**Ilana Frank and Diane Poulin-Dubois 2002:**
**Young monolingual and bilingual children’s responses to violation of the Mutual Exclusivity Principle**

Much of language acquisition research has taken place within the context of monolingual acquisition. However, this does not reflect the situation of a large subset of the world’s population.

**Question:** Do (young) bilingual and monolingual children resemble one another in their adherence to the Mutual Exclusivity Principle?

**Background**

Word learning is hard! A number of lexical principles (thought of as biases, constraints, or assumptions) have been proposed to explain how children prove so successful at this task.

**The Mutual Exclusivity Principle**

Children assume category terms are mutually exclusive—an object will have a single category label. This predicts a child adhering to Mutual Exclusivity would prefer to assign an unfamiliar label to an unnamed object over a named one.

**Mutual Exclusivity in Monolinguals**

- Support for Mutual Exclusivity
  - Markman and Wachtel (1988): Three to four-year old children shown familiar/unfamiliar object pairs showed a strong preference to learn a new word for a new object when asked to, say, “show me the dakon.”
  - Au and Glusman 1990; Merriman and Bowman 1989: Results replicate those of Markman and Wachtel1998.

- Onset of Mutual Exclusivity Preference
  - Golinkoff, Hirsh-Pasek, Bailey and Wenger, 1992; Graham, Poulin-Dubois and Baker, 1998; Liittschwager and Markman, 1994; and others: Research gives conflicting answers as to when adherence to Mutual Exclusivity begins. Experiments have yielded answers ranging from 17 to 30 months.

- Violations of Mutual Exclusivity
  - Au and Glusman (1990) and Taylor and Gelman (1989): Children (3.5-5.5 years) will accept two names for an object if they have
reason to believe the names come from different levels of a
categorical hierarchy.

- **Savage and Au (1996):** Children split on adherence when
  presented with two novel names applied to a single unfamiliar toy,
  and then later asked to select referents for each term from among
  several unfamiliar objects.

**Mutual Exclusivity in Bilinguals**

Bilinguals are constantly being confronted with violations of Mutual Exclusivity.

- **Intralingual Mutual Exclusivity**
  - **Merriman and Kutlesic, 1993; Rosenblum and Pinker, 1983; Dewitt, 1995:** Bilinguals honor Mutual Exclusivity within a
    language comparably to monolinguals of that language.

- **Interlingual Mutual Exclusivity**
  - **Au and Glausman, 1990; DeWitt, 1995; Merriman and Kutlesic, 1993:** Bilingual children over 3.5 years do not reliably
    honor Mutual Exclusivity across languages.
  - **Davidson, Jergovic, Imami and Theodos, 1997:** For children 3.5-6 years, mutual exclusivity within a language weaker in bilinguals
    than monolinguals.

*But what about bilinguals under three years?*

- Is their adherence comparable to monolinguals?
- How does it change between two and three years?
- Do they distinguish between inter and intra-lingual labeling?

**EXPERIMENT**

**Participants:** 114 Canadian children, split into 4 groups by age/language:

<table>
<thead>
<tr>
<th></th>
<th>26-28 mo</th>
<th>34-36 mo</th>
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</thead>
<tbody>
<tr>
<td><strong>Monolinguals</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>English</em></td>
<td>21</td>
<td>27</td>
</tr>
<tr>
<td><em>French</em></td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td><strong>Bilinguals</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>English-dominant</em></td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td><em>French-dominant</em></td>
<td>12</td>
<td>13</td>
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</tbody>
</table>

For obvious reasons, monolingual children participated only in the
Same-Language Mutual Exclusivity task, whereas bilingual children
participated in both the Same-Language and Dual-Language tasks.
Bilingual children were administered the tasks in a counterbalanced
order, with an average period of 20.88 days between the two.

**Task 1: Same-Language Mutual Exclusivity**

**Hypothesis:** Within each age group, bilingual children will be more willing
than monolingual children to accept two names for the same object, that is,
to violate Mutual Exclusivity
**Materials:** Each trial made use of four objects, two of which were chosen for their presumed familiarity (e.g. shoe, flower) and two for presumed unfamiliarity (e.g. garlic press, noseguard). Four trials made for a total of sixteen objects.

In addition, each trial used two novel labels. All nonsense words were two syllables long and constructed to be consistent with the phonotactic rules of the target language.

**Procedure:** The task consisted of four trials, each carried out by two experimenters, both of whom administered the task entirely in the child’s dominant language. Each trial had two phases.

- **Training Phase:** Experimenter 1 familiarizes the child with the objects. Each object is shown in turn, first the two familiar, then the two unfamiliar. When showing the final unfamiliar object, the Experimenter 1 labels it, using a nonsense name a total of three times. Experimenter 1 then hands the object to Experimenter 2, who refers to the same object using the other nonsense term three times. The other unfamiliar object remains unlabeled.

- **Testing Phase:** The four objects are laid out before the child. Each experimenter asks the child to point out one of the familiar items, and then asks the child to point to the object bearing the unfamiliar name introduced they have previously introduced.

**Results:**

Performance in naming familiar items was used to test the experimental set-up. Children in every group successfully identified on average more than 7/8 familiar items.

For a child to honor Mutual Exclusivity, one of they must select the unlabeled unfamiliar object as the referent to one novel word, and the doubly-labeled unfamiliar object as the referent to the other novel word.

<table>
<thead>
<tr>
<th>Language Group</th>
<th>Age Group</th>
<th>26-28mo</th>
<th>34-36mo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monolinguals</td>
<td>mean</td>
<td>1.24</td>
<td>2.26</td>
</tr>
<tr>
<td></td>
<td>standard deviation</td>
<td>1.15</td>
<td>1.15</td>
</tr>
<tr>
<td>Bilinguals</td>
<td>mean</td>
<td>1.54</td>
<td>2.33</td>
</tr>
<tr>
<td></td>
<td>standard deviation</td>
<td>0.91</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Extensive statistical analysis showed no significant effects for:

- Experimenter (who served as E1 or E2 did not prove a confound)
Lingual Group bilingual and monolingual children honored Mutual Exclusivity equally!!

With a significant main effect for:
- Age Group, with older children honoring Mutual Exclusivity more than younger children.

Task 2: Dual-Language Mutual Exclusivity

Hypothesis: Older children will be more willing to violate Mutual Exclusivity across languages (when the novel words come from two different language) than within a single language, while younger children will adhere to mutual exclusivity equally (which is to say, not very much).

Materials: A separate set of materials was used in this task, with the same distribution of familiarity/unfamiliarity as in the Same-Language task. However, the nonsense words in this task were selected differently, with one English-sounding word and one French-sounding word per trial.

Procedure: The procedure for the Dual-Language task was similar to that of the Same-Language task, except that Experimenter 1 spoke only in the child’s dominant language, and Experimenter 2 spoke only in the non-dominant language, each using the corresponding novel word in the training phase.

In addition, parents were asked between sessions to fill vocabulary inventories for both French and English in order to count the number of translational equivalents (TEs) present in each child’s productive vocabulary.

Results:
- As in the Same-Language task, children performed well in identifying familiar objects.

Younger children had between 2 and 336 TEs, with TEs comprising between 9% and 79% of vocabulary (average 47%).
Older children had between 1 and 499 TEs, with TEs comprising between 1% and 95% of vocabulary (average 51%).

<table>
<thead>
<tr>
<th>Mean trials (out of four) in which Mutual Exclusivity was honored</th>
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<tbody>
<tr>
<td><strong>Task</strong></td>
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<td></td>
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<tr>
<td>Same-Language</td>
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</table>
Extensive statistical analysis showed no significant effects for:

- Task Ordering (Same-Language or Dual-Language first made no difference)
- Percentage of TE’s, in either task
- Task bilingual children honored Mutual Exclusivity equally within and across languages!!

With a significant main effect for:

- Age Group, with older children honoring Mutual Exclusivity more than younger children.

**DISCUSSION**

- The only effects seen were age effects, but even among older subjects Mutual Exclusivity wasn’t very prevalent. 
  *The experiment set up an explicit Mutual Exclusivity violation, and so any Mutual Exclusivity adherence on the part of the subjects shows initiative!*
- The results replicate results seen with older children in Merriman and Kutlesic, 1993. 
  *Those observed tendencies can be extended to children as young as 27 months.*
- But contradict those of Davidson et al., 1997. 
  *That study could be *spurious*, or the experimental set-up may have primed bilingual subjects with sociolinguistic cues (though this seems unlikely given results in the Dual-Language task).*
- What of TE’s? If Mutual Exclusivity is in effect, how are children learning so many? And if they have so many TEs, wherefore Mutual Exclusivity?