Different amounts of protest in 4-month-old infants of depressed vs. non-depressed mothers
Gufler, Sandra Rejnholdt; Smith-Nielsen, Johanne; Væver, Mette Skovgaard; Harder, Susanne

Publication date: 
2014

Document version 
Early version, also known as pre-print

Citation for published version (APA):
Different amounts of protest in 4-month-old infants of depressed vs. non-depressed mothers

Sandra Gufler, M.Sc., Johanne Smith-Nielsen, M.Sc., Mette Væver, Ph.D., Susanne Harder, Ph.D.

Copenhagen University, Babylab

Contact: Sandra.Gufler@psy.gu.dk

Abstract

Amount of vocal protest was measured in 4-month-old infants of depressed vs. non-depressed mothers during 10 minute face-to-face interaction. The sample consisted of two groups of mothers with their infants: depressed (n=17) and non-depressed (n=49), in total N=66. Vocal protest was measured using PRAAT software and manual, reliable coding. Results showed that infants of depressed mothers expressed a lower amount of vocal protest compared to infants of non-depressed mothers as measured in mean percentage of time (p < .001).

Background

A significantly heightened amount of protest has previously been reported for infants of depressed mothers during face-to-face interaction (Field, Healy, Goldstein, & Gufler, 1990). The other studies have also reported a heightened amount of protest in infants of depressed mothers on a tendency level (Murray, Foin-Crowley, Hooper, & Cooper, 1996; Friedman, Bebee, Jaffe, Ross, & Trigg, 1996). Previous studies have predominantly used composite multimodal measures, which measure several modalities together (Field et al., 1990; Murray et al., 1996). However, multimodal measures may cover up so-called dissociated affects (the infant is expressing converging affects through different modalities), which have been detected in infants of depressed mother (Bebee et al., 2008). Aim

The aim of the present study was to measure amount of infant protest in infants of depressed vs. non-depressed mothers. In addition to the measured through a single modality, the vocal modality, which has been found to be the most salient system through which both mother and infant communicate with each other at 4 months (Van Eggermond, Barratt, & Roach, 2001).

Method

Participants

The sample consisted of 66 primiparous mothers and their infants from the urban Copenhagen area with PPD group (n=17) and non-depressed group (n=49). Inclusion criteria were: Primiparous mother, healthy infant, mother at least 18 years of age, living in the Copenhagen area, normal hearing and vision abilities. Exclusion criteria were: Psychosis and/or presence of co-morbid bipolar disorder and abuse of any substances.

Measures

Depression status was measured with the self-report measure Edinburgh Postnatal Depression Status (EPDS) (Beckham, 1989). The EPDS is a self-report inventory of depressive symptoms and is scored between 0 and 30 with a score of 10 or higher suggesting the presence of postnatal depression (Murray & Cooper, 1997; Field, 1996). However, it has been argued that there are different types of depressed mothers characterized by different behavior patterns in mothers and infants (Cohen, Malasa, Tronick, Cornell, & Lupa-Ruth, 1986; Tronick & Weinberg, 1997; Field, Hernandez-Reif, & Deigo, 2005). Infants of under stimulating depressed mothers would subsequently be characterized by their response to the mother while the infants of over stimulating intrusive mothers cry to lessen the mother’s efforts to soothe them (Field et al., 1990). The infants of the disengaged mothers might turn passive and turn to self-regulation in time (Tronick & Weinberg, 1997).

Results

Contrary to previous findings, the results of the present study show a lowered amount of vocal protest in infants of depressed mothers, which would result in different amount of protest when different modalities are measured.

Sample characteristics might have affected the results. The depressed women in the present sample can be considered low-risk (Table 1), while Field has often used particularly high-risk samples. Interactions of high-risk infant-mother dyads are qualitatively and quantitatively different (Murray & Cooper, 1997; Field, 1996). Furthermore, it has been argued that there are different types of depressed mothers characterized by different behavior patterns in mothers and infants (Cohen, Malasa, Tronick, Cornell, & Lupa-Ruth, 1986; Tronick & Weinberg, 1997; Field, Hernandez-Reif, & Deigo, 2005). Infants of under stimulating depressed mothers would subsequently be characterized by their response to the mother while the infants of over stimulating intrusive mothers cry to lessen the mother’s efforts to soothe them (Field et al., 1990). The infants of the disengaged mothers might turn passive and turn to self-regulation in time (Tronick & Weinberg, 1997).

Conclusions

Protest is a lowered amount of vocal protest in infants of depressed mothers, while previous studies have detected higher amounts. The relatively small sample size of the depressed group should be taken into account. However, the findings of both a higher and a lower amount of protest in infants of depressed mothers might be explained by a model where a mid-range amount is seen as optimal. Operating outside the “mid-range” could be understood as attempts to cope with interpersonal disturbances by heightening or lowering the response.

References


Field, T., & Fiori, A. (2009). An Exploratory Study of the Interpersonal Communication Between Mothers and Infants of Mothers with Postnatal Depression PNDP in the Infants in the present study are 16 weeks, while infants in the other studies are younger (8-11 weeks, 13.6 weeks, and 14.8 weeks). The differences in age are relatively small, however an infant might experience many interactions on a daily basis, making the experience on which they base their behavior accumulate quickly.

Finally, the infants of depressed mothers might as a group show both a heightened and a lowered amount of protest. Adopting Bebee’s mid-range model for interpretation would indicate that the different depressed samples are facing different types of regulatory differences. A heightened amount of protest would indicate that the infant is preoccupied with the interactive regulation while a lowered amount would indicate that the infant has turned to self-regulation (Bebee, Rustin, Sforer, & Kniblaush 2005).

Audio recording

Ten minutes of mother-infant face-to-face interaction were recorded. Recordings were aborted if the infant cried excessively (more than 30 seconds in succession). 11 of the 49 recordings (22.4%) of the control group were aborted before the ten minutes had finished. Due to the infant protesting. None of the 17 depressed interactions were aborted.

Vocal coding and reliability

Acoustic analysis and labeling was carried out using PRAAT software for phonetic analysis. The recordings were segmented into speech and non-speech intervals using a semi-automated procedure during which possible segments of speech were first identified based on intensity threshold levels. The segments were then verified and adjusted manually and infant vocalizations were reliably separated into negative (protest) and neutral-positive vocalizations by blind coders. Coders were trained to achieve reliability at minimum kappa (K) ≥ 0.60 for event and ≥0.80 for percentage agreement, which is considered acceptable (Cohen, 1988). Inter-rater reliability was calculated for 20% of each recording. Time-based and event-based Kappa was calculated with sequential analysis software (Bakare & Quera, 2011). For protest time-based K = 0.92 and the K = 0.84, % = 93. Seven files were consensus-coded because reliability could not be reached.

Ethics

All participants were thoroughly informed about the project and all signed a consent form. All participants in the depressed group were offered thorough feedback after all visits and were offered to participate in short-term cognitive behavioral group therapy.

Data Analysis

Data was analyzed performing an independent sample t-test using IBM SPSS Statistics 19.

Results

Maternal and infant characteristics

Basic characteristics of the sample are presented in Table 1. No significant differences were found in maternal age, single parent status, maternal unemployment status, maternal years of education, infant gender or infant birth weight. The two groups only differed according to depression diagnosis.

Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Depressed</th>
<th>Non-depressed</th>
<th>t value</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal age (years)</td>
<td>33.9</td>
<td>34.1</td>
<td>-0.6</td>
<td>0.53</td>
</tr>
<tr>
<td>Married</td>
<td>14/17</td>
<td>45/49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single mother</td>
<td>3/17</td>
<td>4/49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primipara</td>
<td>16/17</td>
<td>45/49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infant sex</td>
<td>8/17</td>
<td>27/49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infant gender</td>
<td>9/17</td>
<td>22/49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infant birth weight (g)</td>
<td>3460</td>
<td>3470</td>
<td>-0.1</td>
<td>0.90</td>
</tr>
</tbody>
</table>

Protest results

On average, infants of non-depressed mothers showed a higher percentage of time in protest (M = 11.65, SD = 14.65) than infants of depressed mothers (M = 2.31, SD = 4.78). This difference was highly significant (t(63) = -3.61, p < .001).

Table 2

<table>
<thead>
<tr>
<th>% of total</th>
<th>Depressed</th>
<th>Non-depressed</th>
<th>t value</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>0/17</td>
<td>0/49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1%</td>
<td>0/17</td>
<td>0/49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2%</td>
<td>0/17</td>
<td>0/49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3%</td>
<td>1/17</td>
<td>0/49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4%</td>
<td>2/17</td>
<td>0/49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5%</td>
<td>2/17</td>
<td>0/49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6%</td>
<td>4/17</td>
<td>0/49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7%</td>
<td>5/17</td>
<td>0/49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8%</td>
<td>7/17</td>
<td>0/49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9%</td>
<td>8/17</td>
<td>0/49</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Discussion

Contrary to previous findings, the results of the present study showed a lowered amount of vocal protest in infants of depressed mothers. Possible interpretations will now be discussed. Figure 1 shows the results from the present and previous studies.

One possible explanation is the use of different measures. However, only across the depressed samples does the measure seem to largely impact the amount of protest. This could be explained by the presence of dysregulation affect in the infants of depressed mothers, which would result in different amount of protest when different modalities are measured.

Field's mid-range model for interpretation would indicate that the different depressed samples are facing different types of regulatory differences. A heightened amount of protest would indicate that the infant is preoccupied with the interactive regulation while a lowered amount would indicate that the infant has turned to self-regulation (Bebee, Rustin, Sforer, & Kniblaush 2005).