Children’s Acquisition of Emotion Adjectives

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Outline

- Background: How are emotion concepts acquired?
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  - Evidence of a role for language
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  - But if words contribute to the formation of the concepts, how are the words acquired?
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- Support from language: Syntactic Bootstrapping
Learning Emotion Words and Concepts

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- Two experiments using novel adjectives
- Conclusions and next steps
What are emotions?
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How do emotion concepts develop? Two approaches...
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How do emotion concepts develop? Two approaches...

- **“basic emotions” approach:** certain emotion concepts are innate
- **constructionist approach:** emotion concepts are constructed based on our experiences
“Basic Emotions” Approach


- Humans are born with five “basic” emotions:
  - happiness
  - sadness
  - anger
  - fear
  - disgust
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These emotions “should be universally accepted as discriminable categories of direct experience.”
“Basic Emotions” Approach

Predicts:

- Emotions cannot be further broken down
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- the same emotional expressions will be produced by the same neuromuscular movements

(essentially) the same for all people, across cultures (Ekman et al. 1987)

However, emotions can be broken down into more basic features (valence and arousal)

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SURPRISED
EXCITED
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- emotions can be broken down into more basic features (valence and arousal)
- measurements of neuromuscular movements in facial expressions do not reliably predict emotional states
- there is suggestive evidence of cultural variation in emotion perception (Gendron et al. 2014)
Another idea: we are born with more basic, underlying emotion features: valence (pleasant vs. unpleasant) and arousal (active vs. calm).
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→ How do we acquire concepts of discrete emotions?
Constructionist approach

...emotion words help a perceiver understand the meaning of another person’s facial muscle movements. [...] Language plays a constitutive role in emotion perception...

Lindquist & Gendron (2013), p.66
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…language plays a role in emotion because it helps acquire, organize, and use the concept knowledge that is an essential element in emotion perceptions … and perhaps even experiences.

Lindquist et al. 2015, p.100
Evidence for the “constructionist” view and for a role of language:

- Neurotypical adults
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- Neurotypical adults
  - Better performance in face sorting task when verbal labels are provided, than when no labels are provided

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  - Patients sort faces into 3 piles, distinguished by valence (e.g. pleasant, unpleasant, neutral); Control group formed roughly 6 piles (happy, sad, afraid, angry, etc.)
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This is taken to support the view that emotion language helps construct specific emotion concepts.
So where does the language come from?

A common assumption is that children hear words and (magically!) map them onto some salient thing in their environment.
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→ Word-to-world mapping
So where does the language come from?

- This might work for (some) concrete nouns,

"cup"
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- This might work for (some) concrete nouns,
  - “cup”

- but not so much for verbs
  - “push”
So where does the language come from?

- This might work for (some) concrete nouns, such as "cup".
- But not so much for verbs, like "push".
- And we don’t know much about how adjectives or words for abstract states are learned, such as "sad".
Gleitman (1990) observed that events and states are not reliably labeled in the input. Her proposal: learners use the syntactic frame in which a verb occurs to restrict its semantic properties.

- [Subject [Verb]] — sleep, *hit, *give, ?think
- [Subject [Verb [Object]]] — *sleep, hit, *give, *think
- [Subject [Verb [Object] Indirect Object]] — *sleep, *hit, give, *think
- [Subject [Verb [Sentence]]] — *sleep, *hit, *give, think
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→ Sentence-to-world mapping
How Predicates are Acquired: Syntactic Bootstrapping


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<th>Sentence</th>
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...But what about verbs that label internal states or abstract properties? And what about the category of adjectives?
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  - or a video scene involving an obvious false belief
- People were more likely to guess a mental verb with the sentences.
Learning Labels for Internal States: Adjectives

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⇒ Many open questions about how adjectives are acquired and when/whether children reason about their meanings and sentence structures similarly to verbal predicates.
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Other words that label non-objects (verbs) are learned via Syntactic Bootstrapping.

Maybe adjectives are learned this way too?

- Maybe, but adjectives also present some complications.
- Situational context is (somehow) informative about word meaning.
How are emotion adjectives used in speech to children?
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Shablack (2017) examined spontaneous use of emotion adjectives by children and by parents speaking to children.

CHILDES database: 12 children ages 2–3 years
## A Corpus Study

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<tr>
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</tr>
<tr>
<td>glad</td>
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</tr>
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<tr>
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</tr>
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<td>joy</td>
<td>fear, fearful</td>
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<tr>
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<td>scared</td>
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<tr>
<td>interested</td>
<td>nervous</td>
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<tr>
<td>content</td>
<td>worry, worried</td>
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<td></td>
<td>gross</td>
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<td></td>
<td>disgust, disgusted, disgusting</td>
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<td>gloomy</td>
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<td>furious</td>
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### Part of speech of emotion words:

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<thead>
<tr>
<th></th>
<th>Parent</th>
<th>Child</th>
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<tbody>
<tr>
<td>Noun</td>
<td>1.65%</td>
<td>0.43%</td>
</tr>
<tr>
<td>Verb</td>
<td>2.83%</td>
<td>4.35%</td>
</tr>
<tr>
<td>Adjective</td>
<td><strong>95.40%</strong></td>
<td><strong>94.13%</strong></td>
</tr>
<tr>
<td>Preceding Environment</td>
<td>Following Environment</td>
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Sentence Environments of Use

Preceding Sentence Environment

Following Sentence Environment

Misha Becker

Acquisition of Emotion Adjectives
Experiments: Comparing Contextual Cues and Syntactic Cues to Emotion Words

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We conducted two novel word studies:

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In both studies children had to choose the picture of an alien that illustrated the meaning of the novel word
Three sentence frames (between subjects):

1. be + Adjective: Palooza is binty
2. feel + Adjective: Palooza feels binty
3. feel + Adjective + about: Palooza feels binty about something

be Adj: happy, sad, tired, cold, tall, red
feel Adj: happy, sad, tired, cold, *tall, *red
Puppet A: I know an alien who is binty!
Puppet B: Really? You know an alien who is binty?
Puppet A: Yes! This alien is binty.
Puppet B: Wow! You know an alien who is binty!
Experiment 1: Sentence Context

Puppet A: I know an alien who is binty!
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...is binty/feels binty/feels binty about something
Experiment 1: Sentence Context

Participants: 135 children ages 3–5 years

Procedure:

- 3 warm-ups (inclusion criterion: 2/3 correct)
- 4 target videos
- 3 fillers (“I know an alien who is serding!”)
- After each video conversation, point to 1 of 3 alien pictures
Point to where Palooza feels binty.
Experiment 1: Results (by Sentence Frame)

- Moderate effect of sentence frame: kids pick emotion images more in “feels about” than “feels”, but not sig. more than in “is” condition.
- Sig. effect of age: older kids pick more emotion images than action images
- No 3-way interaction (Age x Sentence x Choice)
Experiment 1: Results (by Age)

- Moderate effect of sentence frame: kids pick emotion images more in “feels about” than “feels”, but not sig. more than in “is” condition.
- Sig. effect of age: older kids pick more emotion images than action images
- No 3-way interaction (Age x Sentence x Choice)
Experiment 1: Results (Combined)

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Acquisition of Emotion Adjectives
Experiment 1: Discussion

- Children had an overall preference for the physical state images (more salient?)

Would additional contextual information help?
Children had an overall preference for the physical state images (more salient?)

Children were marginally influenced by sentence frame, but not exactly the way we expected.
Experiment 1: Discussion

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- Children were marginally influenced by sentence frame, but not exactly the way we expected.

- Lack of 3-way interaction means that although older children picked more emotion images and children overall picked more emotion images for “feels about” than “feels”, the effect of sentence frame did not increase with age.
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Based on Widen & Russell (2010): Children are presented with a series of very short stories about an alien character. Each story makes a particular emotion salient.
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*It was Palooza’s birthday. All her friends came to her birthday party and gave her presents. Palooza jumped up and down.*
Experiment 2: Story Context

Based on Widen & Russell (2010): Children are presented with a series of very short stories about an alien character. Each story makes a particular emotion salient.

*It was Palooza’s birthday. All her friends came to her birthday party and gave her presents. Palooza jumped up and down.*

*Now, Palooza is binty. What do you think binty means? Point to where Palooza is binty!*
Point to where Palooza feels binty.
Participants: 113 children ages 3–5 years

Procedure:

- 3 warm-ups (inclusion criterion: 2/3 correct)
- 7 stories highlighting a positive or negative emotion for a character
- After each story children hear the novel adjective used in one of 3 sentence frames
  - Now Palooza is binty! What do you think binty means? Point to where Palooza is binty!
  - Now Palooza feels binty! . . .
  - Now Palooza feels binty about something! . . .
- Children point to one of 3 alien images
Experiment 2: Results
Experiment 2: Results

**Significant effect of age**

- Older kids pick more emotion images (5 > 4 and 4 > 3)
- 3-year-olds pick more action images than 4 or 5
- 4-year-olds pick marginally more physical state images than 5-year-olds
Experiment 2: Results

- Significant effect of age
  - older kids pick more emotion images (5>4 and 4>3)
  - 3-year-olds pick more action images than 4 or 5
  - 4-year-olds pick marginally more physical state images than 5-year-olds
- 3-way interaction between Age x Sentence Frame x Image choice
  - 4-year-olds were significantly influenced by sentence frame, picking the emotion image sig. more in “feels/feels about” than “is”, but about the same in “feels” and “feels about” conditions.
  - 5-year-olds were marginally influenced by sentence frame, picking the emotion image more in “is” and “feels about” than in “feels” condition.
Experiment 2: Discussion

- Story context appears to boost children’s mapping of the novel adjective onto an emotion.
- Older children (age 4, 5) are more susceptible to this influence than younger children (3).
- Sentence frame is additionally helpful for 4-year-olds: given the sentence frame “feels Adj.” or “feels Adj. about” they were more likely to pick the emotion picture.
- Contrary to expectation this did not happen for 5-year-olds: they picked emotion pictures equally given “is Adj.” or “feels Adj. about”.

Misha Becker
Acquisition of Emotion Adjectives
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Conclusions

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There is a role for both language and situational context in learning the meanings of emotion words.
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Sentence frame alone (“feel Adj. about something”) is only mildly helpful in cueing an emotion meaning

Story context alone (story + “is” condition) cues emotion meaning for 5-year-olds

Story context + sentence frame cues emotion meaning for 4-year-olds

There is a role for both language and situational context in learning the meanings of emotion words.
Next Steps

Lots of open questions! For example...
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Our corpus study suggested other sentence frames that could be helpful, or combinations of these frames:

- make/get Adj. (also compatible with physical states)
- Adj. that/to/about

If we increase the range of sentence frames used (make/get/feel Adj about/to/that...) does this help in a novel word learning task?
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What if we use photographs of real kids instead of cartoon aliens?
Broader questions...

- What are the kinds of sentence frames that emotion words select in other languages?
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- What are the important questions to ask about bilingual acquisition of emotion words?
Next Steps

Broader questions . . .

- What are the kinds of sentence frames that emotion words select in other languages?
- What are the important questions to ask about bilingual acquisition of emotion words?
- For children who have difficulties recognizing emotion in faces (e.g. children with autism), is language intervention helpful? Or does the problem recognizing emotions hinder learning emotion words?
THANK YOU!

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