Handgrip force of maltreating mothers in reaction to infant signals

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ABSTRACT

Handgrip force responses to infant signals were examined in a sample of 43 maltreating and 40 non-maltreating mothers. During a standardized handgrip paradigm, mothers were asked to squeeze a handgrip dynamometer at maximal and at half of their maximal handgrip strength while listening to infant crying and laughter sounds. Maltreating mothers used excessive force more often while listening to infant crying and laughter than non-maltreating mothers. Of the maltreating mothers, only neglectful mothers (n = 20) tended to use excessive force more often during crying than non-maltreating mothers. Participants did not rate the sounds differently, indicating that maltreating mothers cannot be differentiated from non-maltreating mothers based on their perception of infant signals, but show different behavioral responses to the signals. Results imply that, in response to infant signals (i.e., crying or laughing), maltreating mothers may be insufficiently able to regulate the exertion of physical force.

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Child maltreatment is a major problem throughout the world (Stoltenborgh, Bakermans-Kranenburg, Van IJzendoorn, & Alink, 2013; Stoltenborgh, Bakermans-Kranenburg, & Van IJzendoorn, 2013). Important risk factors for child maltreatment are low education, unemployment, single parenthood, parental psychopathology, and parents’ own experiences with child abuse and neglect (Egeland, Jacobvitz, & Sroufe, 1988; Euser et al., 2013; Pears & Capaldi, 2001; Walsh, MacMillan, Jamieson, 2002). However, little is known about the processes on the level of the parent that may lead to child maltreatment. There is some evidence that maltreating parents and parents at risk for child maltreatment show different physiological responses to child signals compared to non-maltreating parents (e.g., Bugental, Lewis, Lin, Lyon, & Kopeikin, 1999; Joonsen et al., 2013; Lin, Bugental, Turek, Martorell, & Olster, 2002; for a review see McCanne & Hagstrom, 1996). In addition, parents at risk for maltreatment tend to interpret child signals as more negative and hostile (Crouch, Skowronsni, Milner, & Harris, 2008; Farc, Crouch, Skowronski, & Milner, 2008). As a next step in unraveling the processes leading to maltreatment, we investigated maltreating mothers’ use of excessive force using a handgrip dynamometer during listening to infant signals (laughter and crying).

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Infant vocalizations, including laughter and crying, are powerful cues eliciting parental proximity and care (Bowlby, 1969/1982; Groh & Roisman, 2009). Infant laughter is a uniquely rewarding experience for parents, generally stimulating feelings of love and happiness (Bowlby, 1969/1982; Groh & Roisman, 2009; Mendes, Seidl-de-Moura, & de Oliveira Siqueira, 2009). However, for some parents the rewarding effect of laughter may be attenuated or even absent (Arteche et al., 2011; Reck et al., 2004). Crying signals infant distress and alerts parents to tend to the needs of the infant. While crying generally elicits parental proximity, it is also an aversive stimulus (Fujiwara, Barr, Brant, & Barr, 2011; Murray, 1985) which can evoke irritation and may trigger harsh or even abusive parenting responses (Out, Bakermans-Kranenburg, Van Pelt, & Van Ijzendoorn, 2012; Solitis, 2004).

Physiological reactivity to infant signals has been suggested as a mechanism explaining the divergence in parenting responses (McCanne & Hagstrom, 1996; Murray, 1985; Out et al., 2012; Out, Pieper, Bakermans-Kranenburg, & Van Ijzendoorn, 2010). Some studies suggest that abusive parents or parents at risk for abuse are unable to regulate the physiological stress elicited by infant crying and laughter, and experience physiological hyperreactivity to stressors, particularly to child-related stimuli (McCanne & Hagstrom, 1996). However, there is also evidence for a decreased physiological response in insensitive mothers (Joosen et al., 2013), possibly explaining their lack of appropriate activity in response to their child’s behavior.

Cognitive processes (schemata) and attributions of child behavior may also play a role in explaining differences in parenting responses. For example, there is evidence that the accessibility of hostility-related schemata is related to child abuse risk (Farca et al., 2008). Parents at high risk for physical abuse rated children in pictures ambiguously depicting them to be either cooperative or hostile as more hostile. The authors propose that the accessibility of hostility-related schemata promotes attributions of hostile intent and thereby aggressive parenting behaviors. Given that these hostility-related schemata are accessed automatically, high-risk parents may perceive hostile intent as originating from the child, without recognizing the contribution of their own perceptual and interpretive biases. In line with this, pregnant women’s beliefs about infant’s negative intentions predicted child maltreatment in the first years of life (Berlin, Dodge, & Reznick, 2013).

Exploring this issue further, Crouch et al. (2012) examined implicit changes in schema accessibility during the course of an interpersonal exchange game involving aggressive response options in which participants were led to believe that they were competing against other players. They found that for parents at high risk for child physical abuse, positive schemata became less accessible whilst negative schemata became more accessible following lost rounds. This indicates that for these parents, positive schema accessibility is hindered by negative interpersonal experiences. These automatic processes may play a role in both the development and maintenance of the maladaptive behavior patterns found in at-risk and abusive parents. Mothers at risk for abuse may also have a tendency to attribute positive child behavior to more external causes and negative child behavior to more internal causes than do control mothers (Dadds, Mullins, McAllister, & Atkinson, 2003).

In addition to physiological and cognitive processes, behavioral responses to standardized child stimuli have been used to examine child abuse risk. For example, a handgrip dynamometer has been used to assess the use of excessive force in pseudo-parenting contexts. In one of the first studies using a handgrip dynamometer, the effect of perceived control on punitive force was tested (Bugental et al., 1999). In a simulated computer interaction mothers attempted to provide training to an unrelated child, and they used a dynamometer to provide feedback to children regarding their performance. Women who perceived themselves as low in power in the caregiving role used more excessive force (punitive power) when children were ambiguously responsive to their instructions. The use of excessive punitive force was interpreted as an analog of reactive force to children’s disobedience. Bugental et al. (1999) reason that a negatively distorted view of the motives of children might result in parental use of exaggerated punitive force as a defense against the presumed power of children, increasing the risk of child maltreatment. This reasoning finds support in Crouch et al.’s (2008) results that while watching video segments of an infant in quiet, smiling, and crying states, parents at risk for child abuse who were primed with hostile words, tended to use more excessive force on the dynamometer.

In another study, the handgrip dynamometer was used to assess excessive force during exposure to infant crying in adult females with secure versus insecure AAI classifications (Riem, Bakermans-Kranenburg, Van IJzendoorn, Out, & Rombouts, 2012). Not only did insecure individuals use more excessive force during infant crying, they also experienced more irritation than individuals with a secure representation. In addition, the use of excessive force in response to infant crying was reduced by intranasally administered oxytocin, but only for individuals without experiences of harsh discipline in their own childhoods (Bakermans-Kranenburg, Van IJzendoorn, Riem, Tops, & Alink, 2012).

An important limitation of the studies using the hand grip dynamometer as an indicator of the use of excessive force in parenting contexts so far is that they focused on parents potentially at risk for child maltreatment, instead of actually maltreating parents. It is essential to also investigate parents who have been reported for substantiated child maltreatment. In addition, most studies to date have focused on physically abusing parents or parents at risk for physical abuse (e.g., Crouch et al., 2008; Crouch et al., 2012; McCanne & Hagstrom, 1996; Out et al., 2012). It is possible that processes that may lead to child maltreatment are different for abusing and neglecting parents. Child neglect is a form of maltreatment that involves acts of omission rather than commission (i.e., abuse), and is defined as a persistent failure to meet the child’s physical and emotional needs (Dubowitz, Black, Starr, & Zuravin, 1993). Neglectful mothers show lower levels of emotional expression (Camras et al., 1988), lower levels of empathy and emotional insight (Rodrigo et al., 2011; Shahar, 2001), and lower rates of (positive) interaction (Aragona & Eyberg, 1981; Bousha & Twentyman, 1984) as compared to control mothers. Child abuse, on the other hand, implies a committed rather than an omitted act, either verbally or physically.
The current study measures handgrip strength responses to infant crying and laughter sounds in a sample of maltreating and non-maltreating mothers. Within the maltreating group, we further distinguished between abusive and neglectful mothers. We hypothesized that maltreating mothers are less able to successfully regulate the distress elicited by infant signals and as a result use more excessive force in response to infant vocalizations as compared to non-maltreating mothers. We expected that this difference would be more pronounced for infant crying. Furthermore, we expected abusive mothers, as compared to neglectful mothers, to respond more often with excessive force. Lastly, we also explored whether excessive handgrip responses would be more often present in the group of mothers with experiences of abuse and neglect in their own childhood.

Method

Sample

A group of 43 maltreating and 40 non-maltreating mothers were recruited at a mental health facility. The maltreating mothers received family treatment either as outpatients or as inpatients, and were informed about the study before the start of their treatment. The non-maltreating mothers were recruited from another unit within the same mental health facility, specialized in child developmental or learning problems. At least one of their children was receiving treatment. Eligible mothers in both groups received a brochure with information about the study, in which we explained that parents deal with various signals of their child on a daily basis and that we would like to examine differences between parents in their responses to these child signals.

Child Protection Services (CPS) records were coded to substantiate recent or ongoing maltreatment using the Maltreatment Classification System (MCS; Barnett, Manly, & Cicchetti, 1993). When records were inconclusive, the mother’s psychiatrist was interviewed using a semi-standardized interview about the mother’s parenting problems. For three mothers, neither their records nor their psychiatrists provided proof of maltreatment on the mothers’ part, and the treatment they received revolved around other family issues. In these cases, we conducted a Dutch adaptation of the Maternal Maltreatment Classification Interview (MMCI; Cicchetti, Toth & Manly, 2003) with the mothers to further verify the absence of maltreatment. When the absence of maltreatment was verified we considered them as non-maltreating in the analyses. To verify the absence of maltreatment in the non-maltreating sample, the MMCI was used as well. For three mothers in this group, incidents of maltreatment less than five years ago were apparent from the interview. For the analyses we considered them as maltreating mothers.

Table 1 displays characteristics of maltreating mothers and non-maltreating mothers. There were no significant differences between maltreating and non-maltreating mothers regarding ethnicity (p = .40), educational level (p = .16), and number of children (p = .96). Mothers in the maltreating group and their children were significantly younger than mothers and children in the non-maltreating group, t(81) = 4.57, p < .001 and t(81) = 4.40, p < .001, respectively. This was the case for both neglectful and abusive mothers (ps < .01). However, since neither maternal nor children’s mean age were related to the outcome measures, they were not included as covariates in the analyses. For the maltreating group, the number of days they had been in therapy before participating in the study was not related to the outcome measures (ps > .80). For this study, 90

![Table 1](https://via.placeholder.com/150)

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Maltreating (total group) N = 43 (%)</th>
<th>Neglecting n = 20 (%)</th>
<th>Abusive and neglecting n = 23 (%)</th>
<th>Non-Maltreating N = 40 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caucasian</td>
<td>92</td>
<td>87</td>
<td>95</td>
<td>94</td>
</tr>
<tr>
<td>Education completed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary/Short track secondary school</td>
<td>41</td>
<td>47</td>
<td>36</td>
<td>25</td>
</tr>
<tr>
<td>Advanced secondary/Vocational school</td>
<td>49</td>
<td>42</td>
<td>55</td>
<td>50</td>
</tr>
<tr>
<td>College/University</td>
<td>10</td>
<td>11</td>
<td>9</td>
<td>25</td>
</tr>
</tbody>
</table>

Note: p < .05 for all significant contrasts.

a Significant difference between maltreating and non-maltreating.
b Significant difference between neglectful and non-maltreating.
c Significant difference between abusive and non-maltreating.
mothers were recruited in total (45 maltreating and 45 non-maltreating). Handgrip data were missing for seven of them. Included and excluded mothers did not differ on any of the background variables (ethnicity, educational level, maternal age, number of children, children’s mean age, and maltreatment status; ps > .15).

Permission for this study was obtained from the medical ethics review committee for mental health care (METIGG). All mothers gave informed consent and, in the maltreating group, signed for researchers’ access to their files. Mothers received a financial compensation for their participation.

Procedure

The study consisted of two individual sessions at the facility, a location that was familiar to the participants. The current paper focuses on the first session. During this session, participants completed three computer tasks, one of which was the handgrip paradigm. Afterwards, mothers filled out two questionnaires: one concerning health-related issues prior to the session, such as drinking coffee, smoking, and exercising, and a second on their family characteristics, such as educational level, marital status, and children’s ages. The session ended with the MMCI for the non-maltreating group.

Measures

Maltreatment Classification System. The Maltreatment Classification System (MCS; Barnett et al., 1993) was used to code all incidents of maltreatment reported in the clinic’s records from Child Protective Services (CPS) and the child care office. The MCS has been proven to be a reliable and valid system in classifying maltreatment incidents (Cicchetti, Rogosch, Gunnar, & Toth, 2010). Only incidents involving maternal maltreatment were considered for coding. In accordance with operational definitions of the MCS, different subtypes of maltreatment were coded: physical abuse, physical neglect, emotional abuse, and emotional neglect. No mother was found to have sexually abused any of her children. A distinction was made between abuse (physical and emotional abuse) and neglect (physical and emotional neglect). Records were coded by trained research assistants. Interrater reliability on 15 files was good with $\kappa = .82$ for abuse and $\kappa = 1.00$ for neglect. For the presence vs. absence of maltreatment there was full agreement, with $\kappa = 1.00$. Subsequently, all records were coded by two different research assistants and discrepancies were resolved through discussion.

All mothers in the maltreatment group were found to have been neglectful toward their children, either physically or emotionally. 53% of the mothers ($n = 23$) had also been physically or emotionally abusive.

Maternal Maltreatment Classification Interview. The MMCI (Cicchetti et al., 2003) is a semi-structured interview aimed at evaluating whether mothers engaged in any type of maltreatment toward their children during their lifetime. Mothers are asked about incidents of physical and emotional abuse and neglect, as well as sexual abuse, and about any contact the family may have had with CPS. For this study, the interview was translated into Dutch. Inter-rater reliability on 12 interviews was excellent, with full agreement for the presence versus absence of maltreatment ($\kappa = 1.00$). All interviews were coded by two research assistants and discrepancies were resolved through discussion.

Handgrip paradigm. The paradigm consisted of a 2-min cry sound (average fundamental frequency 360.06 Hz ($SD = 58.41$), constant volume) and a 2-min sound of infant laughter (fundamental frequency of 215.96 Hz ($SD = 119.69$), constant volume) (see Groh & Roisman, 2009). To indicate the use of excessive force during listening to infant laughter and crying, a handgrip dynamometer was used. The dynamometer (model TSD121C, Biopac Systems, 2004; http://www.biopac.com/Research-specifications.asp?Pid=3684#LowerTab) weighed 315 g and measures 185 mm (long), 42 mm (wide), and 30 mm (thick), with an isometric range from 0 to 100 kg.

Participants were first trained to squeeze at 50% of their maximum strength. They performed as many trials as necessary for training, with their performance displayed on a monitor to check the 50% level of each second handgrip, until they were able to modulate the force of their second squeeze to half the strength of their first squeeze. The monitor was then directed away from the participant in order to prevent them from receiving feedback regarding their performance during the remainder of the task. Participants were asked to squeeze the dynamometer as hard as possible and then at 50% of their maximal handgrip strength while listening to the cry and laughter sounds. The prompt “squeeze maximally” was displayed briefly in the middle of the screen, shortly followed by the prompt “squeeze at half strength” (based on Crouch et al., 2008). Test–retest reliability for handgrip strength measurement has been shown to be adequate (.91 for men and .94 for women across a 10-week period; Reddon, Stefaenyk, Gill, & Renney, 1985).

The handgrip paradigm was administered on a laptop using E-prime software (version 2.0; Psychology Software Tools, Inc., PA, USA). During the task participants were seated in front of a computer screen wearing headphones (type König CMP). After four baseline (no sound) squeeze instructions, participants were requested to squeeze the handgrip dynamometer four times at full and half strength listening to infant laughter and four times at full and half strength listening to infant crying. The cry and laughter sounds were presented in counterbalanced order. The intervening time between full- and half-strength prompts was 2 s; the intervening time period between half-strength and the next full-strength prompt was 25 s.

Grip strength modulation was calculated by dividing the half-strength squeeze intensity by the full-strength squeeze intensity, so that scores of over 0.50 indicated excessive force on the half-strength squeeze attempt. We then calculated the
number of times excessive force was used during baseline, during listening to infant laughter and during listening to infant crying. This paradigm has been used previously (see Bakermans-Kranenburg et al., 2012; Riem et al., 2012).

Perception of crying and laughter. After the cry and laughter sounds, participants indicated on a 5-point rating scale (1 ‘very little’ to 5 ‘very much’) to what extent they perceived the sound as urgent, the sound as aversive, the child as sick, and themselves as aroused (Zeskind & Lester, 1978; Zeskind & Marshall, 1988). For both sounds (cry, laughter) a principal component (PCA) analysis on the four ratings was conducted. Both PCAs pointed to one underlying component, explaining 60% (crying) and 66% (laughter) of the variance. Factor loadings ranged from .65 to .85 for crying and from .56 to .91 for laughter. Therefore, the ratings were aggregated to obtain scores for overall perception of the sound, for crying and laughter separately, with higher scores indicating a more negative perception of the sound. Reliability was adequate (crying: α = .78, laughter: α = .79). Three mothers (4%; 1 maltreating, 2 non-maltreating) had missing data on the perception questionnaire. These were imputed with the average scores of mothers with the same current maltreatment status.

Childhood Trauma Questionnaire Short Form (CTQ-SF). The CTQ (Bernstein & Fink, 1998; Bernstein et al., 1994) is a self-report instrument with 70 items on childhood experiences of abuse and neglect. It has shown very good test-retest reliability and convergent validity with other assessments (Bernstein, Ahluvalia, Pogge & Handelsman, 1997; Bernstein et al., 1994). The short form consists of 27 items (24 clinical items and 3 validity items; Thombs, Bernstein, Lobbestael & Arritz, 2009), has shown measurement invariance across various populations (clinical and normal), and contains five subscales: physical abuse, emotional abuse, physical neglect, emotional neglect, and sexual abuse (CTQ-SF; Bernstein et al., 2003). Each scale consists of five items (except the sexual abuse scale, which has four items) with a 5-point scale ranging from “never true” to “very often true”. Alphas in the current sample were adequate (physical abuse: α = .89; emotional abuse: α = .89; physical neglect: α = .76; emotional neglect: α = .88; sexual abuse: α = .93).

We categorized scores per subscale according to severity using the manual’s cut-off scores, so that mothers’ scores for each subscale separately were classified as minimal, low, moderate, or severe. They were then assigned a total severity score that was equal to their highest severity score on the subscales. We then distinguished mothers with minimal/low scores (n = 44) from mothers with moderate/severe scores (n = 39). Two mothers (2%; 1 maltreating, 1 non-maltreating) had missing data on the CTQ. The missing scores were imputed with the average scores of mothers with the same current maltreatment status. Results were similar with and without these missing imputed. Results for the total data set are reported below.

Results

Perception of cry and laughter sounds

Independent samples t-tests were conducted to examine group differences on the overall perception scores. No significant differences for perception of laughter or crying were found for current maltreatment status (ps > .37), nor for experienced childhood maltreatment (ps > .81). There was no significant main effect of type of current maltreatment (abuse or neglect) on the overall perception scores (ps > .50). Thus, the two groups of participants did not rate the sounds differently. In general, crying (M = 11.27, SD = 3.89) was rated as more aversive than laughter (M = 5.13, SD = 2.37), F(1,81) = 197.78, p < .001, partial $\eta^2 = .71$. The interaction effect of maltreatment x type of sound was not significant, F(1,81) = .011, p = .74.

Handgrip force and current maltreatment

A repeated measures ANOVA with simple contrasts was conducted to examine the effect of current maltreatment status (maltreating, non-maltreating) on the number of times too much force was used during baseline and listening to infant laughter and infant crying. Order of presentation was included as a between-subjects factor. Results showed a main effect of current maltreatment status, $F$(1,80) = 4.50, p < .05, partial $\eta^2 = .05$, with maltreating mothers using excessive force significantly more often than non-maltreating mothers (see Fig. 1). There was also a significant condition effect, $F$(2,79) = 4.65, p < .05, partial $\eta^2 = .11$. Within-subjects contrast analyses revealed that more force was used during laughter than crying, p < .01. The interaction effect of condition x group was not significant, $F$(2,79) = 0.16, p = .86.

Distinguishing between the two types of maltreatment, in a repeated measures ANOVA with simple contrasts we found a marginally significant main effect of type of current maltreatment (non-maltreating, abuse, neglect) on the number of times excessive force was used, $F$(2,79) = 2.99, p = .056, partial $\eta^2 = .07$ (irrespective of order of presentation). There was no significant interaction effect of condition x group, $F$(4,158) = 0.14, p = .97. Post hoc comparisons (LSD) revealed that solely neglectful mothers used excessive force significantly more often during crying (M = 2.65, SD = 1.50) than non-maltreating mothers (M = 1.65, SD = 1.41), p < .05. No significant differences were found between solely neglectful and abusive mothers.

Handgrip force, current and experienced maltreatment

Maltreating mothers had experienced maltreatment more often (58%; n = 25) than non-maltreating mothers (35%; n = 14), $X^2 = 4.45, p < .05, \phi = .23$. To test the effect of experienced childhood maltreatment on handgrip force, analyses were repeated with experienced childhood maltreatment (minimal/low vs. moderate/severe) as additional between-subjects factor. The
main effect of experienced childhood maltreatment was not significant, \( F(1,78) = 0.05, p = .82 \). No significant interaction-effect between current maltreatment status and experienced childhood maltreatment was found, \( F(1,78) = 0.00, p = .98 \). Finally, the interaction between condition and experienced maltreatment was not significant, \( F(2,77) = 0.20, p = .82 \).

Discussion

As hypothesized, maltreating mothers used excessive force significantly more often than did non-maltreating mothers. Maltreating mothers did not rate the sounds as more negative than non-maltreating mothers. This indicates that maltreating mothers cannot be differentiated from non-maltreating mothers based on their perception of the child signals. However, they can be differentiated from non-maltreating mothers based on their ability to modulate behavioral responses. Distinguishing between the two types of maltreatment (abuse vs. neglect) we found that, contrary to our hypothesis, the effect could be mainly attributed to the neglecting mothers’ poor grip strength modulation. Maltreating mothers, and neglecting mothers in particular, thus seem less successful in regulating their behavior. This pattern of differences for both positive and negative infant signals has also been found in earlier studies (e.g., Frodi & Lamb, 1980). However, results of the current study suggest that the poor regulatory skills may not be limited in reaction to child signals, but may be a general characteristic which is also observable during non-child-related situations and becomes salient when dealing with children.

One explanation for the use of excessive force by neglectful mothers may be that they are more easily overwhelmed, in particular by infant cues, and consequently disengage from the situation which results in neglect, or the failure to respond to their child’s needs. In fact, one study suggested a possible association between physiological reactivity to toddlers’ distress and maternal disengagement or detachment (Sturge-Apple, Skibo, Rogosch, Ignjatovic, & Heinzelman, 2011). The authors reasoned that in response to challenging environments these mothers inhibit engagement with their child through increased passivity. It is important to note that all maltreating mothers in our sample were also neglectful toward their children. In fact, child abuse and neglect often go hand in hand: a number of studies report high comorbidity between different types of maltreatment (e.g., Dong et al., 2004; Euser et al., 2013; Ney, Fung & Wickett, 1994).

Our finding that maltreating mothers rated the sounds similarly to non-maltreating mothers may not seem to be in line with previous research suggesting that adults at risk for maltreatment have a tendency to interpret child signals as more negatively than other parents (e.g., Crouch et al., 2012; Farc et al., 2008). However, these studies often asked participants to rate ambiguous child behavior. The infant signals used in the current study were not ambiguous at all (and were not intended to be ambiguous).

Participants used excessive force more often during laughter than during crying. This finding is remarkable, especially since we found that participants rated the cry sound as more negative (urgent, aversive, sick, and aroused) than the laughter sound. It should be noted that our laughter sound lasted relatively long (2 min, similar to the cry sound) and may therefore have been interpreted as resulting from overstimulation of the infant, evoking increased arousal in the participants. Bakermans-Kranenburg et al. (2012) also found that 71% of their participants used excessive force during laughter and 62% during the cry sound, a finding in the same direction.

A number of limitations should be considered. First, cry and laughter sounds of unfamiliar children were presented in a laboratory context. Although it can be reasoned that presenting own infant stimuli in a naturalistic setting increases validity,
the standardized design of the handgrip paradigm makes for optimal group comparison. With our design, the influence of previous experiences with the mothers’ own children’s crying and laughter was minimized. A second limitation concerns the age difference between the maltreating and non-maltreating mothers. Maltreating mothers in our sample were younger, which means they had experienced crying and laughing more recently than non-maltreating mothers. However, maternal age was not related to handgrip force and thus did not influence the results. Lastly, it was impossible to distinguish between solely neglecting and solely abusing mothers. As is often found in other studies (Euser et al., 2013; Manly, Cicchetti, & Barnett, 1994), neglect was a dominant trait in our sample. This emphasizes the importance of focusing on child neglect in the study of child maltreatment.

The current study is one of the few studies investigating parents who have been reported for substantiated child maltreatment, enabling conclusions about specific characteristics distinguishing maltreating from non-maltreating parents. In addition, the control group consisted of mothers with a child receiving treatment for developmental or learning problems at the same mental health facility as the maltreating mothers. Both groups were comparable on socio-economic background, and both had experienced parenting stress to a certain extent. Therefore, the differences we found are likely to be attributable to the presence or absence of maltreatment.

In sum, we found that maltreating mothers show poor grip strength modulation in comparison to non-maltreating mothers. Neglectful mothers in particular tended to use excessive force more often. In demonstrating these stronger reactions, we may have found a specific vulnerability of maltreating and particularly neglectful mothers. Our findings imply that these mothers have difficulties regulating their behavior, which would be problematic when reacting to children’s emotional expressions. Our results may provide a basis for intervention modules aimed at reducing the risk of child maltreatment. For example, biofeedback training might help maltreating parents to become more aware of their behavioral reaction and to successfully regulate their responses. In addition, relaxation or mindfulness training (Baer, 2003) as part of an intervention program may help parents regulate their behavior and may add to reducing the risk of child maltreatment.

References


