Children’s Labeling of Facial Expressions and Stories
Nicole L. Nelson, Sherri C. Widen & James A. Russell
Boston College

Introduction
Many people believe that children understand facial expressions from infancy. And, it follows, that when children later learn emotion labels, they easily map these labels onto the matching facial expressions (e.g., Denham, 1998).

Curiously, the emotion labels used by children to categorize facial expressions do not immediately resemble adult-like categorizations of the same facial expressions.

Children’s gradual acquisition of the meaning of emotion labels and of emotion concepts was recently mapped out in a Differentiation Model (Widen & Russell, 2003): when children (2 to 5 years of age) were sorted, irrespective of age, by the number of labels they used, emotion labels were found to emerge in a systematic order.

- If a child used only one label, that label was most likely to be happy.
- For two labels, there were two possible paths: some children added angry, others added sad.
- For those who used three labels, the two paths merged and all the children used happy, sad, and angry.
- The next step again allows two paths: some children added surprised and some scared.
- For five labels, the two paths again merged, and all the children used happy, angry, sad, scared, and surprised.
- In the last step, disgust was added.

Over 81% of the children fit this pattern.

Age increased with the number of labels used from a mean age of 30 months for Labeling Level 0 (children who produced no labels) to 62 months for Labeling Level 5 (children who used five labels).

When children are at lower Labeling Levels, and thus use only a few labels, they use these labels to describe the entire emotion domain.

Young children’s understanding of emotion labels is different from our adult understanding of them.

Study Overview
Children (2 to 4 yrs) were shown facial expressions and, separately, told stories describing emotional events.

They were asked to label the emotion in each stimulus.

The Differentiation Model was based on children’s free labeling responses to facial expressions.

- Will children’s label use follow the predicted patterns when they are labeling emotion stories?
Method

Participants
Participants were 76 children (40 girls and 36 boys) enrolled in daycares and preschools the Greater Boston, MA, area. All children were proficient in English. There were two age groups: young preschoolers (2;6 to 3;5), older preschoolers (4;0 to 4;11).

Materials
Facial Expressions. A set of 5 black and white drawings of a young girl displaying different facial expressions of emotions (happiness, sadness, anger, fear, disgust, plus neutral) were used (Figure 1). The drawings were provided by Dr. Kirouac. The development of these drawings to meet Ekman and Friesen’s (1978) criteria for particular discrete emotions is described in Tremblay, Kirouac, & Dore (1987).

Stories of Emotional Events. Five stories describing stereotypical emotion-eliciting events and responses were created (Table 1), based on prior work in our lab in which children generated causes and consequences of specific emotions (happiness, sadness, anger, fear, disgust). The children were shown a drawing depicting an object in each story (e.g., a block tower) while the story was being read.

Procedure
Each child participated in the three parts of the procedure in a single session. Each child’s emotion concepts were first primed in a brief conversation about emotions. The child then labeled three animals (cat, dog, rabbit) to establish that he or she was willing and able to produce labels on demand. Then each child was asked to label the five facial expressions and five stories of emotional events; order was counterbalanced.

Faces. The experimenter introduced the faces and showed the child the five facial expressions, one at a time in a random order. After each picture, the experimenter asked, “How do you think Joan feels in this picture?”

Stories. The experimenter introduced the stories (Table 1) and then presented them, one at a time in a random order. The first story began, “Once upon a time,” and the other stories began, “One week later…” After each story, the experimenter asked, “How do you think Joan feels?”

Scoring
The participants were allowed to use any label they chose. The scoring key used in this study was drawn from Widen and Russell (2003) who describe the development of a scoring key based on ratings of two judges blind to the source of the labels. Responses to the faces and stories that were scored as correct for happiness were happy, excited, going to play; for fear, scared; for disgust, disgusted, yucky, gross; for anger, angry, mad, cross, frustrated, grumpy; and for sad, sad. Responses varied from what was just listed in syntax or by being embedded in a phrase (e.g., very scared, totally grossed out). These were all the labels children used that came close to specifying the specific emotion.
Table 1

Stories describing emotional events.

<table>
<thead>
<tr>
<th>Emotion</th>
<th>Story</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happy</td>
<td>It was Joan’s birthday. All her friends came to her birthday party. They gave her lots of presents. They all ate birthday cake. Joan jumped up and down and clapped her hands. And she looked like this [show happiness face].”</td>
</tr>
<tr>
<td>Sad</td>
<td>Joan went to feed her pet gold fish. But it was not swimming. It was not even in the fish tank. Joan’s fish had died. Tears came to Joan’s eyes. She walked slowly over to a chair. She didn’t want to talk to any one.</td>
</tr>
<tr>
<td>Angry</td>
<td>Joan built a block tower. But then a boy came and knocked Joan’s tower down on purpose. Joan yelled at that boy and hit him. She clenched her fists and stomped her feet. She yelled really loud.</td>
</tr>
<tr>
<td>Scared</td>
<td>A big mean dog started growling and chasing Joan. Joan screamed. She ran away as fast as she could. She looked back to see if she was being chased. The dog ran after her, barking.</td>
</tr>
<tr>
<td>Disgusted</td>
<td>Joan took a big bite of an apple. It tasted awful. It was rotten inside. She spit it out as fast as she could and threw the apple on the ground. She did not want to touch it.</td>
</tr>
</tbody>
</table>

Results

To investigate whether emotion labels emerged systematically, all children were sorted and grouped, irrespective of age, by the emotion labels they used on the free labeling task. The frequency with which each target combination of emotion labels occurred was counted, and is illustrated by Figure 2. Children's free labeling responses followed the sequence of emotion label acquisition predicted by the Differentiation Model. This pattern held for both stories and faces.

- For faces, 90.0% (72/80) of the labeling patterns fit the Model (Figure 2).
- For emotion stories, 83.4% (67/80) of the observed labeling patterns fit the Differentiation Model (Figure 2).

Conclusions

The systematic emergence of preschoolers’ use of emotion labels extends beyond their labeling of facial expressions to their understanding emotional events as well.

In the current study, the Differentiation Model (Widen & Russell, 2003) predicted emotion label use in both the face and story modes (Figure 2).

- This finding suggests that this developmental progression is robust, applying to multiple aspects of children’s emotion conceptualization.
This study provides good first evidence for the generalizability of the Differentiation Model to other aspects of children’s understanding of emotion.

**Figure 2.** Emotion labels emerged in a systematic order. Note that because surprise was not tested in the current study, the order in which labels emerged appears to jump from Labeling Level 4 to Labeling Level 6.

**References**


