Children’s Descriptions of the Causes and Consequences of Disgust Facial Expressions
Sherri C. Widen* & James A. Russell

Boston College
Presented at the 20th Annual Convention of the Association of Psychological Science, Chicago, May 2008

Abstract
This study investigated whether the prototypical “disgust” facial expression communicates disgust to children (N=84, 4-9 years) and adults (N=22) using two different tasks. When asked to label six different faces, children were most likely to label both the “disgust” and “anger” faces as anger and were unlikely to label either face as disgust. On a story-telling task, children were most likely to describe anger causes and consequences for both the “disgust” and “anger” faces. Before the age of 10 years, children interpret the “disgust face” as anger.

Introduction
According to basic emotions theory, the production and recognition of facial expressions of basic-level emotions evolved. The “disgust face” seems a good candidate for a face that evolved because of its survival value: The “disgust face” evolved from the act of spitting out foods that were rotten or poisonous (e.g., Fridja, 1986), with the “disgust face” evolving into a signal of the disgust reaction. On this perspective, the basis of children’s understanding of basic-level emotions (e.g., happiness, anger, disgust) is facial expressions. Development of children’s emotion concepts should take the form of mapping other aspects of emotion onto the already-known facial expressions.

The Study
How do children (N = 84, 4 to 9 years) interpret the “disgust face”? Do they interpret the “anger” and “disgust” faces as displaying different emotions or do they generally believe that someone displaying the “disgust” face is angry?

The present study used a story-telling approach to revealing the emotion children attribute to the “disgust face.” Children were asked to imagine the causes (what made this person feel the way) and the consequences (what did she do next) of the emotion conveyed by the “disgust,” “anger,” and “happiness” faces.

The story-telling task, children were asked to free-label two sets of six facial expressions: “happiness,” “anger,” “sadness,” “fear,” “surprise,” and “disgust.” Adults were included as a comparison and so we knew what the end-points of development on the two tasks were. That is, if, adults did not describe causes or consequences that corresponded to the target face at a ceiling level, or on the labeling task, did not label the disgust face as disgust, then it would not be reasonable to expect the children to perform at a higher level.

Results
Proportion Correct children were significantly lower (p < .001) than on the other faces, anger, sad, and happiness; fear, surprise, anger also differed significantly from each other (p < .03). F(3, 324) = 70.13, p < .001 (sadness and happiness were at ceiling in the ANOVA). This effect replicated at each age, and the age x emotion interaction was not significant (p = .25).

Adults’ free-labeling was higher than children’s, but not at ceiling except for the happiness expressions, F(4, 84) = 4.54, p < .004 (happiness was not included in the ANOVA).

Children’s performance on the “disgust face” was significantly lower (p < .001) than on the other three faces, anger, sad, and happiness. The “fear” face was significantly lower (p < .02) than for the other facial expressions, F(4, 84) = 4.82. p < .05 (sadness and happiness were at ceiling in the ANOVA). This effect replicated at each age, and the age x emotion interaction was not significant (p = .25).

Adults’ free-labeling was higher than children’s, but not at ceiling except for the happiness expressions. Their performance for the “disgust face” and “fear” face was not significantly different (p < .02). Adults’ free-labeling was higher than children’s, but not at ceiling except for the happiness expressions. Their performance for the “disgust face” and “fear” face was not significantly different (p < .02). Adults’ best-guess rating was higher than children’s, but not at ceiling except for the happiness expressions. Their performance for the “disgust face” and “fear” face was not significantly different (p < .02).

Discussion
The current study shows, with a labeling task and a story-telling task, that children do not interpret the “disgust face” as disgust.

Over the six-year age range studied (4;0-9;10), there was no increase with age in children’s attribution of disgust to the “disgust face” on the best-guess task.

Instead, children of all ages interpreted the “disgust face” as anger, whether they were asked to label or to describe its causes and consequences.

University-aged adults also did not label the disgust face as disgust at ceiling levels and were most likely to label this face as anger when they mislabeled it.

Hypotheses
It is possible that children can describe disgust-appropriate causes and consequences of the “disgust face” based on their history of observations of events leading up to and following others’ “disgust faces” — even when they do not yet associate the label disgust (or close synonyms) with the “disgust face.”

Alternatively, children who label the “disgust face” as anger may try to interpret it identically to the way they try to treat the anger face on the story-telling task.

Proportion Correct children labeled the “disgust face” as anger significantly more frequently than labeled it as disgust, dependent samples t(83) = 5.70, p < .001. Indeed, children labeled the “anger face” as anger only 26 more times (out of 164 opportunities) than they labeled the “disgust face” as anger. Both children and adults labeled the anger face as anger. When adults mislabeled the “disgust face,” they labeled it anger.

Children labeled both the “disgust” and “anger” faces as anger more frequently than labeled it as disgust, dependent samples t(83) = 6.70, p < .001. Indeed, of the 19 children who labeled the “disgust face” as disgust, only 4 also described cause+consequence stories that were rated as disgust.

Children’s Cause+Consequence Stories for the “Disgust Face” were Most Frequently Rated as Anger Stories
Our results join with prior research (e.g., Gosselein & Laroque, 2000; Markham & Adams, 1992; Widen & Russell, 2002, 2004, in press) in raising questions about the account of disgust provided by basic emotions theory.

If children approaching their 10th birthday do not readily associate the “disgust face” with disgust, and if 25% of college-educated American adults do not, then how can basic emotions theory account for current data?

Furthermore, the frequent association of the “disgust face” with anger presents another kind of problem for basic emotions theory. This sort of “error” is not often studied, but seeing anger where it does not exist is just as much an error as not seeing anger when it does exist.

References