Child development, language and social interactions

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Adult role on language acquisition

- Infant development is associated with the quality of infants interaction established with adults and opportunities to play (Vygotsky, 1986), namely with their parents (Bowlby, 1969).
- Parent-child interaction are fundamental for children’s early language development (Tomasello, 2003). During interaction, adults adapt language, namely they use a higher pitch and exaggerate intonation, they restrict the range of topics and they are quite selective in the syntactic constructions they use (Snow, 1994). These interactions are critical for children’s early language development and later academic performance (Halliday, 1993; Chall, Jakobs e Baldwin, 1996).
Bioecological and transactional human development models
(Bronfenbrenner & Morris, 1989; Sameroof & Fiese, 2000)

Human development occurs over the life course through progressively more complex reciprocal interactions (proximal processes) between individuals and their environment

* Process–Person–Context–Time

**Other persons**
- Social interaction occurs within Zone of Proximal Development (ZPD)
- Mediators: persons, objects, language

**Relationships and interactions**
- Synchrony
- Reciprocity
- Trust
- Participation
- Affective behavior

**Learning new things**
- Training abilities and behaviors
- Mental representations/internal working models

**Affected and affecting**
- Language and Social Development
Study aim

- To investigate the differences and to detailed describe maternal – infant and paternal-infant interactions regarding:
  1) affective verbal and non-verbal behaviors and changes
  2) play
  3) communication
Participants

- 27 healthy infants (15 boys, 13 first-born, 15 months, Portuguese Caucasian) and their mothers and their fathers;
- Mother completed about 11 years of formal education (M = 11.25 SD = 3.079) and fathers about 10 (M = 10.33 SD = 3.822);
- Mothers were about 30 years old (M = 29.58; SD = 7.501; range 19-43) and fathers about 32 years old (M = 32; SD = 7.058, range 20-45);
- Parents cohabitated
- Middle class backgrounds
Methods

- Mother-infant and father-infant dyads were videotaped in separable free play interaction of 5 minutes each (total 10 minutes of interaction for the infant – first with one parent and then with another). A set of toys was offered in a box. Parents order was randomly selected.

- The videos were described micro-analytic (sec by sec) and behavioral categories were organized to describe mothers and fathers behavior. Categories included affective behavior, verbal communication, non-verbal communication and play and scored in quantity (time and frequency) and quality.
1 – Episodes: cohesive unities of interactive play;
2 – Interactive verbal sequences: interactions with vocalization:
   a) *Simple sequence*: Mother: “How does the cow do”? Child: “Muuu!” (verbal or gesture behaviour followed with an answer);
   b) *Broken sequence*: Father: “Take the ball”. Child reaches for another toy; (verbal or gesture behaviour without an answer);
   c) *Recast sequence*: Filho – Child “thes”. Mother “This”; (repeating what the child has said, correcting errors);
   d) *Expansion sequence*: Father “Try another one”; (more elaborated verbal forms);
3 – Non-verbal sequences (the same categories).
Categories definition

4 - Verbal affective behavior: positive, negative or neutral
5 - Non-verbal affective behavior: positive, negative or neutral (smile, distancing behavior, touch, facial expression, sharing attention);
6 - Play: under, above, or in ZPD;
7 - Play: 1 – Language/communication, 2 – Symbolic, 3 – Logic, 4 – Psychomotor/movement, 5 – knowledge Acquisition;
8 - Communication significant: requests, demands, recast meaning attributions.
An example
(Maria João Alves, 2013)

01:48 Leonor
01:50
01:53 Onde está a vaca?
01:54 Onde está?
01:55 Não, a vaca. Dá a vaca ao pai
01:56 Isso não, esse é o porquinho!
01:59 A vaca, dá a vaca ao pai.
02:00 A vaca.

P dispõe encaixes de animais já montados à sua frente: a vaca, o pintainho, o porco;
F segue os movimentos de P
F leva a mão ao porco e apanha-o (1m);
P faz um gesto de pedido com a mão
F abre o porquinho sem dificuldade;
F olha o lado côncavo das peças - porco -
P retira as peças, encaixa-as guardando o porco nas suas mãos; F segue o porco com o olhar;
F reage imediatamente ao ouvir o seu nome, olhando os br;
P voz dinâmica
(gargalhadas na sala)

02:29
02:32
02:33 Foi muito longe?
02:34 Vamos meter todos?
02:35
02:36 Mete este lá dentro, este aí

F tenta encaixar o porquinho;
P dispõe o pintainho e a vaca à frente de F;
F deixa cair o encaixe -porco- que rola para trás de si; F procura-o com o olhar
P apanha-o e mostra-o a F;
F tenta agarrá-lo;
P retira-o, coloca-o no chão, agarrar o pintainho
F observa o lado côncavo do porco batendo ao de leve no seu interior;
P estende o pintainho;
F boca aberta
P e F lado a lado
P voz dinâmica
- Mothers structure more children play (to put the toys near the child, disassemble the toy to show the type of toy, arranging the materials) than fathers;

– Fathers tend to use more verbal directions and instruction about toys use (e.g., “Put inside, this one” - put this one inside, this one) and they model how to do (in front of child they demonstrate how to put pieces together – without speech).
### Results

<table>
<thead>
<tr>
<th>Type of play (non mutual exclusive categories)</th>
<th>% of time</th>
<th>% of time</th>
</tr>
</thead>
<tbody>
<tr>
<td>knowledge Acquisition</td>
<td>51</td>
<td>65*</td>
</tr>
<tr>
<td>Psychomotor/movement</td>
<td>26</td>
<td>20*</td>
</tr>
<tr>
<td>Logic</td>
<td>17</td>
<td>10*</td>
</tr>
<tr>
<td>Language/communication</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Symbolic</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

* indicates significance at p < .05.
Interactions and ZPD

Play

- Near ZPD
- Within the ZPD
- Below the ZPD
- Above the ZPD

- Ocurrences mother-child (in seconds)
- Ocurrences father-child (in seconds)
- % time mother-child
- % time father-child
Mothers use verbal communication (for each 49 mothers verbalizations, Portuguese fathers do 11),
Mother talk more and longer
Mothers (e.g.,: Lowered speech tempo, higher pitch) more repetitions, recasts, speech with gestures
Verbal sequences

- **Simple**: Mother (60), Father (50)
- **Broken**: Mother (30), Father (20), Recasted (10), Expanded (10)

*p < .05*
Fathers use more and longer non-verbal language. Fathers engage more on an attentive play, follow/respond infants interests and wait more for infants turn than mothers.

Fathers allow children more try-error (learning on their trial)
Verbal affective behavior

- Explicit praise
- Positive reinforce
- Negative reinforce
- Neutral reinforce

Occurrences in seconds: [Mother, Father]
% of time: [Mother, Father]
Qualitative data:

- **Maternal** reinforcing can be observed in *direct* behaviors (e.g., praise, cheers clap, touch)
- **Paternal** reinforcing can be observed in *indirect* behaviors (e.g., smiles, nodding)
No differences were found in maternal and paternal amount of request and directives given by both parents. Maternal communication turns were associated with maternal requests (Rho= .677; p<.05);

Mothers that verbalize more (Rho= .623; p<.05) and make more request (Rho= .658; p<.05) have more years of education

Mothers verbalize more use more verbs and make more request direct to girls than boys (tested with U Mann Whitney test; p<.05).
* Generate independent scales to access fathers and mothers behaviors or male/female interactive behavior: Faria et al. (2011) reported that maternal overall sensitivity scores in free play are better than paternal, but fathers obtained better scores in play and controlling behavior.

* Gathering quantitative and qualitative data: Mothers are more directive and infants communicate less negative behaviors with them, but fathers allow infants to do more choices and try new things.
Study limitations and further directions

- Single observation
- Micro-analytic analyses (sec by sec) are very time consuming
- Are these findings associated with attachment relationship and child development?
References


*Tomasello, M. (2010). Human communication is thus cooperative to the core, and it helps in coordinating collaborative activities as well. MIT Press, Cambridge Massachusetts.