CHAPTER 8

Cognitive Development in Childhood

As mentioned in an earlier unit, cognition is a broad term related to mental activity, or thinking, decision-making, and memory. Unlike various forms of physical development (e.g., neurological development), cognition cannot be directly observed. Rather, an observer may infer cognitive development in the ways in which children progress and adapt to solving problems, making decisions, and employing memory. There are very consistent ways in which young children may differ from older children in terms of cognitive capabilities. In addition, there are legitimate ways in which all children seem to differ from adolescents and adults in terms of cognitive processes and capabilities. The cognitive development theorists presented in this chapter (i.e., Piaget and Vygotsky) have offered useful terms and frameworks for clarifying how and why these adaptations occur. It may be important to note that each of these theorists have unique terms and principles associated with their views on cognitive development. However, each assumes some degree of activity and interaction with the world, including people and objects, to facilitate cognition and development. Indeed, it seems particularly beneficial that children appear to have a predisposition to be curious, and seek out activity and interaction. Research has demonstrated that children's curiosity motivates learning, and the more curious they are about a particular topic, the more they activate the hippocampus regions associated with memory, retention of information and reward (Gruber, Gelman, & Ranganath, 2014). Together, curiosity seems to naturally spark learning and cognition.

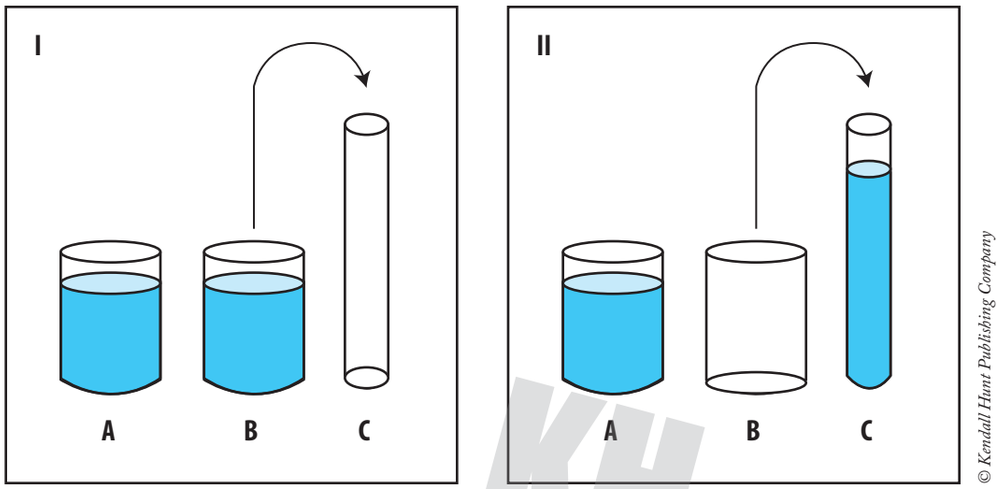

FIGURE 8.1 *Piaget's Conservation Task*

One of the primary ways to identify cognitive development is to observe how children of different ages approach and handle problems. The problems or dilemmas children encounter may be at home (with sibling), at school (with academic tasks), or with peers (with adopting and maintaining friendships or playing games). Theorists and researchers (such as Piaget and Vygotsky) may induce problems in laboratory settings as well to closely monitor how children solve problems. One of the class laboratory-induced problems is the "conservation" problem or task (see Figure 8.1).

In this particular task, a researcher comes into a room with three beakers, two of which are short and stout and full of equivalent amounts of liquid. The third beaker is taller and thinner, and does not contain any liquid. The researcher then takes one of the shorter beakers with liquid and pours all of the liquid contents into the tall thin beaker. Now, there is one short beaker and one tall beaker with liquid. The researcher asks the audience (or participants) which one of the beakers has the most liquid. The most telling piece to this particular task is that very young children are more inclined to state the taller beaker has more liquid in it. However, as children age and mature cognitively, they are less likely to claim the taller beaker does have more liquid. Indeed, by early adolescence, most would be surprised if there were still consistent errors made with this task. In other words, older children may be less susceptible to making decision-making errors as they have matured cognitively. It may be useful to ask yourself: At what age would children be significantly less likely to make this conservation error?

However, the mere observation of age-based differences in laboratory-induced problems does not clarify how and why such cognitive development occurs. That is where theory becomes useful.

Piaget

Piaget's (1950) theory was first covered in an infancy chapter, and related to the sensorimotor stage and the necessary formation of schema. During this stage, infants stumble into objects and experiences, and make sense of their physical reality. Their interactions require motor movement, and all movements promote the formation of schema, or an organized mental action. While schema is critically important in terms of cognitive development, they are not enough to permit advanced thinking. According to Piaget, other stages must be realized. More specifically, children must pass through preoperational and concrete operational stages. As the names of these stages imply, the term

"operation" will be critically important to understanding this theory. An **operation** is an internalized *mental action* that is part of an organized structure. More simply put, an operation is mental action.

Following the sensorimotor stage, the **preoperational stage** may be evident from approximately ages 2 through 7. As the prefix "pre" implies, this stage is one that exists *before* proper operational thought exists. Piaget believed that the sensorimotor period led to internal images that children can label with words. Subsequently, this stage is marked by an explosion in language and use of **symbols**. Language, make believe play, and drawing are some important ways children demonstrate their advancement with the use of symbols. While language, play, and drawing are very salient activities, children are still very susceptible to errors in thought.

The preoperational stage is defined largely by what is missing (i.e., operational thought). In a sense, mental action cannot occur due to inherent limitations or cognitive obstructions. For instance, the inability to solve the conservation task may be understood via some limitations inhibiting mental action. One is that young children tend to be **centered**, implying they get "stuck" on striking features (e.g., tallness) of immediate objects. Imagine a child that holds firmly to the idea that a taller beaker must contain more liquid. In addition, children may not understand **reversibility,** in that what was done may be undone. In the conservation task, if a short beaker was poured into a taller beaker, then one could reverse the process and pour the contents of the taller beaker back into the shorter beaker, demonstrating that the contents of both were still equal. In the example above, centeredness and reversibility illustrate two obstructions that negatively impact a child's ability to "mentally act" or operate on problems to solve them logically. Indeed, operational thought may be used synonymously with **logical thought**. Piaget identified numerous limitations in the preoperational mind, including:

- **Identity Constancy**
  People maintain their personal integrity despite changes in external features (e.g., a scary mask turns a person into a monster).
- **Animism & Anthropomorphism**
  Giving life and human characteristics to inanimate objects.
- **Seriation**
  Related to ordering or grouping objects.
- **Artificialism**
  Humans make everything, including natural phenomenon.
- **Egocentrism**
  The inability to see another's point of view.

The latter limitation (egocentrism) is one of the most prevailing characteristics of cognition in childhood. One of the classic ways childhood egocentrism has been demonstrated is via the "three mountain problem." In this scenario, a child enters a room with a model consisting of three mountains, one larger mountain and two smaller mountains. The child is situated near the side with the two smaller mountains, and can clearly see some objects (e.g., houses) resting on the smaller mountains. Another person (or doll) is placed on the opposite side of the model adjacent to the taller mountain. From that angle, this person's (or doll's) vision of the smaller mountains is obstructed by the taller mountain. However, when you ask the preoperational child if the person or doll can see the objects on the smaller mountains, they invariably respond "yes." Such egocentrism may be

evident in common settings as well. For instance, a child may ask another individual a question about what's on television as though they are in the same room, even though they are clearly not.

It is important to note that childhood forms of egocentrism are due to an inherent cognitive inability to see another point of view. The term *egocentrism* may be used to describe adolescents or adults, but is no longer linked with a cognitive inability. Rather, other factors fueling egocentric thought may be evident, as will be described in a unit on adolescence.

Together, while the preoperational stage is marked by advancements in symbolic and linguistic capa-bilities, there are numerous limitations. Most children in the preoperational phase would (by definition) not be able to solve the conservation task. However, children in the **concrete operational stage** may demonstrate higher order cognitive skills. Basically, whatever a child could not do before, they can during the concrete operational stage. To solve problems adequately, you have to "mentally act" upon them, rather than just reacting to immediate perceptions as in sensorimotor and preoperational stages. Older children are able to solve the classic conservation problem because they realize even though it appears different, it must logically be the same as long as no water is spilled. A key term is "concrete," implying what is tangible and observable. Children in this stage can mentally act upon concrete objects and situations (i.e., those they can see, feel, smell, hear, etc.). Thus, children in this stage can readily problem solve many day-to-day issues. Where they still encounter difficulty is generally thinking about that which is not concrete. Therefore, thinking that is hypothetical, abstract, retrospective, futuristic, or speculative is still difficult.

Vygotsky

Lev Semyonovich Vygotsky spent most of his academic and professional life in early twentieth century Moscow, investigating and analyzing literature, artistic creation, philosophy, and pedagogy. However, his greatest professional contribution was in the area of cognitive development. Prior to his death from tuberculosis at 38 years of age, Vygotsky had already developed what remains as one of the most influential theories in developmental psychology. Interestingly, the development of the theory may be understood in the context of Vygotsky's social and political environment (i.e., early twentieth century Russia). More specifically, Vygotsky was influenced in part by Marxist ideals. Briefly, Marxist ideology suggested that all societies were evolving toward a communistic society. To that end, Marx believed that the activities in which people engage accounted for the "contents" of the mind (e.g., memory, attention). In other words, Marxist philosophy posited that social existence determines consciousness. There were apparent differences in the psychological make-up of different social classes. Moreover, Marx also believed that societies develop though "dialectic exchanges." These exchanges allow individuals within society to identify problems, formulate solutions, and act upon them. To illustrate, during Vygotsky's adult life in Russia, capitalism was viewed as the problem, and dialectic exchange eventually offered communism as a solution. According to Marxist ideology, these

dialectic exchanges were essential for societal movement and development. Thus, the communistic movement was based upon the ideas that action influences cognition and dialogue encourages growth. Subsequently, Vygotsky applied these ideas to child cognitive development. He also advocated for the impact that play had upon cognitive development.

Play was viewed as a critical vehicle for cognitive development. Play-based activities offered children a world independent of the real world that was driven by authority figures such as parents, teachers, and caretakers. A primary benefit of play is that imaginary situations may be created that permit the child to act out in ways not possible in the real world. The fantastic nature of play allowed otherwise unrealistic goals and desires to be met. In this way, the child may behave in ways beyond his or her age. One may envision a child riding a big-wheel bicycle all the while pretending to be driving a car. A second benefit of play is that most play—whether solitary or group play—contain rules that must be followed. Even basic imaginative play scenes adhere to social rules. For example, a child that is pretending to be a professional dancer will adhere to the social rules often prescribed to that profession. The child must dress, speak, and act accordingly. According to Vygotksy, no form of play was without rules. Together, play was viewed as a means to nurture higher-order thinking in children. In more recent years, research has demonstrated that play may enhance memory, cognitive skills, social functioning, language abilities, and reasoning.

According to Vygotsky (1962), children construct the contents of their minds through social interaction. The content of a mind may consist of a variety of mental structures and images that underlie cognitive processes. Three core beliefs guided his theory of cognitive development:

- activity generates thinking,
- development requires the use of "dialectic exchanges, and
- development is a sociocultural process.

In general, environments with rich activities would promote cognitive development. Furthermore, Vygotsky gave emphasis to the importance of language and guidance by superiors (i.e., the zone of proximal development). Simply put, two children may have a similar biological make-up. However, the childhood activities of one are laden with opportunities for play, social interaction, problem solving, and rich cultural experiences. The other child may lead a less active lifestyle that is marked by little activity and social involvement. According to Vygotsky, the latter of these children may be less advanced cognitively and possess fewer psychological tools as a result of fewer opportunities to think in a social context. Most important, it appears as though many elements of the theory may be understood in the context of childhood play. The following sections will juxtapose childhood play to the three core beliefs of Vygotsky's theory, as well as highlight the relevance of language and the zone of proximal development.

At the center of Vygotsky's theory is the idea that activity generates thinking, which presumes that children must engage with stimuli in the environment in order to initiate thought. Activity in the broadest sense includes all familial, academic, physical, and social tasks that children typically encounter. Play represents a significant type of activity found in childhood, and would require very basic thinking processes. According to this idea, children are active agents in their own development. To illustrate, a child that desires to climb a tree will be forced to think to some degree about the intended action. For instance: Where will the climb begin? Does the tree appear sturdy enough? If not, how will the weak areas be traversed? Has anyone climbed the tree successfully before? How far can the climb continue up the tree? Is there adequate landing in the event of a fall? Although children—especially younger children—would not necessarily map out a complete tree-climbing plan, the task itself may require some degree of thinking. For example, a group of children that are playing a game of American football would have to employ several psychological mechanisms in order to play successfully, including: a) recall of game rules, b) game strategy, c) knowledge of their respective role and position on the team, d) who their teammates are, and e) the ongoing score. According to Vygotsky, such activity would enhance

cognitive development by requiring children to utilize basic and necessary psychological skills.

As children engaged in activities, they may run into situations or problems that they couldn't readily solve. Subsequently, the child has to synthesize the conflict. More specifically, some forms of play will necessitate that the players identify and resolve problems via "dialectic exchanges." However, these dialectic exchanges do not necessarily need to be interpersonal verbal exchanges between children, but rather may be intrapersonal mental exchanges within the mind of each child. Problems that arise in play need to be identified and solved. Vygotsky employed some interesting research paradigms throughout his research career, many of which required children to play games that required problem solving. One such paradigm required children to play a "forbidden colors" game. Children were asked a series of questions, and the answer to several of these questions was a particular color. However, children were forbidden to use certain color terms (e.g., blue and yellow) in their game play. Children were also not allowed to use one color response more than once. Lastly, they were also informed that in order to win the game they must refrain from using these color terms. The researchers gave the children colored cards to use during game play in any way that they thought necessary. Vygotsky reported that younger children did not use the colored cards effectively—if at all—during game play. However, older children used the cards in several different ways. They used the cards to eliminate colors, remind themselves of previous answers, or to arrange potential correct responses. Vygotsky argued that older children used these cards as "tools" in their game play. These tangible tools are akin to cognitive tools (e.g., recall strategies, logical thought) that children may develop and use during other forms of play.

Perhaps Vygotsky's most well-known line of research involved the use of blocks. According to this paradigm, the researcher would place a collection of blocks of different sizes, shapes, and colors in front of a child. The researcher would then turn over one of the blocks to reveal a nonsensical word (e.g., "mur") written on the underside of the block. The child was then asked to select all of the other blocks that would likely have the same word written on it. Thus, the child was being asked to categorize the blocks in some systematic way. After each series of selections, the researcher would turn over a block that had not been selected, thereby informing the child to the "correctness" of their decision. Vygotsky was primarily interested in the ways in which children grouped the blocks together. The experiments revealed that younger children did not use any real type of systematic method to organize blocks, but rather clumped them into "unorganized heaps." Children that were somewhat older would "think in complexes" by using some form of objective criterion to classify blocks (e.g., color, size, or shape). The oldest children would demonstrate more adult-like capacities for thinking and were able to conceptualize correct block categories. Vygotsky argued that these research methods corroborated his notion that activity generates thinking and psychological tools are created and used to accomplish tasks.

Lastly, Vygotsky argued that cognitive development is also a sociocultural process. His theory presumes that thinking and learning shifts from the intrapersonal domains to interpersonal domains evident in cultural and ethnic groups. In this way, thinking becomes a social experience and most mental processes had social origins. Different cultural groups and regions maintain distinct patterns of thinking that tend to be transmitted inter-generationally. Along these lines, Vygotsky and his colleagues examined categorization schemes—similar to his block studies—in literate and non-literate populations. Vygotsky reasoned that non-literate individuals would have less advanced categorization capabilities than literate individuals. The literacy variable was thought to reflect one way in which cultures may differ cognitively. More recent research has demonstrated that cultural groups may also differ according to parental involvement, language usage, memory capacity, and so on. Similarly, the rules and expectations of play are well defined within each culture. Much like each game has its unique set of rules, strategies, expectations, and nuance, each particular culture has its own unique play-based activities. In sum, each culture may promote a unique set of psychological tools.

Vygotsky thought that cognitive development was influenced by certain "semiotic mechanisms." The semiotic nature of these mechanisms required the usage of symbols and mental image. These mechanisms were

essential features that must be in place for development to occur. Most notably, language was thought to transform cognitive development. Words and the mental images that accompany them were considered an essential element for this cognitive growth to occur. This transformation may be viewed much the same way as mastery of a particular motor skill, such as walking transforms the nature of human physical activity. Once a child gains the strength, coordination, and confidence to walk, he or she is more readily able to move in fluid and adult-like ways. Furthermore, they are able to move faster and farther than crawling permitted. Similarly, once language is mastered, cognition will be redefined for a child. Vygotsky argued that the symbolic features of language enhanced cognitive capabilities greatly. To illustrate, when a young child is being introduced to American football, they are likely recognizing a ball and playing field and learning how to throw and catch a ball. When the child has an understanding of football vernacular, the learning of the game will augment greatly. In other words, when learning and playing a game of American football, children will likely need to communicate and use terms related to the game itself (e.g., touchdown, extra point, hand-off, receiver, offense, defense, kick-off, etc.). There is a symbolic component to each of these terms, and players should generate a mental image of each of them. After having attached a mental image to these relevant terms, they will be able to think about the game in more advanced ways. For instance, they may demonstrate the ability to think retrospectively, futuristically, and hypothetically about the game. Children will be able to reminisce about past games and describe in detail what occurred. They may describe play tactics and design other games. Children may envision how the activity may be altered to be more enjoyable. Therefore, after the basic mastery of language, children are capable of more adult-oriented, higher-order thought processes. Subsequently, the quality of their play has been enhanced.

Perhaps Vygotsky's most prominent idea focused on the differentiation between actual development and potential development. The **zone of proximal development (ZPD**) describes the distance between what a child can do alone versus what he or she can do with some assistance from an expert or a superior. A child's actual developmental level is recognized by the level of mental functioning that they currently maintain. A child's actual developmental level allows them to independently accomplish tasks. However, potential developmental level may be higher, and is related to the tasks that may be accomplished through guidance or collaboration with adults or peers. Thus, ZPD describes the gap between these two developmental levels. Moreover, ZPD captures mental tools, strategies, and processes that have not yet fully matured. The implications for childhood play are clear as games may have informal mentoring and imitative qualities to them. When observing a group of children at play, it is apparent that some are active participants in the games and some—frequently younger children—are observing and reproducing action. For example, a young child may not readily be able to play a game of tee-ball, but with assistance from an older sibling is able to make contact with the ball, run the bases in an appropriate way, and stay in the proper area while in the field. In this way, the child is able to engage in an activity and work with certain cognitive skills that otherwise would not be enabled. Together, a child's actual developmental level is not viewed completely by how a child can play independently, but rather also by how they are able to observe and imitate others.

In sum, Vygotsky's theory of cognitive development has proved very useful in clarifying how children learn. According to the theory, the interaction between the child and the environment is critical to the growth of mental processes. Most notably, the theory highlights the importance of: a) activity (including play), b) dialectic exchange (i.e., problem resolution), c) sociocultural context, d) language, and e) the zone of proximal development. Taken together, children develop psychological tools and strategies (e.g., language, counting, mnemonic devices, algebraic formulas, writing, art, schemes, diagrams, mapping, symbols, etc.) that enhance their cognitive capabilities and potential. In this way, children's learning begins long before they actually enter school. Vygotsky argued that long before studying specific topics in school (e.g., arithmetic), children have had experience with the content (e.g., operations of division, additions, subtraction, and determination of size). Thus, childhood play would appear to be a critical component to the eventual intellectual and academic achievement of children. Childhood play offers opportunities for children to temporarily depart the real world that is governed

by adults and engage in thoughts and actions that are beyond his or her years. Childhood play offers children exposure to social rules and expectations outside of the familial setting. Furthermore, play will likely offer children the occasion to resolve conflicts, employ language and symbolic thought, and be mentored by older children. In such ways, cognition may be nurtured through play.

Theory of Mind

As children begin to emerge from a characteristic egocentric stage—according to Piaget (1952) around age 5—they begin to understand (among other things) that people have different views and thoughts. This capacity is related to the theory of mind (ToM), which posits that people have "different heads" and in order to engage in genuine *give-and-take* activities (e.g., shared dialogue, friendship, empathic behaviors) one must be able to understand, people have beliefs and perspectives, which are different than one's own (Wellman, 1990).

A classic research paradigm employed to demonstrate this cognitive milestone is the false-belief task. In this task, a child is in a room with two adults (A and B). The child and adult A watches adult B hide a toy in a certain location (e.g., in a drawer). Then, adult A leaves the room. Adult B (who originally hid the toy) moves the toy to another location (e.g., under a pillow). Next, adult B asks the child where adult A will look for the toy when they return. If the child is under age 4—and has not achieved a ToM—they will typically respond the second hiding place (i.e., under pillow), even though adult A could not possibly know the toy was moved, much less where. Children who *have* achieved a ToM (typically 5 and over) will respond that adult A will look for the toy in the first location (i.e., drawer). Such a response indicates the child genuinely grasps the concept that what they personally observed is not the same as what the adult observed.

There are some interesting consequences from developing a ToM for children. As noted above, more sophisticated give-and-take conversations and friendship patterns may take place. Some consequence may be less obvious, or desirable. For instance, children who develop a ToM appear to tell more sophisticated lies than their younger counterparts (Evans, Xu, & Lee, 2011). For a ToM perspective, children come to understand their parents are not "in their heads"—as younger children may believe—and consequently they may try to influence their parents' ideas by being dishonest. In a way, more sophisticated lying an indication of some form of cognitive advancement.

While ToM is presumed to continue to develop well into adolescence, there is evidence it can begin to emerge before around age 5, even in infancy (Onishi & Baillargeon, 2005). However, we may never fully master ToM. From time to time, adults may wrongfully assume what is in their own head is in someone else's head too. Any time adults mistakenly assume someone else knows what they want or meant, they may be making an error in regards ToM. Think of two partners arguing because they continually do not clarify their thoughts and feelings, always thinking the other should know what they intended to say.

All of the theories noted in this chapter clarify cognitive development. Depending upon the theory, children develop as they enter operational stages (Piaget, 1952), engage in dialectic exchanges (Vygotsky, 1980), and develop better give-and-take capabilities (ToM). All of these may contribute to specific forms of a cognitive progress, including linguistic and reading development.

Reading

The foundation of reading comprehension (RC) may be laid in early elementary school years and appropriately viewed as a culmination of a variety of developmental reading skills. Indeed, a widely recognized perspective on reading—the simple view of reading (SVR)—may offer an idea of future success in reading. Hoover and Gough (1990) originally suggested to primary skills underlie reading: decoding and linguistic comprehension. Briefly, decoding is efficient word recognition; an ability to quickly derive representation from printed stimuli and subsequently associated with data in the reader's lexicon. (Hoover & Gough, 1990). Linguistic comprehension (or listening comprehension) is an ability to take semantic information arriving through auditory channels, and make meaningful interpretations. Simply put, indices of linguistic comprehension should assess the ability to understand language that

arrives via spoken discourse, while indices of reading comprehension are associated with an ability to understand contents of written discourse (Hoover & Gough, 1990).

In addition to clarifying reading development in general, the SVR helps guide understanding of some reading difficulties. For instance, some poor readers have problems in decoding (or word recognition), but are still good in terms of language comprehension. These individuals may have dyslexia. A second group of struggling readers may have good word recognition skills, but poor language comprehension, which may indicate a specific comprehension, deficit. Lastly, those who struggle with word recognition and language comprehension may have a mixed reading disability (Catts, Hogan, & Adolf, 2004).

Recent estimates suggest over 2.5 million students in the United States fulfill respective criteria for some form of learning disability (Cortiella, 2011) and the most common appears to be specific to reading skills (Fuchs, Fuchs, Mathes, Lipsey & Roberts, 2002). Consequently, reading comprehension (RC) has received considerable attention as a general indicator of reading achievement as it is broadly linked with the acquisition and integration of printed text in an attempt to extract meaning (e.g., Soden, Christopher, Hulslander, Olson, Cutting, Keenan, Thompson, Wadsworth, Willcutt, & Petrill, 2015).

There are some common approaches to identification and intervention with reading difficulties. The aptitude/IQ-achievement discrepancy model may be the most widely used approach to identify students with a learning disability. Briefly, this model compares achievement (e.g., reading measures) with aptitude (frequently IQ). The discrepancy between aptitude and achievement scores should offer evidence of difficulties. Several criticisms of this discrepancy model have emerged. One important critique is that a formal achievement assessment noting a difficulty is necessary prior to identifying a student with a learning disability, giving this approach a "wait-to-fail" connotation. To illustrate, a common academic sequence in the United States is for more systematic, formal reading instruction to begin in the first grade. A discrepancy model approach would necessitate an achievement test of reading to be administered and evaluated prior to learning disability detection, which may take considerable time. This lag may cause parents and teachers to lose valuable time in supporting students who could use additional support in the development of sub-skills which otherwise support specific achievement outcomes.

A more contemporary approach to identification and remediation is a response-to-intervention (RtI) approach. The RtI approach requires screening, multiple tiers of intervention, and progress monitoring. More specifically, in tier I, all students are offered basic academic instruction and support. In tier II, students are identified in specific academic areas as performing below expectations. Subsequently, those students identified in tier II would receive targeted support and intervention. Those not responsive to such efforts would transition to tier III, which may include comprehensive testing for learning difficulties and whether special education services are warranted.

Key Terms

- **Operation** – central to Piaget's theory, this term refers to an internalized mental action that is part of an organized structure
- **Preoperational Stage** – following sensorimotor, this stage may be evident from approximately ages 2 through 7, and one that exists *before* proper operational thought exists
- **Symbols** – becoming more evident in the preoperational state, language, make believe play, and drawing are all examples of symbols and symbol use
- **Logical Thought** – perhaps akin to operational thought, the ability to think rationally and readily solve problems
- **Centered** – children may get "stuck" on striking features (e.g., tallness) of immediate objects
- **Reversibility** – what was done may be undone
- **Identity Constancy** – scary mask turns a person into a monster

- **Animism & Anthropomorphism** – giving life and human characteristics to inanimate objects
- **Seriation** – related to ordering or grouping objects
- **Artificialism** – the idea humans make everything, including natural phenomenon
- **Egocentrism** – the inability to see another's point of view
- **Concrete Operational Stage** – characterized by the ability to "mentally act" upon the concrete and tangible object and situations
- **Zone of Proximal Development (ZPD**) – perhaps Vygotsky's most famous notion, this term refers to the distance between what a child can do alone versus what he or she can do with some assistance from an expert or mentor

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