The Development of Children's Understanding of the Appearance-Reality Distinction Between How People Look and What They Are Really Like

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Children of 3 to 5 years of age were tested for their understanding that people's real and apparent moral character can differ. In each of four tasks, the subject heard a story about a child's behavior (mean or nice) while seeing a photograph of that child with a neutral expression. A second photograph portrayed the same child "after an operation" that gave the child an appearance which was in opposition to his behavior (nice or mean). This appearance and the child's behavior were restated and then appearance and reality questions were asked. Consistent with previous appearance-reality research, younger preschoolers had significantly more difficulty than older ones did with this socially important instance of the appearance-reality distinction.

A marked increase during the preschool years in children's ability to think about the appearance-reality distinction has been shown in a number of studies (Flavell, 1986, 1988, 1990; Flavell, Green, & Flavell, 1986). This ability is usually tested by first pretraining children briefly on the meaning of *looks like* and *really* and *truly* and then questioning them about the appearance and reality of some illusory stimulus. For example, in the case of a white object that the child sees placed behind a blue filter, the questions are whether the object "looks white or blue right now" (appearance) and whether it is "really and truly white or blue" (reality). The usual finding in these studies is that 4- or 5-year-olds tend to answer both questions correctly and 3-year-olds tend to get one or the other wrong. That is, in the foregoing example, they either say that the object looks blue (correct) and really is blue (incorrect) or that it looks white (incorrect) and really is white

(correct). Only rarely do they respond incorrectly to both questions, e.g., saying that the object looks white but really is blue, as would be expected by chance on about one fourth of the trials if they were simply responding randomly to each question.

Most evidence (Flavell, 1990; Flavell et al., 1986; Taylor & Hort, 1990) suggests that 3-year-olds' difficulties with this distinction are genuine and deep-seated conceptual ones: (a) Three-year-olds from different cultures show the same difficulties; (b) attempts to improve their performance by making the appearance-reality tasks easier or clearer have largely failed; and (c) attempts to train the distinction have likewise proven unsuccessful. Several theorists have argued that 3-year-olds show these and related difficulties (e.g., on false-belief and certain perspective-taking tasks) mainly because they have not yet fully acquired a "representational theory of mind" (Forguson, 1989; Forguson & Gopnik, 1988); roughly, the view that people mentally represent the world and act on the basis of their representations (see also, for example, Flavell, Green, & Flavell, 1990; Perner, 1991; Wellman, 1990). Lacking such a theory, they have difficulty realizing that the object can be mentally represented as simultaneously white when considered from one perspective and blue when considered from another. Consequently, they are reduced to repeating whichever single color they take it to "be," in some undifferentiated sense, at that moment, either its remembered real color or its perceived apparent color.

It is obviously important for children to learn that the physical world can be represented in different ways, and that how it seems or appears to be from some perspective can differ from how it really is (Flavell, 1986). However, it is no less important for them to learn that the same is true for the social world. Like objects, people too may seem or appear to be different from the way they really are. For example, people can look like they feel happy but actually feel sad, or they can seem nice superficially but not be nice in reality. Knowing that people can present psychological appearance-reality discrepancies is a critical part of children's social-cognitive development. They will surely function more adequately in interpersonal situations as they realize that people may not always be thinking, feeling, wanting, or intending what they appear to be, that people who are attractive or unattractive in appearance may not be that same way in behavior, and that people may have ulterior motives for their altruistic-seeming actions. Sensitivity to possible appearance-reality discrepancies can even be a survival skill in a world where benevolent-appearing others invite children to accompany them into their cars, sample their drugs, and the like.

What little developmental research has been done concerning psychological appearance-reality discrepancies has mostly focused on real versus apparent emotions. In a series of studies, Harris and colleagues have inves-

tigated children's ability to distinguish between how people look like they feel from their facial appearance (when deliberately feigning an emotion) and how they really feel inside (Harris, 1989; Harris, Donnelly, Guz, & Pitt-Watson, 1986; Harris & Gross, 1988; Pratt & Harris, 1989). Consistent with the findings of object appearance-reality studies, these researchers found a substantial improvement during the preschool period in children's ability to grasp the distinction. As in the foregoing studies also, their subjects usually erred by giving the same answer to both questions, that is, responding with either the real emotion to both questions or the apparent emotion to both. This finding suggests that preschoolers do not understand that the focal person can be represented simultaneously in two different ways (e.g., as looking happy on his face but really feeling sad inside).

Only one study (Hoffner & Cantor, 1985) deals with appearance-reality discrepancies concerning not what people feel, but what sort of people they are. Unlike the present study, Hoffner and Cantor were not explicitly concerned with the appearance-reality distinction and did not directly test children's ability to make the distinction. However, they did test the related ability to use behavior ("reality") rather than physical attractiveness ("appearance") as the basis for judging a target individual's character ("reality"). Hoffner and Cantor (1985) manipulated the physical appearance (attractive or ugly) and behavior (kind or cruel) of an adult cartoon character in a videotape episode in which the ending was left ambiguous. After seeing the videotape, children from 3 to 10 years of age assessed the character's personality ("nice" vs. "mean") and predicted her future social behavior (positive vs. negative). When the character's initial appearance and behavior were inconsistent (i.e., when she looked kind but behaved cruelly or vice versa), 3- to 5-year-olds relied on appearance when assessing her personality and predicting her future behavior to a significantly greater degree than did the older subjects. A second study showed that subjects of all ages based their judgments on appearance when no behavioral information was provided, suggesting that the younger children's performance in the first study reflected a relatively greater dependence on appearance as opposed to behavior cues, rather than just a greater tendency to stereotype people on the basis of physical appearance.

The present study was designed to provide a more direct and adequate test of 3- to 5-year-olds' ability to understand that it is possible for people to look nice or mean but not really to be that. The testing procedure included several improvements over that used by Hoffner and Cantor (1985): (a) The people to be judged were photographs of actual children rather than cartoon adults; (b) a reason was given for why these focal children looked different from the way they really were (e.g., looked mean despite really being nice); (c) as in previous appearance-reality studies, both appearance

and reality questions were included to heighten attention to the distinction and to provide a direct test of children's ability to make the distinction; and (d) how the children looked (appearance) and what they were actually like as people (reality) were made very clear and explicit. Subjects first heard a brief story that described a neutral-looking focal child as very nice or very mean. Next they learned that an operation (cf. Keil, 1989) had temporarily made the child look the opposite; at this point they were shown a photograph of the same child with a small bandage on his or her face, looking mean or nice. Then the subjects were asked whether the child *looks* nice or mean (appearance question) and whether the child *really* and *truly* is nice or mean (reality question).

METHOD

Subjects

Subjects were 72 preschool children, divided into three age groups of 24 each: 3-year-olds (11 girls and 13 boys, mean age 3–5, range 2–7 to 3–11); 4-year-olds (13 girls and 11 boys, mean age 4–6, range 4–1 to 4–11); and 5-year-olds (15 girls and 9 boys, mean age 5–3, range 5–0 to 5–7). Five other children were tested but were not retained as subjects because they failed to pass at least three out of four memory tests (four 3-year-olds and one 4-year-old). The subjects attended a nursery school in a predominantly upper middle-class urban area.

Procedure

Four pairs of 4 × 5-inch color photographs of children's faces were used. Two pairs (one female pair and one male pair) showed a child with a neutral expression in one photograph, and the same child with a nice expression in the other (smiling, looking happy and friendly). Each of the other two pairs (one female and one male) showed a child with a neutral expression in one photograph and a mean expression in the other (glowering, threatening). Thus, the four pairs were female neutral-mean, female neutral-nice, male neutral-mean, and male neutral-nice. Stimuli were chosen from a number of posed photographs of children between 7 and 12 years of age. Several adults judged the pictures and picked the four which best exemplified stereotypical mean and nice expressions. The experimenter subsequently introduced six 3- and 4-year-olds to the four pictures by saying: "I have pictures of mean, nasty children and nice, good children." Then, for the first two pictures: "Does this [showing one picture]

look like a mean, bad kid or a nice, good kid?" And then, for the last two pictures: "What kind of kid does this look like?" All of the children answered all of the questions correctly. Story and appearance were paired in the following ways: nice story and mean appearance male; nice story and mean appearance female; mean story and nice appearance male; mean story and nice appearance female. Orders of tasks were counterbalanced.

Pretraining. Pretraining to familiarize children with the meaning of *looks like* and *really* and *truly* was similar to that used in previous studies (see Flavell, 1986). The experimenter showed the child a hand puppet and said, "This is Charlie. Really and truly he's Charlie, but he's got a costume for Halloween." After putting a ghost costume over the puppet's head, the experimenter continued, "Right now, he *looks* like a ghost to your eyes, but *really* and *truly* he isn't. *Really* and *truly* he's Charlie [takes off ghost costume], but right now [puts on ghost costume] he *looks* like a ghost. Sometimes things *look* like one thing to your eyes when they are *really* and *truly* something else."

Task. The experimenter told the child that he or she would look at some pictures of children and hear some stories about them, and would need to listen carefully to remember the stories. The nice story and mean appearance male task demonstrates the procedure for all four tasks. The experimenter showed the child a neutral picture of a boy and said:

> I have a story about this boy. His name is Bobby. Bobby is a very nice boy. He always does good things. When Bobby is at school, he helps other children with their school work. He always shares his games and toys with other children. That's pretty nice, isn't it?

(The mean stories described children who repeatedly committed such acts as teasing and hitting other children, or stealing or breaking their possessions.) Then, the experimenter said:

> One day, Bobby had an accident and had to have an operation on his face that made him look very mean, like this [shows mean photograph] for just a little while. The operation only changed his face and nothing else. Now, Bobby looks like this. Now Bobby *looks* like a very mean kid because of his operation. He still does really nice things like he always did, but now his face looks mean. So, the operation changed his face, didn't it? It didn't change anything else though, just his face.

Next, the experimenter asked the child: (a) "When you *look* at Bobby right now, does he *look* like a nice kid or does he *look* like a mean kid?" (*appearance question*), (b) "*Is* Bobby *really* and *truly* a nice kid or *really* and

truly a mean kid?" (*reality question*). The order of the questions was randomly varied with the constraint that one half of the children received the appearance question first on the first trial and all children had two trials with the appearance question first and two trials with the reality question first. The order of the answer choices within each question was unsystematically varied. The same question and answer orders were used for each age group.

Finally, the child was tested for memory of the original story. The experimenter showed the child the original picture and asked, "What did Bobby do at school? Do you remember what he did in the story I told you?" If the child hesitated, the experimenter asked, "Did Bobby do anything with toys? Did he do anything with other children?" Children were scored as having remembered the story content if they correctly reported any nice or mean behavior or said that the character was nice or mean. Children giving correct answers were praised for remembering the story. If a child gave an incorrect answer or no answer, the experimenter briefly summarized the behaviors described in the story and then encouraged the child to try to remember what the child did in the next story. The other three tasks followed.

RESULTS

In the analyses that follow, reference to a task is by its story type (nice or mean behavior), not by the character's appearance after the operation. Inspection of the data showed no substantial differences in answer patterns due to the sex of the focal character in each story type. Consequently, the data were collapsed into two story types (nice behavior and mean appearance, and mean behavior and nice appearance) for subsequent analyses. Each child was then given a score of 0, 1, or 2 points for the two trials of each story type; one point was given for each correct pair of answers (i.e., correct answers to both the appearance question and the reality question of a given trial). A 3(Age) $\times$ 2(Sex) $\times$ 2(Story Type) ANOVA revealed a significant effect for age only, $F(2, 66) = 4.49$, $p < .025$; there were no other significant main effects or interactions. The percentages of trials completely correct were 55%, 73%, and 86% for 3-, 4-, and 5-year-olds, respectively. Post hoc Tukey tests showed that the 3-year-olds performed more poorly than did either the 5-year-olds ($p < .01$) or the 4-year-olds ($p < .05$), with the two older groups not differing significantly from one another. However, even the 3-year-olds, taken as a group, performed significantly better ($p < .05$ by t test) than chance expectation of 25% correct pairs.

Table 1. Number of Children at Each Age Level Correctly Answering 0–4 Pairs of Questions

	Scores				
Age	*4*	*3*	*2*	*1*	*0*
3	6	6	3	5	4
4	11	5	5	1	2
5	19	2	0	1	2

Table 2. Patterns of Answers to Appearance and Reality Questions

Story Type	Age	Correct Answers to Both	Appearance Answers to Both	Reality Answers to Both	Incorrect Answers to Both	Incorrect Memory Response
Nice	3	29	9	10	0	3
	4	34	5	8	1	0
	5	42	4	2	0	0
Mean	3	24	14	10	0	2
	4	36	5	7	0	0
	5	41	4	3	0	1

Table 1 indicates the number of children at each age who correctly answered 0 to 4 pairs of questions. There was a marked increase with age in the number of children consistently differentiating between the real and the apparent niceness-meanness of the focal children. Table 2 shows the patterns of correct and incorrect responses to the appearance and reality questions. Two findings are evident in Table 2. First, as a group, when children erred they responded by giving the reality answer to both questions about as often as they gave the appearance answer to both. Second, children virtually never erred by responding differently (but incorrectly) to both questions. Not shown in Table 2 is the intriguing finding that individual children tended to make the same type of error consistently. Of the 22 children who erred on two or more of the four tasks, 21 made only one of the two types of errors mentioned earlier (i.e., either giving reality answers to both questions or appearance answers to both). Only six of the children (five 3-year-olds, and one 5-year-old) made the maximum allowable number of one inadequate story recall.

Finally, it might have been expected that children would "catch on" to the task demands and improve over trials as the experimenter repeatedly differentiated reality and appearance in the test questions. No suggestion of such improvement appeared in the data, however.

DISCUSSION

The results showed a significant increase from 3 and 5 years of age in children's ability to make an appearance-reality distinction between the sort of person an individual appeared to be from his or her facial expression and the sort of person that the individual really was as evidenced by his or her behavior. As an illustration of this increase, Table 1 shows that only 12 of the 24 3-year-olds consistently made the distinction (3 or 4 pairs correct), whereas 21 of the 24 5-year-olds did. This developmental pattern is quite similar to those previously observed, both in a number of appearance-reality studies using physical objects, and in studies dealing with people's real versus apparent emotion done by Harris and coworkers (see especially Pratt & Harris, 1989). Likewise, the modest age increase in correct answers to the reality question (first plus third data columns of Table 2) parallels that found in a somewhat similar study by Hoffner and Cantor (1985) in which only reality questions were asked.

Several explanations are possible for the poorer performance of the younger children. An obvious one, always to be considered in studies of young children, is that the task demands were not made clear, leaving the children no recourse but to chose randomly between the two options of "nice" and "mean" when answering each question. Neither part of this argument seems plausible, however. First, the task demands in this study could hardly have been more clear and explicit. Children were initially pretrained on the intended meaning of the appearance and reality expressions. Nice and mean were concepts with which they were familiar before the experiment. "Is a very nice boy," for example, was equated with nice behavior during the story so that the is wording in the subsequent reality question, "Is Bobby really and truly a nice kid or really and truly a mean kid?", could more easily be understood as referring to behavior rather than appearance; similarly, looks was explicitly identified with facial appearance after the operation rather than with behavior. The experimenter also carefully explained that the operation changed only the focal child's face, and that his or her behavior remained as it was. Finally, both the appearance and the reality were restated shortly before the test questions: "Now Bobby looks like a very mean kid. . . . He still does really nice things . . . but now his face looks mean." As to the second part of the argument, it is also not true that the children responded randomly to the questions. Had they done so, there would have been many more trials on which children answered both questions incorrectly; instead, there was only one such trial in the whole data set (Table 2). What children did instead, as in numerous other appearance-reality studies, was either to respond correctly to both questions or else to give the same answer to both. Moreover, when

individual children erred they tended to show the same error pattern over trials: either giving only appearance answers or only reality answers to both questions.

A more reasonable possibility is that younger children erred because they had difficulty recalling the reality presented in the story (the appearance, of course, remained perceptible and therefore did not have to be recalled). Although an inability to remember the story could account for the error pattern of giving appearance answers to both questions, it obviously could not account for the equally frequent error pattern of giving reality answers to both questions. However, it is even questionable whether memory difficulties played a large role in producing the former pattern. As Table 2 shows, only six of the 72 children retained in the study were scored as having failed to remember even one of the four stories. Furthermore, five of these six had responded correctly on that trial to appearance and reality questions. There were also the facts that the experimenter repeated the reality just before the test questions were asked, that recognition memory alone should have sufficed to retrieve the child's real character ("Just recognize whether he was nice or mean"), and that performance on the memory tests was much better than performance on the appearance-reality questions. Thus, although memory problems could have played some role in limiting the younger children's performance on these tasks, it was probably not a large role.

Another possibility is that the younger children found an operation as the cause of a mean or nice facial expression to be unfamiliar and incomprehensible, which may have impaired their task performance. Several reasons cast doubt that it had this effect, however. First, there is no compelling reason to think that older preschoolers would have found this admittedly odd manipulation to be any more familiar or comprehensible than the younger ones, and yet they performed quite well on the tasks. The same argument and counterargument can be made, of course, for all previous nonsocial appearance-reality studies. Second, the story character's visible facial appearance and recently described mean or nice behavior, not the appearance's cause, were the salient events for the subjects when the task questions were asked.

Finally, the results of a study by Pratt and Harris (1989) suggest that using a more realistic and possibly more familiar cause of a person's misleading facial appearance does not necessarily make the task any easier for young children. These researchers presented 4- and 5-year olds with stories in which the emotional appearance, the emotional reality, and the cause of the appearance were all explicitly described. A sample story was: "Carol feels sad because she fell down in the playground. If Carol shows the other children how she feels they will laugh at her. So Carol

looks happy on her face." The subjects were then asked: (a) "When Carol fell over did she feel happy or sad?" (reality question); (b) "When the other children saw Carol did she look happy or sad?" (appearance question). The percentages of correct pairs of answers were 53% for the 4-year-olds and 83% for the 5-year-olds; recall that the comparable percentages from the present study for these ages were 73% and 86%. Their error patterns were also very similar to those shown in Table 2; that is, single errors of both types but very few double errors. The purpose in using the strange contrivance of an operation was precisely to make it clear that the cause of the character's facial expression was physical rather than psychological; that is, to be sure the children knew that the character's nice or mean appearance did not reflect nice or mean realities (underlying sentiments or behavioral dispositions), and therefore could readily differ from those realities.

The explanation of the younger children's difficulties, favored here, is the one cited in the Introduction. According to this explanation, because of their limited understanding of mental representations, young children do not fully appreciate that the selfsame stimulus can be mentally represented in different, even contradictory-seeming ways. As a consequence, they tend to represent the stimulus in only one of these ways at a given moment, and to do so without being aware that what they are doing is representing it. In the present tasks, this single-coding tendency takes the form of a strong inclination to represent each focal child as "being," in some nonspecific, undifferentiated sense, either nice or mean but not both at once. This inclination must be strong, given that everything in the task situation suggested that they should represent the focal child in two opposing ways rather than in only one. In fact, as previously mentioned, 3-year-olds often persist in giving an appearance-reality stimulus only one representation, even following direct attempts to train them to do otherwise (Flavell et al., 1986; Taylor & Hort, 1990). Pratt and Harris (1989) interpreted their results similarly:

> The main difficulty for the 4-year-old children seems to lie in the tendency to collapse the distinction between the emotion that is being experienced and the one that is shown on the face. Despite the fact that the real and apparent emotions were explicitly described as different when the stories were narrated, children ignored this discrepancy. (pp. 18–19)

This explanation is also supported by evidence that young children who fail appearance-reality tests also tend to show other signs of not understanding mental representations well (Flavell et al., 1986; Gopnik & Astington, 1988; Moore, Pure, & Furrow, 1990). In particular, they tend not to appreciate that belief representations can change, be false, and be

held with different degrees of certainty, and that how something is represented perceptually can vary from one viewing position to another.

If, as argued here, the 3-year-olds' errors attest to a lack of adequate knowledge about mental representations rather than to information-processing problems or the like, to what do the 4- and 5-year-olds' correct answers attest? To a better command of that same knowledge, but probably not much more. It is not known how well they would have done without the very considerable help that the experimenter provided. Children of this age tend to perform more poorly on both object and person appearance-reality tasks when given less explicit assistance (Flavell et al., 1986, 1989; Gross & Harris, 1988; Harris et al., 1986). The evidence also suggests that children of this age are less given than older children to conceptualize qualities like niceness and meanness as stable underlying personality dispositions or traits (Rholes, Newman, & Ruble, 1990; Shantz, 1983). Thus, they would be unlikely to have yet formed the generalization that people may not be what they seem: in effect, that their real traits or dispositions may differ from the ones they appear to have.

How much of this kind of social knowledge children of various ages possess, and how much they use it in their everyday lives, are important questions for future research. What the present study suggests is that a basic and general conceptual prerequisite for acquiring this knowledge develops between 3 and 5 years of age, namely, an understanding that the selfsame thing may be represented in two contrasting ways. If true, it suggests that attempts to teach children about important real-world implications of the appearance-reality distinction, especially that one should be wary of relying solely on initial, superficial impressions when judging people, objects, and situations, might profitably begin at 4 or 5 years of age. As noted in the Introduction, sensitivity to the distinction is not just useful in today's world; it can be vital.

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