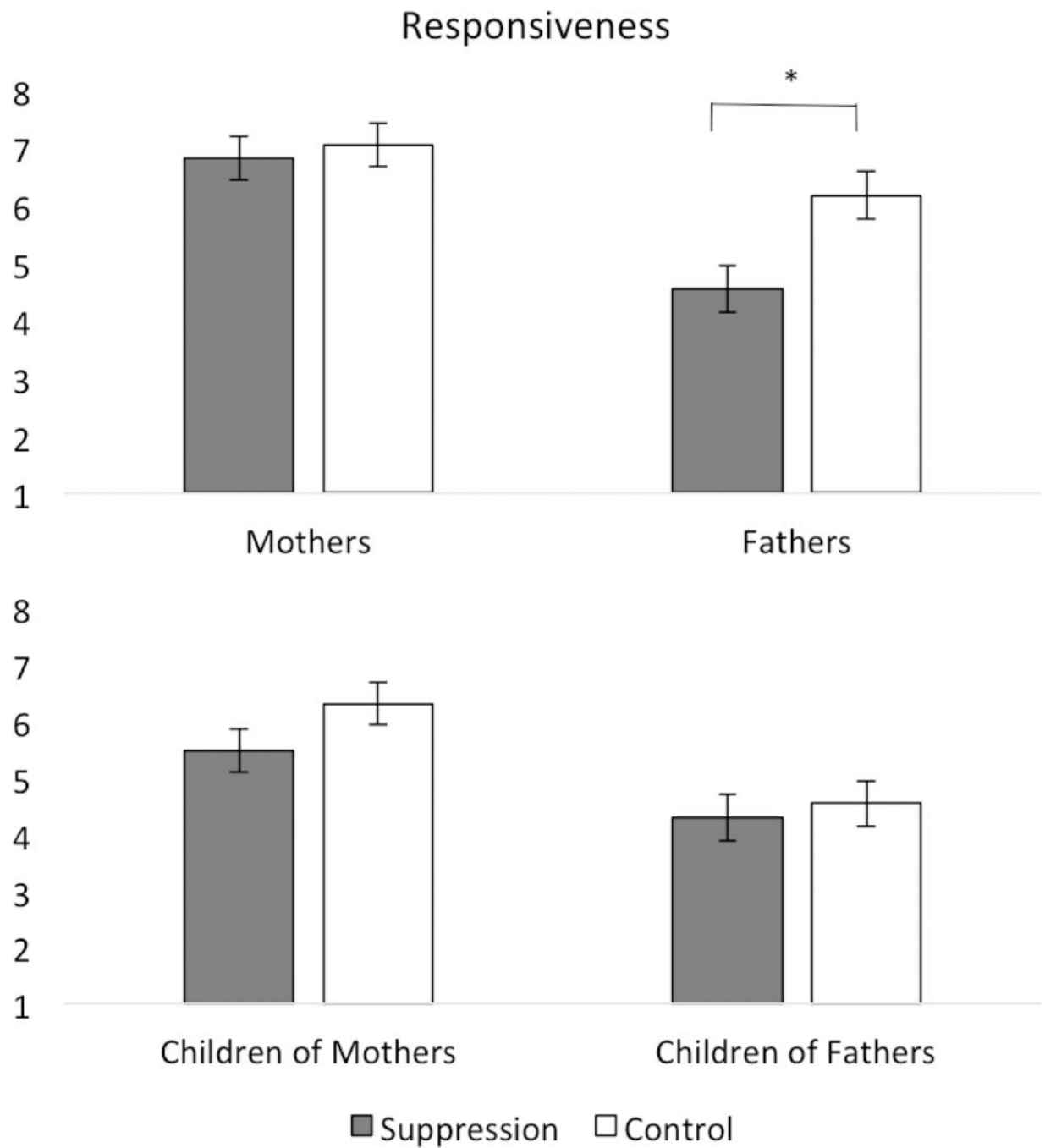


Figure 1. Means of observed parent and child responsiveness by condition (suppression vs. control), parent sex (mother vs. father), and role (parent vs. child).

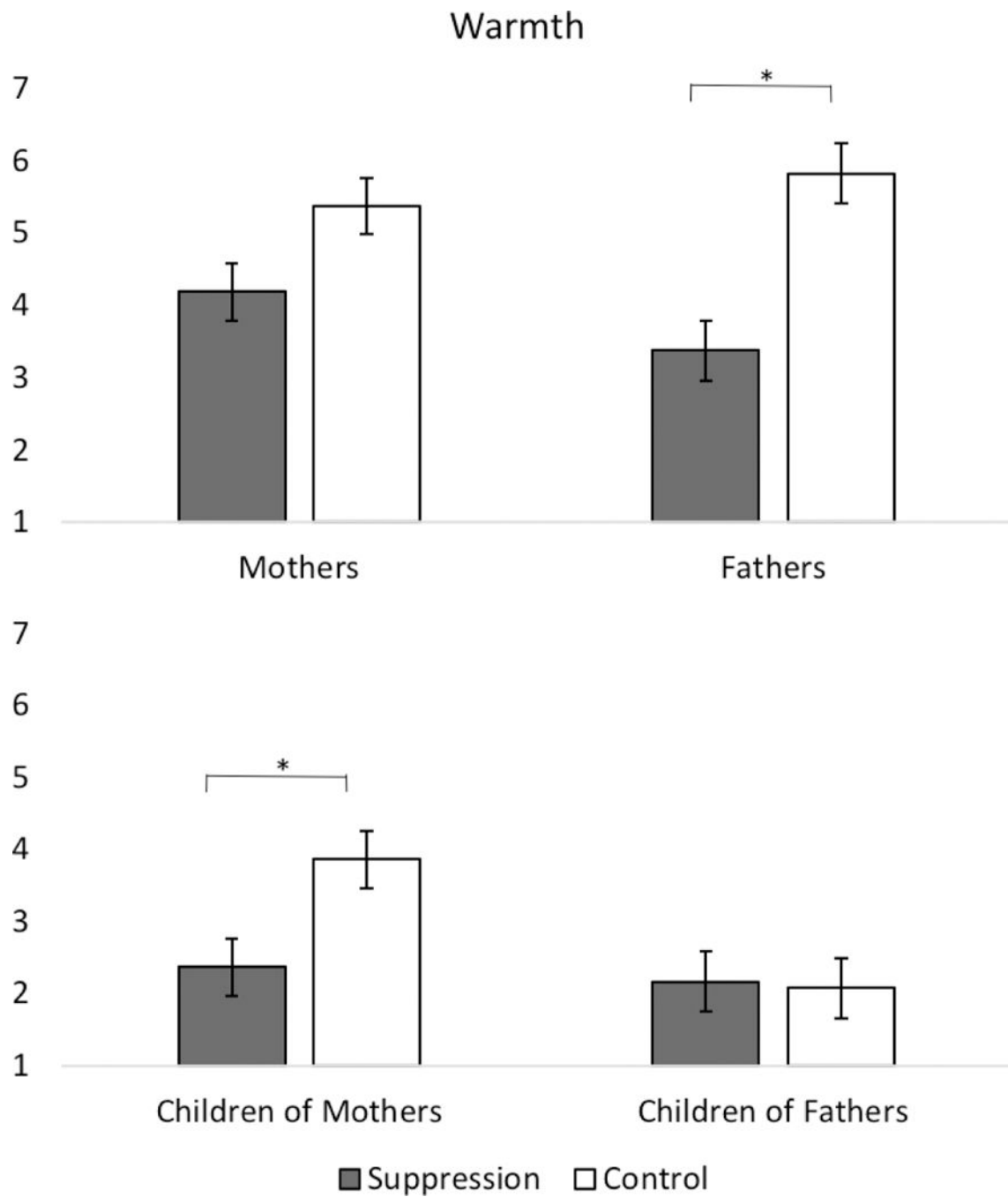


Figure 2.
Means of observed parent and child warmth by condition (suppression vs. control), parent sex (mother vs. father), and role (parent vs. child).

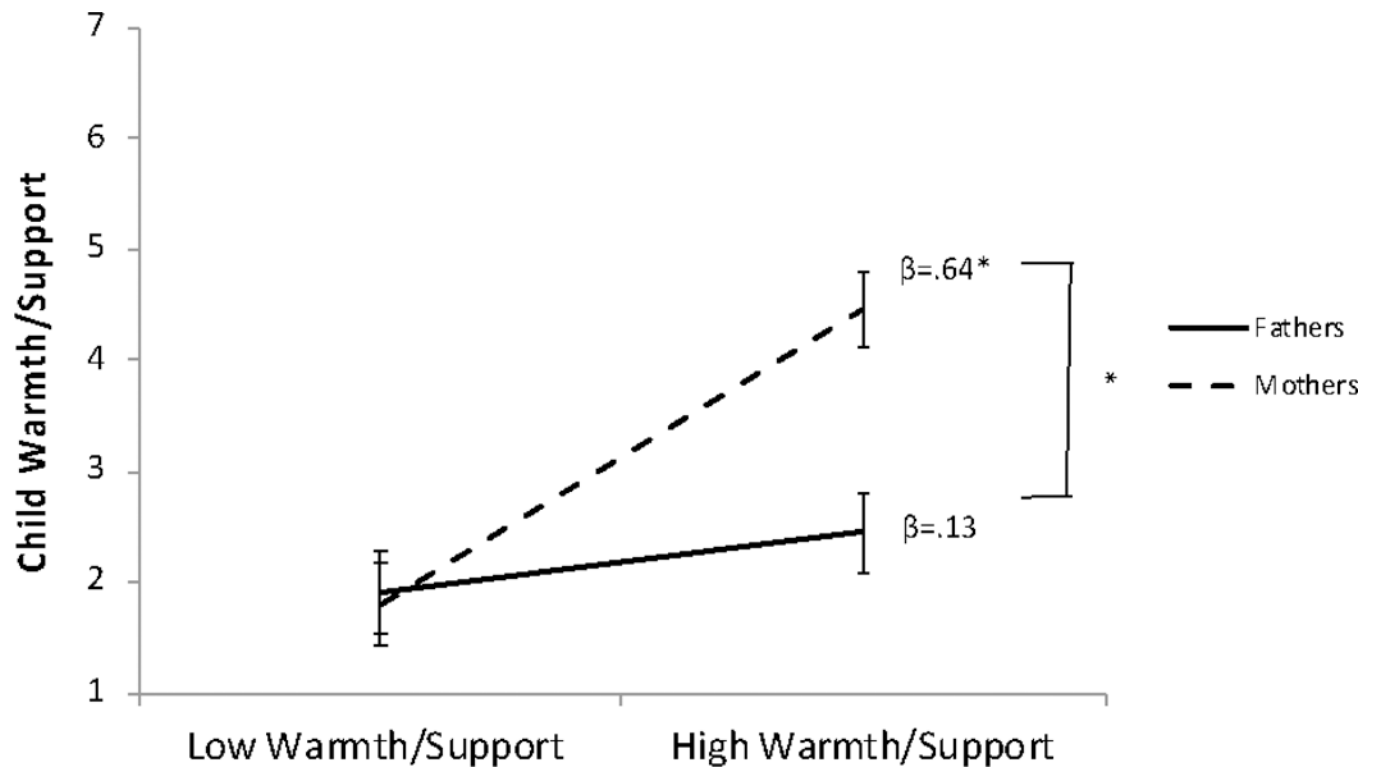


Figure 3.
Interaction between parent warmth/support and parent sex predicting child warmth/support, controlling for condition.

Table 1.

Zero-order correlations between study variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Condition (0=control, 1=suppression)		-.10	.02	.03	-.04	.15	-.01	-.26**	-.21*	-.38**	-.23*	.10	-.13	-.14	-.19 [†]	-.37**
2. Parent Age			.11	.22*	.12	-.17 [†]	-.26**	-.01	.14	.11	-.03	.07	-.13	.08	-.21*	.14
3. Parent Sex (0=female, 1=male)				-.06	.19*	.43**	-.17 [†]	-.03	-.36**	-.04	-.02	-.11	-.23*	-.35**	-.25*	-.21*
4. Child Age					-.05	-.23*	-.11	-.01	.09	-.10	-.41**	-.12	-.01	.07	-.05	-.14
5. Child Sex						-.06	-.07	.02	-.04	.02	-.08	-.01	-.11	.00	-.13	-.14
6. Parent Habitual Suppression							.00	-.12	-.35**	-.20*	.04	.02	-.22*	-.32**	-.13	-.25*
<i>Observed Parent Behaviors</i>																
7. Negative Mood								.02	-.07	.01	-.10	.48**	.11	-.02	.14	-.07
8. Positive Mood									.31**	.63**	.08	.05	.55**	.25*	.39**	.63**
9. Listener Responsiveness										.35**	.11	-.17 [†]	.25*	.56**	.18 [†]	.56**
10. Warmth/Support											.34**	.12	.36**	.24*	.43**	.77**
11. Parental Guidance												.04	-.05	-.04	.01	.34**
<i>Observed Child Behaviors</i>																
12. Negative Mood													.00	-.20*	-.02	-.03
13. Positive Mood														.38**	.66**	.47**
14. Listener Responsiveness															.38**	.42**
15. Warmth/Support																.42**
16. Relationship Quality																

Note.

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

Table 2.

ANOVA results.

	DV: Relationship Quality	DV: Guidance
Predictor Variables:		
Condition	F=16.70, $p<.001^{**}$	F=6.15, $p=0.015^*$
Parent Sex	F=5.22, $p=0.024^*$	F=0.04, $p=0.85$
Condition x Parent Sex	F=.73, $p=0.396$	F=0.82, $p=0.37$

Note.

[†]
p < .10

^{*}
p. < .05

^{**}
p < .01

Table 3.
APIM results.

	Model 1	Model 2	Model 3	Model 4
	DV: Negative Mood	DV: Positive Mood	DV: Listener Responsiveness	DV: Warmth/Support
Predictor Variables:				
Condition	$B = -0.09, p = 0.500$	$B = 0.43, p = 0.024^*$	$B = 0.37, p = 0.034^*$	$B = 0.63, p < .001^{**}$
Role	$B = -0.22, p = 0.001^{**}$	$B = 0.27, p = 0.010^{**}$	$B = 0.49, p < .001^{**}$	$B = 1.04, p < .001^{**}$
Parent Sex	$B = 0.21, p = 0.119$	$B = 0.26, p = 0.166$	$B = 0.76, p < .001^{**}$	$B = 0.29, p = 0.094^{\dagger}$
Condition x Role	$B = 0.08, p = 0.327$	$B = 0.19, p = 0.075^{\dagger}$	$B = 0.10, p = 0.327$	$B = 0.28, p = 0.011^*$
Condition x Parent Sex	$B = 0.06, p = 0.680$	$B = 0.08, p = 0.676$	$B = -0.10, p = 0.545$	$B = 0.04, p = .822$
Role x Parent Sex	$B = 0.01, p = 0.878$	$B = -0.21, p = 0.044^*$	$B = 0.02, p = 0.815$	$B = -0.20, p = .065^{\dagger}$
Condition x Role x Parent Sex	$B = 0.14, p = 0.082^{\dagger}$	$B = -.11, p = 0.302$	$B = -0.25, p = 0.012^*$	$B = -0.36, p = .002^{**}$

Note.

†
p < .10

*
p. < .05

**
p < .01