

ASK YOURSELF . . . CHAPTER 9

REVIEW: Select two of the following features of preoperational thought: egocentrism, a focus on perceptual appearances, difficulty reasoning about transformations, and lack of hierarchical classification. Present evidence indicating that preschoolers are more capable thinkers than Piaget assumed. (pp. 321–323)

EGOCENTRISM: Piaget believed that when children first mentally represent the world, they tend to focus on their own viewpoint and assume that others perceive, think, and feel the same way they do. For example, in Piaget’s three-mountains problem, preoperational children cannot select a picture that shows the mountain from a perspective other than their own. However, when researchers adapt this problem to include familiar objects and use methods other than picture selection, 4-year-olds show clear awareness of others’ vantage points. This provides evidence that Piaget overestimated children’s egocentrism.

FOCUS ON PERCEPTUAL APPEARANCES: Piaget believed that preoperational children are easily distracted by the *perceptual appearance* of objects. For example, when water is poured from a tall, narrow container into a short, wide one, they believe that the amount of water has changed—that there is less water in the short container—because its appearance has changed. But later research has shown that when 3- to 5-year-olds are asked carefully worded questions about what happens to substances (such as sugar) after they are dissolved in water, the children are able to explain, accurately, that the sugar is conserved—that it continues to exist, even though it is invisible.

DIFFICULTY REASONING ABOUT TRANSFORMATIONS: In the same conservation-of-liquid task, in which water is poured from a tall, narrow container into a short, wide one, preoperational children treat the initial and final states of water as unrelated events, ignoring the *dynamic transformation* (pouring of water) between them. In addition, Piaget believed that preoperational children are unable to mentally go through a series of steps in a problem and then reverse direction, returning to the starting point—a limitation called *irreversibility*. In fact, preschoolers can engage in impressive reasoning by analogy about physical transformations, indicating that in familiar contexts, they are able to overcome appearances and think logically about cause and effect.

LACK OF HIERARCHICAL CLASSIFICATION: In Piaget’s famous *class inclusion problem*, children are shown 16 flowers, 4 of which are blue and 12 red. Asked, “Are there more red flowers or more flowers?” preoperational children respond, “More red flowers.” They fail to realize that both red and blue flowers are included in the category “flowers.” However, preschoolers are able to organize their everyday knowledge into hierarchical categories earlier than Piaget believed. Preschoolers form many basic-level categories (“chairs,” “tables”) and, by the third year, subcategories (“rocking chairs,” “desk chairs”).

All of these research results show that when Piagetian tasks are modified to include familiar objects in familiar contexts, young children are much more competent problem solvers than Piaget assumed.