

MERRILL-PALMER QUARTERLY, VOL. 48, NO. 3

# Gender and Preschoolers' Perception of Emotion

Sherri C. Widen and James A. Russell,
*University of British Columbia*

A person's gender plays a role in the emotion children attribute to that person, even given unambiguous cues to a basic emotion. Eighty preschoolers (4 or 5 years of age) were asked to name the emotion of either a boy (Judd) or a girl (Suzy) in otherwise identical stories about prototypical emotional events and, separately, as shown with identical prototypical facial expressions. Boys more often labeled Judd than Suzy as disgusted, both in the disgust story and with the disgust face. There was also a trend for girls to label Suzy as afraid more often than Judd, both in the fear story and with the fear face.

In a classic study, Condry and Condry (1976) found that observers attributed more anger to a boy than to a girl (shown via videotape) reacting to a jack-in-the-box. The interesting twist was that the observers were actually shown the identical videotape. The "boy" and the "girl" were the same infant simply labeled differently by the experimenter. Differences in the attributed emotion were in the eye of the beholder, not in the infant's reaction.

In Condry and Condry's (1976) study, the face of the infant was not assessed objectively, and so it is possible that no signals of discrete emotions were shown. Indeed, Condry and Condry suggested that the effects of ascribed gender might be limited to times when the infant shows an ambiguous reaction. Thus, they found no effect of gender

Sherri C. Widen, Department of Psychology; James A. Russell, Department of Psychology.

This study was funded by the Social Sciences and Humanities Research Council of Canada through a grant to J. A. Russell. We thank Sarah Knowlden, Sherisse Pham, Kelly Giesbrecht, Anita Christy, and Paul Wehr. We also thank Linda Camras for providing the photographs of facial expressions used in this study.

Correspondence concerning this article should be directed to James A. Russell, Department of Psychology, McGuinn Hall, 140 Commonwealth Ave., Boston College, Chestnut Hill, MA 02467. E-mail: james.russell@bc.edu.

*Merrill-Palmer Quarterly,* July 2002, Vol. 48, No. 3, pp. 248–262. 

with adults shown an infant (labeled as either a girl or a boy) responding with clear pleasure to a teddy bear or a doll, or shown an infant responding with clear fear to a buzzer. Plant, Hyde, Keltner, and Devine (2000) replicated Condry and Condry's study by showing adults a videotape of an infant's reaction to a frustrating stimulus. Adults attributed more anger when the infant was labeled a boy than when it was labeled a girl, although the gender effect was limited to male participants with a stronger gender stereotype. The infant's facial expression was coded with Ekman and Friesen's (1978) Facial Action Coding System (FACS). The FACS scores indicated that the infant's face was indeed ambiguous: The baby had made a sad face followed by an angry face.

There is some recent evidence that ascribed gender can affect emotion judgments, even with good, clear cues to a basic emotion. In a second study, Plant et al. (2000) examined gender effects with unambiguous stimuli on adults' perception of adult faces. They found gender effects with a "pure" as well as an "ambiguous" expression as determined by FACS coding. Adult men were more likely to interpret an anger expression as anger when seen on the face of a man, but as a blend of anger and sadness when seen on the face of a woman. The men's and women's faces were not identical, however, as they were posed by men and women. Evidence of differences between the actual expressions of men and women is not uncommon (Buck, Savin, Miller, & Caul, 1972; Dimitrovsky, Spector, & Levy-Shiff, 2000; Johnsen, Thayer, & Hugdahl, 1995; Schwartz, Brown & Ahern, 1980). Thus, it is possible that the differences were in the faces of the posers, rather than in the eye of the beholder. One purpose of the present study was to gather more definitive evidence that the effects of ascribed gender do exist in the eye of the beholder even given unambiguous cues to emotion.

Our second purpose was to extend this finding to preschoolers. In the studies mentioned so far, the observers were adults. There is evidence that young children hold gender stereotypes, perhaps by 3 years of age (Birnbaum & Croll, 1984; Brody, 1984, 1995, 1997; Haugh, Hoffman, & Cowan, 1980; Martin, 2000), and use those stereotypes in making judgments about the emotions of others (Birnbaum & Chemelski, 1984; Karbon, Fabes, Carlo, & Martin, 1992). For instance, Karbon et al. (1992) showed preschoolers simple line drawings, each of a different person but displaying no emotion. The children were asked to rate the frequency and intensity with which the person in each drawing felt different emotions. The children rated females as feeling sad more often than males and rated males as feeling angry more often than females. Thus, preschoolers' gender stereotypes were clearly evident when no

cues as to emotion were given. Birnbaum and Chemelski (1984) did the opposite: They told preschoolers stories about emotional events and the children were asked to choose the gender of the protagonist. Children were more likely to choose a girl for the happiness and fear stories and a boy for the anger stories. These two types of experimental designs maximize the influence of gender, and the design has therefore been useful to establish the existence and nature of a stereotype. Still, the question arises as to whether gender stereotypes continue to influence children's emotion judgments as cues to the other's gender and emotion are made clearer and clearer. To our knowledge, there is no evidence available on this question.

Studies are clearly needed with children of different ages, with a broad range of emotions, and with emotion cues that vary from ambiguous to clear. The problem of confounding specific facial expressions with gender of the poser must be overcome. To begin this program of research, we conducted a small preliminary study in which preschoolers (4 or 5 years of age) were provided with maximally clear evidence on the emotion of another person. We used facial expressions and stories prototypical of four emotions previously investigated (happiness, sadness, anger, and fear) and we added a fifth, previously uninvestigated emotion (disgust).

To overcome the problem of physical differences between facial expressions of male and female posers, we used computer software to create facial stimuli that appear to vary in gender of the expresser but actually show an identical face. A smiling 12-year-old boy and a smiling 13-year-old girl were "morphed" together to create a single androgynous smiling face. The hairstyle of that single morphed face was then altered to create an image of a boy and another of a girl, named Judd and Suzy, with an identical expression (Figure 1). A similar procedure produced pictures of Judd and Suzy showing prototypical facial expressions of fear, anger, sadness, and disgust. Preschoolers were asked to name the emotion felt by either Judd or Suzy.

As a separate task, we introduced a set of stories (each describing the causes and consequences of an emotional event) and the child's task was to label the protagonist's emotion. Apart from names (Judd and Suzy) and related pronouns, the story for each emotion was identical. These stories were based on prior research in our lab in which children made up stories about the causes and consequences of emotions (Russell, 1990; Russell & Widen, in press). Similar stories have also been used in other studies of children's understanding of emotion (Bruchkowsky, 1991; Camras & Allison, 1985).

If the children participating in our study based their emotion judgments entirely on their gender stereotypes, available evidence suggests

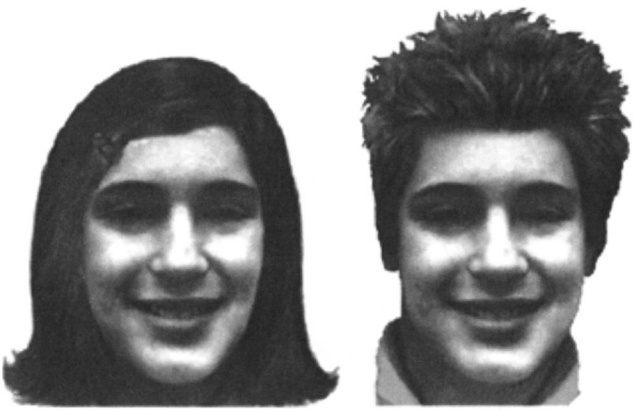

Figure 1. Judd and Suzy with a happy expression. Note that the two faces are identical, and that only the hair is different.

that they would attribute more happiness, fear, and sadness to Suzy, and more anger to Judd. On the other hand, evidence and theory on children's ability to read emotions from facial signals (Bowlby, 1969, 1988; Denham, 1998; Harrigan, 1984; Harris, 1989; Izard, 1971; Markham & Adams, 1992) suggests that there may be little room for gender stereotypes to play any role when faces are cues to emotion. Because available research does not allow unequivocal predictions on such matters, we consider our study preliminary.

## Method

### *Participants*

Participants were 80 children (40 girls and 40 boys) between the ages of 4;0 and 5;11. The girls' mean age was 56 months ($SD$ = 6.69; range: 48 to 71 months); the boys' mean age was 58 months ($SD$ = 5.17; range: 49 to 71 months). Mean age of girls did not differ significantly from that of boys, $t(1, 78) = 1.81$, *ns.* The sample was ethnically diverse, reflecting the population of the city in which the study took place, Vancouver, B.C., Canada.[1] All the children were proficient in

[1] Information as to the race, ethnicity, and SES of the children in our sample was not collected. The population of Vancouver is 76.7% European, 15.5% Asian, and 7.8% other (based on mother tongue, 1996 Census; City of Vancouver, 1998). The day cares happened to be in what seemed to the experimenters to be middle-class neighborhoods.

English and enrolled in one of the 19 day cares that participated in this study.

## *Materials*

### Photographs of facial expressions

We began with two sets of black-and-white photographs of prototypical facial expressions of five basic emotions (happiness, sadness, anger, fear, disgust) plus neutral expressions. One set was posed by a 13-year-old girl, the other 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 use in a study on recognition of facial expressions, and their coding according to Ekman and Friesen's (1978) FACS. Each photograph shows the predicted pattern of facial action units said to be a universal signal for the specified emotion. A sample of children (mean age 5;0 years) associated the faces with the predicted emotion between 73.5% and 100% (mean = 83.8%) of the time on a forced choice task; these results are similar to those obtained with other examples of prototypical facial expressions with this age group.

For each emotion, the girl's expression and the boy's corresponding expression were combined with Morph (Sierra On-Line, Inc., 1998), a computer program that creates a sequence in which one face gradually changes into the other. A single frame in the middle of this sequence provided a face that was neither clearly masculine nor feminine. The middle frame was selected and coded with FACS. Each "morphed" face so selected was found to contain the specified pattern of action units (AUs) for the specific emotion: neutral (no AUs), happiness (AUs 6 + 12 + 25), fear (AUs 1 + 2 + 4 + 5 + 20 + 25), anger (AUs 4 + 5 + 7 + 10 + 26), disgust (AUs 7 + 9 + 25), and sadness (AUs 1 + 4 + 15).

From each of the resulting 6 computer-generated ("morphed") faces, we created two versions. The computer program Cosmopolitan Virtual Make-Over: The Collection (Segasoft, Inc., 1998) was used to paste different hairstyles on the faces in a way that did not block the visibility of any of the action units of the face. The face given a boy's hairstyle was called Judd, and the face given a girl's hairstyle was called Suzy. The resulting 12 faces were printed as 3" x 5" black-and-white photographs. The expression of happiness for Judd and Suzy is shown in Figure 1.

### 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

**Table 1.** Five Emotion Stories

| *Emotion* | *Story* |
|---|---|
| Happiness | . . . it was Judd's birthday. All his friends came to his birthday party. They all ate birthday cake. Judd got lots and lots of presents. Then Judd and his friends played some games. Judd gave his friend a big hug. |
| Sadness | . . . Judd went to feed his pet goldfish. But it was not swimming. It was not even in the fish tank. Judd's fish had died. He really missed his fish. |
| Anger | . . . Judd was at daycare. He spent a long time building a block tower. So long, in fact, that the block tower was very tall. But then a boy came and touched his beautiful tower. Judd said, "Be careful." But the boy knocked it over anyway. Judd wanted to yell at that boy and hit him. |
| Disgust | . . . Judd found an apple. It looked big and juicy. Judd took a big bite. Then he saw that there was a worm in the apple. He spit it out as fast as he could and threw the apple on the ground. He did not want to touch it. |
| Fear | . . . Judd was in his bed. He was all alone and it was very dark. He heard something moving in the closet. He didn't know what it was. He wanted to hide under the bed. Then he heard the closet door open. Judd wanted to run away. |

*Note:* Stories for Suzy were identical except for name and the gender of pronouns.

which children generated causes and consequences of specific emotions. The stories for the two characters were identical, except for the character name (Judd, Suzy) and related pronouns. The children were shown a drawing depicting a setting for each story (e.g., a bedroom) while the story was being read. To confirm that the stories were prototypical emotional events, 36 university-aged adults read each story and labeled the protagonist's emotion. The proportion of adults who selected the target emotion was 1.00 for happiness and fear; .97 for sadness, and .94 for anger and disgust.

## *Procedure*

### Design

Following a priming procedure, children were randomly assigned to either Judd or Suzy with the proviso of an equal number in each cell of a 2 (gender of participant) x 2 (gender of protagonist) x 2 orders (face–first, story–first) x 2 modes of presentation (story, face) x 5 emotions (happiness, sadness, anger, fear, disgust) design. There were five children in each cell of the between-subject factors (gender of participant, gender of protagonist, order). For each child and within each

mode of presentation, the five stimuli were presented one at a time, in a separate random order. Children's responses were not corrected; all were mildly praised.

### Priming

Prior to the labeling tasks, each child's emotion concepts were primed during a conversation with the experimenter about emotions. The priming procedure gave the child opportunity to become more comfortable with the experimenter prior to the labeling task and made it more likely that the necessary terms would be accessible to the child. Performance generally improves when the recognition task is preceded by another emotion task (Izard, 1971; Harrigan, 1984; Markham & Adams, 1992).

Each child was tested individually in a quiet area of his or her child care facility. The experimenter first spent time playing with a child until the child seemed comfortable with the experimenter. The experimenter asked the child for the names of two people at home with whom the child played games (call them X and Y). In order to prime the child's emotion concepts, the experimenter began a conversation in which six emotion words were inserted (*happy, sad, mad, scared, disgusted,* or *yucky*). The experimenter asked, for example, "Does Y ever feel *happy?*" "Do you sometimes feel *mad?*" "Does X ever get *scared?*" "Does Y ever feel *sad?*" and "Did you ever feel *yucky?*" The experimenter did not discuss *when* or *why* these emotions might occur. If the child spontaneously offered an example of when someone had felt a particular emotion, the experimenter listened but did not comment on the child's story or encourage further explanation. Every effort was made throughout the experiment to use a neutral tone of voice when presenting the emotion words.

### Faces

The experimenter introduced the faces by saying, "I brought some pictures of Judd (Suzy). [In the face-first condition, the phrase was "a boy named Judd/a girl named Suzy."] Would you like to look at them with me? Okay, here is a picture of Judd (Suzy) [showing the neutral expression]. Do you know what Judd (Suzy) is going to do? He (she) is going to show us how he (she) feels sometimes." The experimenter then showed the child the five facial expressions, one at a time in a random order. For the first face, the experimenter said, "One day, Judd (Suzy) felt like this [pointing to the face]." For the other faces, the experimenter said, "One week later, Judd (Suzy) felt like this [pointing to the picture]." After each picture, the experimenter asked, "How do you think Judd (Suzy) feels in this picture?"

STORIES

The experimenter introduced the stories (Table 1) by saying, "I'm going to tell you some stories about things that happened to Judd (Suzy). [In the story-first condition, the phrase was "a boy named Judd/a girl named Suzy."] After each one, you get to tell me how you think Judd (Suzy) feels. How does that sound? Remember: listen carefully, because you have to tell me how Judd (Suzy) feels." The experimenter then presented the stories, 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 Judd (Suzy) feels?"

### *Scoring*

Participants were allowed to use any label they chose. Our rationale for preferring this free labeling procedure over the more usual forced choice is detailed by Widen and Russell (2002), who also describe the development of a scoring key. In Widen and Russell (2002), two raters judged whether each of the labels produced by the children fit into a specific emotion category. Disagreements were resolved by a third rater who rated only those responses on which the two original raters disagreed. The raters' task was to indicate into which one of six emotion categories each response fit (happiness, sadness, anger, surprise, disgust, fear), or if it was uninterpretable in regard to these six categories. The two original raters agreed as to the category for 84% of the responses. Based on the resulting scoring key, responses from the current study rated correct for the happiness category were *happy, excited, going to play;* for fear, *scared;* for disgust, *disgusted, yucky, gross;* for anger, *angry, mad, cross, frustrated, grumpy;* and for sad, *sadness.* 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 one of the specific target emotion categories.

## Results and Discussion

In a repeated measures ANOVA (alpha = .05), gender of protagonist (Judd, Suzy), order (story-first, face-first), and gender of participant (male, female) were between-subject factors; emotion (5 levels) and mode of presentation (story, face) were within-subject factors. The dependent measure was whether the response was correct or not, scored 1 or 0, respectively. The main effect for emotion was significant,

**Table 2.** Proportion Correct (and Standard Deviation) for Boys and Girls for Each Emotion for Each Protagonist (Judd or Suzy)

| | *Boys* | | *Girls* | | |
|---|---|---|---|---|---|
| *Emotion* | *Judd* | *Suzy* | *Judd* | *Suzy* | *Mean* |
| Happiness | $.93_{a\,A}$ | $.98_{a\,A}$ | $.98_{a\,A}$ | $.95_{a\,A}$ | .96 |
| | (.24) | (.11) | (.11) | (.26) | (.17) |
| Sadness | $.93_{a\,A}$ | $1.00_{a\,A}$ | $.98_{a\,A}$ | $.90_{a\,A}$ | .95 |
| | (.18) | (.00) | (.11) | (.26) | (.17) |
| Anger | $.65_{b\,BE}$ | $.77_{b\,E}$ | $.75_{b\,E}$ | $.65_{b\,B}$ | .71 |
| | (.37) | (.26) | (.30) | (.37) | (.33) |
| Fear | $.73_{b\,BE}$ | $.65_{b\,BE}$ | $.60_{b\,B}$ | $.75_{b\,E}$ | .68 |
| | (.34) | (.29) | (.38) | (.30) | (.33) |
| Disgust | $.38_{c\,C}$ | $.15_{d\,D}$ | $.17_{d\,D}$ | $.28_{cd\,CD}$ | .24 |
| | (.36) | (.33) | (.33) | (.38) | (.36) |
| Mean | .72 | .71 | .70 | .71 | |
| | (.17) | (.12) | (.16) | (.17) | |

*Note:* Maximum possible is 1. Fisher's Least Significant Difference comparisons (alpha = .10) were calculated on the means. Means in the same row that do not share lowercase subscripts differ at $p < .05$. Means in the same column that do not share a lowercase subscript differ at $p < .05$. Means in the same row that do not share uppercase subscripts differ at $p < .08$. Means in the same column that do not share an uppercase subscript differ at $p < .08$.

$F(4, 288) = 92.94$, $p < .001$, and the main effect for mode was also significant, $F(1, 72) = 4.68$, $p = .03$. The emotion x mode interaction was significant, $F(4, 288) = 9.45$, $p < .001$, as was the gender-of-protagonist x gender-of-participant x emotion interaction, $F(4, 288) = 4.02$, $p = .003$. There were no other significant effects with alpha set at .05.

The main effect for emotion (Table 2) was not surprising. Fisher's least significant difference (LSD) comparisons (alpha = .05) indicated that proportion of correct responses for happiness (.96) and sadness (.95) did not differ significantly from each other, and both were significantly higher ($p < .001$) than for any other emotion; this result effectively puts a ceiling on any further effects with these two emotions. The proportions for anger (.71) and fear (.68) did not differ significantly from each other, and both were significantly higher ($p < .001$) than for disgust (.24). Similar differences among emotions are often reported (Gross & Baliff, 1991).

The main effect for mode of presentation was due to greater accuracy in the story mode (.73) than in the face mode (.68). But this main effect must be qualified by the mode x emotion interaction. Mode made no significant difference for three emotions (happiness, sadness, disgust)—although recall the ceiling effect for two of these. LSD comparisons indicated that for fear, accuracy was significantly greater ($p < .001$) in the story mode (.83) than in the face mode (.54). For anger, the overall trend was reversed: Accuracy was significantly greater ($p = .01$) in the face mode (.78) than in the story mode (.64).

We explored the gender-of-protagonist x gender-of-participant x emotion interaction (Table 2) in two ways. First, separate ANOVAs (alpha = .05) were calculated for each emotion to test for gender-of-protagonist x gender-of-participant interaction. The gender-of-protagonist x gender-of-participant interaction was significant for disgust, $F(1, 76) = 4.29$, $p = .04$. LSD comparisons (alpha = .05) indicated a Judd-Suzy difference, but only with boy participants. Boys labeled Judd significantly ($p = .04$) more often than Suzy as disgusted. This Judd-Suzy difference replicated in each mode of presentation. (The gender-of-protagonist x gender-of-participant x emotion x mode interaction was not significant, $p = .26$.) The Judd-Suzy difference also replicated for the two orders of presentation (the gender-of-protagonist x gender-of-participant x emotion x order-of-presentation was not significant, $p = .73$).

Our second method of exploring the three-way interaction was more liberal and should be taken as a way to help avoid falsely accepting null hypotheses and of generating tentative hypotheses for future research. To this end, we calculated LSD comparisons within rows and columns of Table 2 with alpha set at .10. For fear, a Judd-Suzy difference was found, but only with the girl participants. Girls labeled Suzy more often than Judd ($p = .08$) as afraid. This result replicated in each mode of presentation (the gender-of-protagonist x gender-of-participant x emotion x mode interaction was not significant, $p = .26$), and for the two orders of presentation (the gender-of-protagonist x gender-of-participant x emotion x order-of-presentation was not significant, $p = .73$).

## Conclusion

In this study, preschoolers were given unusually clear information about the emotion of another person. This information was in the form of either a stereotypical emotional story (combination of antecedent and consequent events) or a prototypical facial expression, all concerning

what are considered basic emotions. The other persons' ascribed gender played a role in the attribution of disgust (and, possibly, fear) to the other person. Although gender effects were limited to disgust and, possibly, fear, this finding is an important demonstration of the role of gender in emotion judgments made by preschoolers.

The finding of a gender effect with disgust, a previously neglected emotion, suggests the value of exploring the possibility of gender effects with a range of other emotions. For example, Keltner and Anderson (2000) described embarrassment in a way that could generate the materials used in the present study.

The findings with fear were equivocal: We obtained a Judd-Suzy difference, but the result was limited to girls, and it was not significant at conventional levels. We reported this result because although a primary concern in statistics is to avoid a Type I error (false positive) and is the reason alpha is conservatively set at .05, there is a corollary concern that must also be considered: a Type II error (false negative). In addition, other evidence is consistent with this effect. Birnbaum and Chemelski (1984) found that preschoolers associated fear stories with girls more than with boys. Thus, there is some reason to believe that a gender effect for fear might be reliable. However, Birnbaum and Chemelski's method was more likely than ours to expose a gender effect: They provided children with stories about emotional events, and the children were asked to decide whether the protagonist was a boy or a girl.

Another reason for reporting this marginal result is the possibility that younger children than those in the current study might show a stronger effect. Widen and Russell (2002) suggested that young children's earlier-acquired emotion categories (happiness, sadness, and anger) are broad and extend to the entire emotion domain. As children's age and experience increase, their early emotion categories narrow and they acquire other emotion categories (e.g., fear, surprise, disgust). These new categories are narrow and children's understanding of the new category is not complete. Thus, children are willing to apply these categories only to a limited subset of appropriate stimuli. Perhaps it is at this early stage of their understanding of newer emotion categories that children's gender stereotypes are more likely to play a role in the emotions they attribute to others. It is possible that with somewhat younger children whose fear category is less complete, the trend we reported for fear would be a more powerful effect.

The limitation of gender effects to disgust, and (possibly) fear, coincides with another counterintuitive finding regarding children's understanding of emotion. In three studies comparing children's understanding of emotion labels and faces, a *label superiority effect*

was found (Camras & Allison, 1985; Russell, 1990; Russell & Widen, in press): Children's performance was better when they were given an emotion label than when they were given the corresponding facial expression. This effect was strongest for disgust and fear. Thus, there are now two quite different ways in which children's understanding of disgust and fear differs from their understanding of happiness, sadness, and anger. It appears that children's understanding of happiness, sadness, and anger is more closely associated with faces, whereas their understanding of disgust and fear is more prone to influence from nonfacial factors such as a verbal label and gender stereotypes.

Ceiling effects likely account for the lack of gender effects with happiness and sadness, but they cannot account for their absence for anger. The absence of a gender effect for anger might surprise some readers, particularly in light of Condry and Condry's (1976) and Plant et al.'s (2000) finding of gender effects for anger with adult observers, and Karbon et al.'s (1992) and Birnbaum and Chemelski's (1984) finding that preschoolers associate anger with males more than with females. However, our method of providing maximally clear information about gender and emotion may have reduced any effect of ascribed gender. There were also three differences between the current study and Condry and Condry's and Plant et al.'s studies: (a) their observers were adults whereas ours were preschoolers; (b) their observers belonged to a different cohort than ours; and (c) in two of their studies, emotion cues were ambiguous.

Gender of the protagonist interacted with the gender of the preschooler: It was boys who were more willing to label Judd than Suzy as disgusted (and, tentatively, it was girls who were more willing to label Suzy than Judd as afraid.) A possible explanation is that the masculine stereotype is more salient or accessible to boys, and the feminine stereotype more salient or accessible to girls (Martin, 2000). Boys would thus be more influenced than girls by the masculine stereotype in responding to Judd, and girls more influenced than boys by the feminine stereotype in responding to Suzy. For example, Martin, Wood, and Little (1990, as cited in Martin, 2000) found that young children (4- and 6-year-olds) inferred information about unfamiliar children only when the cues they were given were attributes relevant to their own gender. For example, girls inferred that a child who liked to play with a kitchen set would also like to play with dolls; but the same girls had more difficulty making similar inferences about activities that boys like. In future studies of gender effects on attribution of emotion, the salience or accessibility of stereotypes to preschoolers might be independently assessed.

Of course our study is limited to the specific methods we used. Our use of only one story per emotion leaves open the possibility that the gender effects observed here are situation rather than emotion specific (although our gender effects replicated across story and face modes). Future research would benefit from a variety of stories and faces, and, more generally, from a variety of methods.

Further studies on the generality and developmental course of the influence of ascribed gender on children's attribution of emotion are well worth doing for several reasons. One is that past research with different methods and with adult observers (Condry & Condry, 1976; Plant et al., 2000) was consistent with our findings. Thus, we anticipate replication across methods. Indeed, if Condry and Condry were correct that the impact of ascribed gender increases as emotion information becomes more ambiguous, then our results suggest that in many circumstances gender stereotypes might exert more powerful effects than seen here. Our results suggest the value of examining the power of gender as other information is varied systematically. It would be especially interesting to study gender effects with samples of ecologically valid emotion stories and facial expressions.

## References

BIRNBAUM, D. W., & CHEMELSKI, B. E. (1984). Preschoolers' inferences about gender and emotion: The mediation of emotionality stereotypes. *Sex Roles, 10,* 505–511.

BIRNBAUM, D. W., & CROLL, W. L. (1984). The etiology of children's stereotypes about sex differences in emotionality. *Sex Roles, 10,* 677–691.

BOWLBY, J. (1969). *Attachment and loss: Vol. 1. Attachment* (2nd ed.). London: Hogarth Press.

BOWLBY, J. (1988). *A secure base: Parent-child attachment and healthy human development.* New York: Basic Books.

BRODY, L. R. (1984). Gender and age variations in the quality and intensity of children's emotional attributions to hypothetical situations. *Gender Roles, 11,* 51–59.

BRODY, L. R. (1995). Gender differences in emotional development: A review of theories and research. *Journal of Personality, 53*(2), 102–149.

BRODY, L. R. (1997). Gender and emotion: Beyond stereotypes. *Journal of Social Issues, 53,* 369–393.

BRUCHKOWSKY, M. (1991). The development of empathic cognition in middle and early childhood. In R. Case (Ed.), *The mind's staircase: Exploring the conceptual underpinnings of children's thought and knowledge* (pp. 153–170). Hillsdale, NJ: Erlbaum.

BUCK, R. W., SAVIN, V. J., MILLER, R. E., & CAUL, W. F. (1972). Communication of affect through facial expressions in humans. *Journal of Personality and Social Psychology, 23,* 362–371.

CAMRAS, L. A., & ALLISON, K. (1985). Children's understanding of emotional facial expressions and verbal labels. *Journal of Nonverbal Behavior, 9,* 84–94.

CAMRAS, L. A., GROW, J., & RIBORDY, S. (1983). Recognition of emotional expression by abused children. *Journal of Clinical Child Psychology, 12,* 325–328.

CITY OF VANCOUVER (1998). Retrieved November 26, 2001, from http://www.city.vancouver.bc.ca/ctyclerk/info_depts_boards/statistics.html.

CONDRY, J., & CONDRY, S. (1976). Gender differences: A study of the eye of the beholder. *Child Development, 47,* 812–819.

DENHAM, S. A. (1998). *Emotional development in young children.* New York: Guilford Press.

DIMITROVSKY, L., SPECTOR, H., & LEVY-SHIFF, R. (2000). Stimulus gender and emotional difficulty level: Their effect on recognition of facial expressions of affect in children with and without LD. *Journal of Learning Disabilities, 33,* 410–416.

EKMAN, P., & FRIESEN, W. V. (1978). *Facial action coding systems.* Palo Alto, CA: Consulting Psychologists Press.

GROSS, A. L., & BALIFF, B. (1991). Children's understanding of emotion from facial expressions and situations: A review. *Developmental Review, 11,* 368–398.

HARRIGAN, J. A. (1984). The effect of task order on children's identification of facial expressions. *Motivation and Emotion, 8,* 157–169.

HARRIS, P. L. (1989). *Children and emotion: The development of psychological understanding.* Oxford, UK: Basil Blackwell.

HAUGH, S. S., HOFFMAN, C. D., & COWAN, G. (1980). The eye of the very young beholder: Sex typing of infants by young children. *Child Development, 51,* 598–600.

IZARD, C. E. (1971). *The face of emotion.* New York: Appleton Century Crofts.

JOHNSEN, B. H., THAYER, J. F., & HUGDAHL, K. (1995). Affective judgment of the Ekman faces: A dimensional approach. *Journal of Psychophysiology, 9,* 193–202.

KARBON, M., FABES, R. A., CARLO, G., & MARTIN, C. L. (1992). Preschoolers' beliefs about sex and age differences in emotionality. *Sex Roles, 27,* 377–390.

KELTNER, D., & ANDERSON, C. (2000). Saving face for Darwin: The functions and uses of embarrassment. *Current Directions in Psychological Science, 9,* 187–192.

MARKHAM, R., & ADAMS, K. (1992). The effect of type of task on children's identification of facial expressions. *Journal of Nonverbal Behavior, 16,* 21-39.

MARTIN, C. L. (2000). Cognitive theories of gender development. In T. Eckes & H. M. Trautner (Eds.), *The developmental social psychology of gender* (pp. 91–121). Mahwah, NJ: Erlbaum.

PLANT, E. A., HYDE, J. S., KELTNER, D., & DEVINE, P. G. (2000). The gender stereotyping of emotions. *Psychology of Women Quarterly, 24,* 81–92.

RUSSELL, J. A. (1990). The preschooler's understanding of the causes and consequences of emotion. *Child Development, 61,* 1872–1881.

RUSSELL, J. A., & WIDEN, S. C. (in press). Words versus faces in evoking preschool children's knowledge of the causes of emotions. *International Journal of Behavioral Development.*

SCHWARTZ, G. E., BROWN, S., & AHERN, G. L. (1980). Facial muscle patterning and subjective experience during affective imagery: Sex differences. *Psychophysiology, 17,* 75–82.

SEGASOFT, INC. (1998). Cosmopolitan Virtual Makeover: The Collection [Computer software]. Redwood City, CA: Segasoft, Inc.

SIERRA ON-LINE, INC. (1998). Morph Version 2.5 [Computer software]. Belvue, WA: Sierra On-Line, Inc.

WIDEN, S. C., & RUSSELL, J. A. (2002). A closer look at preschoolers' freely produced labels for facial expressions. Manuscript submitted for publication.