**The group’s beginnings**

- **Geneva School**
  70’s – 80’s
  The classic Piagetian tradition of early development

- **Vygotsky’s ideas**
  Addition of semiotics to the study of human psychological development

- **Group of Strategies and Problem Solving**
  Analysis of microgenetic processes
  Object’s role in the interactions between subjects

**Studies of Early Cognitive and Communicative Development**
Typical and atypical development

At home or at the Preschool

Ages between 0 to 3 years old

Rhythmic, sonorous and melodic systems

Communication and symbolic development

Gesture functions

Communication of self-regulation development

Origins of intentional communication

Current research

Some research questions that we are trying to answer...

How are the semiotic systems getting organised before the appearance of language?

What is the communicative and intentional influence of the adult? Through which system is it realised?

What is the first developmental basis for semiosis?

In which communicative niches is semiosis first manifested?

We also include some interdisciplinary studies from Music (Music-Therapy), History and Theoretical Physics.
From what age are they understood and later, used by the children? What semiotic systems appear at what ages? The status of the object. The minimum unit of construction of psychological development is “The magical number three”. Considered from the point of view of its function in daily life. Firstly in other’s company, later in an autonomous way.

Main axes of our research

Semiotic and Pragmatic Perspective

Adult
Child
Object
At some point late in the first year of life, children begin to "act as if", begin to use an object as another, or use the appropriate objects outside the context of regular use, or to represent absent objects. The child gradually produces meanings represented detached from material reality.

The adult is central to introduce children to the first conventional and symbolic uses of objects. If the objects are defined by their function, have cultural properties and rules that have been agreed, then the symbolic productions can not be outside that characterization. Without taking in account common rules on children’s use of objects, we cannot understand the meaning of their symbolic productions.

Some of the research in progress at this time relate to the following topics:

First symbolic productions in typical and atypical development, in school or family contexts

- At some point late in the first year of life, children begin to "act as if", begin to use an object as another, or use the appropriate objects outside the context of regular use, or to represent absent objects.
- The child gradually produces meanings represented detached from material reality.

Some of the research in progress at this time relate to the following topics:

Intentional communication with an interrogative function

- A fruitful area of research, inspired by Piaget, is initiated in the 70's by Bates, Camaioni and Volterra on the origin of intentional communication in children before language. The illocutionary phase begins with protoimperatives (children use the adult to get something of the world) and protodeclaratives (children use the object to get the attention of adults).
- Both types of communicative acts have been the focus of interest of researchers dedicated to typical and atypical development.

- However, even with the first intentional communicative gestures, we note:
  - (1) the absence of references to the role of the adult, and perhaps in part as a result,
  - (2) the absence of other functions besides declarative gestures and imperative ones.
- All of this ignores the possibility that children can communicate intentionally in an interrogative way (protointerrogatives) to "ask" something, giving to the adult a regulatory role when they encounter some difficulty performing a task with a complex object.
• At some point in development, children know that "things have to be done in a certain way and not in any way", that "the objects are to be used in certain ways" and so on.

• To succeed in the use of complex objects, they begin to produce gestures and private uses as "ways of thinking aloud" to self-regulate their own behavior when encountering a difficulty in a situation of solving a problem with complex objects.

Some of the research in progress at this time relate to the following topics:

Origin and development of gestures and private uses of objects in typical and atypical development

Origin and development of systems-rhythmic-melodic sound in both typically developing and children at risk in a hospital context

• We hypothesize that rhythm, sound and melody constitute a semiotic system, which is very likely the first to be operated in situations of communication between adult and child about and through an object in the first months of life.

• In these kind of situations of interaction, the adult gradually introduces the material world, which allows the child to appropriate the different communicative resources the other gives to him from the beginning.
Method

Participants
Two boys and a girl, with one of their parents

Design
Longitudinal-observational

Instruction
“Play with your child as you do normally”

Place
Participants’ home

Duration
5 minutes

Materials

Pyramid with rings
3 sonorous rings
3 non-sonorous rings
### Observation's Categories

<table>
<thead>
<tr>
<th>CHILD</th>
<th>ADULT</th>
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<tbody>
<tr>
<td><strong>Attention</strong></td>
<td><strong>Emotional Expression</strong></td>
</tr>
<tr>
<td>Towards the object</td>
<td>Smiles</td>
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<tr>
<td>Towards the adult</td>
<td>Laughs</td>
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<tr>
<td>Towards the adult’s action</td>
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<tr>
<td><strong>Emotional Expression</strong></td>
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<td>Smiles</td>
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<td>Shouts</td>
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<tr>
<td><strong>Use of Objects</strong></td>
<td><strong>Communicative Mediatiors</strong></td>
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<tr>
<td>Non-Conventional Uses</td>
<td>Demonstrations</td>
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<td>Premises to Conventional Uses</td>
<td>Distant</td>
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<tr>
<td>Conventional Uses</td>
<td>Immediate</td>
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<tr>
<td><strong>Gestures</strong></td>
<td>Ostensive Gestures</td>
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<td>Ostensive gestures to themselves</td>
<td>Basic or Non-rhythmic ostensive gestures</td>
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<tr>
<td></td>
<td>Rhythmic ostensive gestures</td>
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<tr>
<td><strong>Vocalizations</strong></td>
<td>Language, Verbalizations and/or Vocalizations</td>
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### Adult's Uses of Objects

#### N1

<table>
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<tr>
<th>2 months-old</th>
<th>4 months-old</th>
<th>6 months-old</th>
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#### N2

<table>
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<th>4 months-old</th>
<th>6 months-old</th>
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#### N3

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<th>6 months-old</th>
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Results

How and when do adults add rhythm, sonority and melody to their object demonstrations and their gestures?

Rhythmic, sonority and melody in adult’s uses
Results

Predominant rhythmic pattern:

- Basic Pattern
- Double Pattern
- Triple Pattern

What kind of uses do children produce?
Children's uses of objects

**N1**

- Non-Conventional Uses
- Premises to Conventional Uses
- Conventional Uses

**N2**

- Non-Conventional Uses
- Premises to Conventional Uses
- Conventional Uses

**N3**

- Non-Conventional Uses
- Premises to Conventional Uses
- Conventional Uses

**Percentage of children's gazes toward the sonorous rings when presented by adults**

- N1
- N2
- N3

- 2 months-old
- 4 months-old
- 6 months-old
Discussion

Triadic interactions adult-baby-object.

Structured context of multimodal communication.

Babies are responsive to rhythmic, sonorous and melodic presentations from the adults.

Rhythm, sonority and melody as a basic semiotic system.

Predominant rhythmic patterns.

(Bates, Camaioni & Volterra, 1975; Tomasello, 2004, 2008; Tomasello & Hamann, 2012)

(Del Olmo, 2009; Kress, 2000, 2001)

(Moog, 1976, Trehub, 2003b)

(Basilic & Rodriguez, 2011; Rodriguez & Munro, 1988; Rodriguez & Palacios, 2007)

Conclusions

Rhythm colours interactions, either alone or accompanied by sonority and/or melody.

Adult focusses the baby’s attention on the object, adjusting their actions to the child, and gradually decreasing their contribution to the regulation of the interaction.

At 6 months-old, children are able to explore objects in terms of its sonorous possibilities of use.
What I am working on now

**Adult's initiative**

- Triadic interaction from the first months of life.
- Development of shared reference.
- Thanks to rhythm, sonority & melody, consensus sites are established between child and adult.

**Child's initiative**

- Clearly triadic situations.
- Sonorous exploration of the objects.
- Analysis of gesture production and its functions.

We are focused at:

- Children's productions: gestures and use of objects.
- Gestures (and gesture functions) may not be fully formed.
- Before children understand what the object is, and what are its function and properties, they establish conventions with the adult at a lower level, such as looking at what is presented by the adult.


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Rhythm, sonority and melody in triadic interactions during the first year of life

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