Introduction: "There Is Nothing More Practical Than a Good Theory"

"There is nothing more practical than a good theory," a statement made by the famous psychologist Kurt Lewin in the 1950s, is especially relevant to the field of children's education. Every educator adopts, implicitly or explicitly, a certain theory of child learning and development, which greatly determines what methods he or she uses when educating children. In the best seller of the 1970s, *Future Shock*, Alvin Toffler observes how a replacement of one fashionable theory by another resulted in a change of child rearing practices:

> At the turn of the [20th] century in the United States, for example, the dominant theory reflected the prevailing scientific belief in the primacy of heredity in determining behavior. Mothers who had never heard of Darwin or Spencer raised their babies in ways consistent with the world views of these thinkers. Vulgarized and simplified, passed from person to person, these world views were reflected in the conviction of millions of ordinary people that "bad children are a result of bad stock," that "crime is hereditary," etc.
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> In the early decades of the [20th] century, these attitudes fell back before the advance of environmentalism. The belief that environment shapes personality, and that the early years are the most important, created a new image of the child. The work of Watson and Pavlov began to creep into the public ken. Mothers reflected the new behaviorism, refusing to feed infants on demand, refusing to pick them up when they cried, weaning them early to avoid prolonged dependency.[1]

Similar shifts from one set of practices to another as a result of replacement of one fashionable theory of child learning and development by another take place in the field of instruction. For example, in the 1960s–1970s, growing disappointment with Watson's and Skinner's behaviorism and the embracing of Piaget's constructivist theory resulted in many abandoning conditioning and advocating discovery learning instead as the major method of instruction.

If, as discussed, the theory of child learning and development that one has adopted significantly determines his or her educational practices, would it not be reasonable to assume that the better this theory, the more successful the educational practices will be? The most influential theories of child learning and development have been mentioned earlier; let us review them in more detail.

The Nativist (Maturational) Approach

Nativism appeared at the end of the 19th century. Heavily influenced by Charles Darwin's evolutionary theory, early nativists saw heredity as the major (if not only) determinant of children's development. For example, one of them, Francis Galton, advocated the idea of the inheritance of intelligence. Another early nativist, Karl Bühler, even insisted that criminal behavior is a result of "bad" heredity.

The views of contemporary nativists are not very different from the views of their predecessors. For example, Christopher Ferguson and Kevin Beaver recently published an article with a title that speaks for itself: "Natural born killers: The genetic origins of extreme violence." Martin Daly and Margo Wilson explain incidents of violence and abuse in stepfamilies as a result of our "selfish genes" that are driven to reproduce themselves: Stepparents view their stepchildren as diminishing their opportunities to pass along their own genes through their biological children, which leads them to abuse their stepchildren. Another contemporary psychologist, Frank Sulloway,

advocates the idea that inheritance determines political attitudes, so that some people are born liberals and some conservatives.

To be sure, these examples of contemporary nativist views are somewhat exotic. A much more mainstream idea in contemporary nativism is the one that was formulated by Francis Galton: the idea of inheritance of intelligence. To support this idea, nativists refer to empirical studies that have revealed a high correlation between Intelligence Quotient (IQ) scores of genetically related people.

The view of human development as a process predetermined by heredity leads nativists to grossly undermine any opportunity to influence the developmental processes through parenting and teaching. Sandra Scarr, a renowned nativist, writes:

> Ordinary differences between families have little effect on children's development … Children's outcomes do not depend on whether parents take children to the ball game or to a museum so much as they depend on genetic transmission, on plentiful opportunities, and on having a good enough environment that *supports children's development to become themselves* [italics mine] … Feeding a below-average intellect more and more information will not make her brilliant.[2]

Thus, according to Sandra Scarr, each child is born predisposed to "become somebody" and to enjoy a certain level of intelligence; therefore, the role of educators is limited to simply providing a child with "plentiful opportunities" to develop in accordance with hereditarily predetermined fate.

Of course, as Scarr herself mentions, this position may be very "comforting" to some parents by giving them "more freedom from guilt when they deviate … from culturally prescribed norms about parenting"[3] and, I want to add, by relieving them from guilt if the outcomes of their parenting do not meet their expectations. Some teachers may find this position comforting as well, because it implicitly relieves them from responsibility for poor learning outcomes of their students. Other educators, however, will be happy to learn that this

fatalistic position of nativists is far from the truth. Yes, some abilities are indeed inherited, but, as discussed later in the book, higher-level human abilities, including cognitive and metacognitive abilities, are not. Rather, they develop in children, and educators can and should promote the development of these abilities.

The Behaviorist (Environmental) Approach

Behaviorism appeared at the beginning of the 20th century, and its development was strongly influenced by studies of animal learning by Ivan Pavlov and Edward Thorndike. As these studies demonstrated, new responses can be developed in animals through conditioning, that is, the creation of new associations between stimuli and responses as a result of practice (trial and error) and reinforcement (reward). Having applied the results of these animal studies to humans, behaviorists came to advocate conditioning as the major mechanism of learning and development in children. A newborn child, in their view, is a tabula rasa, a blank slate, and the child's learning and developmental outcomes are the result of conditioning. In other words, a child is a piece of clay in the hand of an adult, and it is up to the adult to choose how to shape this piece of clay. A classic quote from John Watson, a prominent behaviorist, is very revealing in this respect: "Give me a dozen healthy infants, well-formed, and my own specified world to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist I might select."[4]

Behaviorism lost its popularity among psychologists long ago: It turned out that it fails to explain learning in animals, not to mention children. For example, the German psychologist Wolfgang Köhler demonstrated that apes are able to learn without trial and error but rather through insight, the "aha" experience. Or, as the American researcher Edward Tolman found, even rats can learn without any reward.

Although behaviorism is not a fashionable theory any longer, its ideas are still broadly used in education. In the field of instruction,

> behaviorist learning theory emphasized arranging the student environment so that stimuli occurred in a way that would instill the desired stimulus-response chains. Teachers would present lessons in small, manageable pieces (stimuli), ask students to give answers (responses), and then dispense reinforcement … until their students became conditioned to give the right answers.[5]

As I discuss in detail later, it is the implementation of behaviorist ideas in American education that is most responsible for the poor learning outcomes and the problems with the cognitive and metacognitive development of American students.

Behaviorist methodology used to resolve children's behavioral or learning problems at school or at home is often referred to as behavioral therapy or behavioral modification. For example, to eliminate a child's aggressiveness toward classmates, the teacher gives him a token for every day that he behaves. Similarly, parents may give tokens to their children for doing their homework. Having accumulated a certain number of tokens, the child can exchange them for a specific attractive reward.

No doubt, behavioral modification often results in the desired changes in children's behavior. It is important, however, to be aware of several important shortcomings of this methodology. First, you can hardly expect that the child will be rewarded for not being aggressive or for doing his "homework" indefinitely. What is going to happen when the rewards are withdrawn? Sometimes, the child will not return to the former bad behavioral pattern: He or she has already come to appreciate the social advantages of not being aggressive or has developed intrinsic learning motivation, and the external rewards are not needed any more. Often, however, a return to the undesirable behavior does take place upon the reward's withdrawal. Second, and most important, behavioral modification may

work if the child is able to behave himself but simply does not want to. But it is useless to reward the child, for example, for attending to the teacher's explanation if the child is not able to make herself attentive – in other words, if he or she is lacking tools for self-regulation. In this book, I am advocating other ways to resolve children's behavioral or learning problems that relate to developing intrinsic motivation in children and teaching them cognitive and metacognitive tools.

The Constructivist (Interactional) Approach

Despite the major difference between behaviorists and nativists in their understanding of the major determinant of child development (nature versus nurture), their views of child development have one point in common: They consider children to be developed rather than to develop. For behaviorists, "the individual is fabricated out of the conditioning pattern";[6] for nativists, he or she is "fabricated" out of heredity. A very important accomplishment of the constructivist approach to child development is that it overcomes the nativists' and behaviorists' view of the child as a passive object of internal or external development-generating forces.

The major representative of this approach is the theory of the great Swiss psychologist Jean Piaget. According to Piaget, children are young "research scientists," driven by innate curiosity to explore the external world. In the course of these explorations, children come across new environmental phenomena and try to assimilate them into their schemas (that is, into their existing ways of thinking). These new environmental phenomena, however, often do not fit exactly into children's schemas, which creates disequilibrium between children's schemas and the external world. Therefore, children need to accommodate their schemas to the new environmental phenomena, which leads to the elaboration of these schemas and the development of new schemas. As a result, temporary equilibrium between children's

schemas and the external world is achieved, which lasts until children come across new environmental phenomena that create a new state of disequilibrium.

According to Piaget, the process of developing new schemas leads, at a certain point, to a major shift in the course of children's development: They transition from one qualitative stage of cognitive functioning to the next one. Between birth and the age of two years, children are at the *sensorimotor stage*; they solve all problems practically through a trial-and-error procedure. Between the ages of two and six or seven years (the *preoperational stage*), children develop and advance in the ability to exercise symbolic thought, which makes it possible for them to solve problems through mental trials rather than through practical trials. They, however, cannot be attentive to several aspects of the problem or situation at the same time (centration) or take into consideration another person's perspective or position (egocentrism). Children overcome these shortcomings in their thinking when they transition to the *concrete operational stage* (from 6 or 7 years until 11 or 12 years); however their thinking at this point still has one major limitation: They are not able to solve theoretical problems, that is, to exercise formal logical thought. The ability to exercise formal logical thought appears in children around the age of 11 or 12 years, when they transition to the *formal operational stage*, which is the last stage of child development in Piaget's theoretical model.

While viewing children as active constructors of their cognition, Piaget at the same time postulates that the stages of cognitive development appear in a fixed sequence and in accordance with a timetable that is universal for children in all countries and all cultures. Neither children themselves nor their parents and teachers can make any difference in this respect. That is why, the educational implications of Piaget's constructivist theory are very similar to those of nativism: leave the child alone, provide him or her with the opportunities to explore the environment, but do not interfere with the

child's explorations and do not try to promote or accelerate the child's development. Many times, when Piaget addressed American audiences, the question of whether parents or teachers can do anything to speed up the development of their children would come up. When asked such a question, Piaget would reportedly smile and say, "Ah, again, the American question!"

Well, it turns out that this "American question" is not as stupid or naive as Piaget believed it was. It has been demonstrated that, indeed, children's transition to the concrete operational stage can be facilitated with just 15 hours of intervention.[7] Moreover, it has been shown that children's transition to the formal operational stage is not as natural and universal a phenomenon as Piaget believed it was; rather, this transition is a direct outcome of school instruction.[8] In this book, I discuss scientific findings that help us understand how it is possible to promote children's development at each stage.

The Vygotskian Approach as an Alternative to the Nativist, Behaviorist, and Constructivist Approaches

Lev Vygotsky was a Russian-Jewish psychologist and educator whose ideas are now becoming more and more popular all over the world. It is not an exaggeration to say that Vygotsky is a unique phenomenon in the history of science. His life was very short (he died at the age of 37) and not very cheerful: Its beginning was darkened by the anti-Semitic laws of the Russian Empire, and its end by tuberculosis and baiting from Stalin's oppressive regime. After Vygotsky's death in 1934, his ideas were banned from public consumption in Russia. In the same year, many of his closest colleagues and followers fled from Moscow to a Russian provincial city to avoid repression that would have been possible had they remained in Moscow. It was only as a result of de-Stalinization at the end of the 1950s and the beginning of the 1960s, that Vygotsky's selected works were published in Russia. In the 1970s–1980s, English translations of his major works

were published, and starting in the 1980s, more than 50 years after his death, Vygotsky has been widely recognized as "the Mozart of psychology"[9] whose ideas are surprisingly up to date.

The major reason for such a broad recognition of Vygotsky's approach relates to the fact that it provides an innovative view of the processes of child learning and development, which has found strong support in recent studies conducted by American researchers. According to Vygotsky, children's learning and development are neither predetermined by heredity, as nativists hold; nor determined by conditioning, as behaviorists hold; nor the result of children's independent explorations, as constructivists hold. Rather, children's learning and development are the result of adult *mediation*, that is, the engagement of children in age-appropriate activities, in the context of which adults promote the development in children of new motives and teach them new tools of thinking, problem solving, and self-regulation. That is how (and that is why) children develop for example intrinsic learning motivation and school readiness, that is, the characteristics necessary for successful learning at school.

Using Vygotsky's theoretical ideas as the basis for their studies, his Russian followers have elaborated these ideas and extended them to the level of practical applications and instructional programs. The 50-year experience of the implementation of the Vygotskian ideas in educational practices in Russia has confirmed the validity of these ideas and has demonstrated the efficiency of Vygotskian educational practices for the promotion of children's learning and development.

The Purpose, Structure, and Content of this Book

Although, as mentioned earlier, Vygotskian ideas enjoy broad recognition in the world scientific community, English-speaking educators are much less familiar with these ideas and their practical applications. An overwhelming majority of publications on the Vygotskian approach in English are addressed to researchers in the field of child

development and learning rather than to practicing educators or students in teacher education programs. Of those few publications that are addressed to educators, many present the original ideas of Vygotsky rather than the contemporary elaborations of these ideas for educational practices. Some others even misrepresent Vygotsky's ideas, insisting, for example, that Vygotsky believed "that the acquisition of new concepts is most meaningful to students when they are given an opportunity to construct their own knowledge and to discover things for themselves.[10] The remaining few publications that do provide readers with correct and up-to-date knowledge of the Vygotskian approach and practical recommendations on its use target only a certain area of application (for example, early childhood education[11] or mathematics education[12]). The purpose of this book is to describe for English-speaking educators how the contemporary Vygotskian approach to children's learning and development can be used to improve educational practices from birth through adolescence.

The book consists of two parts. Part I provides readers with a general overview of the Vygotskian ideas and practical implementations of these ideas for different developmental periods. In Chapter 1, I discuss the Vygotskian notion of mediation as the major determinant of the development of new abilities, mental processes, and motives in children. My major goal when writing this chapter was to introduce the Vygotskian ideas in a reader-friendly fashion so that they will be clear and meaningful to readers with no background in psychology (without, however, reducing the quality of the analysis). That is why I discuss these ideas in "simple words" and illustrate my discussion with many examples taken not only from scientific research but also from everyday life. Chapters 2 through 7 are devoted to the analysis of periods in children's development from birth through adolescence. When discussing children's learning and development in each of the periods, I pay special attention to how educational practices during each of these periods should be organized to facilitate children's