

**The Power of Labels, Consequences, and Facial Expressions to Evoke  
Preschoolers' Knowledge of Emotions' Causes**

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**Abstract**

Lay people and scientists alike assume that, especially for young children, facial expressions are a strong cue to another's emotion. We report a study in which children (N = 120; 3 to 4 years) described events that would cause basic emotions presented as facial expressions, as labels, or as behavioral consequence. For no emotion was the facial expression the strongest cue. Performance for fear and disgust was more accurate given the label or the consequence than given the facial expression; performance for anger was more accurate given the consequence. For 3s, behavioral consequences were the strongest cues to emotion; for 4s, labels were.

## Introduction

- ❖ By figuring out that his dad is angry, Johnny can learn more about anger: What causes it, what its consequences are, how it is expressed, how it is labeled, and so on.
  - Acquiring this information is important for various aspects of a child's social functioning
    - honing social skills, forming friendships, developing positive peer relations, and adjusting to school (Denham, 1998; Shields, Dickstein, Seifer, Giusti, Magee, & Spritz, 2001; Smith, 2001).
  - An understanding of emotion been theorized to pave the way for infant-caregiver attachment (Bowlby, 1969, 1988; de Rosnay & Harris, 2002)
    - which has in turn been implicated in preschoolers' cognitive and linguistic development (Robinson, & Acevedo, 2001).
- ❖ But, how does the process get started? How did Johnny know that Dad was angry in the first place?

## Possible Explanations

- ❖ Two broad approaches to emotion suggest different answers.
  - **Facial Expressions:** One approach suggests that Dad's angry facial expression signaled his anger to Johnny and thus got the process of learning about anger started.
    - Theoretical considerations of the evolutionary advantages of an emotion signaling system between infant and caregiver (Bowlby, 1969, 1988; Denham, 1998; Izard, 1971; Harris, 1989) have been taken to suggest that very young children recognize specific "basic" emotions from facial expressions.

- Harris (1989) proposed that an early understanding of facial expressions leads to an understanding of other aspects of emotions, which leads in turn to a theory of mind.
  - Denham (1998) pointed to this early understanding of emotion via facial expressions as the “perceptual bedrock” (p. 61) for all later understanding of emotion.
- ❖ **Emotion Labels:** The other approach suggests that someone’s labeling Dad as *angry* might be what started Johnny’s process of forming a concept of anger and thus learning about it.
- Linguistic evidence on cultural differences in emotion concepts can be cited as evidence for this perspective (Wierzbicka, 1992; Harré, 1986; Lutz, 1988).
- ❖ For preschoolers, there is some evidence for what has been called a Label Superiority Effect. Children (preschool to second grade) heard stories about emotional events and selected the protagonist’s emotion from an array of three facial expressions or from an array of three labels (Camras & Allison, 1985).
- Surprisingly, children were more accurate with labels than with facial expressions, especially for fear and disgust.
    - When children (4 to 5 years) were presented with a facial expression or a label and then asked to describe the emotion’s cause (Russell, 1990; Russell & Widen, 2002), labels were again stronger cues than facial expressions overall, especially for fear and disgust.
- ❖ **Behavior Consequences:** There is another obvious possibility, namely that children attend to overt behavior as a cue to the other’s emotion.
- Children find behavior highly salient, and quickly learn social rules from their observations (Bandura, 1992), and use their observations of another’s behavior to solve problems (Call & Tomasello, 1995; Want & Harris, 2001).

- Children attend to the social behavior in their environment to learn about such things as gender roles (Powlishta, Sen, Serbin, Poulin-Dubois, & Eichstedt, 2001).
- ❖ This line of thought suggests that Dad's hostile behavior might be what got Johnny's process of understanding anger started.
  - From this perspective, the behavioral consequences of emotions are strong cues to emotions. To our knowledge, no prior research has addressed this possibility.

### **The Study**

- ❖ We asked children to imagine events that would cause happiness, sadness, anger, fear, surprise, and disgust.
  - The emotion was presented as its facial expression, its label, or its behavioral consequence.
  - The cue that is more powerful in evoking this aspect of a child's knowledge of an emotion is one indication of which cue plays a larger role in acquisition of that knowledge.
- ❖ The primary purpose of this study was to examine the power of behavioral consequences of emotions – relative to facial expressions and labels – in eliciting children's knowledge of the emotions' causes.
  - The behavioral consequences were brief descriptions of stereotypical behavioral and observable physiological responses to emotional events (e.g., for fear, screaming and running away; for sadness, crying) (See Table 1).

Table 1

*Behavioral Consequence Used for Each Emotion*

Sadness	... while D was in the living room, something happened that made him feel a certain way. D walked slowly over to a chair and sat down. Tears came to his eyes. He didn't want to talk to anyone.
Anger	... while D was at school, something happened that made him feel a certain way. It made D yell and hit another kid. He clenched his fist and stomped his feet. He yelled really loud.
Fear	... while D was at the park, something happened to D that made him feel a certain way. It made D scream. He ran away as fast as he could. D kept looking back to see if he was being followed. He just wanted to get home where he was safe.
Surprise	... while D was outside, something happened that made him feel a certain way. It made D stop and stand completely still. His heart was beating very fast. He didn't know what had happened. He looked around and tried to figure out what it was.
Disgust	... while D was in the kitchen, something happened that made him feel a certain way. It made D want to wash. He wanted to get it off of himself as fast as he could. He didn't want to touch that stuff.

*Note.* Each story began with, "The next day..." 'D' stands for 'David' or 'Danny', which ever name the child chose for the protagonist.

## Hypotheses

- ❖ Denham's bedrock hypothesis suggests facial expressions will be stronger cues than behavioral consequence.
- ❖ Social construction theory implies that labels will be stronger cues than behavioral consequence.
- ❖ However, we suggest, behavioral consequences are potentially powerful cues to emotion because children find behavior salient and have had ample opportunity to observe responses to emotional events.

## Method

### *Participants*

Participants were 120 children, all proficient in English and enrolled in daycares in the Greater Boston, MA, area. There were 30 boys and 30 girls in each of two age groups: 3s (35 to 47 months; mean = 42 months) and 4s (48 to 70 months; mean = 58 months).

### *Materials*

*Photographs of facial expressions.* There were six 5" x 7" black and white glossy photographs of posed prototypical facial expressions posed by a 12-year-old boy. The photographs were provided by Dr. Linda Camras. Camras, Grow, and Ribordy (1983) described the development of the photographs, their coding according to Ekman and Friesen's (1978) Facial Action Coding System, and their use in a study on recognition of facial expressions.

*Labels.* The labels for the six emotions were *happy, sad, angry, scared, surprised, and disgusted*.

*Consequence stories.* Six stories describing stereotypical behavioral consequences of each emotion were created (Table 1) based on prior work in our

lab in which children generated consequences of specific emotions (Russell, 1990).

### *Design and Procedure*

On an initial visit to the preschool, the experimenter (one of two women) spent time playing with and getting to know each child until the child seemed comfortable with the experimenter. On a later visit, the experimenter invited a child to play a story-telling game with her. The experimenter introduced the game: "In this game, we are going to take turns telling a story about things that happen to a boy. The boy is eight years old. You get to have your turn first. You get to pick his name. Do you want to name him Davie or Danny? [Pauses for child's response] Now, it is my turn. I think that I'll say: D lives with his mom and his dad. Okay, it is your turn. What kind of pet should D have? [pauses] And what color is it? [pauses] Is it a great big one or a little tiny one? [pauses] So, D is eight years old, and he lives with his mom and his dad. And D has a pet \_\_\_\_."

The happy trial was always first. The experimenter began: "Now, let's make up a story about something that happens to D. Remember, we are just making up a story. So, when it is your turn, you can make up anything you want. Okay? Ready? I'll take my turn first. Once upon a time, there was a boy named D. One day, while D was in his bedroom [showing illustration] something happened that made him feel a certain way. It made D feel happy. It made D do a dance and clap his hands. It made D look like this [showing happiness facial expression]. Now it is your turn. What happened? What made D feel like that?" On this and all subsequent emotion trials, the experimenter used the same, neutral tone of voice.

Up to this point, all the children had been treated identically. Children were now randomly assigned to one of three modes of presentation – label,

consequence, facial expression – which was thus a between-subjects condition. In each mode of presentation, the experimenter continued seamlessly on to the next emotion trial, but now the child was presented with only the label, the consequence, or the facial expression (instead of all three as in the happy trial). The experimenter said, “Do you want to make up another story? [pauses for child’s consent] The next day, when D was [identify setting: e.g., at the park], something happened that made D feel a certain way. . . ” The experimenter introduced the next emotion, selected randomly, in the appropriate mode of presentation. On each trial, the child was shown a simple illustration of the setting of the story: for sadness, the living room; for anger, at school; for fear, the park; for surprise, outside; and for disgust, the kitchen. The child’s task was to describe what made D feel each emotion. The five emotion trials (sadness, anger, fear, surprise, disgust) were randomly ordered.

*Facial expression mode of presentation.* In the facial expression mode of presentation, the five emotions were presented as the prototypical facial expression for each emotion. On each trial, the experimenter said, “It made him feel like this [pointing to the facial expression]. D was feeling so much like this [pointing] that his mom could tell, his dad could tell, and all his friends could tell that D was feeling like this [pointing].” The facial expression was visible throughout the trial. The setting for each emotion was the same as the settings described in consequence mode (see Table 1).

*Label mode of presentation.* In the label mode of presentation, the five emotions were represented orally as labels. On each trial, the experimenter said, “It made him feel very, very [label]. D was feeling so [label] that his mom could tell, his dad could tell, and all his friends could tell that D was feeling [label].” The setting for each emotion was the same as the settings described in consequence mode (see Table 1).



*Consequence mode of presentation.* In the consequence mode of presentation, the five emotions were presented as a brief description of the behavioral consequence of that emotion (see Table 1).

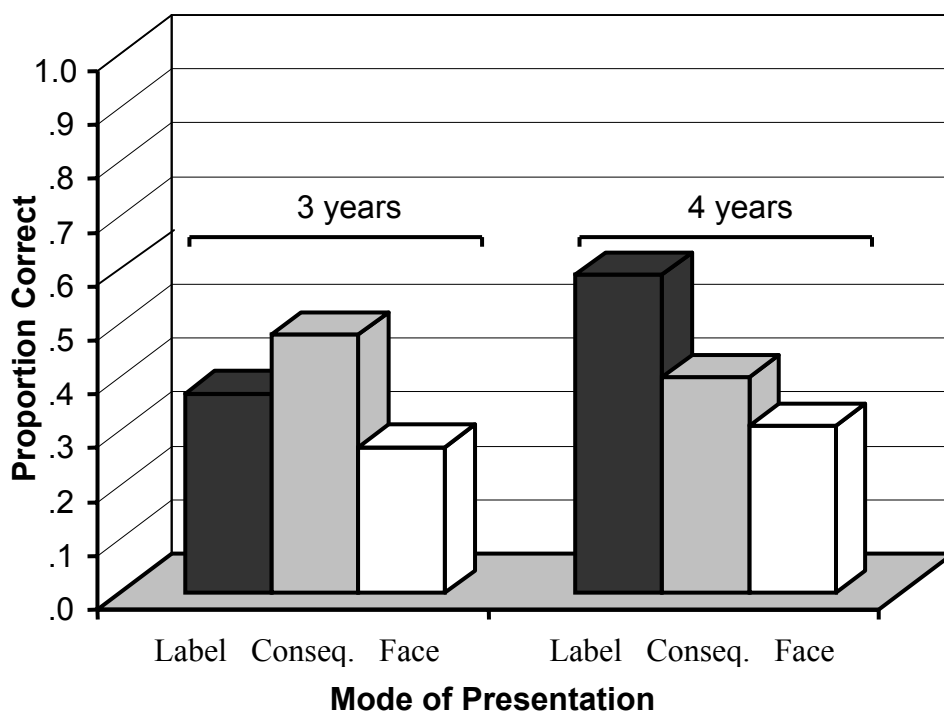
*Dependent measure.* In each trial (in all modes of presentation), after the emotion was presented, the experimenter asked, "What happened? What made D feel like that?" If the response was a "non-story", the experimenter prompted the child. (A "non-story" was a response devoid of information about why D would have any emotion. For example, the child did not respond, said "I don't know," or gave an irrelevant response such as "The flower," "I can't think of anything" or "What is that facial expression?") The first prompt was repeating the question (What made D feel like that?). The second prompt was to ask if someone was there with D, and what that person could do to make D feel that way. The third was "What would make *you* feel...?" If the child still did not respond to this last prompt, the child's response was scored as a "non-story". The experimenter then completed the story with a pre-designated ending (e.g. for happy, "His mom made him chocolate chip cookies. That made him feel like that"; for sad, "He fell down and hurt his knee, and that made him feel like that").

When each trial ended, the experimenter praised the child and the next emotion trial was introduced with, "Do you want to do another one? [pause for child's consent] The next day..."

## Results & Discussion

❖ This task was not an easy one for preschoolers, and, not surprisingly, they were able to imagine a correct cause of an emotion only about half the time.

- **Effect of Cue:** What was interesting was that their performance on describing a cause varied with the cue to the emotion.
- **Figure 1** shows children's performance given the label, the behavioral consequences, and the facial expressions.



*Figure 1.* Effect of mode of presentation for 3- and 4-year-olds ( $F(2, 108) = 4.42, p = .01$ ).

- For 3-year-olds, behavioral consequences were the strongest cue to emotion.
- For 4-year-olds, labels were stronger cues than faces overall.
- Faces were the weakest cue overall.

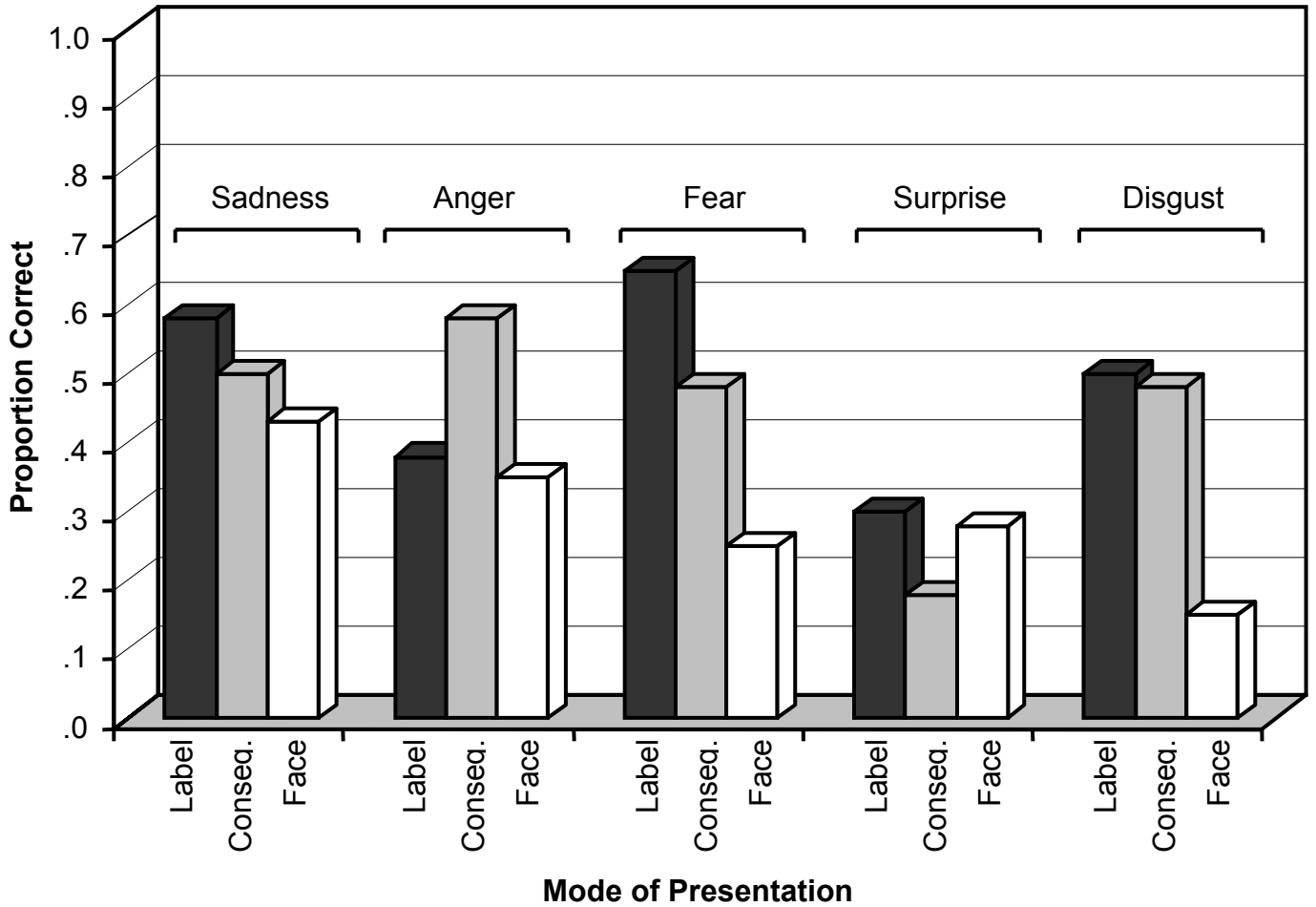
❖ Our results thus challenge the

assumption that prototypical facial expressions are especially potent cues to emotion for young children.

❖ **Figure 2** shows the effect of labels, behavioral consequences, and facial expressions on children's performance for each emotion.

➤ We found a **Label Superiority Effect**:

- Performance was higher overall given an emotion's label than given its facial expression



*Figure 2.* Effect of mode of presentation for each emotion for the best-guess criterion ( $F(8, 432) = 2.55, p = .01$ ).

- The Label Superiority Effect was significant overall, and strongest for fear and disgust, but weak for sadness, and absent for anger and surprise.

- Labels may play a more important role in the later development of emotion concepts, such as when 4-year-olds are acquiring the concepts of fear and disgust.
- We also found an **Behavior Superiority Effect**:
  - Performance was higher given an emotion's behavioral consequence than given its facial expression.
  - This effect was strongest for anger, but present for fear and disgust as well.
  - It was weak for sadness, and reversed for surprise.

### **Conclusion**

- ❖ This is the first demonstration that behavioral consequences can be a powerful cue to emotion for preschoolers
- ❖ In the present study, behavioral consequences were the best of the three modes of presentation overall for the 3-year-olds.
  - Behavioral consequences were also especially powerful for the emotion of anger, and anger is one of the earliest emotion concepts acquired, preceded only by happiness and, in some children, sadness (Widen & Russell, 2003).
- ❖ The present results offer an intriguing possibility:
  - Especially for 3-year-olds, and especially for anger, an emotion's behavioral consequences might be the most salient cue to forming the concept of that emotion.

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