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Different amounts of protest in 4-month-old infants of depressed vs. non-depressed mothers

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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 phonetic 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, & Guttman, 1990). The present study was designed to address this issue by comparing 4-month-old infants of depressed vs. non-depressed mothers in a face-to-face interaction procedure. Previous studies on infant protest have often used high-risk infant-mother dyads and maternal characteristics that are more likely to yield findings of divergent affect 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. The study is intended to provide a more realistic view of high-risk infant-mother interactions, with a non-pathological, low-risk sample.

Methods

Participants

The sample consisted of N=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 15 years of age in the Copenhagen area, mother and infant communicate with each other within the first 4 months (Van Egeren, Barratt, & Roach, 2001).

Procedure

The interaction took place according to a standardized design of mother-infant face-to-face interaction. Mothter and infant were seated in front of each other at a distance of approximately 50 cm, the infant in an infant seat and the mother on a small chair. Vocal recordings were made using Sony voice recorder. Vocal recordings were analyzed by a clinical psychologist at enrollment in both groups.

Protest results

On average, infants of non-depressed mothers showed a higher percentage of time in protest (M = 11.56, SD = 14.65) than infants of depressed mothers (M = 2.31, SD = 4.78). This difference was highly significant (t(63.92) = 3.61, p < .001).

Discussion

Contrary to previous findings, the results of the present study showed a lower 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.

Vocal coding and reliability

Acoustic analysis and labeling was carried out using PRAAT software for phonetic analysis. The recordings were segmented into five second intervals and 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 positive (protest) and neutral-positive vocalizations by blind coders. Coders were trained to achieve sensitivity 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 (Balas & Quera, 2011). For protest time-based K = 0.64, and event-based K = 0.84, % = 93. Seven files were consensus-coded because reliability could not be reached.

Data Analysis

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

Results

Maternal and infant characteristics

Basic characteristics measured in this study are presented in Table 1. No significant differences were found in maternal age, single mother 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 (%) (N=17)</th>
<th>Non-depressed (%) (N=49)</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal age, years</td>
<td>27.1</td>
<td>24.3</td>
<td>0.51</td>
<td>0.608</td>
</tr>
<tr>
<td>Maternal education</td>
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<td>13.5</td>
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Conclusions

Results showing a lower amount of 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, 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 interactional disruptions by heightening or lowering the response.

References


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 discordant affect in the infants of depressed mothers, which would result in different amount of protest when different modalities are measured.

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