Slide 1

Know when to be happy:

Acquisition of
Factive complements

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Magda Oiry & Jeremy Hartman
UMass Amherst

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- Thanks to all the kids, parents

- Research assistants: Amelia Ayer, Cara Iacaponi, Nina Miller, Catherine Baumgartner @UMass

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Introduction

- Ongoing follow-up on Léger's study of *know* vs. *happy*

- Acquisition of factivity with the interaction of negation

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Definition

- A factive verb denotes the truth of its complement

- *know that, regret, discover, be happy, forget that, realize, be aware, remember, be sorry that, be proud that, be indifferent that, be glad that, be sad that.*

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Factivity

1. British Intelligence has learned that Saddam Hussein recently sought significant quantities of uranium from Africa. (Bush Jr, 2003)

- Implies it is true or that the lead is correct - which later reveals itself as not being true.

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Other examples

2. Martha *regrets* drinking John's home brew.
   » Martha drank John's home brew.
3. Frankenstein was *aware* that Dracula was there.
   » Dracula was there.
4. John *realized* that he was in debt.
   » John was in debt.
5. It was *odd* how proud he was.
   » He was proud.

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Non-factives vs. factives

- believe, think vs. know
6. I think that it is raining
    - No truth value of the complement
7. I know that it is raining
    - Truth value of the complement

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Interaction with negation

- Under a negation, the true value does not change
8. John doesn't know that it is raining
    - Still entails that it is raining

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Non-factives under negation

9. I don't think it is raining

= no entailment

- The content of the complement could be true or false

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Negation and (non-)factives

- Think is not a barrier to Negation-raising
10. John doesn't think that Mary is here
11. John thinks that Mary isn't here
= Same meaning

Sailer (2006)

NEG-Raisingine 'Negative Transportation'), first
proposed by Fillmore 1963 and subsequently

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Negation and (non-)factives

- Know is a barrier to Negation-raising
13. John doesn't know that Mary is here
14. John knows that Mary isn't here
= Very different meanings

Sailer (2006)

State on knowledge or absence of knowledge

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Double Negative

15. She doesn't think that he is not coming

= she thinks he is coming

16. She doesn't know that he is not coming

/= she know he is coming

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True factives

17. John is happy that it is raining

18. John is happy because it is raining

19. The fact that it is raining makes John happy

- Causative component with true factives

Giorgi and Pianesi (1997)

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Semi-factives

20. John knows that it is raining

21. *John knows because it is raining

22. *The fact that it is raining makes John know

- A causative component is absent with semi-factives

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Happy and know

- Only *to be happy* is a true factive because semi-factives can lose their factivity in some environments (e.g. hypothetical or conditional contexts)

- But both are barriers to Neg-raising

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Acquisition

- *Know* has been studied but not in parallel with *to be happy*

- As early as 4, children are sensitive to the difference between factives and non-factives

- But, some syntactic properties of factives are not mastered well after the age of 4

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Schulz (2003)

- Four stages of the acquisition of factivity

- Stage 1(2-2;04): production of main clauses

- Stage II (2;5-3;6): interpretation of tensed complements as true and production of non-factive complements

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Schulz (2003)

- Stage III (3;7-7;00): Emergence of Theory of Mind (ToM), production of factive complements, and correct interpretation of factive and non-factive complements

- Stage IV (after 7): recognition of barrierhood of factives to extraction of adjuncts and negation-raising, and adequate reaction to presupposition failure.

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Léger (2008)

- Bassano's (85), Bassano and Champaud's (83) protocol
- Children have to associated given statements to the proper situations
- Dolls who are happy/sad or know/not know to have a duck/turtle

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Scenarios

- *Know* Four dolls: two can see (open eyes) and two dolls who can't see (blindfolded)
- *To be happy* Four dolls: two are happy (smiling) and two are sad (frown face)
- The four dolls are in front of the child, distinguishable by the color of their dress

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Léger (2008)

- The experimenter utters the following statement

1. She is happy she has a turtle   PP
2. She is happy she doesn't have a turtle   PN
3. She isn't happy she has a turtle   NP
4. She isn't happy she doesn't have a turtle   NN

- The child has to pair it to the appropriate doll.

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Léger (2008)

- Tested 39 children aged 6, 7, 9 and 11. Participants were presented with the following four attitude reports:

1. She knows she has a turtle   PP
2. She knows she doesn't have a turtle   PN
3. She doesn't know she has a turtle   NP
4. She doesn't know she doesn't have a turtle NN

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Subjects

- 39 between 6 and 11
  - n=10; 5;6-6;5 ; ma = 6;1
  - n=10; 6;6-7;5; ma = 6;9
  - n=10; 8;7-9;5; ma = 9;1
  - n=9; 10;8-11;5, ma = 11

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Results

	PP	PN	NP	NN
6	100 %	100 %	90 %	80 %
7	100 %	100 %	100 %	80 %
9	100 %	100 %	100 %	90 %
11	100 %	100 %	100 %	100 %

Happy condition

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Results (2)

	age	PP	PN	NP	NN
Know condition	6	80 %	60 %	70 %	50 %
	7	90 %	90 %	90 %	30 %
	9	100 %	80 %	100 %	40 %
	11	100 %	100 %	100 %	33 %

Results NN

	happy NN	know NN
6	80 %	50 %
7	80 %	30 %
9	90 %	40 %
11	100 %	33 %

Interpretation

- Kindergarten children treat *know* as a Neg-raising predicate (PN > NP)

23. She knows that she doesn't have a turtle

as

24. She doesn't know that she has a turtle

NN

- Interpret it as

25. She doesn't know that she has a turtle

- or

26. She doesn't know if she has a turtle

- Also as a PP, as if it was non-factive (raising Predicate)

If-complement

27. She doesn't know if she has a turtle

- Tend to answer non-exhaustively until age 9, chose one puppet and not two.
- Only later they realize that the factivity is suspended when followed by an *if*

If-complement

6	40 %
7	40 %
9	70 %
11	89 %

Discussion

- Why is the NN *happy* acquired earlier than NN *know*?

- The presupposition is different: with true factives like *happy*, it has to do with the presupposition of the speaker and the other participants

- With semi-factives like *know*, it has to do with speaker presupposition only.

Kreutz (98) and Norrick (76)

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Shift of perspective

28. She knows that she has a turtle

29. She doesn't know that she has a turtle

- The child has to entertain two conflicting presuppositions in 29, not in 28.

- This doesn't happen with true factives:

30. She isn't happy that she has a turtle

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In one word

- Theory of Mind, again!

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Our piece

- Checking if the representation of *know* is adequate

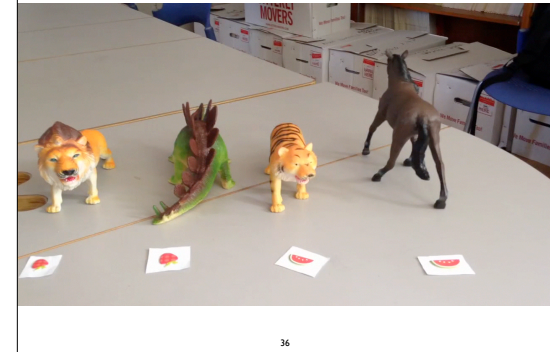- Instead of having a blindfold, characters turn around and do not see their 'gift'

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Happy condition

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Questions

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Know condition

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Questions

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Happy

A.PP Who is happy he got a strawberry?
   Lion

B.NP Who isn't happy he got a strawberry?
   Dino

C.PN Who is happy he didn't get a strawberry?
   Tiger

D.NN Who isn't happy he didn't get a strawberry?
   Horse

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Know

A.PP Who knows he got a strawberry?   **Lion**

B.NP Who doesn't know he got a strawberry?
   Dino

C.PN Who knows he didn't get a strawberry?
   Tiger

D. NN Who doesn't know he didn't get a
   strawberry?   **Horse**

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New experiment

- Ran the experiment in-between subjects
- 43 children (on-going study)
- 6, 7-8, 9 and 10-11 year-olds
- Randomized conditions (6 lists)

Oiry & Hartman (in prog.)

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Subjects

	happy	know
6	6 (ma: 6.6)	4 (ma: 6.5)
7/8	6 (ma: 7.3)	8 (ma: 7.3)
9	7 (ma:9.5)	6 (ma: 9.7)
10/11	-	6 (ma: 11.1)
	19	24

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- Each child hear one verb only and give 4 answers
- The animals stay on the table after every response

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Results for Happy

% correctness	PP Lion	NP Dino	PN Tiger	NN Horse
6	100	100	60	100
7/8	100	53.9	95	94
9	100	100	84.7	100
11	-	-	-	-

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Results for Know

% correctness	PP Lion	NP Dino	PN Tiger	NN Horse
6	77.7	69.2	67.7	0
7/8	100	100	37.9	34.5
9	100	100	64.0	54.5
11	71.4	100	68.4	71.6

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Happy responses

n=19x4	L=PP	D = NP	T = PN	H = NN
L=PP	100 %	0	0	0
D = NP	0	94 %	0	6 %
T = PN	5 %	5 %	73 %	17 %
H = NN	0 %	6 %	0 %	94 %

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Know responses

n=24x4	L = PP	D = NP	T = PN	H = NN
L=PP	92 %	4 %	4 %	0
D = NP	0	96 %	0	4 %
T = PN	0	65 %	35 %	0
H = NN	13 %	48 %	13 %	26 %

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Know: NN condition

31. Who doesn't know he doesn't have a strawberry?

- 24 kids 6 to 11
- 18/24= 74% errors
  - 48% NP Dino: erase the Negation downstairs
  - 13% PP Lion, 13% PN Tiger (26% NN)

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NN condition

% correctness	Know NN	Happy NN
6	0	100 %
7/8	34.5%	94 %
9	54.5%	100 %
11	71.6%	-

- Not only
  a syntactic issue

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Know:
PN / tiger condition

32. Who knows he doesn't have a strawberry?

- 16 out of 24 kids: 65% errors

- Interpreted as 'NP': they seem to treat as a Neg-raising predicate (pick the Dinosaur)

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PN / Tiger condition

- 11-yr-olds
  - On the Know PN condition, the 6 kids chose 66% of the time the NP reading 66% of the time

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Happy:
PN / Tiger condition

- 27% errors
  - 17% NN, 5% PP, 5% NP

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Discussion

- *Know* NP *vs.* PN: negation of the matrix (success) *vs.* the subordinate (fail)
  - Syntactically in the embedded, semantically in the matrix?
- No relation to ToM (no conflict)

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Discussion

- NN: overload?
33. Who doesn't know he didn't have a strawberry?
34. Who isn't happy he didn't have a strawberry?
✦ Change of perspective with *know* not with *happy*

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Conclusion

- Contra Léger: in-between subjects lead to interesting results
  - *Know* NN and PN represent a challenge
- *Know vs. happy* is harder for children: representation?
- Not the case that they treat *Know* as NR, otherwise they would analyze NN as PP

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Next

- More subjects
- What about L2 speakers?
  - no ToM issues there

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Merci!

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Basse, G. (2008). Factive Complements as Defective Phases. In Proceedings of the 27th West Coast Conference on Formal Linguistics, ed. Natasha Abner and Jason Bishop, 54-62. Somerville, MA: Cascadilla Proceedings Project.

De Villiers, J. (2000). Language and theory of mind: What are the developmental relationships. Understanding other minds: Perspectives from developmental cognitive neuroscience, 2, 83-123.

Kreuz, R. J., Kassler, M. A., & Coppenrath, L. (1998). The use of exaggeration in discourse: Cognitive and social facets. Social and cognitive approaches to interpersonal communication, 91-111.

Giorgi, A. & Pianesi F. (1997). Tense and Aspect. From Semantics to Morphosymtax, Oxford University Press, New York/Oxford.

58

Léger C. (2008). "The acquisition of two types of factive complements". In Language Acquisition and Development: Proceedings of GALA 2007. Eds. Anna Gavarró & M. João Freitas. Newcastle, UK: Cambridge Scholars Publishing, 2008. 337–346.

Neal, Norrick. (1976). "Two kinds of factive presuppositions." Linguistiche Berichte, 46, 84 – 89.

Premack, D., & Woodruff, G. (1978). Does the chimpanzee have a theory of mind? Behavioral and brain sciences, 1(04), 515-526.

Prince, E. F. (1976). The syntax and semantics of neg-raising, with evidence from French. Language, 404-426.

Sailer, M. (2006). Don't Believe in Underspecified Semantics. EMPIRICAL, 375.

Schulz, P. (2003). Factivity: Its nature and acquisition (Vol. 480). Walter de Gruyter.

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