

## Young Children's Knowledge About the Apparent-Real and Pretend-Real Distinctions

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Three experimental tests were made of the hypothesis that understanding of the pretend-real distinction develops earlier than understanding of the theoretically related apparent-real distinction. As predicted, 3-year-old children consistently performed better on pretend-real tasks than on apparent-real tasks, even when the two tasks were identical except for the distinction tested. Speculations were made about why understanding of the two distinctions might develop in that particular sequence and about how they might be related developmentally.

Psychologists have long been interested in the development of children's knowledge about the mind (Piaget, 1929). In fact, much of the now-extensive research literature on metacognitive and social-cognitive acquisitions has dealt with one or another aspect of this development. For reviews of this literature, see, for example, Bretherton and Beeghly (1982), Brown, Bransford, Ferrara, and Campione (1983), Chandler and Boyes (1982), Flavell (1979, 1981, 1985), Flavell and Ross (1981), Selman (1980), Shantz (1983), Shatz, Wellman, and Silber (1983), Wellman (1985a, 1985b), and Wimmer and Perner (1983). One basic component of the "theory of mind" that children acquire must be the recognition that internal mental representations of external stimuli are to be distinguished from the stimuli themselves and need not be in one-to-one correspondence with these stimuli (Chandler & Boyes, 1982; Flavell, 1986a, 1986b, 1987; Taylor, 1985). On one hand, a single representation may refer to a number of different stimuli, as when a single class concept has as instances a variety of objects or events. On the other hand and more important for the research reported in this article, the same stimulus object can simultaneously give rise to a number of different, even seemingly contradictory, mental representations. Level 2 visual perspective taking (Flavell, Everett, Croft, & Flavell, 1981) provides a clear example of this latter asymmetry. Level 2 children have the "metarepresentational" knowledge (Baron-Cohen, Leslie, & Frith, 1985; Wimmer & Perner, 1983) that different viewers may have different visual experiences (representations) of the very same stimulus if they view it from different station points. For example, they understand that it may look upside down to one observer and right side up—the very opposite—to another.

Flavell and colleagues (Flavell, 1986a, 1986b, 1987; Flavell, Green, & Flavell, 1986) have recently argued that the acquisition of this same metarepresentational knowledge may be what

enables children to understand the appearance-reality distinction. Just as in Level 2 perceptual perspective taking, we can comprehend and think about the appearance-reality distinction only by understanding that the selfsame external stimulus can simultaneously "be" two different, incompatible things—not out there in the world but in our mental representations of it. A white piece of paper that we presently view through a blue filter is not, itself, simultaneously both all blue and all white. Likewise, a candle that looks like an apple is not, itself, simultaneously both a candle and an apple. Conjunctions of such incompatible properties or identities cannot hold true for objects in the external world; they can hold true only for mental representations of these objects in the internal world. Thus, we can correctly and without contradiction mentally represent the paper as simultaneously being both "blue in appearance to me right now" and "actually white, in reality" and the candle as both "looks just like an apple" and "really a candle." According to this argument, therefore, appearances and realities are much like perspectives. (Indeed, a Level 2 perceptual perspective is literally an appearance.) Both *appearances/realities* and *perspectives* refer to the internal mental representations that sentient subjects have of external objects, and the ability to understand both requires the above-described metarepresentational knowledge. This analysis is supported by Flavell et al.'s (1986) finding that competence in Level 2 perspective taking and competence in appearance-reality are highly correlated ( $r_s = .67-.87$ ) in 3-year-olds when assessed with the same task displays, involving real versus apparent color and shape. To illustrate by using the previous color example, this means that the children who realize that the paper that appears blue is "really and truly" white (appearance-reality competence) are also very likely to realize that it looks white to an experimenter who views it from the opposite side, without visual distortion (Level 2 perspective taking).

The pretend-real distinction also seems cognitively quite similar to the Level 2 different-perspectives distinction in these respects and even more similar to the apparent-real distinction. In pretend-real discrepancies, as in apparent-real ones, there are two different representations of the same stimulus, and, unlike the case in perspective taking, one is identified as more consensually valid ("real") than the other. For instance, the apple-shaped candle looks like an apple but is really a candle (ap-

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parent-real discrepancy). Similarly, a little block becomes a pretend car in the child's symbolic play but is really a block (pretend-real discrepancy).

Given these cognitive similarities between them, one might expect some sort of systematic developmental relation to hold between a metarepresentational understanding of the apparent-real and pretend-real distinctions. The relation might be developmental synchrony, as we have just seen may be true of competencies in apparent-real and Level 2 perspective taking (Flavell et al., 1986). Consistent with this possibility, Wellman (1985b, pp. 22–26) reported spontaneous verbal expressions of both distinctions in the diary records of a boy's speech during his third and fourth years. There is also much evidence that children become increasingly explicit about pretend events during the preschool years, verbally assigning pretend identities to self, playmates, actions, and objects just prior to and during social pretend play (Bretherton, 1984; Fein, 1981; Piaget, 1962; Rubin, Fein, & Vandenberg, 1983); for example, the child might say, "Pretend this block is a car." The fact that these behaviors have been conceptualized as "metacommunication" (Bretherton, 1984, pp. 23–24) and "metaplay" (Rubin et al., 1983, p. 725) suggests that they may reflect metarepresentational knowledge about the pretend-real distinction.

There are, however, even better reasons to hypothesize a systematic developmental sequence, with metaknowledge about pretend-real regularly emerging earlier than metaknowledge about apparent-real. Pretend play, like locomotion and language, seems to be one of those biologically preprogrammed activities that all normal human young are destined to practice and perfect when maturationally ready (Flavell, 1985). The ability and disposition to engage in pretend play first appear around 12 months of age and then grow prodigiously during the next several years. It is clear that by the time children are old enough to take—and often fail—tests of appearance-reality metaknowledge (age 3), they are already quite experienced and accomplished practitioners of pretend play. They can and frequently do create pretend-real contrasts through their own actions, and the pretend identities so created are cognitively very salient and interesting to them. Expressions like *pretend*, *pretending*, and *make believe* are probably clearly understood by this age: *real* and *really* may be also, at least when contrasted with these pretense expressions. Although children may become increasingly skilled at talking about both distinctions as they grow older (see above), their frequent participation in social pretend play gives them many more opportunities to articulate and reflect on the pretend-real distinction. Finally, parents may also provide a formative environment by encouraging pretend play, actively participating in it, verbalizing pretend-real contrasts, and supplying play materials (e.g., toys).

The same can probably not be claimed for the apparent-real distinction. To the best of our knowledge, preoccupation with appearances does not have the endogenous push that preoccupation with pretense does. Moreover, children cannot create apparent identities as easily as they can create pretend identities; to illustrate, it is obviously harder to find or make a candle that looks like an apple than to pretend that a candle is an apple. They also probably do not find illusory appearances as salient or interesting as pretend identities. For instance, once they discover that the seeming stranger in the distance is really Dad, they are likely to be preoccupied with who he really is rather

than with who he initially appeared to be. In contrast, if they pretend that Dad is a dinosaur, they will be preoccupied with his dinosaur identity as well as with who he really is. Parents may also not provide as formative an environment in the apparent-real case.

Still other differences exist. Whereas pretend consistently contrasts with real, apparent does not. If a person pretends to be X or pretends that an object is X, that person or object normally cannot also really be X. On the other hand, if the person or object looks like X, that person or object can either really be X or really not be X. This lack of consistent contrast may explain why, in everyday usage, "looks like X" means "resembles X" plus anything from "and probably is X" to "but definitely is not X." This inconsistency might also cause children to master the apparent-real distinction later than the pretend-real distinction. In addition, Flavell et al. (1986) found that 3-year-olds were near-significantly ( $p < .07$ ) better at identifying fake objects as "pretend" and real ones as "real" than at correctly identifying what fake objects looked like and what they really were. Wellman and Estes (1986) also found that 3-year-olds could readily make a number of appropriate distinctions between pretend (and other mental terms) and real entities.

Finally, differences in how pretend-real and apparent-real cognitions are experienced may also make for earlier metaknowledge of pretend-real cognitions (Flavell, 1986b, 1987). Pretending is experienced as representing objects in any way one wishes. One feels free to pretend that an object is this or that, depending only on one's own play objectives. In contrast, thinking about appearances and realities is experienced as serious cognition rather than play; one has the sense of trying to determine what is there rather than of mentally transforming what is there ad libitum. Consequently, imagining that one thing could be represented in two seemingly contradictory ways should be easier for young children when the representational enterprise is playful, unconstrained assimilation than when it is serious, constrained accommodation.

The purpose of this investigation was to test the hypothesis that metaknowledge of the pretend-real distinction develops earlier than metaknowledge of the apparent-real distinction. We performed three different experimental tests. We conducted Test 1 with a sample of twenty-six 3-year-olds. In Tests 2 and 3, we used the same group—a different sample of forty 3-year-olds—and always administered the tests in that order; Tests 2 and 3 were obviously not wholly independent assessments, inasmuch as they had the same subjects. In each test, we gave all children sets of apparent-real tasks and pretend-real tasks to compare their performance on the two types of tasks. We deliberately varied the three tests to provide a variety of assessments of the predicted developmental ordering. They differed from one another in several ways but most importantly in how similar the apparent-real tasks were to their pretend-real counterparts—least similar in Test 1 and most similar in Test 3.

### Tests

*Test 1.* The apparent and real identities used in the apparent-real tasks did not overlap at all with the pretend and real identities used in the pretend-real tasks. For example, in one apparent-real task, a fake rock's apparent identity was a rock and its real identity, a sponge; in one pretend-real task, a piece

of string's pretend identity was a snake (i.e., an experimenter pretended that it was a snake) and its real identity, a string.

*Test 2.* For each pair of tasks, the apparent and pretend identities continued to differ, but the two real identities were the same. For instance, the fake rock was used both in an apparent-real task and in a pretend-real task. Its apparent identity was a rock in the apparent-real task, and its pretend identity was a truck in the pretend-real task, whereas its real identity was a sponge in both.

*Test 3.* The two realities were the same for each pair of tasks, as in Test 2. In addition, however, the apparent and pretend identities also coincided. For example, in both an apparent-real task and its pretend-real counterpart, an experimenter pretended to eat a fake apple that was really a candle. The result was that both its apparent and pretend identities were an apple and that its real identity was a candle. Therefore, the two tasks of each pair in Test 3 were identical in every respect except for whether the children had to answer an apparent-identity or a pretend-identity question.

The Test 1 pretend-real tasks might prove easier than the Test 1 apparent-real tasks merely because both identities remained perceptible during questioning in the pretend-real tasks, whereas only the apparent identity did in the apparent-real tasks. That is, the string looked and sounded rather snakelike during the experimenter's pretending and, of course, also continued to look like a string. In contrast, the fake rock looked like a rock but, being a "good fake," did not look like a sponge. Both identities are commonly perceptually available in just this way in real-life pretend play and can also be perceptually available in real-life apparent-real situations (poor fakes, people who resemble other people only in part, and so on). This difference between the two kinds of tasks was removed in Tests 2 and 3: Both kinds of tasks used the same realistic fake objects, the real identities of which were not clearly perceptible. Comparison of the three tests suggests that Test 3 should have been the most sensitive and valid test of the hypothesis; Test 2, somewhat less so; and Test 1, least so.

## Method

### Subjects

The subjects were nursery school children from largely upper-middle-class families. The Test 1 sample consisted of 10 girls and 16 boys (mean age = 3-8, range = 3 years 2 months to 4 years 2 months). That of Tests 2 and 3 consisted of 20 girls and 20 boys (mean age = 3-6, range = 2 years 11 months to 4 years). One experimenter tested each subject in the first sample. Two experimenters tested each subject in the second sample: One did all the explaining and question asking, and the other did all the demonstrating and object manipulating.

### Procedure

In all three tests, the children were briefly pretrained on the two distinctions. They were also given part (in Test 3) or all (in Tests 1 and 2) of the solution to each task prior to task administration. The purpose of doing this was to make sure that they at least had the opportunity to notice what the apparent, pretend, and real identities of the task objects were and how these three types of object representations were expressed linguistically. We assumed that this information would be meaningful and useful only or mostly to those children who already possessed some understanding of these representations and distinctions. This assump-

tion was based on a generally constructivist view of how cognitive development typically proceeds and on evidence (Flavell, 1986a; Flavell et al., 1986) that it is very difficult to train young children who cannot already do so to solve the sorts of simple appearance-reality tasks used in this study.

### Test 1

All children were given a block of six apparent-real tasks that was either followed (half the sample) or preceded (the other half) by a block of six pretend-real tasks. Each block was preceded by brief pretraining on the relevant distinction.

In each apparent-real task, the experimenter first showed the child a realistic-looking fake object and asked what it looked like, then explained and demonstrated what it really was, and then asked whether it looked like an A (its apparent identity) or like an R (its real identity) to the child's eyes right now and whether it really and truly was an A or an R. The six fake objects were a sponge that looked like a rock, a pencil sharpener that looked like a potato, a stone that looked like an egg, pieces of paper that looked like a flower, an eraser that looked like a roll of Life Savers candy, and a candle that looked like an apple. The order in which the six tasks were presented was randomly determined for each child. The order in which the appearance and reality questions were asked alternated systematically from one task to the next. The order of mention of the two possible answers to each question (i.e., the object's real identity or its apparent identity) varied unsystematically from question to question.

In each pretend-real task, the experimenter first showed the child a familiar object and asked what it really and truly was. Then, using gestures and sound effects, she pretended that it was a different object and invited the child to do the same. Finally, while still pretending, she asked the child whether she was pretending the object was a P (its pretend identity) or an R (its real identity) right now and whether it was really and truly a P or an R. The six objects (and their pretend identities) were a plastic cup (hat for a stuffed bear), a sheet of paper (blanket for a Snoopy doll), a string (snake), a toothpick (boat in water), a pencil (car), and a curved plastic straw (telephone). Task, question, and answer orders were the same as in the apparent-real condition.

The exact procedure for the pretraining and a sample task of each condition follow.

*Apparent-real pretraining.* "What does this [rubber ice cream on a plate] look like to your eyes right now? That's right, it looks like ice cream. But really and truly it's not ice cream. Really and truly it's a piece of rubber. Feel it. What is this really and truly? That's right/actually, it is really and truly a piece of rubber, but it looks like ice cream."

*Apparent-real sample task.* "What does this [fake egg] look like to your eyes right now? That's right. Let's find out some more about this. It's really and truly a stone that somebody painted. Feel it. It's hard and doesn't break and the paint comes off. Now I'll ask the two different questions. I'll ask about the way this looks to your eyes right now and about what it really and truly is. Here's the first question. What is this really and truly? Is this really and truly a stone or really and truly an egg? When you look at this with your eyes right now, does it look like an egg or does it look like a stone?"

*Pretend-real pretraining.* "Now we'll play some pretend games. I'll show you what I mean. What is this [crayon] really and truly? That's right. It's really and truly a crayon, but I'm going to pretend or make believe it's a toothbrush [pretends to brush teeth]. What am I pretending this is right now? That's right/actually, I'm pretending this is a toothbrush, but really and truly it's a crayon."

*Pretend-real sample task.* "What is this [curved straw] really and truly? That's right. Let's pretend this is a telephone. I'll take a turn; then you can take a turn. Ring. Ring. Hello. I'm fine. Goodbye. Now it's your turn to pretend this is a telephone. . . . Okay, my turn. Now I'll ask the two different questions. I'll ask about what I'm pretending this is right now and about what it really and truly is. Here's the first question.

[Pretending verbalizations preceded each question, and pretending actions continued during each question.] What is this *really and truly*? Is it *really and truly* a telephone or *really and truly* a straw? What am I *pretending* this is right now? Am I *pretending* this is a straw or *pretending* this is a telephone?"

### Test 2

Tests 2 and 3 were administered in a single session—Test 2 first and Test 3 immediately afterward. In Test 2, all children were given a block of four apparent-real tasks, followed (half the sample) or preceded (the other half) by a block of four pretend-real tasks. The same four realistic-looking fake objects were used in both blocks. Their real, apparent, and (experimenter-conferred) pretend identities were, respectively, (a) sponge, rock, truck; (b) pencil sharpener, lemon, airplane; (c) eraser, banana, fire hose; and (d) pen, ice cream cone, telephone. In the apparent-real block, the experimenters first very explicitly pretrained the child on the distinction, using a pencil sharpener that resembled a potato. It was emphasized that "*really and truly* means what we use things for [sharpens a pencil]" and that the fake object "*looks* like a potato [holds object up]—somebody made it brown and round so it *looks* like a potato." Then they demonstrated and described the apparent and real identities of each of the four objects in turn. Finally, they reintroduced each object by nonverbally demonstrating its real identity (e.g., squeezing the sponge and erasing pencil marks with the eraser) and asked what it looked like and what it *really and truly* was. The sequence of events was the same in the pretend-real block. The order of presentation of the four objects (tasks) was the same in both conditions and for all subjects, namely, that just given. The question order for each object was counter-balanced across subjects; the reality question was always asked first on some two of the four objects—the same two in both conditions. Order of mention of the two possible answers to each question varied randomly across questions.

The exact procedure for the two tasks with the fake rock follows.

**Apparent-real.** "*Really and truly* that thing is a sponge. People use it to wipe things up. Feel how soft and squishy it is." The first experimenter demonstrated by wiping a plate with it, holding it so that its appearance would not yet be clearly visible. Then she gave it to the child to use or feel briefly, took it back, and said, "*Really and truly* that thing is a sponge, but it *looks like* something else. Let's hold it up and look at it." The object was placed on a box, as if on display, and both experimenters conspicuously turned and looked at it. "See, it *looks* like a rock. Somebody made it spotty and bumpy so that it *looks* like a rock, doesn't it? It *looks* like a rock but *really and truly* it's a sponge." After the other three objects had been similarly introduced, the experimenter said, "Now I'm going to ask you about how things *look* and what they are *really and truly*. Here's this thing." The second experimenter briefly squeezed the sponge, to remind the child of its real identity, and held it up. Both experimenters looked at it. The first experimenter then said, "Look at what she's holding. Right now, does that [points] *look* like a rock or *look* like a sponge?", followed or preceded by "For *real*, is that thing [points] *really and truly* a rock or *really and truly* a sponge?"

**Pretend-real.** After explaining the object's real identity in the manner just described, the first experimenter said, "*Really and truly* that thing is a sponge, but \_\_\_\_\_ can *pretend* it's something else. She can pretend it's a truck." The second experimenter pretended with sound and motion: "Vrmm, going to get some gas. Where's the gas station?" and the like. She continued to move the "truck" as the first experimenter said, "Right now she's pretending that's a truck. Do you want to pretend that thing is a truck?" (Some children did not; their task performance did not differ, however, from that of children who did.) The second experimenter played with the truck again as the first experimenter said, "Right now, she's *pretending* that thing is a truck but *really and truly* it's a sponge." After the other three objects had been similarly introduced, the first experimenter said, "Now \_\_\_\_\_ is going to pretend again and I'm going to ask you about what she's *pretending* things

are and what they are *really and truly*. Here's this thing." The second experimenter briefly squeezed the sponge. The first experimenter then asked the two questions. (Second experimenter says, "Vrmm, we need gas.") "For *real*, is that thing *really and truly* a sponge or *really and truly* a truck?", followed or preceded by "She's *pretending*." (Second experimenter says, "Vrmm, we need gas.") "Is she *pretending* that thing's a truck or *pretending* it's a sponge?"

### Test 3

Immediately after Test 2 was completed, all children were given a block of three apparent-real tasks, followed (half the sample) or preceded (the other half) by a block of three pretend-real tasks. The same three realistic-looking fake objects were used in both blocks and were always presented in the order given below. Their real identities and their apparent-and-pretend identities (the two were identical) were, respectively, (a) pad of paper between two breadlike pieces of sponge and sandwich, (b) candle and apple, and (c) eraser and candy. Test 3 differed from Tests 1 and 2 in the following additional ways: The apparent-and-pretend identities were conveyed both through visual appearance and the second experimenter's actions: Each object looked like a familiar edible, and the experimenter made believe it was by pretending to eat it. The appearance or pretending question was always asked first, immediately prior to the reality question; as in Test 2, order of mention of the two possible answers varied randomly across questions. Finally, half of the subjects were given one form of the pretend-identity question, and half were given another (see below).

The exact procedure for the two tasks with the fake apple serves to illustrate Test 3. The second experimenter showed the top of the candle, with the wick, to the child, covering the rest of the candle with her hands. The first experimenter said, "*Really and truly* that thing is a candle. This [points to wick] is what you light to make it burn." The felt-covered bottom of the candle was then exposed. "Here is the bottom, where it sits on the table. Feel how heavy and waxy it is [hands it to the child]." The second experimenter then took the candle, said "This is so good!" or the equivalent just prior to each question, and pretended to take bites out of it throughout the questioning. In the apparent-real task in which this object was used, the first experimenter said, "Look at what she's holding. Right now, does that thing *look* like an apple or *look* like a candle? and then, "For *real*, is that thing *really and truly* an apple or *really and truly* a candle?" In the pretend-real task in which the candle was used, she first said to half of the sample, "\_\_\_\_\_ is *pretending*. Is she *pretending* that thing is a candle or *pretending* it's an apple?" and to the other half, "That thing she's holding, is that a *real* apple or a *pretend* apple?" The above-mentioned reality question then followed. The latter, real-pretend form of the pretending question was included because children of this age had found it meaningful and easy to answer correctly in a previous study (Flavell et al., 1986), and therefore we thought it might facilitate understanding of the distinction in this study. It also provided another test of the hypothesized developmental ordering.

It could be argued that the pretending questions, unlike the appearance questions, might direct the children's attention to the experimenter's activity rather than to the object and that this alone might in some way make the pretending questions easier than the appearance questions. This argument does not, however, seem very plausible, given the experimental procedures used. Consider Test 3, for example. In both the pretend-real and the apparent-real tasks, the children observed the second experimenter bring the object to her mouth, pretend to take bites out of it, and say how good it was. Her attention and behavior were obviously focused on the object. So also was the first experimenter's: In both the pretending and the appearance questions, she explicitly referred to "that thing" and to its two possible identities (apple and candle). Moreover, in the pretending form of the pretending question, the children were not asked what the second experimenter was pretending to *do* (eat) but rather what she was pretending the object *was* (apple or candle); her behavior served only to create a pretend object identity.

Table 1  
*Mean Proportion of Correct Answers to Individual Questions and to Pairs of Questions on the Apparent-Real and Pretend-Real Tasks of Each Test*

Test	Apparent-real tasks			Pretend-real tasks		
	Appearance questions	Reality questions	Both questions	Pretending questions	Reality questions	Both questions
Test 1	.56	.74	.39	.82	.81	.67
Test 2	.72	.69	.45	.83	.79	.65
Test 3						
Both subgroups	.74	.56	.36	.85	.64	.63
Pretending subgroup	.80	.50	.37	.95	.62	.58
Real-pretend subgroup	.68	.62	.35	.75	.67	.67

Finally, the pretraining and tasks of Test 2, which immediately preceded Test 3, had given the children training and practice in attending to object identities. In sum, all experimenter verbal and nonverbal referential activity was directed to the object and its possible identities. These procedures almost certainly ensured that the children's attention was focused on the object in both tasks. It is true that the pretending question mentioned the second experimenter's behavior as well as the object, whereas the appearance question mentioned only how the object looked. But this is the natural and communicatively effective way to word these questions, given that an object's pretend identity is usually conveyed by how someone behaves toward it and its apparent identity by how it looks.

## Results and Discussion

The principal measure of metaknowledge of the apparent-real and pretend-real distinctions was the number of tasks of each type in which both questions of the pair (apparent and real, pretend and real) were correctly answered. The number of correct answers to the individual members of these question pairs (apparent, pretend, and real questions) was also of interest. Table 1 contains the mean numbers of correct pairs of answers and correct individual answers expressed as proportions of the total numbers possible (6, 4, and 3 for Tests 1, 2, and 3, respectively). For each test, we performed a  $2 \times 2$  (Type of Task  $\times$  Order of Administration of Apparent-Real and Pretend-Real Blocks of Tasks) analysis of variance on the numbers of correct pairs. The only significant finding in each test was a main effect for type of task: For Test 1,  $F(1, 24) = 12.21, p < .001$ ; for Test 2,  $F(1, 38) = 10.77, p < .003$ ; for Test 3,  $F(1, 38) = 24.32, p < .001$ . That is, in each test, the children performed much better on the pretend-real tasks than on their apparent-real counterparts; compare the "Both questions" columns of Table 1.

It seemed reasonable to assume that children had clearly demonstrated knowledge of a given distinction if they answered both questions correctly on at least two thirds of the relevant tasks within each test. Table 2 contains the numbers of children who did and did not meet this criterion for each distinction. On each of the three tests, only 1 child met this criterion for the apparent-real distinction without also meeting it for the pretend-real (cell 2 of each matrix), whereas 8 to 12 children showed the reverse pattern (cell 3). If the criterion is set one task higher (i.e., made more stringent), the entries in cells 2 and 3 become 3 and 8, 1 and 10, and 0 and 11 for Tests 1, 2, and 3,

respectively; if it is set one task lower (i.e., made more lenient), they become 1 and 10, 4 and 11, and 0 and 10, respectively.

This pattern of results, very similar across three quite different tests, provides strong support for the hypothesis that metaknowledge of the pretend-real distinction develops earlier than metaknowledge of the apparent-real distinction. The evidence from Test 3 is particularly compelling. Each apparent-real task in that test had a pretend-real counterpart that differed from it in only one respect: The first question spoke of "pretending" or "pretend" rather than about "look like." That difference seems to have been enough to produce considerably better performance on the pretend-real tasks, even though the children had had ample opportunity by that point in the testing session to learn what such expressions meant (e.g., they had completed Test 2).

Were the pretend-real tasks easier than the apparent-real ones because pretending questions are easier for 3-year-olds than appearance questions, because a pretend-real contrast or task context makes a reality question easier than an apparent-real contrast does, or both? The data in Table 1 suggest both. In each test, the children did better on the pretending questions than on the appearance questions. Similarly, they also did better

Table 2  
*Numbers of Children Achieving Criterion Performance on the Apparent-Real and Pretend-Real Tasks of Each Test*

Pretend-real	Apparent-real	
	Below criterion	Achieved criterion
	Test 1	
Below criterion	8	1
Achieved criterion	8	9
	Test 2	
Below criterion	18	1
Achieved criterion	11	10
	Test 3	
Below criterion	14	1
Achieved criterion	12	13

Note. Criterion performance is 4+, 3+, and 2+ tasks fully correct on Tests 1, 2, and 3, respectively.

on the pretend-real tasks' reality questions than on the apparent-real tasks' reality questions, even though in Tests 2 and 3 the same fake objects with the same real identities were the subjects of the two reality questions. Of the six such differences shown in the first three rows of Table 1, four are significant ( $p < .05$ ) or near significant ( $p < .10$ ) by  $t$  tests (two-tailed): Test 1, appearance-pretending; Test 2, appearance-pretending and reality-reality; and Test 3, reality-reality. In the Test 3 pretending subgroup but not in the Test 3 real-pretend subgroup, the appearance-pretending difference was also significant. Our interpretations of these differences are that young children (a) understand the concept of pretending and the expression *pretending* better than the concept of visual appearance and the expression *looks like* and (b) also understand the concept of reality and the expression *really and truly* better when these are contrasted with the concept of pretending and the expression *pretending* than when they are contrasted with the concept of visual appearance and the expression *looks like*. Consistent with the second interpretation, in Test 3 correct answers to pretending/real-pretend questions were followed by correct answers to reality questions 74% of the time (63% for the pretending subgroup and 89% for the real-pretend subgroup), whereas correct answers to appearance questions were followed by correct answers to these very same reality questions only 49% of the time (46% for the pretending subgroup and 51% for the real-pretend subgroup).

One might think that what are developing in sequence here are word meanings only, with no undergirding conceptual development. This seems most unlikely. For example, recall the highly explicit explanation and illustration of key terms that preceded Test 2. If the children had entered the testing room with an incorrect interpretation of the verbal expression *looks like*, unaccompanied by any problems in understanding and reflecting on the appearance-reality distinction, they should have quickly corrected this misinterpretation and moved up to near-ceiling performance on both Test 2 and Test 3. Table 1 shows that this did not happen. More intensive efforts to train the distinction in previous research have also failed (Flavell, 1986a; Flavell et al., 1986). It seems likely, therefore, that this development is both conceptual and semantic rather than just semantic. The data just reviewed concerning the reality questions also support this conclusion.

There were also some minor results. First, contrary to expectation, in Test 3 the pretending questions proved to be significantly easier rather than harder than the real-pretend question,  $t(38) = 2.28, p < .05$  (see Table 1). The two subgroups did not differ significantly on any other comparison. Perhaps it was easy for children to understand that the second experimenter was pretending that each object was a familiar edible, both because it looked very much like one and because she clearly appeared to be pretending that it was one. On the other hand, that realistic appearance may have caused some of the children to call it a real rather than a pretend one. Second, as in previous developmental studies of appearance-reality metaknowledge (see Flavell, 1986a), children were much more likely when they erred to give the same answer to both the appearance or pretending question and the reality question than to give different answers (both wrong) to both questions. This apparent tendency to select a single representation of the object and stick with it is consistent with the one-stimulus-one-representation bent we hy-

pothesized for young children. Which single representation subjects tended to focus on when they erred in this way may have depended partly on which one was most salient in each task situation. For example, the fact that the object's real identity was stressed just prior to the questions in the Test 1 apparent-real tasks may have increased the number of reality answers given to appearance questions. As Table 1 shows, only 56% of the appearance questions were answered correctly on those tasks, whereas 74% of the reality questions were. This relation is reversed in the Test 3 tasks, in which each object's apparent or pretend identity was very salient when the questions were asked.

The results of this investigation support the hypothesis that metaknowledge of the pretend-real distinction develops earlier than metaknowledge of the apparent-real distinction. Of course, these results do not imply that all knowledge about the pretend-real contrast is acquired earlier than any knowledge about the apparent-real one. On the contrary, some pretend-play competencies are still developing at the end of the preschool period (Rubin et al., 1983, pp. 719-725). In what follows, we address three questions about this putative developmental sequence.

1. *Is the sequence real or only apparent?* There are two reasons to believe that it is real. First, Table 2 shows that pretend-real tasks were as easy as or easier than apparent-real ones for most subjects on all three tests, as would be expected if the sequence were an invariant or near-invariant one. Second, the similarity in structure and content of the two types of tasks in Tests 2 and 3 implies that they were of roughly equal diagnostic sensitivity, a methodological prerequisite for establishing developmental synchronies and sequences (Brainerd, 1978; Flavell, 1971, 1972, 1985). In particular, it is hard to imagine how the significant differences observed in Test 3 could be due to differences in task sensitivities rather than to genuine differences in children's command of the two distinctions.

2. *Why do children acquire the two distinctions in that particular sequence?* Cognitive-developmental sequences may be explained by appeals to logic (in sequence A-B, B includes or otherwise logically implies A), maturation (A is the product of a maturation process that occurs earlier than whatever process produces B), environment and experience (children, their environments, or both provide more A-formative than B-formative experiences), or combinations of these (Flavell, 1972). The present sequence is probably due mostly to the operation of the last two factors. Understanding the apparent-real distinction does not logically entail understanding the pretend-real distinction: It would be logically possible for a creature that neither produced nor comprehended pretend play to understand the appearance-reality distinction. On the other hand, we argued in the introduction that maturational processes probably guarantee a developmentally early (late-infancy) preoccupation with pretense, that children can easily provide themselves with the practice and experience needed to perfect pretending skills, and that parents may also provide a formative environment for the acquisition of these skills. These arguments are harder to make in the case of the apparent-real distinction.

3. *How might the two acquisitions be related developmentally?* According to one analysis (Flavell, 1972, 1985), the possible developmental relations that may hold between two acquisitions that emerge in a fixed ontogenetic sequence are addition,

substitution, modification (by differentiation, generalization, or stabilization), inclusion, and mediation. We speculate that addition, modification by generalization, and mediation may capture most of what is happening in the present sequence. These three relations also seem quite similar to one another in the case of this particular sequence. First, recognizing that one can represent something as both pretend X and really Y is probably the developmentally earliest form of the single-object-multiple-representations metaknowledge described in the introduction. Recognizing appearance-reality and appearance-appearance (perspective-taking) distinctions can be conceptualized as later emerging forms of this same metaknowledge; other possible later emerging forms have been described by Flavell (1986b, 1987). The developmental relation is addition rather than substitution because the later forms are simply added to rather than substituted for the earlier one in the child's cognitive repertoire. Second, this sequence can also be characterized as one in which a metarepresentational competency that is at first limited to pretending situations later generalizes to appearance-reality and perspective-taking situations. Finally—and this is most interesting—it is possible that gradually coming to understand the pretend-real distinction through play and “meta-play” (Rubin et al., 1983, p. 725) helps the child understand the conceptually similar appearance-reality and appearance-appearance (perspectival) distinctions (Golomb & Cornelius, 1977). Once the ability to simultaneously think of something as pretend this but really that is sufficiently developed, it may be available for transfer to appearance-reality and perspectival situations. That is, the earlier development may actually serve to mediate (bring about, facilitate, or cause) the later ones. It is, of course, much easier to propose than to prove the existence of developmental relations between two acquisitions. Providing experimental evidence that they develop sequentially rather than either synchronously or in no systematic relation is a good beginning, however.

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