Empathy, Emotional Expressiveness, and Prosocial Behavior

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ROBERTS, WILLIAM, and STRAYER, JANET. *Empathy, Emotional Expressiveness, and Prosocial Behavior.* CHILD DEVELOPMENT, 1996, **67**, 449–470. Relations between emotional expressiveness, empathy, and prosocial behaviors are important for theoretical and practical reasons. In this study, all 3 areas were assessed across methods and sources. Emotional expressiveness and empathy were evaluated in 73 children in 3 age groups (5-, 9-, and 13-year-olds) by measuring facial and verbal responses to emotionally evocative videotapes and by ratings from best friends, parents, and teachers. Measures of emotional insight and role taking were also obtained. Prosocial behaviors were assessed by 3 laboratory tasks and by ratings from best friends, parents, and teachers. Confirming expectations, latent variable path analyses (Lohmöller, 1984) indicated that emotional expressiveness, emotional insight, and role taking were strong predictors of latent empathy (multiple $R^2 = .60$). Boys' empathy, in turn, was a strong predictor of prosocial behavior, $R^2 = .55$. In contrast, girls' empathy was related to prosocial behaviors with friends, $R^2 = .13$, but not to cooperation with peers. Thus present findings provide important support and clarification for certain theoretical expectations, and also raise issues that need clarification.

Relations between emotional expressiveness, empathy, and prosocial behaviors are important for both theoretical and practical reasons. Because of their complexity, we have found it useful to diagram these relations. The model presented below will be used to organize this section of our paper, and it also summarizes the expectations we examine in later sections. As will be seen, the three constructs of primary interest in this study were assessed across methods (laboratory observations, interviews, and questionnaires) and sources (children, friends, parents, and teachers).

A Theoretical Model

In describing the model presented in Figure 1, it will be convenient to postpone discussing age-related changes until we have defined and discussed the other major conceptual domains it incorporates. We now turn to the first of these, emotional expressiveness, the intensity of experienced and displayed emotion.

Emotional Expressiveness

Emotional expressiveness and its interactions with empathy and behavior constitute a complex set of phenomena, whose study is characterized by diverse theories and ambiguous data. One basic distinction in this domain involves the type of emotion being expressed. Following others (e.g., Bowlby, 1982; Lazarus, 1991), we take the view that positive affect is generally associated with competent, situationally appropriate behavior and reflects an evaluation by the individual that things are going well. In contrast, negative emotions (fear, sadness, and anger) are often associated behavioral responses that are less than optimal and reflect evaluations that things are not going well. Roberts (1984, 1995) and Roberts and Strayer (1987) have discussed some of the particular processes by which high levels of negative emotions can disrupt behavior, including empathic responses and prosocial behaviors, a view consistent with other research (e.g., Batson, Fultz, & Schoenrade, 1987; Eisenberg et al., 1989).

From a functional point of view, negative emotions themselves need to be differentiated. Sadness, fear, and anger are subject to different display rules regarding their expression, depending on the social context as

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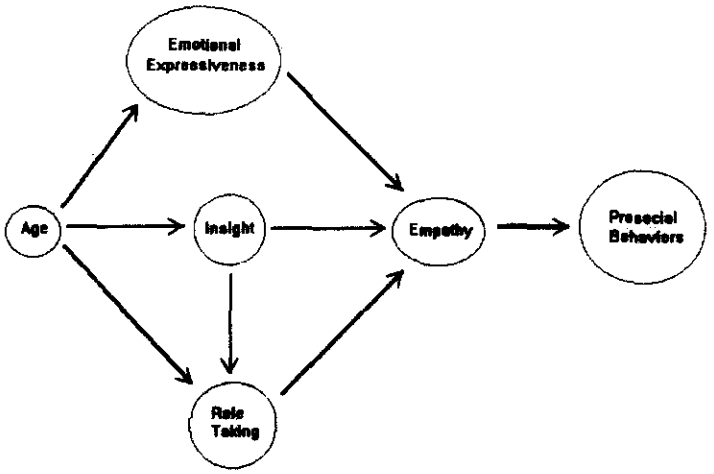

FIG. 1.—Empathy and related variables as causes and predictors of prosocial behavior: a theoretical model.

well as the gender and age of the child expressing the emotion (Brody, 1985; Lewis & Michalson, 1983; Saarni, 1979). For girls, for example, expressing sadness may be "appropriate" in the eyes of others and the self, whereas expressing anger may not. Because child, teacher, and parent ratings of emotional expressiveness in life contexts are presumably influenced by implicit display rules, high scores for expressiveness on such measures may reflect "inappropriate" expressiveness, rather than simply a greater willingness or ability of the child to engage on an emotional level.

Another reason for differentiating negative emotions is that their outcomes are thought to differ (Campos, Campos, & Barrett, 1989). In contrast to sadness or fear, for example, moderately intense or prolonged anger tends to disrupt or even sever social relationships (Bowlby, 1982). Also, it is clear that anger is usually incompatible with empathic responses and prosocial behaviors (Hoffman, 1975).

These considerations lead us to expect different patterns of correlation for different measures of emotional expressiveness in the present study. On one hand, because our teacher, parent, and self-report ratings primarily assess the expression of anger, and because high ratings on these measures may reflect episodes of very intense anger, we expect them to show negative correlations with empathy. On the other hand, the relatively moderate levels of emotional engagement that we can ethically induce in our laboratory measures, and the fact that our stimulus materials elicit sadness, fear, and happiness more than anger, lead us to expect that these measures of expressiveness will show positive correlations with empathy. Low levels of expressiveness will indicate either lack of engagement or emotional overcontrol, and in either case should be associated with lower levels of empathy; greater expressiveness (still moderate by comparison with the more intense emotional experiences that can be encountered in life outside the laboratory) should result in greater empathy.

These contrasting expectations can be unified by viewing the relation between emotional expressiveness and behavior as an inverted-U function. As expressiveness increases from low levels, it indicates an increased engagement with the situation being experienced, and thus an increased probability of empathic and prosocial responsiveness. On the other hand, high levels of expressiveness are disruptive of empathic and prosocial responses, because they imply either a focus on the self (i.e., personal distress) or movement against the other (in the case of anger). It is at moderate levels of expressiveness, then, that empathic responsiveness, which involves a balance between one's own affective experience and that of the other, will be maximal (Strayer, 1987). Thus moderate levels of emotional engagement motivate interventions while not being intense enough to disrupt behavioral plans and their execution (Roberts, 1984, 1995; Roberts & Strayer, 1987).

In assessing emotional expressiveness, we take the view that it comprises both emotional and cognitive processes of which the individual may be either aware or relatively unaware (Bowlby, 1982; Lewis & Michalson, 1983). For these reasons we have assessed empathy and emotional expressiveness by facial as well as verbal measures in the present study, and we have included measures of emotional insight (i.e., children's reported awareness of their emotional states as reflected in their facial expressions).

Emotional Insight and Role Taking

In the model presented in Figure 1, two additional factors contribute to empathy: children's recognition of their own emotions (their insight) and their role-taking abilities. Emotional expressiveness and emotional insight may share some causal factors. Children experience socialization pressures concerning the control and display of emotions (Brody, 1985; Roberts, 1995; Roberts & Strayer, 1987; Saarni, 1979), and these pressures may affect their understanding of their own emotional experiences (Lewis & Michalson, 1983). It is, for example, common for researchers studying facial and verbal indices of empathy to find relatively low levels of correspondence between children's facially expressed emotions and the emotions that they attribute to themselves (Chisholm & Strayer, 1995; Eisenberg et al., 1989), with some verbal responses conforming to gender role stereotypes (i.e., girls reporting more sadness and fear than boys, and boys more anger than girls; Strayer & Roberts, in press). Consistent with the view advocated by Lewis and Michalson (1983) and Schachter and Singer (1962), we consider this to be an example of a socially biased interpretation of the nonverbal components of one's emotional response.

Denial or dissimulation is another common distortion of one's emotional experience. Like gender-linked discrepancies in facial and verbal measures of emotions, denial can also be attributed to socialization pressures (Blanck, Rosenthal, Snodgrass, DePaulo, & Zuckerman, 1981; Lewis & Michalson, 1983).

In the context of our laboratory procedures assessing emotional expressiveness and empathy, we were able to observe two of the three aspects of emotional insight just mentioned. The accurate recognition of one's own emotional experience is reflected in our measures as the congruence of facially expressed and self-attributed emotions. Denial or dissimulation is reflected in facial expressions of sadness, fear, or anger coupled with verbal assertions of feeling happy or feeling nothing at all. (Dissimulation implies more awareness of emotional experience than denial, but this distinction is not important here: Regardless of level of awareness, the negative emotion is judged to be unacceptable—either socially or to the self.) We did not attempt to assess gender-related distortions of emotional experience. Although such patterns are evident in the group data (see Strayer & Roberts, in press), identifying individual instances seemed more problematic than for accurate recognition and denial because such judgments would be based in part on children's gender, not just their observed behavior.

As indicated in Figure 1, we expected emotional insight to affect role taking and empathy. Accuracy in identifying one's own emotions and lack of denial should be related to role taking because greater understanding of one's own emotional experiences should contribute to greater understanding of others' experiences. Emotional insight is also expected to be related directly to empathy, in that the occurrence of denial precludes an empathic response. High levels of accuracy also suggest a history in which others have responded positively to the child's displayed emotion, a history that leads to empathic responding (Zahn-Waxler, Radke-Yarrow, & King, 1979).

Because better understanding of others should enhance empathy, we expect role taking to contribute directly to empathy. Although understanding the plight of others (without being affectively involved) might be expected to lead to some sort of concrete helpful or cooperative response, we follow the lead of other researchers (Feshbach, 1975; Krebs & Russell, 1981) in holding it unlikely that role taking directly motivates prosocial behaviors. Rather, as shown in Figure 1, we expect role taking to lead to greater prosocial behavior because it enhances empathy (Davis, Hull, Young, & Warren, 1987; Hoffman, 1982).

Empathy and Prosocial Behaviors

In contrast to sympathy and personal distress, empathy is marked by shared affect *and* a balanced focus between the self and other (Strayer, 1987). In general, we expect the relations shown in Figure 1 to hold whether empathy is measured as affect matching alone (Feshbach & Roe, 1968) or

whether its assessment includes cognitive mediators of affect (Hoffman, 1982; Strayer, 1993). This extends also to children's self-appraised emotional responsiveness and empathy (Bryant, 1982). We are less certain how well others (best friends, teachers, and parents) can assess children's empathy (in contrast to their prosocial behaviors), but we anticipate that similar relations will obtain.

We expect links between empathy and prosocial behavior to be clearest for verbal measures of empathy (as opposed to physiological or facial measures) because verbal assessments more closely reflect the cognitive appraisals that are involved in planning and carrying out behavior (Bowlby, 1982; Connolly & Bruner, 1974; Miller, Galanter, & Pribram, 1960). That is, to the extent that prosocial responses involve evaluations (e.g., of the demands of the situation, of resources available from others, of the emotional states of others and the self, and possible alternative responses) and decisions (i.e., the selection and execution of a response), cognitive processes are involved of which we have some degree of awareness. Thus we agree with Lewis and Michalson (1983) that our understanding of our emotional experience (tapped by verbal measures) may be more important for behavior than nonverbal components of emotional experience (tapped by facial or physiological measures). It is for this reason that we focused on verbal responses in assessing empathy across laboratory measures and reports from children, best friends, and teachers. However, we also assessed empathy on a less cognitively mediated level by including a measure of facial expressive empathy similar to those employed by other researchers (e.g., Eisenberg et al., 1988, 1994).

Although we have not differentiated prosocial behaviors in Figure 1 for the sake of simplicity, most work indicates that this construct is multidimensional. Some researchers have found that context and respondent are important features. For example, Strayer (1981) reported that young children's naturally occurring prosocial behaviors fell into two groups, one directed to peers, the other to adults. Other researchers have distinguished prosocial behavioral domains, most frequently identifying positive responses to others' emotional distress (caring, comforting), helping or aiding others, sharing or donating, and cooperation (Radke-Yarrow, Zahn-Waxler, & Chapman, 1983). One would expect empathy to be most closely linked to the first domain (given its affective nature) and least to the last, given the reciprocal and social norms that surround cooperation (Graves & Graves, 1983; Trivers, 1983). In this study, we attempted to assess these domains across methods (laboratory observations and ratings of real-world behavior) and sources (parents, teachers, children, and best friends), with a focus on prosocial behaviors with peers.

Although it is plausible to suppose that empathy enhances prosocial responding (e.g., Hoffman, 1982), empirical evidence has been inconsistent, with most of the supporting evidence coming from adult samples (Barnett, 1982, 1987; Batson et al., 1987; Eisenberg & Miller, 1987a, 1987b; Underwood & Moore, 1982). It has been suggested that inconsistent findings may be due in part to shortcomings in assessing basic constructs. In contrast to much of this earlier work, the present study has multiple measures of empathy as well as multiple measures of prosocial behavior. It is, therefore, better able to assess the underlying constructs and their relations independently of artifacts of method and biases of source.

Another possible explanation for inconsistent findings is that important moderator variables have not been identified. For example, it has been suggested that processes relating empathy and prosocial behavior may differ for girls and boys (e.g., Radke-Yarrow et al., 1983), although specific details have not been proposed. Data indicate that there are dependable gender differences (favoring girls) in mean amount of empathy on measures that involve cognitive appraisals (as compared to facial or physiological measures; Lennon & Eisenberg, 1987); that girls and boys experience different socialization pressures for expressing and controlling emotions (Brody, 1985); and that such socialization pressures are related to children's prosocial behaviors (Roberts, 1995; Roberts & Strayer, 1987). Moreover, gender differences in empathy are not paralleled by similar differences in prosocial behaviors (Radke-Yarrow et al., 1983), and the absence of a dose-response relation (in which increasing levels of a putative cause produce increasingly strong effects) suggests that empathy may not be strongly linked to girls' prosocial behaviors. For these reasons, we carried out separate analyses for each gender, and they will be reported below when they differed significantly.

Age-related Changes

Having defined our central constructs and discussed some of the issues associated with them, we return to the question of age-related changes. Our expectations concerning developmental changes in emotional expressiveness and insight reflect the complexity of the phenomena and the relative lack of research in the area.

First, age should be related to greater emotional insight and greater intensity of negative emotional experience in our laboratory measures. Because children's coping and cognitive skills increase with age, making negative emotions less disruptive, we expect older children to permit themselves to experience and report a greater intensity of negative emotions. In addition, older children should experience more intense emotions in our laboratory procedures because they understand situations more fully, and they have a greater store of their own emotional experiences which may be reactivated (Flapan, 1968; Flavell, 1985; Gilbert, 1969; Roberts, 1995; Roberts & Strayer, 1987). However, we do not expect age-related changes to be due to increases in basic understanding of our stimulus materials (Strayer, 1993). There is a growing body of evidence that by the end of the preschool period children can identify basic emotional expressions and situations, and are able to talk meaningfully about their own and others' emotions (Denham, Zoller, & Couchoud, 1994; Saarni, 1990). To take an example from the current stimulus set, although older children may understand more fully the implications of having an abusive parent, even 5-year-old children can understand the emotional response of the video-child who is slapped across the face.

In contrast to negative affect evoked in the laboratory, we expect ratings of children's expression of anger in everyday life to decline with age, as socialization pressures for emotional control are internalized (Cole, 1986; Dunn & Brown, 1991; Roberts, 1995; Saarni, 1989) and more effective ways of coping with frustration and peer conflict are acquired (Piaget & Inhelder, 1969).

These same considerations lead us to expect that age will not be related to intensity of positive emotions over the range sampled in the current study (5 to 13 years). Because understanding of happy events is acquired early, probably before the age of 5 (Dunn & Brown, 1991; Lewis & Michalson, 1983), understanding of simple stimulus materials portraying happiness (and hence intensity of positive expression) would not be expected to change in important ways during middle childhood. In addition, socialization pressures to control displays of happiness are probably linked to contexts (such as sermons and funerals, for example) rather than to age, so that changes in emotional regulation should not produce any obvious age-related changes in laboratory measures of positive affect.

In contrast to these tentative expectations, both theory and past research indicate a strong relation between age and role-taking skills, especially for the measure used here, developed by Selman (Piaget & Inhelder, 1969; Selman & Jaquette, 1977). Thus, as shown in Figure 1, we expect age-related changes in empathy (Lennon & Eisenberg, 1987) to be mediated by age-related changes in role taking (as well as changes in expressiveness and emotional insight). Similarly, we expect age-related changes in prosocial behaviors (Radke-Yarrow et al., 1983) to be mediated by age-related increases in intervening variables, notably role taking and empathy.

In summary, following developmentalists such as Hoffman (1982), it is our contention that empathy is an important way in which emotional engagement motivates prosocial behaviors. In our model, we consider many of the paths antecedent to empathy to be predictive: In the current state of theory and research, we can only specify lines of influence, not causal processes. Yet we do believe that some links diagrammed in Figure 1 are causal in nature. Both theory and empirical evidence support the contention that role-taking ability enhances empathy, and that empathy, in turn, is a cause of prosocial behavior (Barnett, 1982, 1987; Batson et al., 1987; Davis et al., 1987; Iannotti, 1978). Thus, although some parts of the proposed model are strongly supported by theory and research, other parts are more tentative or exploratory.

Method

Subjects

A total of 73 children in three age groups participated in this study. Group 1 consisted of 15 boys and 18 girls (M = 5.1 years, SD = .3). Groups 2 and 3 each consisted of 10 boys and 10 girls. For Group 2, M = 8.8 years, SD = .4; for Group 3, M = 13.1 years, SD = .4. Children came from predominantly

white, middle-class backgrounds. Mean age for mothers was 37 years (SD = 5.3), and for fathers, 39 (SD = 6.2).

Measures and Procedures

We begin by describing the laboratory procedure used to derive four of our seven measures of emotional expressiveness and two of our five measures of empathy.

Children individually viewed six emotionally evocative videotaped vignettes. The vignettes (a brief description is provided in Table 1) portray primarily dysphoric affect, as assessed by adult and child judges (Strayer, 1993). Positive emotions occur briefly across vignettes, and are prevalent in "Circus." Details of selection and pretesting are given in Strayer (1993).

Vignette interviews.—Children were individually interviewed after first watching all vignettes. Each story was cued by a picture, and children described the vignette's content in their own words, as a check on memory and comprehension. They were then asked to report each character's emotion and its intensity, and whether they themselves had felt neutral ("OK," "just regular") or an emotion (and its intensity) in response to the vignette. The memory check and interview were carried out for each vignette in turn. Eight emotion categories were used across all ages: neutral, happy (including positive surprise), sad, angry, afraid, startle (including negative surprise), concerned-worried, and disgusted.[1] Intensity of emotion was rated on a 3-point scale: 0 = none, 1 = a little, 2 = a lot. Additional details are available in Strayer (1993).

It is doubtful that any set of stimuli can adequately sample the range of meaningful or evocative emotional events across age. Our objective was to provide a broader range of emotional stimuli (within reasonable ethical restraints) than had previously been used in such research with children. With this limitation in mind, the stimulus materials appear to have been effective elicitors of emotion for most children: 80% of the sample reported emotions for five or more of the six episodes. In contrast, nearly half (45%) of all "neutral" responses were given by fewer than 10% of the sample. Thus neutral responses appear to be a function of child variables rather than primarily an artifact of low-intensity stimulus materials.

Facial expressions.—Using a ceiling-mounted camera, children were unobtrusively videotaped while they watched the vignettes. A 3-min baseline tape for each subject was viewed initially to familiarize coders with idiosyncratic facial characteristics. Facial expressions were scored by coders trained to recognize expressive changes in upper, middle, and lower facial regions (Izard & Dougherty, 1982).

Two indices were derived from facial scores: emotion valence and intensity, and category of predominant emotion (happy, etc.). Valence and intensity were recorded at 10-sec intervals using a scale that ranged from +3 (positive valence, high intensity) to −3 (negative valence, high intensity; see Table 2 for details). Because our focus is on global expressions communicated in real time, 10-sec durations were selected in pilot testing as a sufficient duration to assess emotion communicated in facial expressions. Ninety-one intervals were rated during the five vignettes with predominantly negative affect and 25 intervals during the vignette that featured positive affect ("Circus").

Exact interrater agreement based on two judges scoring 25% of the videotapes for each age group was 93% (84% for the youngest group, 99% for the others), kappa = .92. All differences were resolved by discussion.

Coders also judged at the end of each vignette the child's predominant facial expression during it. The same eight categories were used as for children's reports (neutral, happy, etc.).[2] Details of coding criteria

[1] If children's spontaneous attributions of emotion were unclear (e.g., "feels bad"), they were asked which of the following terms best applied: happy, sad, angry, afraid, surprised, disgusted (yucky). We queried "surprised," which was described as most like "afraid" in all vignettes except "Circus," for which it was described as most like "happy."

[2] "Concerned" is not a facial code in Izard's system; rather, it represents a procedural compromise on our part. Judges were trained using MAX pictures (Izard & Dougherty, 1982), which portray full-blown extreme expressions of each emotion—extremes which did not occur in our sample. For example, "startle" in MAX might result from the child's loss of proximal physical support, whereas in the current context it refers to the much milder emotion of "negative surprise." Similarly, "concerned" represents our raters' judgment that "startle" and "fear" were too extreme for what they saw. It therefore reflects a combination of moderate apprehension, negative surprise, and agitated interest on the part of the children so coded. In this sense, we believe that it parallels the use of "concerned" by other researchers.

TABLE 1

DESCRIPTION OF VIDEOTAPE STIMULUS VIGNETTES

1. *Old House:* Three children sneak into a yard at night. A boy climbs up creaking stairs to peer through a window into the house. A looming shadow of a man appears above him, and the children run away. (Source: commercial film.)
   PROTAGONIST: male
   PREDOMINANT AFFECT: fear
2. *Spilled Milk:* A husband and wife have an angry exchange while their daughter watches TV. The man leaves and the woman shouts at the girl to come to dinner; the girl accidentally knocks over a glass of milk and the mother slaps her. (Source: "12½ Cents," National Film Board of Canada.)
   PROTAGONIST: female
   PREDOMINANT AFFECT: sadness
3. *Jeannie:* A young woman talks directly to the viewer about the difficult life she and her children had with her abusive husband. (Source: "Loved, Honoured, and Bruised," National Film Board of Canada.)
   PROTAGONIST: female
   PREDOMINANT AFFECT: sadness, anger
4. *Skates:* A girl and boy argue over taking turns on her new skates. The boy calls her names and threatens to tattle. She pushes him down; he runs crying to her parents. The boy lies; the father believes his story and gives the girls' skates to the boy as her punishment. (Source: "Our Vines Have Tender Grapes"; obtained from Dorothy Flapan, who used them in a 1968 study.)
   PROTAGONIST: female
   PREDOMINANT AFFECT: sadness
5. *Canes:* A girl talks pleasantly about her life and the fun she has despite her physical disability. (Source: "I'll Find A Way," National Film Board of Canada.)
   PROTAGONIST: female
   PREDOMINANT AFFECT: sadness
6. *Circus:* A father and daughter go to see the circus train. The elephant is let out to perform some tricks. The girl jumps and laughs excitedly, and is lifted up on the elephant's trunk. (Source: "Our Vines Have Tender Grapes.")
   PROTAGONIST: female
   PREDOMINANT AFFECT: happy

NOTE.—Films are in black and white. Total viewing time is approximately 30 min. Further information is given in Strayer (1993).

are given in Table 3. Percent agreement exceeded 80% for all categories of facially coded emotion.

Congruent with verbal reports of emotion, coders found that most children were expressive: 60% of the sample had a facial emotion coded for five or more of the six vignettes. In contrast, more than a third (37%) of all "neutral" codes were given to the least expressive 10% of the sample.

Emotional expressiveness.—Two summary emotional intensity scores were derived from the self-report and facial ratings described above. Self-reported negative intensity is the mean rating across the five vignettes with predominantly negative affect (see Table 1). Self-reported positive intensity is the rating for the single vignette with predominantly positive affect ("Circus"). Means were 1.2 and 1.4, respectively, for negative and positive intensity; SDs = .5 and .7.

Similarly, facial negative intensity is the sum of negative facial ratings (Table 2) across the five vignettes with predominantly negative affect. Facial positive intensity is the sum of positive ratings for the vignette ("Circus") with predominantly positive affect. Absolute values were used for facial negative intensity, so that for both variables, higher values indicate greater intensity. For facial negative intensity, mean = 88.4, SD = 37.6; for facial positive intensity, mean = 7.6, SD = 8.7.

Emotional expressiveness in more general contexts was assessed by teacher and parent ratings and children's self reports. Teachers rated 61 children on a 47-item

TABLE 2

CODES FOR INTENSITY OF FACIAL EXPRESSIONS

+3	Maximum euphoric/pleasant expression: broad, open-mouth smile; eyes wide with outside corners deeply creased or narrowed by raised cheeks; even brow with eyebrows raised and horizontal (no furrow in nasal ridge).
+2	Moderate euphoric/pleasant expression: broad, moderate closed-mouth smile; eyes wide and relaxed, outside corners creased.
+1	Minimal euphoric/pleasant expression: narrow closed-mouth smile; corners of mouth minimally raised.
0	Neutral expression: typical of baseline observations when no notable facial changes occurred.
−1	Minimal dysphoric/unpleasant expression: lips compressed; lip biting; minimally knit brow.
−2	Moderate dysphoric/unpleasant expression: moderately knit brow; ridges in upper nasal area; eyes narrowed.
−3	Maximum dysphoric/unpleasant expression: knit brow with vertical ridges or flesh folds between brows, horizontal ridges in upper nasal area; eyes narrowed; lips compressed; mouth corners strained or pulled down; chin bulge; lip biting.

TABLE 3

DESCRIPTION OF FACIAL EMOTION CODES

Emotion	Description
Happy	Forehead smooth; cheeks raised; corners of mouth back and up.
Sad	Inner brows drawn together; vertical furrows or bulge between brows; raised inner corners of upper eyelid; eyes squinted; downward mouth corners; lower lip pushed upward by chin muscle (chin puckers).
Anger	Brows sharply down and together; vertical furrows or bulge between brows; nasal root broadened or bulged; eyes narrowed by lowering of brow; rectangular mouth; lips may be pressed together tightly.
Fear	Straight brows slightly raised and drawn together; horizontal lines or bulge on forehead; nasal root narrowed; eyes narrowed or squinted; eyelids raised (white shows more than usual); mouth corners tight or retracted.
Surprise	Brows raised; skin below brow stretched; horizontal furrows across forehead; enlarged, roundish eyes; mouth opened (corners drawn back and up when positive; otherwise just rounded mouth).
Disgust	Brows together and downward; vertical furrow or bulge between brows; nasal root bulged (nostrils enlarged); nasal bridge furrows or bulges; eyes narrowed; cheeks raised; mouth tense (tongue may be forward); lower lip forward.
Concern	Brows drawn together and possible slightly downward; vertical furrows or bulge between brows; eyes narrowed or squinted; cheeks may be raised (but no smile); mouth relaxed; posture may lean forward.
Neutral	Expression as at baseline; no emotion (above) expressed.

NOTE.—Descriptions are based on Izard, Dougherty, and Hembree (1983). For "Concern," see text and note 2.

Child Rating Questionnaire, which assessed prosocial behaviors, empathy, and peer relationships as well as emotional expressiveness. Items were taken from the Prosocial Behavior Questionnaire (Weir, Stevenson, & Graham, 1980) and the Affect Expression Questionnaire (Buck, 1977). Teachers rated each item on a five-point scale (1 = "not at all characteristic of the child" to 5 = "extremely characteristic"). A score for emotional expressiveness (Cronbach's alpha = .78) was derived by averaging four items ("Expresses anger or hostilities directly"; "Displays anger frequently and sometimes inappropriately"; "Controls his or her emotions" [loads negatively]; "Shows a wide range of different kinds and intensities of emotions"). Scores ranged from 1.0 to 4.5; mean = 2.4, SD = .9.

Mothers also rated their children on the Child Rating Questionnaire, allowing us to construct parent scales identical to the teacher scales. For parent-rated child emotional expressiveness (Cronbach's alpha = .65), scores ranged from 1.5 to 5.0; mean = 3.2, SD = .8.

Three items from the Expression of Affect Questionnaire for children (Strayer, 1985) assessed expression of anger to family and friends ("When I feel angry, it's hard to show how I feel to my family"; "When I feel angry, it's hard to show how I feel to my friends"; "I usually don't show my feelings to my friends"). These items were chosen to parallel those rated by parents and teachers. Responses were scored as yes (=1) or no (=0), reflected so that higher scores indicate greater expressiveness, and summed for a total score (Cronbach's alpha = .62). Scores ranged from 0 to 3, mean = 1.6, SD = 1.1.

Emotional insight.—Because the vignettes procedure yields both facial and self reports of emotion, we were able to generate two indices assessing the degree of correspondence between these measures. Accuracy was the number of exact matches between facially rated and self-attributed emotions across the six vignettes. Denial was measured by the number of vignettes in which facially rated negative emotions (e.g., sad, angry, afraid) occurred with self-reported emotions of "happy" or "neutral, nothing much." Scores for accuracy ranged from 0 to 4, mean = 1.0, SD = 1.0. Scores for denial ranged from 0 to 6, mean = 1.9, SD = 1.6.

Role taking.—A general measure of role taking was provided by Selman's perspective-taking measure (Selman & Jaquette, 1977). Children's global score was based on their responses to a series of story dilemmas, using interview methods and criteria, as cited. Obtained scores ranged from 1 to 7, mean = 4.5, SD = 2.1.

Empathy.—Two measures of empathy were derived from the vignettes procedure. The first of these, the Empathy Continuum, integrates the degree of affective sharing experienced (i.e., degree of match between own and stimulus person's emotion) with the child's cognitive attribution for his or her own emotions (see Strayer, 1993, for a description and scoring procedures). It contains seven different levels of cognitive mediation, derived from models of empathy development (Feshbach, 1975; Hoffman, 1975), and levels of interpersonal understanding (Hughes, Tingle, & Sawin, 1981; Shantz, 1983). Scores can range between 0 and 19. In the current sample, scores (averaged across six vignettes) ranged from 0.7 to 15, mean = 5.7, SD = 4.7.

The second measure was a nonverbal measure of affective empathy (Feshbach & Roe, 1968), based on facial expressions. (Similar nonverbal measures have been used by Eisenberg et al., 1988, 1989, to index empathy and sympathy.) Facial-expressive empathy was the number of exact matches between the predominant facially expressed emotions of children and characters. (Predominant vignette emotions, listed in Table 1, were identified in pretests by 30 children 5–14 years old and 30 adults. See Table 1 and p. 191 in Strayer, 1993.) Facial empathy scores ranged from zero to four, mean = 1.4, SD = 1.1.

Empathy in more general contexts was assessed by self reports and ratings made by teachers and best friends. The self-report measure was Bryant's (1982) Index of Empathy for Children (administered in a session separately from the videotaped vignettes). This questionnaire consists of 22 items for children and adolescents and is derived from Mehrabian and Epstein's (1972) version for adults. A global score for empathy is based on children's agreement (=1) or disagreement (=0) with items tapping attributes including emotional expressivity and attitudes (e.g., "sometimes I cry when I watch TV"), sympathy (e.g., "it makes me sad to see a girl who can't find anyone to play with"), and empathy (e.g., "seeing a girl crying makes me feel like crying"). The questionnaire measure has satisfactory

short-term test-retest reliability as well as divergent and convergent validity (Bryant, 1982).

Because the youngest children in the present study were 5 years old, and Bryant's measure has not previously been applied to children younger than grade 1, internal consistency was examined in order to determine whether the questionnaire was appropriate for this age group. The obtained Cronbach's alpha (.48) indicated a low level of internal coherence; thus correlational analyses reported below for the Bryant measure were restricted to the two older age groups. (Analyses that included the youngest children produced results similar to those for the oldest children alone but attenuated in magnitude, a pattern typically found when comparing measures of higher and lower reliability.) For the older children (N = 40), scores ranged from 5 to 18, mean = 11.8, SD = 3.5; for all 73 children, mean = 11.6, SD = 3.2.

Teachers rated the empathy of participating children on two items ("Is generally sensitive and responsive to others' emotions"; "empathic") from the Child Rating Questionnaire, described earlier. For this scale, scores ranged from 1.5 to 5, mean = 3.5, SD = .9; Cronbach's alpha = .74.

Best friends rated the empathy of participating children on six items, such as "Does [child's name] feel bad if s/he sees another kid without a friend to play with?" Responses were scored 0 = not at all, 1 = a little, 2 = a lot. Scores ranged from 1 to 10, mean = 7.5, SD = 2.2; Cronbach's alpha = .78.

Prosocial behaviors.—Like empathy and emotional expressiveness, prosocial behaviors were assessed across methods and sources. We begin by describing our three laboratory measures.

Children's helpfulness toward an adult in need of aid was assessed by a measure adapted from Yarrow and Waxler (1976). While interviewing the child, the experimenter looked through her sheaf of papers and appeared to be distressed because she couldn't find something she needed. As she rearranged her papers, she upset a box of colored paper clips resting on the arm of her chair, scattering them on the floor. "Oh, no!" she said, and stayed occupied with her papers. Children were scored as helping (= 1) if they began to assist the experimenter within 30 sec (64% of the sample). Children who had not helped at the end of 10 sec were prompted with "I just can't seem to get all this together." Children who failed to help were scored as 0.

Sharing was measured by a fishing game adapted from Yarrow and Waxler (1976) in which children have 10 turns to get prizes by bobbing for rings in a pool, using a fishing pole. Children were tested individually. They were told that two usually play this game at once, and they were asked for the name of their best friend. Because the friend was not present, children were told that their friend would be invited to play later. There are only 10 turns in total for both children, however, so subjects must decide at each turn whether they want to take that turn for themselves or leave it for their friend. Scores (= the number of turns given up for the best friend) ranged from 0 to 9, mean = 2.7, SD = 2.1.

Cooperation with an unfamiliar, same-sex peer was assessed using a task adapted from Madsen and Connor (1973). A penny is encased in a block divided in the center and attached to strings at either end. Each child holds a string. If both children pull simultaneously, the block divides and the penny drops out and goes to neither child. Therefore, in order to accumulate coins, it is necessary for the players to use a cooperative strategy in which one child pulls the coin to her side of the table and the other child permits this to happen. Children played for 10 trials, and were scored using the system devised by Madsen and Connor. Scores ranged from 0 to 30, mean = 8.9, SD = 12.2.

Teachers and parents rated children's helpfulness, sharing, cooperation, and positive responsiveness to peers' emotional distress using the Child Rating Questionnaire described earlier. A scale assessing helpfulness was composed of four items (e.g., "Offers to help people who are feeling sick or in trouble," "Offers to help other people who are having difficulty with a task or activity"). For teacher ratings, scores ranged from 1.0 to 4.8, mean = 3.0, SD = .9; Cronbach's alpha = .84. For parent ratings, scores ranged from 1.2 to 5.0, mean = 3.3, SD = .8; Cronbach's alpha = .80.

The scale for sharing was composed of only two items, "Shares play, food, or other materials with others" and "Is generous in donating own time or contributing toward purchase of gifts for others, charities, etc."). For teacher ratings, scores ranged from 1.5 to 5.0, mean = 3.2, SD = .8; Cronbach's

alpha = .70. The parent version of this scale was not used due to low internal coherence (Cronbach's alpha = .34).

The scale for cooperative behavior was composed of eight items, such as "Tries to be fair in games or activities," "Is generally cooperative," "Behaves aggressively with other children" (loads negatively). For teachers, Cronbach's alpha = .85; scores ranged from 2.1 to 5.0, mean = 4.0, SD = .7. For parents, Cronbach's alpha = .79; scores ranged from 2.1 to 4.75, mean = 3.8, SD = .6.

Best friends rated participants' prosocial behaviors on six items: "Does [child's name] take turns when kids are playing games? . . . when you are playing games?"; "Does [child] share things like food, games, and toys, with other kids? . . . with you?"; "Does [child] help other kids when they need it, like fixing things, carrying things, with school work or chores? Does [child] help you . . . ?" Responses were scored 0 = not at all, 1 = a little, 2 = a lot. Scores ranged from 2 to 12, mean = 8.1, SD = 2.1, Cronbach's alpha = .80.

Results

In the first part of this section, we test the model presented in Figure 1 by examining correlations across domains, beginning with age. We then integrate these findings using latent variable path analyses (Lohmöller, 1984). Because functional gender differences emerge in these analyses, we will conclude the Results section by examining mean gender differences in our measures.

Relations across Domains: Age

In order to control Type I error for these analyses, binomial tests were used to assess the omnibus null hypothesis that all correlations were zero for a given set of comparisons. Thus the omnibus p is the exact probability under the null hypothesis of observing n or more significant tests in a set of m comparisons.

Age and emotional expression.—As expected, emotional expressiveness showed relations with age that depended on type of emotion (positive or negative) and method of assessment. Overall, three of seven comparisons were significant at .05; binomial tests rejected the omnibus null hypothesis that all correlations were zero, $p < .005$.

As expected, intensity of facial expressions of negative emotions when viewing stimulus videotapes increased with age, $r(71) = .27$, $p < .05$, whereas intensity of positive expressions did not. (For intensity of facial positive expression, $r(71) = -.02$; for self-reported positive intensity, $r(71) = -.14$.)

In contrast, older children rated themselves, and were rated by others, as less expressive of negative emotions, reflecting increased pressure with age for emotional control. Self-reported negative intensity during the stimulus videos declined with age, $r(71) = -.25$, $p < .05$, as did teacher-rated expression of anger in school contexts, $r(59) = -.22$, $p < .05$. Consistent with this, parent-rated expression of anger declined marginally with age, $r(71) = -.17$, $p < .10$.

Age and emotional insight.—In contrast to emotional expressiveness, emotional insight was unrelated to age. Contrary to expectation, denial of negative emotions during the stimulus videos did not decrease with age, $r(71) = -.03$, nor did congruence between facial expressions and verbally reported emotions increase, $r(71) = .06$.

Age and role taking.—As expected, role-taking ability, as assessed by Selman's procedure, increased strongly with age, $r(71) = .82$, $p < .0001$. Thus, over this age range, cognitive changes were more striking than changes in emotional expressiveness and emotional insight.

Relations across Domains: Empathy

Emotional expressiveness and empathy.—As expected, expressiveness was frequently related to empathy. As shown in Table 4, 10 of 35 comparisons were significant; the omnibus null hypothesis was rejected, $p < .0001$. The contrasting pattern that we expected was evident: laboratory measures of expressiveness were positively related to empathy, whereas the expression of anger showed negative associations. These latter correlations only reached significance for parent ratings of children's anger, suggesting that the expression of anger in family contexts may be particularly important for children's empathy with peers—a finding consistent with attachment theory (e.g., Bretherton, 1990).

Emotional insight and empathy.—As indicated in Figure 1, we expected emotional insight to be related to empathy and role taking. As shown in Table 5, this expectation was supported for empathy (omnibus $p < .005$) but not for role taking. Accuracy was most strongly associated with higher fa-

TABLE 4

CORRELATIONS BETWEEN EMOTIONAL EXPRESSIVENESS AND EMPATHY

	Emotional Expressiveness						
	Facial		Interview		Ratings of Anger By:		
Empathy	Neg	Pos	Pos	Neg	Parent	Teacher	Self
EmCon	.28**	.19+	.26*	.30**	−.38***	−.05	.13
Facial	.36***	.39***	−.06	.03	.16+	−.17	−.01
Teacher	.07	.03	.14[a]	.09	−.26*	−.14	−.11
Self	.01	.24+	.29*	.40**	−.23	.08	.14
Friend	.05	−.09	.07	−.21+	−.31*	−.20	−.09

NOTE.—Emcon: mean Empathy Continuum score. Facial Neg: Observer-rated intensity of negative valence facial emotions. Facial Pos: Observer-rated intensity of positive valence facial emotions. Intview Pos: Vignette interview, self-reported positive emotional intensity. Intview Neg: Vignette interview, self-reported negative emotional intensity.

[a] For boys, $r = .54$**; for girls, $r = -.20$; the correlations differ significantly, $z = 2.99$**.

+ $p < .10$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Omnibus null hypothesis: $p < .0001$.

cial empathy scores and denial with lower Empathy Continuum scores. As well, denial showed marginally significant relations with empathy across methods. These correlations, considered as a set, suggest that our measures of emotional insight are tapping something general, not just context specific.

Role taking and empathy.—As expected, greater role taking was associated with greater empathy. As shown in Table 6, two of five comparisons were significant, omnibus $p < .001$. Not surprisingly, the relation was strongest for Empathy Continuum scores, which integrate cognitive and affective factors. Nevertheless, it also held for empathy measures in which role-taking components are not obvious (*i.e.*, best friend ratings and, for girls, self reports).

Empathy and prosocial behaviors.—Empathy was positively associated with prosocial behaviors. Unexpectedly, the evidence was much clearer for boys than girls. As shown in Table 7, six of 55 comparisons for girls and 15 of 55 comparisons for boys were significant. Thus, although the omnibus null hypothesis was rejected for both (indicating an overall relation between these variable

TABLE 5

CORRELATIONS BETWEEN EMOTIONAL INSIGHT, ROLE TAKING, AND EMPATHY

	Accuracy	Denial
Role taking:		
Selman	.16+	.00
Empathy:		
EmCon	.19+	−.38***
Facial	.49***	.10
Teacher	−.09	−.17+
Self	.18[a]	−.23+
Friend	.12	−.14

NOTE.—EmCon: mean Empathy Continuum score. Self: self-reported empathy (Bryant questionnaire); $N = 40$.

[a] For girls, $r = .38$**; boys, $r = -.35$; the correlations differ significantly, $z = 2.23$*.

+ $p < .10$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Omnibus null hypothesis: $p < .005$.

TABLE 6

CORRELATIONS BETWEEN ROLE TAKING AND EMPATHY

Empathy	Role-Taking Scores
EmCon	.54***
Facial	−.04
Teacher	−.17
Self	.22+[a]
Friend	.33**

NOTE.—EmCon: mean Empathy Continuum score. Self: self-reported empathy (Bryant questionnaire); $N = 40$.

[a] For girls, $r = .58$**; boys, $r = -.11$; the correlations differ significantly, $z = 2.25$*.

+ $p < .10$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Omnibus null hypothesis: $p < .001$.

TABLE 7

CORRELATIONS BETWEEN EMPATHY AND PROSOCIAL BEHAVIORS BY SEX OF CHILD

PROSOCIAL	EMPATHY				
	EmCon	Facial	Teacher	Self	Friend
			Girls		
Laboratory:					
Helps	−.11	.03	−.06	−.08	−.05
Shares	.23+	.12	−.17	−.15	.08
Coop	−.11	−.02	.44**	.05	−.06
Teacher:					
Helpful	−.27	−.09	.87***	.04	−.04
Coop	−.20	−.02	.61***	−.07	.11
Shares	−.17	−.23	.69***	−.26	.10
Comforts	−.13	−.04	.85***	.09	.14
Parent:					
Helpful	−.14	.13	.11	.24	−.12
Coop	.25+	−.15	.11	−.05	.26+
Comforts	.04	−.05	.14	.02	.17
Friend:					
Prosocial	.24+	.05	−.20	−.34	.52**
			Boys		
Laboratory:					
Helps	.16	.06	.35*	−.25	.33*
Shares	.27+	.01	.11	−.08	.12
Coop	.14	.30*	.23	.19	−.02
Teacher:					
Helpful	.33*	−.13	.73***	.04	.26
Coop	.21	.41*	.41*	−.35	.46*
Shares	.19	.18	.59***	−.25	.21
Comforts	.33*	.10	.69***	−.12	.31+
Parent:					
Helpful	.25+	−.03	.27+	.34+	−.14
Coop	.38*	−.13	.20	−.01	.00
Comforts	.31*	.29+	−.01	.33+	−.08
Friend:					
Prosocial	.42*	.26+	.34+	−.17	.62***

NOTE.—EmCon: mean Empathy Continuum score.
+ $p < .10$.
* $p < .05$.
** $p < .01$.
*** $p < .001$.
Omnibus null hypothesis: for girls, $p < .0001$; for boys, $p < .00001$.

sets for both genders), significant correlations occurred more frequently for boys than girls, $\chi^2(1) = 4.77$, $p < .05$.

For both genders, all within-source correlations were significant (i.e., the correlations between teacher-rated empathy and teacher-rated prosocial behaviors, and best-friend rated empathy and prosocial behavior), suggesting that teachers and friends see empathy as part of a coherent constellation of prosocial qualities.

Correlations across sources constitute much clearer evidence for the causal role of empathy in prosocial behaviors. Of the 50 such correlations in Table 7, 10 were significant for boys (omnibus $p < .001$), but only one for girls (omnibus $p > .35$). If we adopted this more rigorous across-source criterion, then, evidence would indicate that boys' empathy (but not girls') was related to their prosocial behavior. Thus, consistent with reports that girls are more empathic than boys but not more prosocial, this correlational evidence indicates that empathy is an important determinant of boys' prosocial behavior, but has less effect on the prosocial behavior of girls.

Relations across Domains: A Latent Variables Path Analysis

In order to clarify this rather complex set of findings, data were subjected to a la-

tent variable path analysis (Lohmöller, 1984). According to Falk and Miller (1992), this method is particulary appropriate when relations between theoretical constructs cannot be specified exactly, when empirical measures have some degree of unreliability, when there are many manifest and latent variables, and when sample sizes are moderate or small. Thus this type of analysis is appropriate under conditions found in the present study (and found as well as in psychological research in general). In addition, by creating composite variables based on shared variance, latent variables path analysis offers a view of emotional expressiveness, empathy, and prosocial behavior that cuts across sources and methods. This is especially useful in the present case, in which within-source correlations between empathy and prosocial behaviors are high.

Because teacher scales of prosocial behavior were strongly correlated with one another (median $r = .60$, $p < .0001$; see Strayer & Roberts, 1994), they were averaged together prior to the latent variable analysis to form a single teacher measure of prosocial behavior. The same was done for parent scales of prosocial behavior (median $r = .58$, $p < .0001$).

When domains did not reduce to a single latent variable (as in the case of emotional expressiveness), they were divided on the basis of independent principal component analyses. Analyses within the path modeling program confirmed that variables had been grouped appropriately.

Three analyses were done, one for the entire sample ($N = 73$), and one for each gender. The entire sample was used for the main analysis because we neither expected nor found functional differences between genders in the relations between age, role taking, emotional expressiveness, and empathy. In contrast, our correlational analyses indicated important gender differences in the relation between empathy and prosocial behaviors, and so for this portion of the model, path analyses were carried out separately for girls and boys. To ensure comparability, all components of the model (Fig. 1) were included in all analyses. For the relations between age, role taking, emotional expressiveness, and empathy, the analyses by gender can be considered replicating subsamples with *N*s of 38 and 35; they therefore provide us with information about the stability of the path coefficients generated in the analysis of the full sample.

In order to control Type I error, expected paths were deleted if they failed to account for at least 10% of the variance. This value corresponds to an alpha level of .01 with a sample size of 73. All paths found in the main analysis were included in the subsample analyses for purposes of comparability and interpretation. Because of the conceptual overlap between these analyses, it will be convenient to describe them jointly.

Age-related trends.—As reported earlier, age strongly predicted role taking, accounting for 68% of the variance in Selman scores. The path coefficient (.82) was stable in the two subsamples, differing by only plus or minus .02 (see Figs. 3 and 4), indicating an equivalent relation for girls and boys. In contrast, and contrary to expectation, age was only weakly correlated with latent emotional expressiveness ($r = -.04$), latent expressed anger ($r = -.19$), and emotional insight ($r = .04$).

Age was correlated with latent empathy and latent prosocial behavior (*r*s = .56 and .32, respectively), indicating that older children were both more empathic and more prosocial, consistent with reports for other samples. However, in keeping with the paths diagrammed in Figure 1, analysis of residuals indicated that age was not directly linked to either factor. In the full-sample model, including age as a direct predictor of empathy and prosocial behavior only accounted for an additional 5% of the variance in latent empathy (increasing R^2 from .60 to .65) and failed to account for any additional variance in prosocial behavior (R^2 decreased from .26 to .25). Similar patterns were seen in analyses done separately by gender. Thus age-related increases in empathy appear to be largely due to increasing ability to understand the plight of others, with greater empathy leading, as expected, to greater prosocial behavior.

Predictors of latent empathy.—As expected, role taking was strongly linked to latent empathy (primarily defined by Empathy Continuum scores and best friend ratings), accounting for approximately 23% of its variance, $F(1, 71) = 21.21$, $p < .0001$. This relation was moderately stable across sex; subsample estimates of the path coefficient (.49) differed by plus or minus .07, and R^2 varied from .12 (boys) to .35 (girls).

Confirming expectations, emotional insight directly contributed to latent empathy, accounting for 10% of the variance, $F(1, 71) = 7.89$, $p < .01$. The path coefficient (.26)

was stable across sex; R^2 varied from .08 (girls) to .15 (boys), indicating that absence of denial and recognition of one's own emotional experience contribute to greater empathy across gender.

Contrary to expectation, the indirect link from emotional insight to empathy via role taking was not found. Emotional insight was only weakly linked to role taking, r = .03, suggesting that this measure of role taking (Selman & Jaquette, 1977) is tapping a primarily cognitive mode of understanding others.

As expected, children who were more emotionally expressive on our laboratory measures were also more empathic. Latent emotional expressiveness was positively related to latent empathy, accounting for 16% of its variance, $F(1, 71) = 13.52$, $p < .001$. Stability was not high across sex; in the subsample estimates, the path coefficient (.40) varied by plus or minus .12, and R^2s from .06 (girls) to .25 (boys), suggesting that this relation may be somewhat more important for boys.

Also as expected, expression of anger was negatively related to latent empathy, accounting for 12% of its variance, $F(1, 71) = 9.68$, $p < .01$. The path coefficient (−.30) was stable across sex; R^2 varied from .12 (boys) to .19 (girls), indicating that for both girls and boys, reports of anger, especially by parents, were associated with lower levels of empathy across methods and sources.

In all, 60% of the variance in latent empathy was accounted for by role-taking scores, latent expressiveness, expression of anger, and emotional insight, $F(4, 68) = 25.50$, $p < .00001$. R^2s for girls (.68) and boys (.64) were similar. Thus, as expected, both cognitive and emotional factors made important contributions to empathy, consistent with the dual cognitive-affective nature of empathy.

Empathy as a predictor of prosocial behavior.—In the main analysis, latent empathy was an important predictor of latent prosocial behaviors (defined by best friend, teacher, laboratory, and parent measures, as shown in Fig. 2), accounting for 26% of its variance, $F(1, 71) = 24.95$, $p < .00001$. However, this combined analysis masked important gender differences.

As shown in Figure 3, the analysis for boys was similar to the main analysis but even stronger, as indicated by path coefficients and R^2s. For boys, empathy accounted for 55% of the variance, $F(1, 33) = 40.33$,

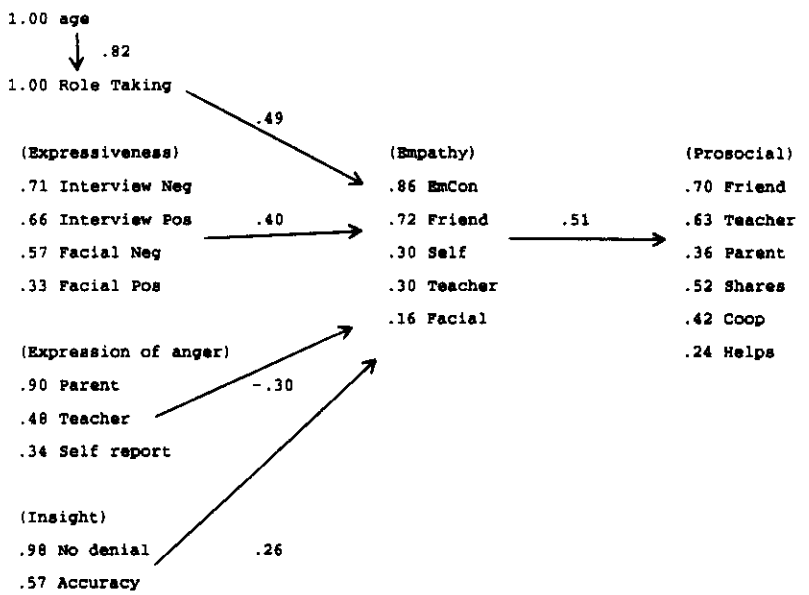

FIG. 2.—Empathy and prosocial behavior: an empirical latent variable model (N = 73). Notes: Coefficients for measured variables are their factor loadings; coefficients for arrows between latent variables are standardized path coefficients or beta weights. For the overall model, RMS Cov(e,u) = .10, indicating a moderate fit with the data. The latent variables expressiveness and expression of anger correlated at .09. EmCon = Empathy Continuum.

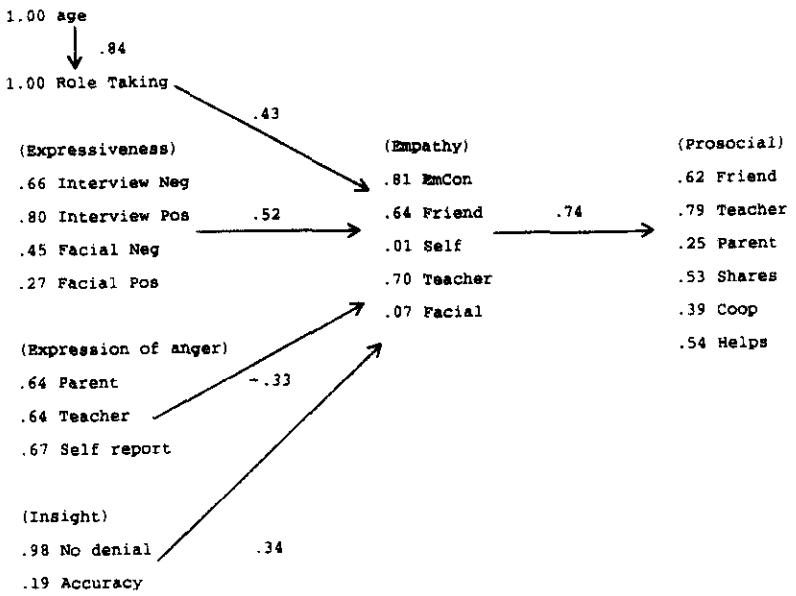

FIG. 3.—Empathy and prosocial behavior: an empirical latent variable model for boys (N = 35). Notes: Coefficients for measured variables are their factor loadings; coefficients for arrows between latent variables are standardized path coefficients or beta weights. For the overall model, RMS Cov(e,u) = .13, indicating a moderate fit with the data. The latent variables expressiveness and expression of anger correlated at .06. EmCon = Empathy Continuum.

$p < .00001$, in a latent variable defined by teacher, best friend, and laboratory measures of prosocial behavior. Thus for boys, empathy accounted for a substantial proportion of the variance in a wide range of prosocial behaviors.

In contrast, the analysis for girls (Fig. 4) indicated a more modest relation between latent empathy and prosocial behaviors with best friends, $R^2 = .13$, $F(1, 36) = 5.38$, $p < .05$. Girls' empathy was unrelated to a second latent prosocial variable reflecting cooperative behavior with peers ($r = .15$). Thus girls' empathy, in contrast to boys', was related more weakly and to a more restricted range of prosocial behaviors.

Given this pattern of gender differences, we re-examined data previously reported in Strayer and Roberts (1989), doing a latent variable path analysis for each gender. (In the original report, data were aggregated across gender.) A pattern similar to that just described emerged in this smaller sample of 7-year-olds. For boys (N = 25), latent empathy (defined by high loadings on the Bryant Inventory and parent ratings) accounted for 21% of the variance in parent-rated prosocial behavior, $F(1, 23) = 6.11$, $p < .025$, whereas for girls (N = 19), latent empathy accounted for only 2% of the variance in prosocial behavior, $F(1, 17) = .35$, $p > .55$. Thus in this independent sample also, the relation between empathy and prosocial behavior was stronger for boys than for girls.

Mean Gender Differences

Given the functional gender differences that emerged in the correlational and latent variables analyses, we next report mean differences across gender. As will be seen, mean differences in this sample are similar to those reported in other samples, suggesting that the functional differences described here may exist elsewhere.

Gender and emotional expressiveness.—Gender differences in expressiveness were only marginally significant, multivariate $F(7, 61) = 2.04$, $p < .07$, and were confined to laboratory measures. Consistent with gender role display rules (Brody, 1985; Lewis & Michalson, 1983), girls described their negative emotions while watching the stimulus videos as more intense: means were 1.3 and 1.1 for girls and boys, respectively, $F(1, 67) = 4.92$, $p < .05$. In contrast, ratings of emotional expressiveness by parents, teachers, and children failed to show gender differences, suggesting that gender

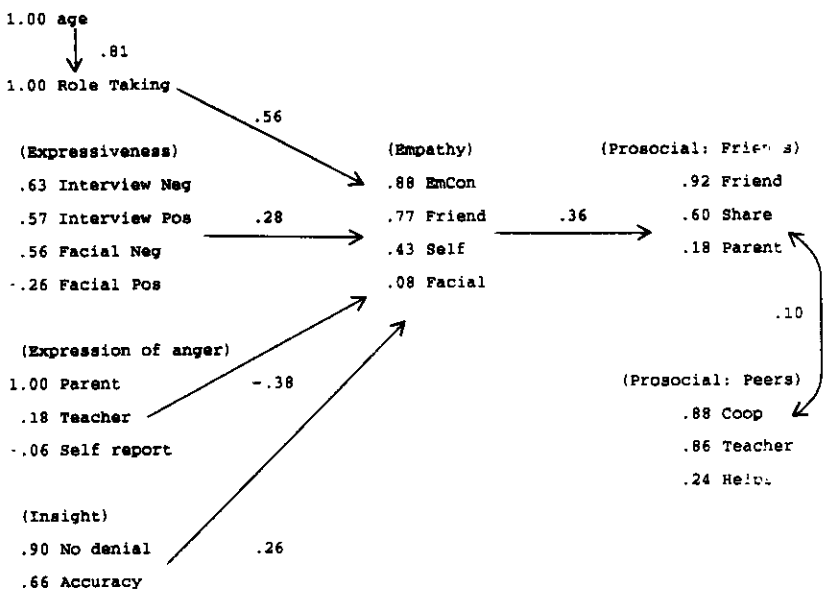

FIG. 4.—Empathy and prosocial behavior: an empirical latent variable model for girls, $N = 38$. Notes: Coefficients for measured variables are their factor loadings; coefficients for arrows between latent variables are standardized path coefficients or beta weights. For the overall model, RMS Cov(e,u) = .10, indicating a moderate fit with the data. The latent variables expressiveness and expression of anger correlated at −.29. Teacher-rated empathy deleted from latent empathy because of a substantial negative loading (−.55). EmCon = Empathy Continuum.

may form part of the implicit frame of reference used when rating boys' or girls' expressiveness.

Gender and insight.—There were consistent gender differences in emotional insight, multivariate $F(2, 66) = 4.95$, $p < .02$. Consistent with a socialization model of emotion, girls displayed higher levels of accuracy, univariate $F(1, 67) = 7.49$, $p < .01$ (means = 1.3 and .7 for girls and boys, respectively), and lower levels of denial, univariate $F(1, 67) = 5.56$, $p < .025$ (means = 1.5 and 2.3). Present data are thus consistent with views that gender socialization pressures may serve to distance boys from their emotional experiences (Brody, 1985; Lewis & Michalson, 1983).

In contrast to understanding their emotional experiences, girls and boys had equivalent scores on their cognitive understanding of others' experience. Means for role taking were 4.4 and 4.5, respectively, $t(71) = .13$, $p > .85$.

Gender and empathy.—As in other samples (Lennon & Eisenberg, 1987), girls often had higher empathy scores than boys, multivariate $F(6, 62) = 3.57$, $p < .005$. Girls had higher scores than boys on the Empathy Continuum, univariate $F(1, 67) = 4.91$, $p < .05$ (means = 6.4 and 5.1, respectively), and they described themselves as more empathic on the Bryant Empathy Questionnaire, univariate $F(1, 36) = 8.29$, $p < .01$ (means = 13.2 and 10.2, respectively). Girls were also more often facially empathic than boys, univariate $F(1, 67) = 6.57$, $p < .025$ (means = 1.7 and 1.1, respectively), a procedure that often minimizes gender differences.

Gender and prosocial behaviors.—It is notable (given gender differences in empathy) that there were no gender differences in prosocial behaviors, multivariate $F(11, 57) = .41$, $p > .90$.

In summary, although parents and teachers did not describe girls as more expressive than boys, girls reported more intense negative emotions during our laboratory procedures, and they showed significantly higher levels of emotional insight and empathy. (Based on their latent variables path model, higher levels of empathy for girls could be attributed in part to their higher scores on emotional insight.) In contrast, girls and boys showed equivalent levels of prosocial behavior. As noted earlier, this pattern of mean differences (girls

higher on empathy but not higher on prosocial behavior) has been found in other samples (Lennon & Eisenberg, 1987; Radke-Yarrow et al., 1983), and the absence of a dose-response relation implies that empathy is not a strong determinant of girls' prosocial behavior. Thus, the analysis of mean gender differences is consistent with the conclusions drawn from the path analyses and suggests that similar functional differences may be present in other samples.

Discussion

These results make several important contributions to the literature on emotional expressiveness, empathy, and prosocial behavior. Our findings present clear evidence in support of the hypothesis that empathy is an important contributor to prosocial behavior. They also provide evidence of a functional gender difference in the relation of empathy to prosocial behavior, indicating that this relation is much stronger for boys than for girls. Just as importantly, they support the contention that there are important links between emotional factors and empathy, drawing attention to the distinct positive contributions made by emotional insight, expressiveness when witnessing others in emotionally charged situations, and the negative effects of expressed anger in natural contexts in which the child is involved as a participant.

Empathy and Emotional Expressiveness

As expected, given the dual cognitive-emotional nature of empathy, the present study found that empathy was predicted by both a cognitive measure (role taking) and by emotional factors. It thus establishes links between emotional expressiveness and empathy, suggesting that children who experience emotions of sadness, happiness, and fear more keenly, who recognize and accept these feelings, but who also manage to moderate their own anger in social interactions, tend to be more empathic.

Factor loadings for laboratory measures of expressiveness indicate that greater empathy is associated with greater ability to experience and express positive emotions as well as negative emotions. Empathy as a motivator of prosocial behavior may indeed require both abilities. The ability to share positive affect facilitates positive, cooperative social interactions (Sroufe, Schork, Motti, Lawroski, & LaFreniere, 1984), and the ability to respond with concern motivates sharing, helping, and comforting. Thus current results support the contention that positive and negative affect are both important components of empathy.

Our results also indicate the need to distinguish types of negative affect. As shown in Figure 2, expressiveness during our laboratory procedures was unrelated to ratings of expression of anger in real-life settings: measures fell into two distinct, essentially orthogonal ($r = -.09$) factors that had different functional relations with empathy. Measures that assessed intensity of happiness, sadness, and fear were positively associated with empathy, and those that assessed anger were negatively associated with empathy. (Whereas parent, teacher, and self report ratings focused on the expression of anger, our stimulus videos [Table 1] seldom elicited anger from children: less than 10% of all verbal responses and 5% of all facial expressions; see Strayer & Roberts, in press). Thus current results support the contention that expression of anger should be considered separately from expressions of sadness and fear.

We believe that current findings may have implications for related areas of research. For example, it is plausible to think that links found between parents' responses to children's emotional distress and children's prosocial behaviors (Roberts, 1995; Roberts & Strayer, 1987) may be mediated in part by the consequences such practices have for their empathy (Zahn-Waxler et al., 1979). The important role of emotional expression in the current sample suggests that research on the socialization of empathy should include measures assessing the socialization of emotions as well.

Gender and Empathy-Prosocial Relations

Latent variable path analyses provided clear evidence for the importance of empathy for a broad range of boys' prosocial behaviors and for an important functional difference between genders in the relation of empathy and prosocial behavior. We believe this is unusually clear evidence because latent variables for empathy and prosocial behavior aggregated across methods and sources. In doing so, they leave behind error, method, and source variance unique to each of the manifest (or measured) variables, and therefore provide unusually good measures of the underlying constructs.

For girls, the relation between empathy and prosocial behaviors was modest in size and restricted to prosocial behaviors with friends, as assessed by best friend ratings and a laboratory task involving sharing with best friends. That empathy was less impor-

tant for girls' prosocial behavior was also apparent in raw correlations between empathy and prosocial behaviors (Table 7) and in the analysis of mean differences, in which girls were more empathic than boys (multivariate $p < .01$), but not more prosocial (multivariate $p > .90$). Finally, this same functional difference was found in a reanalysis of previously published data on a separate sample of 7-year-olds (Strayer & Roberts, 1989).

We do not know the reasons for functional variations in the relations of empathy and prosocial behavior, but differences in gender socialization are a plausible candidate. One possibility is that social norms require girls to be prosocial whether they feel empathic or not. This appears to be the case for nurturant, care-giving behavior, an area in which girls are often described as more prosocial than boys, with differences usually ascribed to gender-role socialization pressures (Radke-Yarrow et al., 1983; Wylie, 1964; Zahn-Waxler, Cole, & Barrett, 1991). To the extent that such socialization pressures are important, the role of empathy as a motivator of prosocial behavior would be diminished.

Boys, in contrast, appear to be under less pressure to behave prosocially (Radke-Yarrow et al., 1983; Wylie, 1964). Boys are permitted to express more anger than girls (Brody, 1985; Lewis & Michalson, 1983) and they do so more often (Strayer & Roberts, in press). Aggression and mock-fighting are more frequent and more tolerated in boys (Parke & Slaby, 1983). There are sociological reports that in adolescence boys may even be expected to engage in irresponsible behavior that is not permitted in girls (e.g., Wylie, 1964). Under these less constrained circumstances, the role of empathy as a motivator of cooperative, helpful, responsible behavior may be more apparent.

Whatever their exact nature, one would expect differential socialization pressures to give rise to differential functional relations between variables. Such differential processes may help to explain the sometimes inconsistent links between empathy and prosocial behaviors reported by other investigators (e.g., Barnett, 1987). Our results suggest that analysis by gender is important in this area of research.

Developmental Trends

In our path analysis, age was strongly linked to increasing cognitive ability to understand others, but not to emotional expressiveness or to the recognition and acceptance of one's own emotional experiences. This may be due in part to the substantial gains in understanding emotions that occur in toddlerhood and preschool (Denham et al., 1994; Saarni, 1990). However, the weak associations between age and our laboratory measures of expressiveness and emotional insight may also be partly artifactual. The stimulus materials were chosen to be understandable by even the youngest children studied here (Strayer, 1993), and, in the case of our laboratory measures, latent expressiveness aggregated across variables for which we expected differing age relations.

In contrast, correlational evidence indicated that modest trends of the type expected did occur. Older children experienced more intense negative emotions while viewing our stimulus materials (as indicated by their facial expressions), but described their feelings as less intense. Consistent with this, teacher and parent ratings described older children as less intense in their expressions of anger. Thus our results are consistent with socialization models in which school-age children face increasing pressure to regulate or moderate their expressions of negative affect, particularly anger. It is certainly possible that better measures of the expression of anger would provide clearer evidence of increased regulation over this age range.

As expected, age was not related to prosocial behaviors independently of empathy. However, like our emotionally laden stimuli, our laboratory measures of prosocial behavior were chosen to be age appropriate across our sample, that is, comprehensible by the youngest and reasonably engaging for the oldest. In addition, it is plausible to assume that ratings of prosocial behaviors by parents, best friends, and teachers incorporated age into their frames of reference, that is, that children were tacitly rated in comparison to similar children on tasks that were age appropriate to them. Thus current measures were not designed to elicit differences in prosocial behavior due to increasing motor or cognitive skills related to particular prosocial behaviors as such. Rather, our findings suggest that once an ability enters a child's prosocial behavioral repertoire, empathy will have a bearing on whether it is performed—especially if the child is male.

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