

TELLING FRONTS FROM BACKS: THE IMPACT OF MISSING VISUAL INFORMATION FOR THE ACQUISITION OF LOCATIVE EXPRESSIONS IN YOUNG BLIND CHILDREN

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BACKGROUND

Linguistic forms of locative expressions

- Using affixes
e.g. Finnish
Turkish - *deniz-e* sea+dative 'in the sea'
- Using adpositions
e.g. French *dans la rue*
English *in the street*
- Using verbs with locative meaning
e.g. Korean
kkita 'put X in/on Y where X fits tightly'

BACKGROUND

Order of acquisition

The following is attested in many languages:

1. in, on, under
2. beside
3. back (with objects with back-front orientation)
4. front (with objects with back-front orientation)
5. between
6. behind (with objects with no back-front orientation)
7. front (with objects with no back-front orientation)

- usually attributed to cognitive development.

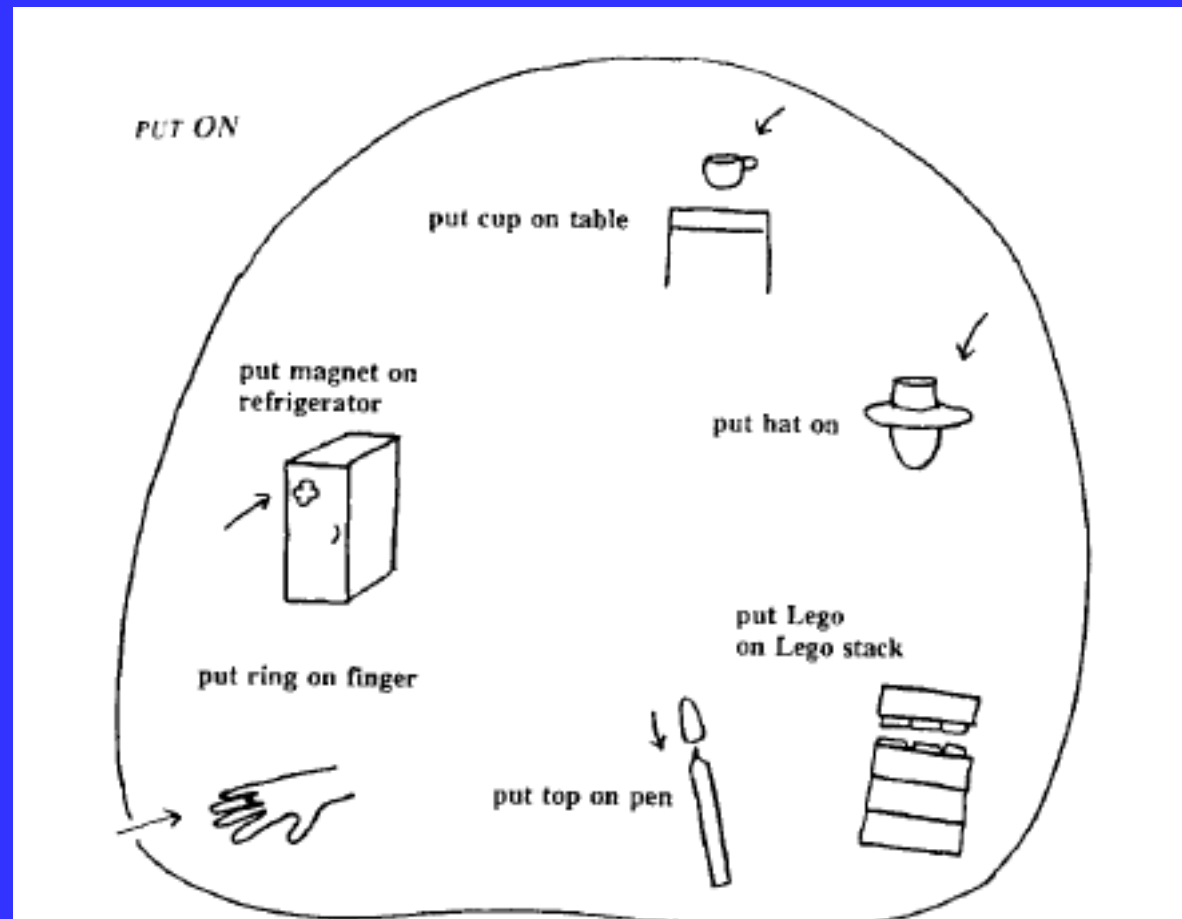
BACKGROUND

Cross-linguistic differences

- But do all language divide up space according to vertical/horizontal dimensions and surface and containment?

LINGUISTIC DIFFERENCES

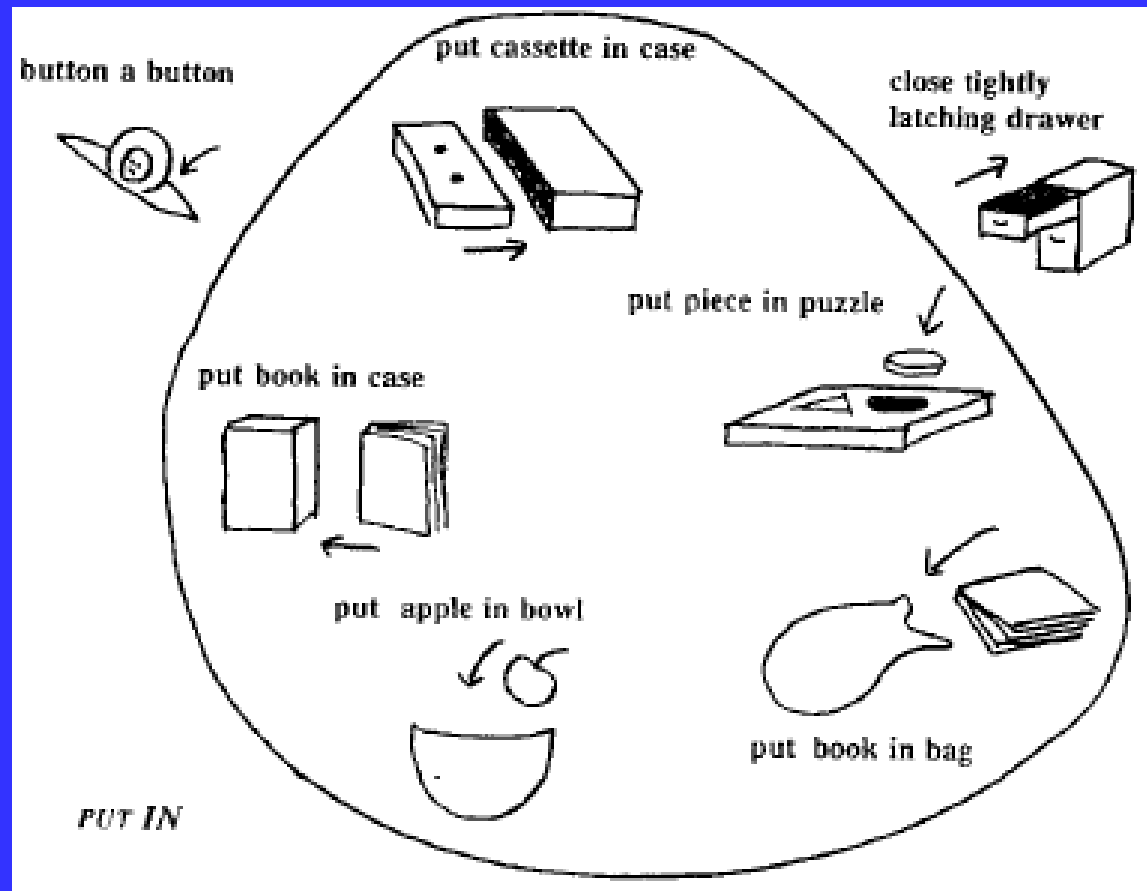
English *on*



*Bowerman &
Choi 1993*

LINGUISTIC DIFFERENCES

English *in*

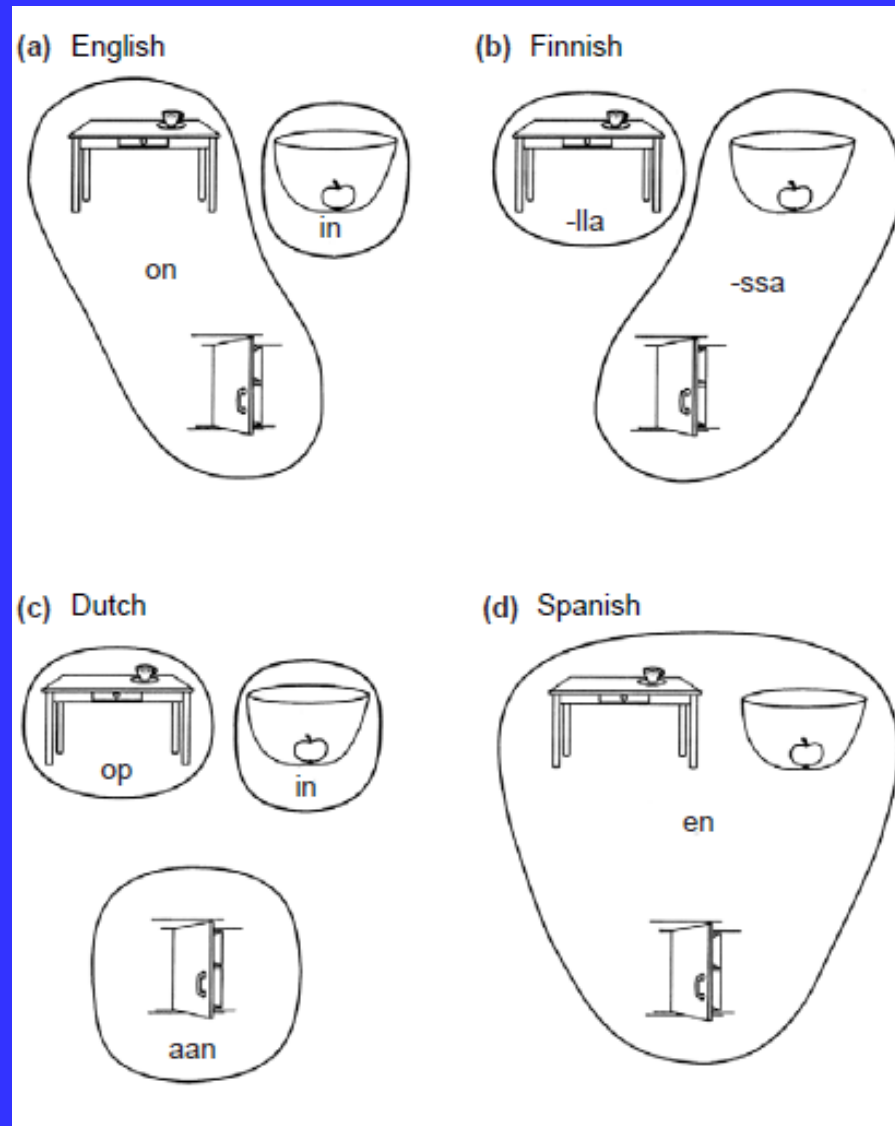


*Bowerman &
Choi 1993*

LINGUISTIC DIFFERENCES

Equivalents in other European languages

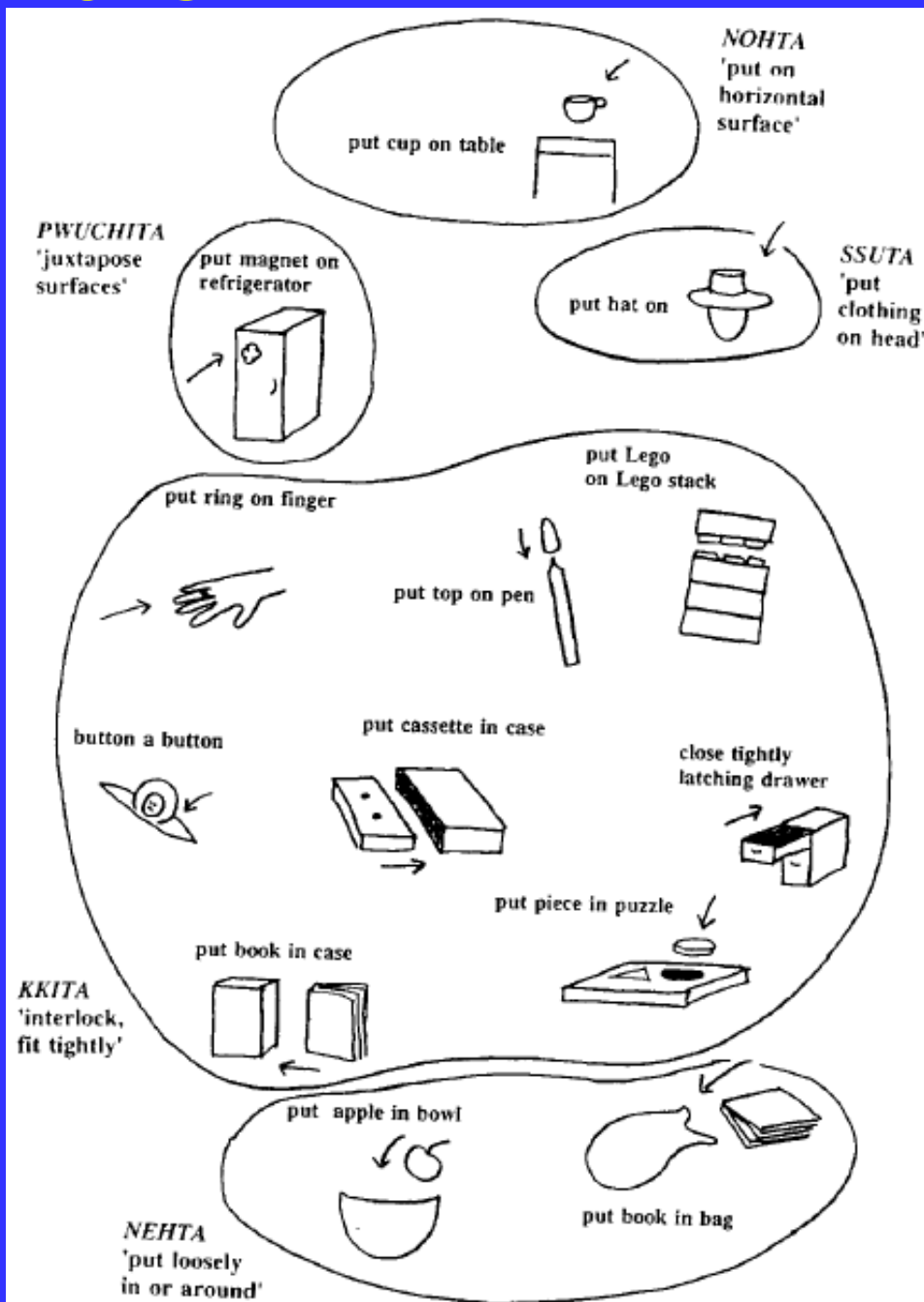
Clark 2004



LINGUISTIC DIFFERENCES

Korean

*Bowerman &
Choi 1993*



LINGUISTIC DIFFERENCES

Acquisition order revisited

- Korean children learn the distinctions made in Korean early (18 months)
- Even before they produce the forms.
- Conclusion: children probably have a conceptual map for spatial categories but the linguistic forms they are exposed to are mapped on to the concepts very early

LANGUAGE AND COGNITION

Acquiring locative expressions in English

Linguistic term

in

on

on top of

next to

in front of

behind

Cognitive concept

containment

support & attachment

support & vertical alignment

lateral horizontal alignment

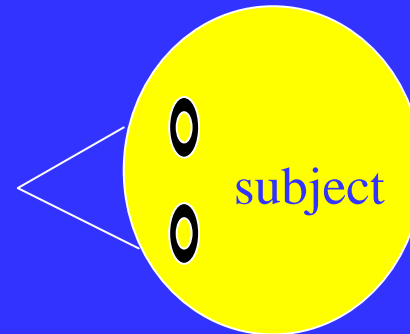
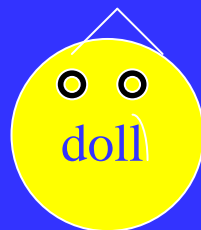
horizontal alignment, front
surface of referent object/self

horizontal alignment, back
surface of referent object/self

LANGUAGE AND COGNITION

The importance of the reference object

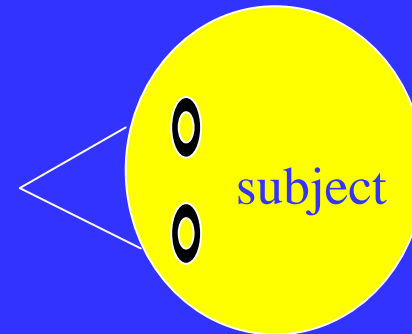
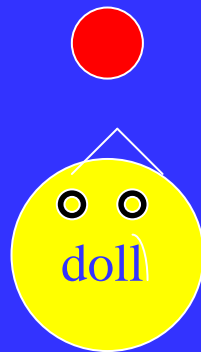
‘place the ball in front of the doll’



LANGUAGE AND COGNITION

The importance of the reference object

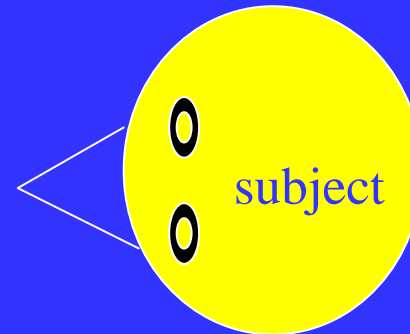
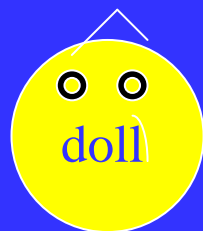
‘place the ball in front of the doll’



LANGUAGE AND COGNITION

The importance of the reference object

‘place the ball in front of the doll’



LANGUAGE AND COGNITION

The importance of the reference object

‘place the red ball in front of the yellow ball’



LANGUAGE AND COGNITION

The importance of the reference object

‘place the red ball in front of the yellow ball’



LANGUAGE AND COGNITION

Pre-requisites for carrying out the task

1. Knowing whether the reference object (doll/ball) has a front
2. Knowing that this knowledge is necessary for understanding and producing the term *in front of*
3. Knowing which features identify the front of the reference object if appropriate
4. Identifying these features

LANGUAGE AND COGNITION

Stages in acquisition

(Kuczaj & Maratsos 1975)

1. Child knows front and back of own body.
2. Child knows the fronts and backs of fronted-object types
3. Child can place another object in front of and at the back of these objects.
4. Child can generalize knowledge of fronts and backs to novel objects.

METHODOLOGY

Study of comprehension of locative expressions in blind children

- 20 English speaking blind children aged 5-8 years (14 boys, 6 girls)
- No other known disability
- Tested at their school
- Tested on expressions:
in, on, on top of, under, in front of, behind

METHODOLOGY

Asked to place objects in relation to one another:

for *in front of* and *behind*

- Objects to be placed:
a squeazy ball or doll
- Reference objects
doll (fronted) cube (non-fronted)
car (fronted) football (non-fronted)
- Total of 8 items per expression
- After all testing was complete, subjects were asked to identify the fronts and backs of all objects.

RESULTS

Quantitative Results (number and % correct)

Variable	fronted max = 8	non-fronted max = 8
<i>in front of</i>	3.4 43% (sd 3.1)	6.05 76% (sd 2.7)
<i>behind</i>	3.65 46% (sd 2.9)	5.85 72% (sd 1.9)
<i>Total</i>	3.5 44% (sd 3.1)	5.95 74% (sd 2.2)

Less than 2% non-responses

Sign. difference ($p < .01$) between fronted and non-fronted objects

RESULTS

Quantitative Results (knowledge of front/back features)

Variable	Does X have a front side? max = 20	Where is the front of X? max = 20
<i>Self (fronted)</i>	20	20
<i>Car (fronted)</i>	8	2
<i>Doll (fronted)</i>	11	7

Sign. difference between knowledge of existence of a front side and ability to identify it.

RESULTS

Quantitative Results (knowledge of front/back features)

Variable	Does X have a front side? max = 20	Where is the front of X? max = 20
<i>Self (fronted)</i>	20	20
<i>Car (fronted)</i>	8	2
<i>Doll (fronted)</i>	11	7
<i>football (non-fronted)</i>	5	n.a.
<i>Cube (non-fronted)</i>	6	n.a.

Some children (younger) attribute front/back to non-fronted objects

RESULTS

Qualitative results

Children identified front sides:

Self: on basis of stomach or nose

Doll: nose sometimes confused with little finger

Car: no consistent response e.g.
headlights, bumper, bonnet

Football and cube: responses like 'if they talk'

BLINDNESS

Errors with non-fronted objects

In front of = close to self

Behind = far from self

No clear orientation to reference object

Older children start to place a hand on reference object.



Conclusions: stages

1. Blind child knows the front and back of own body.
2. Blind child learns *one for one* that some objects have fronts and backs and some do not.
3. Blind child learns *one for one* to identify those front/back features and can then place another object in front of and at the back of these objects.
4. Blind children have problems generalizing knowledge of fronts and backs to novel objects.

Thoughts for future research

- Training on frontal features in younger children, then test on understanding of linguistic expressions
- What are the implications for blind children learning a language with a different structure?

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