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Perspective-Taking and Altruism

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We review the evidence regarding the development of altruism and suggest that various forms of "perspective-taking" (perceptual, social, empathic, moral) might be the mediators of this development. Previous reviews in this area have generally concluded that the evidence relating perspective-taking and prosocial behavior is equivocal. Using a technique that allows the assignment of an exact probability to the results of a series of studies, we conclude that there are reliable relations between altruism and perceptual, social, and moral perspective-taking. The results concerning empathy and altruism are nonsignificant overall, but we suggest that a reliable association between empathy and altruism develops over time and is found in adults. The significant effects that were found cannot be attributed to artifactual effects of either age or other measures of perspective-taking. Nor, however, can these relations completely account for age-related increases in altruism. We conclude that the evidence for a causal influence of perspective-taking on altruism is strongest for studies of empathy and altruism among adults, but even there it is not totally conclusive.

The presumed relation between altruism and "perspective-taking" has been much discussed recently (Kurdek, 1978b; Moore & Underwood, 1981; Mussen & Eisenberg-Berg, 1977; Staub, 1978, 1979), but the conclusions that have been drawn have been equivocal. We contend that the relation of altruism to perspective-taking, which has been proposed as a primary mediator of the development of altruism, has been obscured because of improper interpretation of results from multiple studies.

Using alternative analytic procedures for combining data across studies, we have examined the existing literature relating perspective-taking and altruism and computed probabilities for the overall pattern of results. By using these procedures we are also able to gain a clearer idea of the relations among the various types of perspective-taking. Our eventual goal is a better understanding of the development of other-oriented behavior, which is one of the most theoretically interesting and societally important types of human interaction.

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A problem confronting any researcher investigating altruism is that of definition. Acts that may be considered altruistic include a wide range of behavior—from saving a person who is drowning to helping someone carry packages, from donating blood to donating a penny, from the heroic to the merely thoughtful. The defining characteristic of altruistic action is that the acts do not appear to be motivated by self-gain.

We follow Staub's (1978) distinction between prosocial behavior and altruism by considering as altruism only behavior that appears to have been intended solely to benefit others and not to gain material or social rewards. This means, for example, that we do not review the literature on cooperativeness insofar as such behavior usually involves obvious gains for all parties.

Age-Trends in Altruistic Behavior

A prerequisite to discussing the mechanisms by which altruistic behavior might develop is to establish that it in fact does develop—that we find increasing amounts of altruism as children get older. Detailed reviews of the literature on age-trends in altruistic behavior have been reported elsewhere (e.g., Rushton, 1980; Underwood & Moore, in press), and the picture that

emerges is generally one of a positive linear trend. In general, older children are more likely to engage in a given act of helpfulness or sharing than are younger children, and they show a greater variety of other-oriented behavior. Although there are reports of a slight decrease in generosity during the early elementary-school years (Underwood, Froming, & Moore, 1977; Coke & Bradshaw, Note 1; Froming & Underwood, Note 2), and evidence that children's bystander intervention decreases quite dramatically during the late elementary school years (Staub, 1970), these forms of altruistic behavior have shown increases to their highest levels subsequent to the reported decreases (cf. Staub, 1971). Thus, the overall picture remains one of altruism increasing with age.

Perspective-Taking

The developmental mechanism that is used most frequently to explain age-related increases in altruistic behavior is the increasing ability of the child to take the point of view of the other person. The ability to take the viewpoint of someone in distress is seen as necessary to acting to alleviate that distress. The development of this ability is seen as relying on both basic cognitive developmental processes (movement from cognitive egocentrism) and the acquisition of specific reasoning abilities relating to social and ethical issues. A recent review (Ford, 1979) defined egocentrism as "an embeddedness in one's own point of view" (p. 1170).

Conceptually and methodologically, the referents for perspective-taking can be organized into three distinct categories—perceptual, social-cognitive, and affective—although a variety of tasks have been used to assess children's perspective-taking ability (Kurdek, 1978b). The child can be asked (a) to predict the literal visual perspective of another, (b) to identify another person's thoughts, intentions, motives, or social behavior, or (c) to infer another's feelings, reactions, or concerns. Although we shall use these distinctions, it should be clear that the constructs are interrelated and surely tap overlapping processes. Kurdek (1978b) stated, on reviewing the literature relating different measures of perspective-taking, that "perspective-taking is best conceived of as a multi-dimensional social-cognitive skill" (p. 6).

There is some presumption (Flavell, 1963) that perceptual perspective-taking is a precursor to the development of the capacity for social and affective perspective-taking. Although the social and affective domains bear the most obvious conceptual relation to prosocial behavior, all three domains are considered because of their interrelatedness. It is beyond the scope of this article to do an extensive review of the construct of role-taking; the aforementioned reviews by Ford (1979) and by Kurdek (1978b) do an excellent job of discussing the various aspects and components of the construct.

We examine separately the relations between moral judgment and altruism and between empathy and altruism. It seems that these are special cases of perspective-taking, built on but involving more than perceptual, social, and affective perspective-taking.

Moral judgment is presumed to be related to social perspective-taking in that it involves taking into account the viewpoint of others as one arrives at moral decisions (Mussen & Eisenberg-Berg, 1977). As the child becomes progressively better able to recognize the consequences of his or her actions for others (social perspective-taking), the child's judgments about those actions are assumed to change (Kohlberg, 1971). So, clearly, the development of moral judgment is based on the development of perspective-taking ability; furthermore, these are not identical constructs. Ability to take the role of another would seem to be a necessary but not sufficient condition for higher order moral judgments. It is not sufficient, in that people may be well aware of the consequences of their actions on others but may not base their judgments on that information. There seems to be good reason to examine moral judgment as a separate category of perspective-taking.

Empathy holds a similar status in that it involves social and affective role-taking—being able to predict, describe, or infer the reactions of another—as necessary but not sufficient conditions. For by empathy we mean not only knowing the reactions of another but also vicariously experiencing those

reactions. The distinction has to do with some demonstration of shared affect in addition to the ability to recognize the affective state of another.

Supporting our treatment of moral judgment and empathy as special instances of perspective-taking is the fact that they have been treated as such in the literature; many studies have focused on them without including other measures of perspective-taking. Therefore, there is a value in making an estimation of the overall relation between altruism and these conceptual categories. Moreover, reviews of the literature (e.g., Kurdek, 1978a) have found significant but not large relations between these dimensions and other measures of perspective-taking.

Hoffman (1975, 1979) attempted a synthesis of affective, perceptual, and social aspects of role-taking in relation to altruistic behavior. In Hoffman's model the development of empathic feelings is the outgrowth of inborn or early acquired "empathic distress" in reaction to the distress of another. The infant initially is unable to distinguish between another's distress and his or her own. As the child becomes more cognitively complex, achieving object permanence and becoming better able to distinguish between self and other, "the affective portion of the child's global empathic distress . . . is extended to the separate self and other that emerge" (1975, p. 615). Later, the child's increasing cognitive role-taking ability leads to awareness that others have internal emotional states similar to those experienced by the observer, and this awareness leads to a desire to alleviate the other's distress. Finally, Hoffman contends that with advancing role-taking ability, the child becomes able to understand the plight of a people or a class of people, thus providing the requisites for a generalized empathic distress.

It is easy to see why these measures of perspective-taking (except perhaps for the perceptual domain) should be related to altruistic action. An awareness of another's thoughts and motives (social perspective-taking) should heighten one's perception of the other's needs, which may be a necessary precursor to action designed to alleviate those needs. Similarly, an awareness of another's unpleasant affective state (affective perspective-taking), and especially an actual sharing of that state (empathic distress), may act as a motive to relieve that other person's distress. Krebs and Russell (in press) suggest two ways in which awareness derived through perspective-taking might lead to altruism. First, such awareness "may produce a state of cognitive disequilibrium, which may be resolved by helping another" (p. 20). This disequilibrium might be produced through disturbance of a cherished view that the world is basically fair and just (cf. Lerner, 1977). Second, "a sense of moral responsibility" (p. 20) may be stimulated by awareness of another's needs. This second proposed mechanism makes it clear why moral reasoning should be related to altruism. The person with more advanced moral reasoning should be especially likely to recognize personal moral responsibility for tending to the needs of others and, thus, to have a stronger motivation for altruistic action.

Despite ample conceptual basis for expecting a relation between role-taking and prosocial behavior, most authors of reviews of this area (Krebs & Russell, in press; Kurdek, 1978b; Mussen & Eisenberg-Berg, 1977) have contended that the results on this issue are inconclusive. We believe these reviews may have arrived at erroneous conclusions. A central goal of this article is to reexamine this question through the use of different analytic procedures.

There are several reasons for this inconclusiveness. One might be that the data truly are ambiguous, but there are other possible reasons as well. The data are often reported in ways that are not directly comparable across studies. For example, some studies report the usual Pearson product-moment correlations between altruism and potential developmental mechanisms; others report only partial correlations controlling for age. Both are legitimate ways of reporting the data (we think that both should always be reported), but they are clearly not directly comparable. A study that finds a nonsignificant partial correlation has not necessarily failed to replicate a study that found a significant zero-order correlation. Failure to distinguish between the different ways in which relations are reported may very well

lead to a different conclusion from that reached by examining only directly comparable reports.

Another possible reason for inconsistency has to do with the traditional literature review. Reviewers may note several studies in which significant results were obtained, contrast them with several other studies that failed to find significance, and conclude that the data are impossibly contradictory. In fact, there is no reason to believe that every test for a relation, even a relation that truly exists in the population, will lead to significant findings. The entire concept of statistical significance is based on the existence of sampling variation, and this variation should be expected to result in occasional nonsignificant findings. Even two studies that find correlations of precisely the same magnitude may reach different conclusions about statistical significance owing to differences in sample sizes. Thus, the existence of occasional nonsignificant findings should not dismay the reviewer; such a pattern merely accentuates the need for some method of combining the results of different studies to arrive at a sound conclusion.

Glass (1976) used the term *meta-analysis* to refer to any statistical procedure for combining the results of independent studies. Fortunately, there are many such procedures, reviewed excellently by Rosenthal (1978). These procedures consist of different ways of arriving at an overall probability level to measure the confidence with which a null hypothesis can be rejected following several independent tests of the hypothesis. Cooper and Rosenthal (1980) demonstrated that the conclusions reached by the traditional procedures of literature review may differ from the conclusions indicated by meta-analytic statistical procedures, presumably because of the imprecision and lack of standardization that are characteristic of traditional literature reviews. This would seem to argue strongly for the use of meta-analytic procedures, and we use such procedures in our literature review.

Perhaps the simplest meta-analytic procedure, and one that has been used in a review of gender differences in conformity (Cooper, 1979), is the Stouffer method (Mosteller & Bush, 1954; Rosenthal, 1978; Stouffer, Suchman, DeVinney, Star, & Williams, 1949). This method takes advantage of the fact that the sum of independent standard normal deviates (Z scores) is itself a normal deviate, with variance equal to the sum of the variances of the standard normal deviates. Because each standard normal deviate has a variance of one, however, the sum of the variances is simply the number of standard normal deviates being summed. Thus, a new standard normal deviate can be constructed by summing standard normal deviates and dividing this sum by the square root of the number of standard normal deviates being added (which is the standard deviation of the sum). That is,

$$Z_{\text{ma}} = \frac{Z_1 + Z_2 + \cdots + Z_n}{\sqrt{n}},$$

where Z_{ma} is the standard normal deviate for the meta-analysis; $Z_1, Z_2, \ldots, Z_n$ are the standard normal deviates from the independent studies; and n is simply the number of independent studies whose results are being combined. The level of significance of Z_{ma} can then be obtained from a table of standard normal probabilities.

All that is required to apply the Stouffer method is a probability for each study insofar as the probability can be converted directly to a standard normal deviate. Where the data are reported in the form of correlation coefficients, as is typically the case for studies of altruism and perspective-taking, it is quite simple to convert the correlations to standard normal deviates using the r-to-Z transformation, and this is the procedure we follow in our review. It is frequently impossible to summarize the findings of a study by a single correlation coefficient, either because of the use of multiple measures or because the data are reported separately for different subsamples (e.g., men separately from women). When this is the case, we compute standard normal deviates for each correlation coefficient and use their mean as the standard normal deviate for that study.

In addition to reaching conclusions about whether a population correlation can be assumed to be different from zero, a review

should also estimate the true magnitude of the relationship. Because most of the data we review are reported in correlation coefficients, we report a mean correlation coefficient as an estimate of magnitude of relationship. When the data from a study are not reported by a single correlation, we use the mean of all correlations reported as the correlation for that study, to be averaged with the correlations from the other studies.

Of course, published studies may not be a completely safe basis for inferences about a possible relation. The problem, called the "file-drawer problem" by Rosenthal (1979), is that studies that fail to produce significant results may never be published, so that published studies may represent only those studies with the largest estimates of population parameters. Selecting only the largest estimates for publication results in an overestimation of the population parameters. In the extreme case, where there is no relationship in the population, it is conceivable that we could conclude that a relationship existed because of publication of a chance finding followed by editorial reluctance to publish results that either failed to replicate this initial report (i.e., were nonsignificant) or actually contradicted it (i.e., were significant in the opposite direction).

There is no easy solution to this problem, although simply recognizing its existence may be helpful. One step that can be taken to estimate the possible magnitude of the file-drawer problem with regard to significance of results is to calculate a "fail-safe number" (Cooper, 1979), which is the number of studies with null results that would be required to elevate an overall probability above the .05 (or any other desired) level. For the Stouffer method,

$$N_{\mathrm{fs}} = \left(\frac{Z_1 + Z_2 + \cdots + Z_n}{1.645}\right)^2 - N$$

gives the number N_{fs} of additional studies with a total Z score of zero, which would be required to elevate the probability for the meta-analysis above .05. We also report this fail-safe number as we review the available literature.

To summarize, then, we report the standard normal deviate (and its associated probability) for a meta-analysis by the Stouffer method, the mean correlation coefficient, and the fail-safe number for each subarea to be reviewed. Although we include doctoral dissertations in our tabular presentations of studies, we do not include them in our calculations of the statistics listed above, due to the limited availability of information about them. The inclusion of data from doctoral dissertations would not change the conclusions reached by the meta-analysis in any of the areas reviewed.

Although the partial correlations often reported in this area are not directly comparable to zero-order correlations, they may be very useful in assessing the possibility that the proposed mediating variables have a causal influence on, and account for the age-related increase in, altruism. If partial correlations between perspective-taking and altruism controlling for age are reliably greater than zero, then it is impossible that the zero-order relationship between perspective-taking and altruism is just an artifact of age-related increases in both variables. Such a finding would not establish the direction of a causal relationship or even that a causal relationship exists insofar as the two variables could still be artifactually related because of some factor other than age. It would merely rule out one possible artifactual basis for the relationship. We consider this question sufficiently important that we perform a meta-analysis on these partial correlations also.

Nevertheless, these partials controlling for age are not the only partial correlations of interest. Partial correlations between age and altruism controlling for perspective-taking may also be informative. If such partial correlations are not reliably different from zero, then perspective-taking could conceivably (although not necessarily) be the sole factor involved in producing age-related increases in altruism. If these partial correlations are reliably greater than zero, on the other hand, then perspective-taking could not possibly be the sole factor responsible for altruism increasing with increasing age; some other factor, either instead of or in addition to perspective-taking, would have

to be producing such increases. In the hope of clarifying this issue, we perform a meta-analysis on partial correlations between age and altruism controlling for perspective-taking.

Despite the fact that most studies do not provide all of this information, it is still possible to perform reasonable meta-analyses of the sort described above. This is due to the fact that information provided in the article usually allows the computation of any zero-order or partial correlations that are not reported directly. We follow the procedure of computing needed correlations from information in the article whenever possible. We should also note that some studies use only one age group. This accomplishes methodologically what partial correlations do statistically; that is, the zero-order correlations in such studies are really analogous to partial correlations controlling for age. Nevertheless, we consider such correlations as zero-order rather than partial correlations because this is a more conservative procedure. The only exception to this would be when a study includes subjects of different ages but reports correlations only within each age group (e.g., Iannotti, Note 3). In this case, we consider each within-age correlation to be an independent estimate of the partial correlation controlling for age, and we use the mean of the within-age correlations as the partial correlation controlling for age. Computation of the zero-order correlation, with age free to vary, will then proceed by substituting this mean value in the formula for computing a partial correlation.

The studies on which we focus in the meta-analysis are the correlational studies, by far the most common format. Nevertheless, we supplement our discussion where possible with consideration of studies that have experimentally manipulated the predictor variables. These studies are not included in the meta-analysis because of their lack of direct comparability to the correlational studies, including the difficulty presented by the interactive nature of the usual results of such studies.

Review of Empirical Studies

In reviewing the literature we continue to make the same distinctions among component areas of perspective-taking as we have made previously. Thus, we consider the more purely cognitive measures of perceptual and social perspective-taking and moral reasoning first and only then take up the cognitive/affective mixture involved in affective perspective-taking and empathy.

Perceptual Perspective-Taking

Underwood, Froming, and Guarijuata (Note 4) investigated the relationship between perspective-taking and altruism using Piaget's three-mountain task as their measure of perspective-taking. Their elementary school subjects were given 25 pennies for helping the experimenters and had a subsequent opportunity to donate anonymously some of their pennies to peers who would be unable to earn pennies. There was a significant correlation between perspective-taking and generosity as well as significant correlations between grade level and both perspective-taking and generosity. The partial correlation of perspective-taking and generosity with grade partialed out was nonsignificant as was the partial correlation between grade level and generosity with perspective-taking partialed out.

Most of the results of the other studies of perceptual perspective-taking and altruism are consistent with this pattern of findings (see Table 1). Rushton and Wiener (1975), for example, found significant correlations between a measure of perceptual perspective-taking and generosity, both toward a friend and toward a charity. When age and IQ were partialed out, the correlations were no longer significant, whereas the correlations between age and generosity with the effect of perspective-taking partialed out were still significant.

Buckley, Siegel, and Ness (1979) related a measure of visual perspective-taking to a composite measure of altruism in children from 3 to 8 years old. The composite measure of altruism was apparently formed by coding children as altruistic if they performed either of two altruistic actions toward another child (helping to clean up a mess or sharing a cookie) and as nonaltruistic if they performed neither. The correlation between perspective-taking and altruism was

Table 1
Studies of Perceptual Perspective-Taking and Altruism

Study	Age of subjects	Measure of altruism	Zero-order correlations			Partial correlations	
			Altruism with perspective-taking	Age with perspective-taking	Age with altruism	Altruism with perspective-taking controlling for age	Altruism with age controlling for perspective-taking
Buckley, Siegel, & Ness (1979)[a]	3–8 yrs.	Composite: helping peer or sharing cookie with peer	$r = .43$, $z = 2.84$	$r = .65$	*ns*	$r = .46$, $z = 3.02$	NR
Leckie (1975)[b]	3–8 yrs.	Retrieving dropped papers; donating to fund	*ns*				
Rushton & Wiener (1975)[c]	7 & 11 yrs.	Generosity to friend (f) Generosity to charity (c)	$r_f = .50$, $z = 4.14$ $r_c = .43$, $z = 3.47$	$r = .65$	$r_f = .68$ $r_c = .47$	$r_f = .10$, $z = .75$ $r_c = .19$, $z = 1.44$	$r_f = .54$, $z = 4.52$ $r_c = .28$, $z = 2.16$
Underwood, Froming, & Guarijuata (Note 4)	1st–5th grades	Generosity to peers	$r = .25$, $z = 2.63$	$r = .50$	$r = .25$	$r = .15$, $z = 1.58$	$r = .15$, $z = 1.58$
Zahn-Waxler, Radke-Yarrow, & Brady-Smith (1977)[d]	3–6 yrs.	Helping (h), sharing with (s), and comforting (c) an adult	*ns*	NR	*ns*, except $r_c = -.26$	NR	NR

Note. NR = not reported.
[a] A nonsignificant correlation between age and altruism was inferred from the nonsignificant chi-square.
[b] Information obtained from Kurdek (1978b). Dissertations were not included in our calculations due to the difficulties involved in readers obtaining detailed information about methods and results.
[c] We are grateful to J. Phillipe Rushton for providing the matrix of zero-order correlations.
[d] All nonsignificant and unreported correlations were assumed to be zero for our calculations.

significant, but there was no significant relationship between age and altruism. As a consequence, the partial correlation between altruism and perspective-taking—controlling for age—was also significant.

Although such significant findings have been obtained frequently, there has been at least one failure to replicate. Zahn-Waxler, Radke-Yarrow, and Brady-Smith (1977) failed to find a significant relation between a composite perceptual perspective-taking score and measures of helpfulness, generosity, and comforting.

Having reviewed these four studies (summarized in Table 1), what conclusions can we draw? We would be justified in concluding that there is a positive relation between perceptual perspective-taking and altruism in the population ($Z_{ma} = 4.63$, $p < .000005$, by the Stouffer method). The mean correlation coefficient was .28, and the fail-safe number was 28. This conclusion must be limited to the childhood years, however, because none of these studies used subjects beyond elementary school age. The conclusion is further limited to helpfulness, comforting, and generosity insofar as these are the only measures of altruism that have produced significant results. It may even be limited to generosity alone because Buckley et al. (1979) used helpfulness only in a composite measure, Zahn-Waxler et al. (1977) found no significant relationship to separate measures of helpfulness and comforting, and the other studies did not use either measure. There have been no studies to examine a possible relation between perceptual perspective-taking and bystander intervention. There are clear contributions to be made in this area by exploring the limits of this relationship in terms of both the applicable age range and the types of altruistic behavior that may exhibit the relation.

Conclusions about the possibility of causal relations among age, altruism, and perceptual perspective-taking are not possible given the pattern of partial correlations. Applying methods for obtaining overall probabilities from a series of studies leads to the conclusion that there are reliable positive partial correlations between altruism and perspective-taking controlling for age ($Z_{ma} = 2.84$, $p = .005$, by the Stouffer method) and between altruism and age controlling for perspective-taking ($Z_{ma} = 2.46$, $p = .01$). The mean partial correlation between altruism and perspective-taking was .19, with a fail-safe number of 8, whereas the mean partial correlation between altruism and age was .14, with a fail-safe number of 5. This would indicate that the relationship between perceptual perspective-taking and altruism is not merely an artifact of age-related changes in both variables but that the magnitude of this relationship is not sufficient by itself to account for all of the age-related increases in altruism. Thus, the one firm conclusion that we can justify is that there must be some other causal factor, either instead of or in addition to perceptual perspective-taking, that is at least partially responsible for developmental changes in altruism.

Social Perspective-Taking

We now turn to research examining the relation of social perspective-taking to altruism. There are many possible measures of social perspective-taking, from the ability to predict and understand other people's thoughts and actions to the ability to communicate with another person in a nonegocentric fashion. We consider a perspective-taking measure to fit into the social perspective-taking category if it involves any implicit or explicit social exchange, except for the affective perspective-taking measures that are considered later. An early study (Rubin & Schneider, 1973) related a measure of communicative egocentrism to two measures of altruism—sharing candy with less fortunate peers and helping a younger child to complete a task—among 7-year-olds. There were significant correlations between perspective-taking and both sharing and helpfulness. The use of children of a single age makes these zero-order correlations analogous to partial correlations controlling for age. In addition, however, Rubin and Schneider obtained a measure of mental age, and the partialing out of this score produced significant partial correlations between perspective-taking and both sharing and helpfulness.

Krebs and Sturrup (Note 5) had observers rate elementary school children's behavior

in the classroom and on the playground over a period of several weeks. They derived a composite measure of altruism from these ratings and obtained teacher ratings of the children's altruism as well. Both of these measures were significantly related to two measures of social perspective-taking.

Iannotti (Note 6) described a study of elementary school children in which there was a significant relation between generosity toward a needy peer and a composite social perspective-taking measure taken at two different testing sessions. Even after the influence of age was partialed out, these relations remained significant, whereas controlling statistically for the influence of either perspective-taking score reduced to nonsignificance the correlation between age and generosity.

Iannotti (Note 3) also reported follow-up data on some of the same children in his earlier study (Note 6) 1 year later. The data were reported in a slightly different form in the follow-up, with correlations between social perspective-taking and altruism computed only within the two age groups (7 years and 10 years), which makes them analogous to partial correlations controlling for age. This correlation was nearly significant for the 7-year-olds but virtually zero for the 10-year-olds. Using the procedures we described earlier to generate an estimated zero-order correlation from such data, we found a significant relationship between perspective-taking and altruism when age was left uncontrolled, and the partial correlation between age and altruism controlling for perspective-taking was near significance.

Olejnik (Note 7) reported significant partial correlations, controlling for age, between a composite social perspective-taking measure and generosity both toward a friend and toward a stranger. It is possible to compute the partial correlation, controlling for perspective-taking, between age and generosity toward a friend from the information provided, but the partial is not significant. The study by Rushton and Wiener (1975), which was discussed earlier, included two measures of social perspective-taking. Although all four correlations between generosity and perspective-taking measures were positive, only one was statistically significant. None of the partial correlations between perspective-taking and generosity, controlling for age, were significant, but all four partial correlations between age and generosity measures, controlling for perspective-taking, were significantly positive. In addition, several researchers have reported studies that found no significant zero-order correlations between measures of altruism and perspective-taking (Barrett & Yarrow, 1977; Emler & Rushton, 1974; Kurdek, 1978a; Zahn-Waxler et al., 1977).

Iannotti's (Note 6) study involved not only measures of social perspective-taking but also experimental procedures to train 6- and 9-year-old children in perspective-taking. The children were read a series of stories, and children in a control condition were asked questions about the stories' content. Children in a perspective-taking condition, however, were asked to imagine themselves in the position of a particular character in the story and were asked questions about that character's reactions. Children in a perspective-switching condition were asked to imagine the point of view of more than one character in the story (on consecutive readings, not simultaneously) and were asked questions about the different characters' reactions. The perspective-taking training conditions influenced both social perspective-taking and altruism measures. Both the perspective-taking and perspective-switching training conditions produced higher social perspective-taking scores than did the control condition, but there was no significant difference between the two training conditions. For the 6-year-olds, there was significantly more sharing in the perspective-switching than in the perspective-taking condition and significantly more sharing in the perspective-taking condition than in the control condition. There was no significant effect of the training condition on sharing among the 9-year-olds.

These findings are consistent with the idea that a relationship between perspective-taking and altruism develops only after the children are old enough to have achieved a minimal facility at perspective-taking. The training conditions increased perspective-taking scores at both ages, but these conditions increased sharing only among the

younger children, who were perhaps still sufficiently poor at perspective-taking that an increase in it could be expected to produce an increase in sharing. The older children, perhaps sufficiently capable at perspective-taking to have derived already its beneficial effect on altruism, increased still further at perspective-taking as a result of the training but showed no concomitant increase in sharing. One possible problem for this explanation of the findings is that if training in perspective-taking leads to increased perspective-taking ability, which leads to increased sharing for the younger children, we should expect to find a positive correlation between perspective-taking and sharing in this age group. Iannotti (Note 3) reported this correlation to be nonsignificant, but it was computed with the three conditions combined. It could be that such a correlation existed for the younger children in the experimental conditions but that the absence of a relation in the control condition diluted this positive relation to such an extent that it could not be detected. Alternatively, it could be that perspective-taking is not causally related to altruism, although this explanation would make it difficult to understand why the training conditions would produce increased sharing in the younger children. Although these results must be considered inconclusive, they do suggest obvious possibilities for causal influence that should be investigated further.

In evaluating the overall significance of the pattern of results across these 10 studies (see Table 2), we find that there is a reliable positive relation between social perspective-taking and altruism ($Z = 7.64$, $p < .000000001$, by the Stouffer method). The mean correlation was .28, and the fail-safe number was 206. Although most of the studies that produced significant results have used generosity as the measure of altruism, there have also been significant results using a composite derived from naturalistic observation (Krebs & Sturrup, Note 5), teacher ratings (Krebs & Sturrup, Note 5), and a measure of helpfulness (Rubin & Schneider, 1973). Thus, it may be that our conclusion regarding altruism and social perspective-taking is somewhat more general than was the case for perceptual perspective-taking, although none of the studies used a measure of bystander intervention in a potential emergency. As with perceptual perspective-taking, there are no studies with adolescent or adult subjects, so we must limit our conclusions to children. It may be that these conclusions do not even apply to extremely young children insofar as the study with the youngest subjects (Zahn-Waxler et al., 1977) was among those that failed to obtain significant results. This would also seem to be consistent with the results obtained by Iannotti (1978, Note 6) because the correlation between perspective-taking and generosity was not significant for his youngest subjects. Again, a more systematic exploration of the limiting age ranges for the relation would represent a major contribution to this body of research. Examination of a possible relation in adolescence and adulthood is probably more feasible for social perspective-taking, for which there may be substantial variation even among adults, than for perceptual perspective-taking.

The conclusion for the partial correlations is about the same as for perceptual perspective-taking, namely, there seems to be a reliable positive partial correlation between social perspective-taking and altruism, controlling for age ($Z_{ma} = 5.97$, $p < .0000005$), and between age and altruism, controlling for perspective-taking ($Z = 3.31$, $p = .0009$). The mean partial correlation between perspective-taking and altruism was .19, and the fail-safe number was 69. The mean partial correlation between age and altruism was .15, and the fail-safe number was 22. The fact that the fail-safe numbers are much higher for social perspective-taking than for perceptual perspective-taking, despite the striking similarity in average correlation coefficients, is due to there being more studies in the social perspective-taking literature that require a larger number of null results to overcome their influence. These conclusions leave the causal picture clouded, but there is a suggestion that social perspective-taking may be a causal factor in children's altruism. This suggestion comes from Iannotti's (1978, Note 6) finding that training in social perspective-taking produces an increase in generosity among younger children. The significant partial correlations be-

tween age and altruism, however, mean that other causal factors would also have to be involved to account for all of the developmental increases in altruism.

Moral Reasoning

The other major cognitive-developmental variable that has been suspected to be responsible for age-related increases in altruism is moral reasoning. Most of the measures of moral reasoning that have been used in this area of research have evolved from the conceptual and empirical work of Jean Piaget (1932) or of Lawrence Kohlberg (1971). Recently, however, several authors have used measures of moral reasoning that are specifically tailored to prosocial behavior (Damon, 1977; Eisenberg-Berg & Hand, 1979). Table 3 lists the studies in this area, including the type of moral-reasoning measure that was used. The earliest of studies (Ugurel-Semin, 1952) reported that moral reasoning was related to prosocial behavior; the measure of moral reasoning, however, was idiosyncratic, and the relationship was not tested for statistical significance.

Emler and Rushton (1974) found one of the two measures of Piagetian distributive justice to be correlated significantly with charitability, and this relationship remained significant even after the effect of age was partialed out. Partial correlations between age and altruism with the effect of moral reasoning controlled were nonsignificantly positive. Olejnik (Note 7) found that Piagetian intentionality was significantly related to generosity both toward a friend and toward a stranger. Controlling for the influence of age produced a significant partial correlation between intentionality and generosity toward a friend and a nearly significant partial correlation between intentionality and generosity toward a stranger. Again, the partial correlations between age and altruism, controlling for moral reasoning, were nonsignificantly positive. Rushton (1975) also found a measure of Piagetian moral reasoning to be related significantly to two measures of generosity, with one of those relations remaining significant and the other nearly so even after the effect of age was removed through partial correlations. Dreman (1976) replicated the significant relation between Piagetian intentionality and generosity toward peers. Dreman found, however, that this correlation became nonsignificant when the influence of age was partialed out. The partial correlation between age and generosity controlling for moral reasoning was statistically significant. The one exception to these significant findings comes from a study by Grant, Weiner, and Rushton (1976), who found no significant relation between Piagetian intentionality or distributive justice and generosity to a charity. They did find, however, significant partial correlations between age and generosity controlling for moral reasoning.

There have also been numerous studies relating Kohlberg's measures of moral reasoning to prosocial behavior. These studies have provided very little information about age relationships insofar as Kohlberg's measure is designed primarily for adolescents and adults, groups in which there is often little attention paid to age trends. Rubin and Schneider (1973) did use an adaption of Kohlberg's procedure with children, and they found that it was significantly related to both generosity and helpfulness in their sample. Unfortunately, this sample comprised exclusively 7-year-olds, so it did not yield information on age trends. This positive relationship has been replicated frequently. Harris, Mussen, and Rutherford (1976) found that Kohlberg's moral maturity scores were significantly related to a sociometric measure of altruism in fifth-grade boys; Krebs and Rosenwald (1977) found a significant correlation between Kohlberg's stage scores and helpfulness in adults; Staub (1974) reported significant relations between Kohlberg's stage scores and several measures of helping in a minor emergency among college students; and Schwartz, Feldman, Brown, and Heingartner (1969) found Kohlberg's stage scores to be related significantly to helpfulness in college students. In addition, Santrock (1975) found a significant relationship between Kohlberg's scores and generosity to peers with fifth- and sixth-grade boys but only for father-absent subjects.

There have also been several failures to replicate the relation between Kohlberg's

(text continued on page 158)

Table 2
Studies of Social Perspective-Taking and Altruism

Study	Age of subjects	Measure of altruism	Zero-order correlations: Altruism with perspective-taking	Zero-order correlations: Age with perspective-taking	Zero-order correlations: Age with altruism	Partial correlations: Altruism with perspective-taking controlling for age	Partial correlations: Altruism with age controlling for perspective-taking
Barrett & Yarrow (1977)[a]	5–8 yrs.	Naturalistic observation	$r = -.02$, $z = -.11$ (boys) $r = .06$, $z = .35$ (girls)	$r = .16$	$r = .18$	NR	NR
Emler & Rushton (1974)[b,c]	7–13 yrs.	Generosity to charity	$r_a = .004$, $z = .03$ $r_b = .09$, $z = .68$	$r_a = .35$ $r_b = .26$	$r = .21$	$r_a = -.08$, $z = -.60$ $r_b = .04$, $z = .30$	$r_a = .22$, $z = 1.68$ $r_b = .19$, $z = 1.44$
Iannotti (1978, Note 6)	6 & 9 yrs.	Generosity to peer	$r_{pre} = .66$, $z = 5.99$ $r_{post} = .64$, $z = 5.72$	$r_{pre} = .84$ $r_{post} = .77$	$r = .58$	$r_{pre} = .39$, $z = 3.08$ $r_{post} = .37$, $z = 2.90$	$r_{pre} = .06$, $z = .45$ $r_{post} = .18$, $z = 1.36$
Iannotti (Note 3)[d]	7 & 10 yrs.	Generosity to peer	$r = .56$, $z = 4.10$	$r = .79$	$r = .57$	$r_7 = .41$, $z = 1.90$ $r_{10} = .01$, $z = .04$	$r = .25$, $z = 1.65$
Krebs & Sturrup (Note 5)[e]	2nd & 3rd grades	Composite derived from naturalistic observation (c) and teacher rating (t)	$r_{ac} = .47$, $z = 2.34$ $r_{at} = .42$, $z = 2.05$ $r_{bc} = .52$, $z = 2.64$ $r_{bt} = .57$, $z = 2.97$	*ns*	*ns*	NR	NR
Kurdek (1978a)	1st–4th grades	Teacher ratings	*ns*	NR	NR	NR	NR
Leckie (1975)[e]	3–8 yrs.	Retrieving dropped papers; donating to fund	*ns*				
Olejnik (Note 7)[f]	Kindergarten –3rd grade	Generosity to friend (f) Generosity to stranger (s)	$r_f = .68$, $z = 10.39$ $r_s = .25$, $z = 3.21$	$r = .41$	$r_f = .24$ $r_s = .07$	$r_f = .66$, $z = 9.90$ $r_s = .24$, $z = 3.06$	$r_f = -.06$, $z = -.75$ $r_s = -.04$, $z = -.50$
Rubin & Schneider (1973)[g]	7 yrs.	Helpfulness to younger child (h) Generosity to peers (g)	$r_h = .44$, $z = 3.40$ $r_g = .31$, $z = 2.31$	Only one age in sample	Only one age in sample	$r_h = .64$, $z = 5.41$ $r_g = .29$, $z = 2.14$	Only one age in sample
Rushton & Wiener (1975)[b,c]	7 & 11 yrs.	Generosity to friend (f) Generosity to charity (c)	$r_{af} = .18$, $z = 1.37$ $r_{ac} = .33$, $z = 2.59$ $r_{bf} = .19$, $z = 1.45$ $r_{bc} = .17$, $z = 1.30$	$r_a = .34$ $r_b = .30$	$r_f = .68$ $r_c = .47$	$r_{af} = -.07$, $z = -.52$ $r_{ac} = .21$, $z = 1.59$ $r_{bf} = -.02$, $z = -.15$ $r_{bc} = .03$, $z = .22$	$r_{af} = .67$, $z = 6.07$ $r_{ac} = .40$, $z = 3.17$ $r_{bf} = .67$, $z = 6.07$ $r_{bc} = .45$, $z = 3.63$

Table 2 (*continued*)

Study	Age of subjects	Measure of altruism	Zero-order correlations: Altruism with perspective-taking	Zero-order correlations: Age with perspective-taking	Zero-order correlations: Age with altruism	Partial correlations: Altruism with perspective-taking controlling for age	Partial correlations: Altruism with age controlling for perspective-taking
Zahn-Waxler, Radke-Yarrow, & Brady-Smith (1977)[a]	3–6 yrs.	Helping (h), sharing with (s), and comforting (c) an adult	*ns*	NR	*ns*, except $r_c = -.26$	NR	NR

Note. NR = not reported.

[a] Correlation coefficients whose values are not listed were assumed to be zero for our calculations.

[b] We are grateful to J. Phillipe Rushton for providing the matrix of zero-order correlations from Rushton and Wiener (1975) and the raw data from Emler and Rushton (1974).

[c] There were two measures of perspective-taking (noted as a and b).

[d] Correlations between perspective-taking and altruism were reported separately for 7- and 10-year olds, which make them analogous to partial correlations controlling for age. The estimate of the zero-order correlation between perspective-taking and altruism was obtained by assuming that the partial correlation controlling for age was .21, the mean of the two separate correlations reported.

[e] Information obtained from Kurdek (1978b). Dissertations were not included in our calculations due to the difficulties involved in readers obtaining detailed information about methods and results.

[f] Correlations of grade with perspective-taking and altruism were computed from a tabular listing of dependent variable means and standard deviations for each grade.

[g] The partial correlations control for mental age rather than for chronological age.

Table 3
Studies of Moral Reasoning and Altruism

Study	Age of subjects	Type of moral reasoning	Measure of altruism	Zero-order correlations: Altruism with moral reasoning	Zero-order correlations: Age with moral reasoning	Zero-order correlations: Age with altruism	Partial correlations: Altruism with moral reasoning controlling for age	Partial correlations: Altruism with age controlling for moral reasoning
Andreason (1977)[a]	College students	Rest's Defining Issues Test	Helping experimenter	Significant				
Damon (1977)[b]	4, 6, 8, & 10 yrs.	Stage score based on prosocial moral reasoning	Amount of candy assigned to others and to self	Significant, $p < .001$ ($r \geq .25$, $z \geq 3.04$)	NR	NR	NR	NR
Dreman (1976)	1st, 4th, & 7th grades	Piagetian intentionality	Generosity to peer	$r = .46$, $z = 6.61$	$r = .66$	$r = .62$	$r = .09$, $z = 1.19$	$r = .48$, $z = 6.94$
Eisenberg-Berg (1979)	9th–12th grades	Stage score based on prosocial moral reasoning	Helping experimenter	NR	NR	NR	$r = .57$, $z = 3.61$ (boys) $r = .20$, $z = 1.18$ (girls)	NR
Eisenberg-Berg & Hand (1979)[c]	48–63 mos.	Components of prosocial moral reasoning, including: Hedonistic reasoning (a) and needs-oriented reasoning (b)	Naturalistic observation of sharing (s) and helping/comforting (h)	$\rho_{as} = -.39$, $z = 2.33$ $\rho_{ah} = -.15$, $z = .85$ $\rho_{bs} = .46$, $z = 2.81$ $\rho_{bh} = -.09$, $z = -.51$	$\rho_a = -.32$ $\rho_b = .21$	$\rho_s = .36$ $\rho_h = .26$	NR	NR
Emler & Rushton (1974)[d]	7–13 yrs.	Piagetian distributive justice (two measures, a and b)	Generosity to charity	$r_a = .17$, $z = 1.30$ $r_b = .32$, $z = 2.51$	$r_a = .25$ $r_b = .30$	$r = .21$	$r_a = .12$, $z = .91$ $r_b = .28$, $z = 2.16$	$r_a = .18$, $z = 1.35$ $r_b = .13$, $z = .98$
Fay (1971)[a]	6 & 8 yrs.	Cognitive moral judgment	Generosity	Significant for boys (8 yrs.), not for others				
Grant, Weiner, & Rushton (1976)	8–11 yrs.	Kohlberg's principled morality (a), Piagetian intentionality (b), Piagetian distributive justice (c)	Generosity to charity	$r_a = -.28$, $z = -1.22$ $r_b = -.06$, $z = -.25$ $r_c = .15$, $z = .64$	$r_a = -.07$ $r_b = .04$ $r_c = -.01$	$r = .63$	$r_a = -.30$, $z = -1.28$ $r_b = -.11$, $z = -.45$ $r_c = .20$, $z = .84$	$r_a = .64$, $z = 3.22$ $r_b = .63$, $z = 3.14$ $r_c = .64$, $z = 3.22$
Harris, Mussen, & Rutherford (1976)[e]	5th grade	Kohlbergian moral reasoning	Sociometric nominations, altruism factor	$r = .41$, $z = 2.39$	Only one grade in sample	Only one grade in sample	Only one grade in sample	Only one grade in sample

Table 3 (*continued*)

Study	Age of subjects	Type of moral reasoning	Measure of altruism	Zero-order correlations: Altruism with moral reasoning	Zero-order correlations: Age with moral reasoning	Zero-order correlations: Age with altruism	Partial correlations: Altruism with moral reasoning controlling for age	Partial correlations: Altruism with age controlling for moral reasoning
Krebs & Rosenwald (1977)	Adults	Kohlberg's stage score	Helpfulness to experimenter	$r = .49$, $z = 2.59$	NR	NR	NR	NR
Lazarowitz, Stephan, & Friedman (1976)[f]	College students	Kohlberg's moral maturity score	Difference between points assigned to partner and to self	*ns*	NR	NR	NR	NR
McNamee (1972)[a]	College students	Kohlberg's stage score	Defying authority of experimenter to help person in need	Significant				
Olejnik (Note 7)[g]	Kindergarten – 3rd grade	Piagetian intentionality	Generosity to friend (f) Generosity to stranger (s)	$r_f = .48$, $z = 6.55$ $r_s = .17$, $z = 2.16$	$r = .38$	$r_f = .24$ $r_s = .07$	$r_f = .43$, $z = 5.75$ $r_s = .15$, $z = 1.89$	$r_f = .07$, $z = .87$ $r_s = .006$, $z = .07$
Rosenn (1977)[a]	2nd grade	Stage score based on prosocial moral reasoning; relativistic reasoning; heteronomous respect for authority	Number of tokens assigned to other and to self for joint performance	All three significant				
Rubin & Schneider (1973)[h]	7 yrs.	Adaptation of Kohlberg's procedure	Helpfulness to younger child (h), generosity to peers (g)	$r_h = .40$, $z = 3.06$ $r_g = .31$, $z = 2.31$	Only one age in study	Only one age in study	$r_h = .51$, $z = 4.02$ $r_g = .26$, $z = 1.90$	Only one age in study
Rushton (1975)[i]	7–11 yrs.	Piagetian moral reasoning	Generosity to charity, both immediate (i) and delayed (d)	$r_i = .26$, $z = 2.83$ $r_d = .28$, $z = 3.06$	Significant	Significant	$r_i = .19$, $z = 2.03$ $r_d = .15$, $z = 1.60$	NR
Santrock (1975)	5th & 6th grades	Kohlbergian moral reasoning	Generosity to peers	$r = .30$, $z = 2.33$ (father-absent boys) $r = -.06$, $z = -.45$ (father-present boys)	NR	NR	NR	NR
Schwartz, Feldman, Brown & Heingartner (1969)	College students	Kohlberg's stage score (Stages 5 & 6 vs. other stages)	Helpfulness to peer	$p = .03$ (Fisher's exact test), $r = .39$, $z = 1.88$	NR	NR	NR	NR

(table continued)

Table 3 (*continued*)

Study	Age of subjects	Type of moral reasoning	Measure of altruism	Zero-order correlations			Partial correlations	
				Altruism with moral reasoning	Age with moral reasoning	Age with altruism	Altruism with moral reasoning controlling for age	Altruism with age controlling for moral reasoning
Staub (1974)[j]	College students	Kohlberg's stage score (Stage 5 vs. all lower stages)	Help in apparent emergency (a), average helping in apparent medical problem (stomach cramps; b)	r_a = .34, z = 1.98 r_b = .25, z = 2.71	NR	NR	NR	NR

Note. NR = not reported.

[a] Dissertations were not included in our calculations due to the difficulties involved in readers obtaining detailed information about methods and results.

[b] Only the significance level was reported, so we have computed the minimum correlation for that level of significance and have used that value and its association z score in our calculations.

[c] Partial correlations were obtained by substituting Spearman's rs in the formula for partial correlation and cannot be tested for significance.

[d] We are grateful to J. Phillipe Rushton for providing the raw data from this study so that we might reanalyze it in a form more suitable for this table.

[e] The correlation between altruism and moral reasoning is a partial correlation controlling for IQ.

[f] It was not possible to compute a correlation coefficient from the information given, so we have assumed a correlation of zero for our calculations.

[g] Correlation of grade with altruism and moral reasoning were computed from a tabular listing of variable means and standard deviations for each grade.

[h] The partial correlations control for mental age rather than for chronological age.

[i] The correlations are point biserial correlations, converted from F values in analyses of variance and covariance.

[j] The correlation r_a is a phi coefficient computed from a contingency table.

measures and prosocial behavior. Lazarowitz, Stephan, and Friedman (1976) failed to find significant relations between Kohlberg's moral maturity scores and generosity in college students. Grant et al. (1976), who reported nonsignificant negative correlations between Piagetian measures of moral reasoning and generosity in children, likewise found a nonsignificant negative relation between generosity and a measure of Kohlberg's principled morality. They did find, however, a significant relation between age and generosity, controlling for moral reasoning.

Since 1977, there have been several reports of studies using measures of moral reasoning derived from specifically prosocial moral dilemmas. Damon (1977) developed a stage classification, somewhat similar to Kohlberg's, that was based on reasoning about situations in which self-interest was pitted against the interests of others. He reported a significant correlation between this stage score and generosity to peers in a sample of 4–10-year-old children. Eisenberg-Berg (1979) reported that a somewhat similar stage score for prosocial moral reasoning was positively related (as measured by partial correlations) to helpfulness in adolescent boys and girls, but the relation was statistically significant only for boys. Eisenberg-Berg and Hand (1979) eschewed the stage approach and examined the relation between several distinct dimensions of prosocial moral reasoning and children's natural prosocial behavior. They found that there was significant correlation between generosity and two reasoning dimensions, but helpfulness was not significantly related to any of the measures of prosocial moral reasoning.

Combining the results of all of these studies with moral reasoning (see Table 3), the Stouffer procedure produced a Z_{ma} of 8.50, $p < 000000001$, for the zero-order correlations. The mean correlation coefficient was .27, and the fail-safe number was 413. In many ways the data for moral reasoning are the most compelling we have seen, not for magnitude of relationship but for generality of that relationship. Studies in this area have obtained significant results with subjects ranging from nursery school children to college students and other adults. Significant findings have been reported, using measures

of generosity, helpfulness, bystander intervention, sociometric nominations, and naturalistically observed prosocial acts. Segregating the studies by type of moral reasoning measure (Piagetian, Kohlbergian, or prosocial) produced virtually identical results for the meta-analysis.

For the partial correlations between moral reasoning and altruism controlling for age, the Stouffer method yielded a Z_{ma} of 5.30, $p = .0000001$. The mean partial correlation was .21, and the fail-safe number was 66. For partial correlations between age and altruism controlling for moral reasoning, the Stouffer method resulted in a Z_{ma} of 5.88, $p < .00000001$. The mean partial correlation between age and altruism was .33, and the fail-safe number was 48. The appropriate conclusions for moral reasoning, then, would seem to be that it is positively related to altruism, that the relationship is too strong to be accounted for completely by their joint relationship with age, and that the relationship is too weak to account completely for age-related increases in altruism.

Affective Perspective-Taking

There are at least two kinds of perspective-taking that we consider in this section. One kind is essentially social perspective-taking applied to affect; that is, it consists of recognizing other people's affective reactions. The other kind of measure involves going beyond simply recognizing another's affective state and actually experiencing that affect. We follow convention by referring to this vicarious affective arousal as empathy and by distinguishing it from affective recognition, which we label affective perspective-taking. Furthermore, we conduct separate meta-analyses for these two categories of reactions to others' affect, and we examine the literature on empathy separately for different age groups because there is a hint of an age trend in the published results.

The study by Buckley et al. (1979), which was discussed previously, measured children's choice of the appropriate affects for the main characters in a series of brief stories. Children who were altruistic scored higher on this measure of affective perspective-taking than did the nonaltruists. Eisenberg-Berg and Lennon (1980) also reported a study of children's recognition of appropriate affects, and they related this measure to several measures of natural prosocial behavior. Although the correlations were not statistically significant in this study, a meta-analysis of the two studies reveals a significant pattern ($Z_{ma} = 2.25$, $p = .02$). The fail-safe number was only 2, however, and the computation of the mean correlation was complicated by the fact that Buckley et al. analyzed their data by use of a statistic that does not translate directly into a correlation coefficient. Assuming that the correlation in that study would have been the value required to produce the reported standard normal deviate, the mean correlation was computed to be .25.

The picture is somewhat less encouraging for studies that have attempted to relate a truly affective empathic reaction to children's altruism. Eisenberg-Berg and Lennon (1980), for example, used the Feshbach and Roe (1968) measure of affective empathy in addition to their measure of perception of affect, and they assessed empathy both by the verbal statements typically used with this measure and by a nonverbal response (having children point to the one of a series of facial drawings that described their current feelings). These two measures of empathy were significantly *negatively* related to unsolicited altruistic action but nonsignificantly positively related to solicited altruistic acts (see Table 4). Iannotti's (1978, Note 6) study of children's generosity included a measure of empathy, somewhat similar to the Feshbach and Roe measure, in which children were scored as responding empathically if their (nonverbally) self-reported affect matched that indicated by the expressive cues of characters in pictorially illustrated stories. This empathy measure was negatively correlated with both generosity and age. This negative correlation between age and empathy is quite unusual and may serve as a warning that Iannotti's sample is somehow an unrepresentative one. Nonetheless, the relationships were similar 1 year later (Iannotti, Note 3), and we have computed the usual partial correlations from the earlier data, finding a near-significant negative correlation between empathy and

Table 4
Studies of Empathy and Altruism

Study	Age of subjects	Measure of altruism	Zero-order correlations: Altruism with empathy	Zero-order correlations: Age with empathy	Zero-order correlations: Age with altruism	Partial correlations: Altruism with empathy controlling for age	Partial correlations: Altruism with age controlling for empathy
Buckley, Siegel, & Ness (1979)[a]	3–8 yrs.	Composite: helping peer or sharing cookie with peer	$z = 2.45$	NR	*ns*	NR	NR
Coke, Batson, & McDavis (1978)[b]	College students	Volunteering to help peer	$r = .59$, $z = 3.23$	NR	NR	NR	NR
Eisenberg-Berg & Lennon (1980)[c]	4 & 5 yrs.	Unsolicited (u) and solicited (s) altruism, measures derived from naturalistic observation	$\rho_{au} = -.29$, $z = -2.07$ $\rho_{as} = .11$, $z = .76$ $\rho_{bu} = -.41$, $z = -3.02$ $\rho_{bs} = .25$, $z = 1.77$ $\rho_{cu} = .05$, $z = .35$ $\rho_{cs} = .16$, $z = 1.12$	NR	NR	NR	NR
Eisenberg-Berg & Mussen (1978)	9th–12th grades	Helping experimenter	$r = .40$, $z = 2.40$ (boys) $r = -.02$, $z = -.12$ (girls)	$r = .09$ (boys) $r = .08$ (girls)	NR	NR	NR
Fay (1971)[d]	6 & 8 yrs.	Generosity	*ns*				
Green (1975)[d]	Kindergartners	Helpfulness toward experimenter (e), helpfulness toward peer	r_e significant, girls only (emotional recognition)				
Iannotti (1978, Note 6)	6 & 9 yrs.	Generosity to peer	$r = -.45$, $z = -3.02$	$r = -.46$	$r = .58$	$r = -.25$, $z = -1.87$	$r = .47$, $z = 3.52$
Iannotti (Note 3)[e]	7 & 10 yrs.	Generosity to peer	$r = -.16$, $z = -1.04$	*ns*	$r = .57$	$r_7 = .06$, $z = .26$ $r_{10} = -.44$, $z = -2.11$	NR
Leckie (1975)[d,e]	3–8 yrs.	Retrieving dropped papers; donating to a fund	*ns*				
Mehrabian & Epstein (1972)	College students	Helpfulness to peer	$r = .31$, $z = 2.83$	NR	NR	NR	NR

Table 4 (*continued*)

Study	Age of subjects	Measure of altruism	Zero-order correlations: Altruism with empathy	Zero-order correlations: Age with empathy	Zero-order correlations: Age with altruism	Partial correlations: Altruism with empathy controlling for age	Partial correlations: Altruism with age controlling for empathy
Miller (Note 8)[f]	4th grade	Generosity to recipient visibly (v, in experimenter's presence) or nonvisibly (n, anonymously)	For girls, $r_v = .35$, $z = 1.71$; $r_n = .32$, $z = 1.57$. For boys, $r_v = .02$, $z = .12$; $r_n = -.3$, $z = -1.80$	Only one grade in sample	Only one grade in sample	Only one grade in sample	Only one grade in sample
Peraino (Note 11)[g]	11th–12th grades	Altruistic choice in Prisoners' Dilemma game with peer	*ns*	NR	NR	NR	NR
Sawin, Underwood, Weaver, & Mostyn (Note 9)[h]	1st & 3rd grades	Generosity to peers (g) Teacher ratings (t)	$r_{ag} = .06$, $z = .68$; $r_{at} = -.01$, $z = -.11$; $r_{bg} = .12$, $z = 1.15$; $r_{bt} = .07$, $z = .66$	$r_a = .23$; $r_b = .06$	$r_g = .25$; $r_t = -.15$	$r_{ag} = .003$, $z = .03$; $r_{at} = .03$, $z = .034$; $r_{bg} = .11$, $z = 1.02$; $r_{bt} = .08$, $z = .74$	$r_{ag} = .24$, $z = 2.72$; $r_{at} = -.15$, $z = -1.67$; $r_{bg} = .25$, $z = 2.37$; $r_{bt} = -.15$, $z = -1.40$

Note. NR = not reported.

[a] The relationship between empathy (emotional recognition) and altruism was analyzed using the Mann-Whitney U statistic.

[b] The correlation coefficient was computed for the combined experimental and control conditions, so it was not included in the meta-analysis.

[c] There were two measures of empathy, one verbal (a) and the other nonverbal (b), and one measure of affective perspective-taking (c).

[d] Dissertations were not included in our calculations due to the difficulties involved in readers obtaining detailed information about methods and results.

[e] Correlations between empathy and altruism were reported separately for 7- and 10-year olds, which make them analogous to partial correlations controlling for age. The estimate of the zero-order correlation between empathy and altruism was obtained by assuming that the partial correlation controlling for age was −.19, the mean of the two separate correlations reported.

[f] Information obtained from Kurdek (1978b).

[g] Correlations between empathy and altruism, both zero-order and partial, were assumed to be zero for our calculations.

[h] There were two measures of empathy (noted as a and b).

generosity controlling for age and a significant positive correlation between age and generosity controlling for empathy.

Other studies (Miller, Note 8; Sawin, Underwood, Weaver, & Mostyn, Note 9) have found nonsignificant relations between measures of empathy and altruism, but these nonsignificant correlations have more often been positive than negative (see Table 4). Combining these results produces an overall probability that is greater than .05 (Z_{ma} = .84, p = .20). These studies, then, have not shown conclusively that there is a relation between empathy and altruism, and we must wonder why. Several authors (e.g., Eisenberg-Berg & Lennon, 1980; Sawin et al., Note 9) have argued that the instruments typically used to measure children's empathy are not as psychometrically sound as they should be, and this might account for the failure to find a reliable relation. Alternatively, Krebs and Russell (in press) argued that the "empathy" measures in the Iannotti (1978, Note 3, Note 6) and Eisenberg-Berg and Lennon (1980) studies may have actually reflected a kind of egocentric emotional arousal that deterred rather than facilitated prosocial action. Of course, it may simply be that there is no relation between empathy and altruism in the population of children, which would also fit very comfortably with the research data.

There are two recent studies that may eventually lead to a revision of our conclusion that no relation exists between empathy and altruism in children. Peraino and Sawin (Note 10) reported a study in which they obtained multiple measures during videotaped presentations of behavior sequences. There were three different videotape sequences, each with different children depicted, and in each case there was an opportunity for the child viewing the videotape to take some altruistic action to alleviate the distress of the child depicted in the videotape. This procedure may offer two advantages over the traditional assessment of empathy in children. The first advantage is that the videotape presentation may be more vivid than slide or oral presentations and so be more likely to produce a representative range of empathic reactions in the children. The second potential advantage concerns a more conceptual point. Most studies of empathy and altruism have measured a generalized, or trait, empathic tendency on the assumption that children who are generally more empathic will be more likely to feel empathy for the people whose distress they may reduce by their altruism. The Peraino and Sawin procedure is a much more direct measure of the type of empathy that seems as though it should be related to altruism, namely, empathy for the potential beneficiaries of altruistic action. We might think of this as state empathy in contrast to the trait empathy that has been measured by previous studies.

The Peraino and Sawin procedure allows correlations between altruism in a particular situation and both empathy measured in that same situation (state empathy) and empathy measured in the other situations (presumably a reflection of trait empathy). Peraino and Sawin (Note 10) reported a number of significant positive correlations that was significantly greater than the number expected by chance, both for state empathy (6 of 15, or 40%, significant at or beyond the .05 level, Z = 6.22, $p < .000000001$) and for trait empathy (5 of 30, or 17%, significant at or beyond the .05 level, Z = 2.93, p = .002). The fact that Peraino and Sawin obtained significant positive correlations for the trait empathy measure (empathy in a situation and for a person other than the one toward which the altruistic action was directed) suggests that the use of videotape sequences of behavior may have provided a more effective measure of children's empathy than the usual assessment devices. Furthermore, the fact that there was a higher proportion of coefficients that were significant for the state empathy measure suggests that there is some advantage to assessing children's empathy for the potential beneficiary of their altruism that goes beyond any overall advantage due to the use of videotape presentations. In sum, it appears that Peraino and Sawin may have identified a more effective way of assessing children's empathy and provided evidence that state empathy is more reliably related to altruism than is trait empathy.

Barnett (in press) reported another intriguing result concerning children's empathy and altruism. He solicited teachers' rat-

ings of trait empathy in elementary-school children, using a modified version of the measure constructed for adults by Mehrabian and Epstein (1972). The children were given an affect induction and then had an opportunity to construct "color and activity" booklets for hospitalized children. The correlation between empathy ratings and helpfulness (number of booklets constructed) was positive but nonsignificant for children who had reminisced about a sad incident in their past or about affectively neutral information. For children who had reminisced about a sad event happening to another person, however, there was a significant positive correlation between helpfulness and the empathy ratings. This leads to the interesting possibility that children's trait empathy is related to altruism but perhaps only when some "priming" event has focused a child's attention toward the negative affective consequences of other people's misfortunes. Of course, similar arguments could be advanced for other forms of perspective-taking.

These studies (Barnett, in press; Peraino & Sawin, Note 10) seem to be potentially important breakthroughs in the study of children's empathy and altruism. The crucial point is not that significant positive relations were found—in fact, combining these results with the ones previously discussed does not produce a significant overall pattern of results. Rather, the important point is that significant positive relations were identified by the first research efforts to be reported in two new paradigms. It is the identification of paradigms that may lead to reliable findings of an empathy–altruism relation that is exciting.

There have been two studies (Eisenberg-Berg & Mussen, 1978; Peraino, Note 11) that have examined the relation between empathy and altruism in adolescence, with both studies using the affective empathy questionnaire devised by Mehrabian and Epstein (1972). Eisenberg-Berg and Mussen related this empathy measure to high-school students' willingness to volunteer for a dull task in order to help the experimenter and found a significant positive relationship for their 35 male subjects (biserial $r = .40$, $p < .05$) but not for their 37 female subjects (biserial $r = .02$, *ns*). There was no report of a correlation between age and volunteering, but the relationship between age and the empathy measure was found to be nonsignificant for both boys and girls.

Peraino (Note 11) used a modified Prisoner's Dilemma game in which there was a clearly altruistic choice. His subjects were 27 boys in the 11th and 12th grades of a parochial school. There was no significant relation between the empathy measure and the number of times the prosocial alternative was chosen in a series of trials on the game. The findings in these two studies of adolescents, then, reveal only a rather inconsistent empathy–altruism relationship. Indeed, combining the results of the two yields a probability larger than .05 for the two sexes combined ($Z_{ma} = .81$, $p = .21$) and barely less than .05 for boys alone ($Z_{ma} = 1.70$, $p = .04$). At least, however, the one significant correlation obtained with adolescents was positive, the direction that both sophisticated psychological theory and naive layperson's ideas would predict.

Mehrabian and Epstein's (1972) original report of their affective empathy questionnaire included a validation study that used a measure of altruism in 81 female college students. These women were given an opportunity to volunteer some of their time to assist a fellow student (actually an experimental confederate). Mehrabian and Epstein reported a significant positive relationship between their empathy measure and the amount of time volunteered, but it is not clear whether this represents a zero correlation or a partial correlation controlling for some of the other factors in the study (liking for and perceived similarity to the confederate, etc.).

There are at least two possible ways to summarize these correlational studies relating measured empathy to altruism. One is to note that there are occasional significant findings and occasional nonsignificant findings, to calculate the overall probability for all of these studies taken as a whole ($Z_{ma} = .87$, $p = .19$), and to conclude that there is no reliable correlation between empathy and altruism. A second, and more speculative, summary would involve noting that signifi-

cant results were found in the only correlational study with adults (Mehrabian & Epstein, 1972), that significant results in one subsample of one study with adolescents (Eisenberg-Berg & Mussen, 1978) were apparently contradicted in the other study with adolescents (Peraino, Note 11), and that the studies of truly affective empathy in children found nonsignificant overall results. This might indicate that there is a relationship between empathy and altruism and that it develops over time, so it is not present during childhood; it is present only partially or unstably during adolescence, and it emerges as a stable positive relationship only during adulthood. We feel uneasy about this second way of summarizing the findings because it is based on only one or two studies within each of the older age groups, but it certainly must be considered as a possible explanation for the divergent findings.

In addition to these correlational studies, there have been several studies in which experimenters have attempted either to induce empathy or to provide an experimental analogue to the acquisition of empathy. Aronfreed and Paskal (Note 12) examined the role of an experimenter's affective expression and social reinforcement on a child's altruism. The 6–8-year-old girls in this study played a game that included pressing a lever on a machine. One lever dispensed a piece of candy that the child could keep, whereas the other lever turned on a red light. When the child pressed the lever that turned on the light, the experimenter provided either social reinforcement (smiling and hugging the child) or an expression of positive affect (exclaiming joyfully at the appearance of the light) or both. Following this training period, the experimenter exclaimed joyfully whenever the child pressed the lever that turned on the red light. The measure of altruism was the number of trials on which the child pressed the lever that pleased the experimenter rather than the lever that provided candy for the child. The children who had received both social reinforcement and expression of positive affect scored higher on altruism than did those who had received only social reinforcement or only expression of positive affect.

Aronfreed and Paskal (Note 12) suggested that the child's positive affect (produced by the social reinforcement) had become associated with the experimenter's expression of positive affect through a conditioning process. The experimenter's positive affect would then be a conditioned stimulus that leads to positive affect in the child, producing the sort of affective match required by one definition of empathy. The altruistic action would be mediated, according to this analysis, by the child's empathy with the positive affect produced in another by her altruistic act. Midlarsky and Bryan (1967) replicated these results and also showed that children who received the combined reinforcement-plus-positive-affect training were more generous in anonymous donations of candy to "poor children." The latter finding demonstrates that the training effect was not due solely to a desire to appear nice to the experimenter insofar as the experimenter would have no way of knowing about the anonymous donation.

Even so, these findings do not automatically establish the role of empathy in altruism. We might argue that the experimenter's positive affect served as an exhortation to behave altruistically, and that the results indicate only that combining exhortation with reinforcement is more effective than either treatment in isolation. We might note that there is no direct evidence that empathy was even produced by these treatments insofar as empathy was not actually measured in either study. Furthermore, even if we conceded that empathy was the crucial factor in producing these experimental findings, we might maintain that empathy is not involved in natural altruistic acts, where there is no special empathy training.

A recent study by Brehm, Powell, and Coke (Note 13) investigated the effect of an attentional empathy manipulation on children's generosity. First-grade children (35 girls and 32 boys) were given 10 pennies for allowing their answers to questions about their summer vacations to be tape-recorded. They were then asked to listen to a conversation between a boy or girl named Chris and an adult woman. Subjects in the empathy condition were asked to focus on Chris's feelings and to pretend that what happened to Chris had happened to them. Subjects in the control condition were asked to listen carefully to see what Chris said and

did. Thus, the conditions differed in the focus of attention they promoted, in the control condition emphasizing overt behavior, and in the empathy condition emphasizing feelings. The children then heard Chris tell how he/she would be unable to have a birthday party because his/her family did not have enough money to buy candy and cake for the party. Finally, the children were given an opportunity to donate anonymously to a fund for Chris's party. Analysis of variance revealed a marginally significant interaction ($p < .06$) between sex of subject and type of instruction. Boys donated significantly more in the empathy condition, $F(1, 59) = 4.75$, $p < .05$, whereas there was no significant difference for girls.

This study represents a methodological step forward because the manipulation is much more directly and unambiguously linked to the concept of empathy than was the case in the earlier (Midlarsky & Bryan, 1967; Aronfreed & Paskal, Note 12) studies. There are still reasons, however, to be cautious about concluding that an empathy–altruism link exists, including the fact that the finding was only marginally significant. Moreover, the empathy instructions themselves did not affect children's reports of their own emotional state while listening to the tape. It can be noted that the responsiveness of boys but not of girls to the manipulation in this study is similar to Eisenberg-Berg and Mussen's (1978) finding of a relation between measured empathy and altruism for male but not for female adolescents. A question for further investigation is whether there is an empathy–altruism relation that develops earlier for boys than for girls.

There are two studies of manipulated empathy and altruism in adults, including one by Krebs (1975), who investigated the impact of certain situational factors on both empathy and altruism. Adult male subjects watched another person perform a game in which that person could win or lose on each trial. Subjects in the high-empathy condition were told that the performer would be rewarded (with money for wins) and punished (with electric shocks) for losses, whereas those in the low-empathy condition were not given such expectations. Within each empathy condition, the performer was portrayed as either highly similar or highly dissimilar to the subjects. Krebs measured the subjects' affective reactions to a series of trials by means of a physiograph. Finally, the subjects were given the opportunity to divide the amount of reward for a win and of punishment for a loss between themselves and the performer. Assigning more money to the performer or more shock to oneself was scored as a more altruistic action. Krebs found that subjects in the high-empathy, high-similarity condition displayed both the most intense affect on physiological measures (and thus, presumably, the most empathy) and the greatest amount of altruism.

This is a somewhat more convincing study than the ones previously discussed because it does demonstrate that the condition that produced the most altruistic action also produced the most affective reaction. If it is true that the affect reflects empathy and that it is this empathy that produces the altruism, however, it is necessary that the affect measure and the altruism measure be positively correlated in the high-empathy, high-similarity condition (Underwood, 1975). Otherwise, these results may reflect only parallel—but unrelated—effects of the independent variables on the two dependent measures. Unfortunately, Krebs (1975) did not report this within-condition correlation, so we are still left without a definite conclusion regarding the relation of empathy to altruism.

Perhaps the most convincing single source of evidence for a relation between empathy and altruism is a pair of studies by Coke, Batson, and McDavis (1978). These investigators attempted to induce empathy by manipulating the inferences that their subjects (college students) made about their own arousal states. In the initial study, both men and women were given a capsule, whose described side effects included a state of either relaxation or arousal. The students listened to a tape-recorded "newscast" about a recently orphaned female undergraduate student, who was struggling to finish her degree while supporting her younger brother and sister, under an observational set that highlighted either the broadcasting techniques or the feelings of the student depicted

in the recording. It was anticipated that subjects who focused on the student's feelings would feel arousal, which the relaxation-state subjects would attribute to their empathic reaction and which the arousal-state subjects would misattribute to the pill they had taken. It was anticipated that subjects in the imagine-feelings relaxation-state would experience more empathic distress and would therefore volunteer more time to help the student depicted in the recording when given an opportunity to do so. Analysis of the data on amount of time volunteered to help the student confirmed this expectation, but—as we have seen in other studies—there was no direct measure of empathic distress.

Coke et al. (1978) set out to rectify this omission in a second study with female students as subjects. In this study, all of the subjects listened to a taped appeal for help from a graduate student under an instructional set that was similar to that in the imagine-feelings condition of the initial study. Perceived arousal was manipulated by false feedback about galvanic skin response (GSR) activity. The feedback indicated either that the subject was in the normal range of arousal or was highly (and increasingly) aroused during the taped presentation. Following the presentation, the subjects filled out an adjective checklist that included five items to make up an empathic concern index: empathic, concerned, warm, soft-hearted, and compassionate. The subjects then filled out other questionnaires and responded to a written request for help from the student in the taped presentation. The helping response was coded according to the amount of time that was volunteered to help the student. The subjects in the high-arousal condition volunteered significantly more time than did those in the normal-arousal condition, $F(1, 31) = 9.73$, $p < .005$. Furthermore, the index of empathic concern was significantly related to the helping measure. There was a further suggestion, from a stepwise regression analysis, that this result was not due simply to generalized arousal but was due instead to the specific mechanism of empathic concern.

There are some potential sources of confound in this study, although the inclusion of a measure of empathic concern represents another giant step forward in establishing definitely the role of empathy in altruism. One difficulty with the study is that the empathy–altruism correlation was apparently computed for the two groups of subjects combined, although a stepwise regression analysis indicated that the correlation was significant even after the effect of experimental condition was removed. Furthermore, there seems to be an obvious possibility that demand characteristics could have produced the results obtained in the second study, though it is difficult to imagine that the similar results of the first study could have been due to experimental demand.

There is at least one similarity between the attempts to manipulate or induce empathy experimentally and the correlational work reviewed earlier. That similarity is that the most convincing work in both areas is the work with adult subjects. We should also note that the experimental work with adults involves state rather than trait empathy. Our evaluation of the evidence presented in this section inclines us to believe that empathy is related to altruism, at least among adults. This is not, however, a conclusion that we hold with as much conviction as we feel regarding the relation of the more cognitive variables to altruism. Much of the empirical support for this conclusion is too indirect to inspire great feelings of confidence, and the existence of several instances of negative results may erode confidence still further. Overall, however, we cling uneasily to the belief that empathy and altruism are related among adults.

Furthermore, there is one aspect of the data regarding empathy and altruism that is more encouraging than the data on the more cognitive variables that we reviewed earlier. We feel that there is good reason to believe that empathy plays a causal role in its relationship with altruism. This feeling does not come from the partial correlations we have examined throughout this review; indeed, there are no analogous partial correlations in the correlational data with adult subjects, where we expect the empathy–altruism relationship to exist. Instead, the feeling arises from a more convincing set of studies involving experimental manipulation (Coke et al., 1978; Krebs, 1975) of the pro-

posed mediator than those that exist for any of the other variables we are examining. Again, we caution that the evidence is not conclusive, but we find it more persuasive than the evidence for causal influence of either perspective-taking or moral reasoning.

Studies with Multiple Measures

Several of the studies we have reviewed included two of the potential mediators of altruistic behavior, and they afford excellent opportunities to see whether these measures are related to altruism through some common mechanism or whether they make some unique contribution toward predicting altruism. We can assess such possibilities by examining partial correlation coefficients, correlating altruism with one type of potential mediator while controlling for the influence of the other. Unfortunately, there are sufficiently few such studies, and the pairings of the potential mediators of altruism are sufficiently varied that it would not be possible to apply our methods of meta-analysis to each such possible pairing. Indeed, some potential pairings have never been examined (e.g., perceptual perspective-taking and moral reasoning). Consequently, we have grouped together all partial correlations between altruism and a particular mediator, regardless of which other mediator was controlled for statistically. For example, all partial correlations between measures of altruism and of social perspective-taking were considered together, regardless of whether the other variable in the study was perceptual perspective-taking, moral reasoning, or empathy. The methods of meta-analysis were then applied to the grouped studies.

There were only two studies (Rushton & Wiener, 1975; Zahn-Waxler et al., 1977) that examined the influence of perceptual perspective-taking on altruism in addition to one of our other cognitive/affective variables. In both of these studies social perspective-taking was the other variable whose relationship to altruism was studied. Rushton and Wiener's data revealed significant partial correlations between measures of generosity and of perceptual perspective-taking controlling for social perspective-taking (*r*s range from .36 to .53). Zahn-Waxler et al. did not report their results in sufficient detail to allow computation of partial correlations, but it seems reasonable to assume that the partial correlations between perceptual perspective-taking and altruism would all be nonsignificant because the zero-order correlations were all nonsignificant. Combining the results of these two studies (assuming a correlation of zero for the Zahn-Waxler et al. data), we find that the Stouffer method leads to a probability that is smaller than .05 (Z_{ma} = 2.63, p = .004). The mean partial correlation was .23, and the fail-safe number was 4.

There were six studies that examined both social perspective-taking and some other potential mediator of altruism, three involving moral reasoning as the other variable (Emler & Rushton, 1974; Rubin & Schneider, 1973; Olejnik, Note 7), two involving perceptual perspective-taking (Rushton & Wiener, 1975; Zahn-Waxler et al., 1977), and one involving empathy (Iannotti, 1978, Note 3, Note 6). Generally, these studies have found the partial correlations between social perspective-taking and altruism to be positive, often significantly so (Rubin & Schneider, 1973; Rushton & Wiener, 1975; Iannotti, 1978, Note 3, Note 6; Olejnik, Note 7). When we combine across all of these studies, the partial correlations are reliably greater than zero (Z_{ma} = 5.44, p = .000000003, by the Stouffer method). The mean partial correlation was .23, and the fail-safe number was 60.

In the three studies of both moral reasoning and social perspective-taking (Emler & Rushton, 1974; Rubin & Schneider, 1973; Olejnik, Note 7), the partial correlations between moral reasoning and altruism controlling for perspective-taking were also positive. Both the Olejnik and the Emler and Rushton studies found that some of the partial correlations between moral reasoning and altruism were significantly positive, and meta-analysis of the three studies combined also finds significant results (Z_{ma} = 3.31, p = .0005). The average partial correlation was .21, and the fail-safe number was 9.

The only sources of data relating both empathy and another predictor (social perspective-taking) to altruism are the two studies by Iannotti (1978, Note 3, Note 6). Even

these are not independent sources because the second study (Iannotti, Note 3) used many of the same subjects as did the initial study (Iannotti, 1978, Note 6). The mean partial correlation between altruism and empathy controlling for perspective-taking was −.14, and the mean Z score was −1.04, which does not approach traditional levels of statistical significance.

The overall picture for these partial correlations, then, is very much like that for zero-order correlations. The cognitive variables are all significantly positively related to measures of altruism, even after the influence of other predictors has been removed statistically. Empathy was not significantly related to altruism through partial correlations in the samples of children studied, echoing our conclusions about zero-order correlations between empathy and altruism for children. These significant partial correlations mean that none of the relations between altruism and these cognitive variables can be attributed to joint relationships with the other variables; each must—at least to some extent—make a unique contribution to predicting altruism.

Magnitude of Effect for Different Predictor Variables

Following the lead of earlier meta-analyses (Smith & Glass, 1977), we wish to see if the reliable effects that we have noted differ in magnitude among the different categories of predictor variables (i.e., social perspective-taking vs. empathy). In doing such comparisons we separate the studies on moral reasoning into those involving Piagetian measures, Kohlbergian measures, or measures of prosocial moral reasoning to establish whether one of these approaches has found larger relationships. The most reasonable measure to use in these comparisons is, for several reasons, the mean of the Fisher's Z^* transformation of the correlation coefficients. First, the mean rather than the sum must be used because there are different numbers of studies in the different categories. Second, the mean Fisher's Z^* transformation is preferable to the mean standard normal deviate because the magnitude of Fisher's Z^* depends only on the magnitude of the correlation coefficient and the sample size. The standard normal deviate is therefore a less direct measure of magnitude of effect than is the Fisher's Z^*. Third, the mean Fisher's Z^* is preferable to the mean correlation coefficient because Fisher's Z^* has a known and symmetrical distribution and a known population variance. Finally, the mean Fisher's Z^* is preferable to a mean squared correlation coefficient—a common measure of magnitude of effect—because of the known distribution of Fisher's Z^* and because the squared correlation coefficient does not allow for negative relationships to cancel positive ones.

In summarizing the results of K studies by $\bar{Z}^*$, the variance can be computed by

$$\begin{aligned}\mathrm{Var}(\bar{Z}^*) &= \mathrm{Var}\left(\frac{1}{K}\sum_{i=1}^{K} Z_i^*\right)\\ &= \frac{1}{K^2}\mathrm{Var}\left(\sum_{i=1}^{K} Z_i^*\right)\\ &= \frac{1}{K^2}\sum_{i=1}^{K}\mathrm{Var}(Z_i^*)\end{aligned}$$

insofar as the Z_i^* are independent of one another,

$$= \frac{1}{K^2}\sum_{i=1}^{K}\frac{1}{N_1 - 3}.$$

In comparing the mean Fisher's Z^* from two different areas, the variance can be computed by

$$\mathrm{Var}(\bar{Z}_1^* - \bar{Z}_2^*) = \mathrm{Var}(\bar{Z}_1^*) + \mathrm{Var}(\bar{Z}_2^*) - 2\,\mathrm{Cov}(\bar{Z}_1^*, \bar{Z}_2^*)\sqrt{\mathrm{Var}(\bar{Z}_1^*)\,\mathrm{Var}(\bar{Z}_2^*)}.$$

Insofar as there are several studies that used predictor variables from more than one of these areas, it cannot be assumed that the covariance term will be zero. It can reasonably be assumed, however, that the covariance term will be either zero or positive, so that

$$\mathrm{Var}(\bar{Z}_1^* - \bar{Z}_2^*) \leq \mathrm{Var}(\bar{Z}_1^*) + \mathrm{Var}(\bar{Z}_2^*).$$

We shall make the conservation assumption that the variance is as large as it could reasonably be, namely, $\mathrm{Var}(\bar{Z}_1^*) + \mathrm{Var}(\bar{Z}_2^*)$. In generating standard normal deviates by use

of this assumption to test the difference between the mean Fisher's Z^* for different research areas (see Table 5), we find that the mean for the studies with empathy is significantly smaller than the mean for each of the other research areas, and that no other differences are significant. This analysis, then, is in complete accord with the results of the meta-analyses of the individual areas, which produced the conclusion that empathy was different from the other areas because it alone failed to show evidence of a reliable association between the predictor variable and altruism.

Conclusions

As we have noted when the results of studies on perspective-taking and altruism are combined statistically, they are far from equivocal. Our reviews in most of the subareas have revealed an extraordinarily reliable—if only moderately large—relationship. Furthermore, these reliable relations cannot be attributed solely to artifactual effects of age or of other types of perspective-taking, so each type of perspective-taking has some unique variance in common with measures of prosocial behavior. It is interesting that the sole exception to this conclusion is for empathy, which perhaps is conceptually the closest to altruism of all of the perspective-taking measures but which is the only type of perspective-taking not to show a reliable association with altruism in the studies we have reviewed.

As we have noted, there are several possibilities for relations between empathy and altruism despite these negative findings, but the variation in results from study to study is quite striking. There are, to be sure, variations between studies in the magnitude of correlations for all subareas reviewed here. For most of the areas the typical range is from significantly positive to nonsignificantly positive. This is precisely the sort of result that might be attributed either to sampling variation or to differences between studies in the power of the statistical techniques used (because of differences in sample sizes). For empathy, however, the range is from significantly positive to significantly negative, which is somewhat more difficult to explain by the usual sampling variation or differences in sample size.

Recently, there have been theoretical justifications for and empirical demonstrations of a phenomenon that might help us to understand the puzzling differences among studies of empathy and altruism. There have been suggestions that the relation between measures of perspective-taking and altruism may itself vary as a function of other variables (Barrett & Yarrow, 1977; Hampson, 1981). Barrett and Yarrow found that the relation between social inferential ability and naturalistically observed altruism was positive for highly assertive children but negative for relatively nonassertive children (especially boys). Hampson investigated type of helpfulness among the most helpful boys in his sample as a function of their popularity. The more popular boys tended to engage in acts of helpfulness involving interaction with peers, whereas the less popular boys were more likely to perform relatively impersonal helpful acts. Both these studies present the possibility that relationships involving altruism may be mediated by other factors (e.g., popularity and assertiveness).

This is exactly the sort of process that might be expected to produce variations in the correlation coefficients as large as those observed in studies of empathy and altruism. In fact, the variations among different subgroups in the Barrett and Yarrow (1977) study are of approximately the same magnitude as those observed in work on empathy and altruism. The search for potential mediating factors might well be one of the more fruitful areas for future research. Although the study by Barnett (in press) represents a start in this direction, identifying affective factors that may mediate the empathy–altruism relation, there is clearly room for further contributions insofar as that study did not reveal any factor that might lead to significant negative correlations between empathy and altruism.

Even where reliable associations between altruism and perspective-taking measures have been identified, the relationships are not dramatically large. The average correlations have been between .25 and .30, and the partial correlations controlling for either age or other forms of perspective-taking

were even smaller. There are restrictions in the generality of even these rather modest relationships; some such restrictions are imposed by a certain narrowness in the domain of altruistic behavior sampled by the studies we have reviewed. The vast majority of studies have used laboratory measures of altruism, usually generosity. This would not be such a major limitation were it not for the fact that different measures of altruism tend not to be interrelated very strongly, making it possible for a variable that is positively related to one type of altruism to be unrelated or even negatively related to other types (cf. Underwood & Moore, in press).

Still further limitations in generality are imposed by failure to sample widely in terms of subjects' ages, especially for perceptual and social perspective-taking, where all of the studies have used as subjects children who were younger than 14 years. Although one might anticipate that perceptual and social perspective-taking ability would be unrelated to altruism among adolescents and adults due to ceiling effects on the perspective-taking measures, there are other ways to approach the assessment of perspective-taking among older subjects. For example, it has been demonstrated that the inclination (rather than ability) to engage in social perspective-taking is related to certain social/political attitudes (Underwood & Briggs, Note 14), and such a measure might also be related to altruism among adolescents and adults. The need for more extensive sampling of the age range from childhood to adulthood seems particularly crucial for empathy and altruism, where there are hints in the literature of a relation that increases in strength over this time.

Even for those measures of perspective-taking that we have concluded to be related to altruism (at least for some types of altruism and some age ranges), there remain further contributions to be made. One such contribution would consist of delineating the circumstances in which the relation between perspective-taking and altruism would be unusually strong or unusually weak. For example, Kurdek (1978b) suggested that perspective-taking might be related to remedial altruism (altruism that improves the situation of a needy person) but not to simple altruism (altruism that improves the situation of a person who would appreciate but not truly need the improvement). The finding that assertiveness mediated the relation between altruism and social perspective-taking in one study (Barrett & Yarrow, 1977) should also encourage a search for mediating factors.

There is the further problem of teasing out the precise pattern of causal relations, always a rather difficult task when person variables such as perspective-taking are involved. We would suggest that one fruitful

Table 5
Tests of Differences in Magnitude of Relationship Among Predictor Categories

	Predictor category					
Predictor category	Social perspective-taking	Affective perspective-taking	Empathy	Piagetian moral reasoning	Kohlbergian moral reasoning	Prosocial moral reasoning
Perceptual perspective-taking	−.20	.43	4.15***	.24	.97	−.02
Social perspective-taking		.59	5.09***	.48	1.34	.13
Affective perspective-taking			2.40*	−.27	.40	−.43
Empathy				−3.94***	−3.30**	−3.38**
Piagetian moral reasoning					−.74	−.22
Kohlbergian moral reasoning						−.82

* $p < .02$. ** $p < .002$. *** $p < .0002$.

approach to this issue, perhaps even more fruitful than the development of manipulations of perspective-taking ability and inclination, is the design of studies to allow the implementation of path analyses. This would necessitate some longitudinal work, which is always a major investment of the researchers' time and energy, but the potential benefits to be derived from such studies would certainly seem to be an attractive inducement.

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Revised Policy Statement

At its June 1981 meeting, the Publications and Communications Board of the American Psychological Association expanded *Psychological Bulletin's* publication policies regarding methodological articles to include research designs. The revised policies, effective immediately, appear below (revision underlined):

New Section in *Psychological Bulletin:* Quantitative Methods in Psychology

Purpose of the Section on Quantitative Methods in Psychology

This section is designed to bring pertinent methodological developments to the attention of a broad spectrum of research psychologists. Articles should be understandable to those whose backgrounds in statistical and computer methods are comparable to those now widely required in the recognized PhD programs in psychology. Articles aimed solely toward or accessible only to those skilled in advanced mathematical statistics, mathematics, computer science, or psychometrics are not appropriate.

Types of Articles

Three broad categories of articles are welcomed:

1. *Expository.* These articles are intended to provide a bridge from the more specialized, highly technical literature in statistics, computer science, and mathematics to the research psychologist. Articles should emphasize major ideas and procedures that appear to be useful in the design, analysis, or modeling of empirical research. Accuracy, breadth, clarity, and pertinence are the major criteria for evaluating such articles.

2. *Critical analysis and comparisons of methods.* These articles raise critical questions about quantitative methods and research designs currently in use, make clear the breadth and limitations of existing and proposed methods, and compare alternative available methods. Frequently such articles include numerical and Monte Carlo explorations of specific techniques.

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