Vygotsky’s revolutionary theory of psychological development

By Jeremy Sawyer

“It seems surprising that the science of psychology has avoided the idea that many mental processes are social and historical in origin, or that important manifestations of human consciousness have been directly shaped by the basic practices of human activity and the actual forms of culture.”

—Vygotsky’s colleague Alexander Luria

Prevailing ideas hold that human psychology originates in the isolated individual. Whether determined by genes, stimulus-response conditioning, or computer-like data processing modules, the dominant schools of psychology assume a historically static, lone individual as the starting point for investigation. From the hardwired “caveman brain” of evolutionary psychology, to the manipulative “reward and punish” tactics of pop behaviorism, these psychological doctrines are generally pessimistic about the possibility of progressive human change and transformation.

Fortunately, there is a scientific alternative that progressives can advance. The past few decades have seen a renewed interest in the life and work of Soviet...
psychologist Lev Vygotsky (1896–1934). Aspects of his work, most notably the "zone of proximal development" (ZPD), are now frequently taught within psychology, education, and special education programs (although applied only sporadically within today’s test-driven public schools). Although Vygotskian theory was conspicuously absent from my school psychology training program, when Vygotsky is taught, it is typically in piecemeal fashion, completely divorced from its revolutionary political roots. It would seem the Left has much to gain from examining and reestablishing this connection.

Suppression and distortion of Vygotsky’s ideas has a long history. After Vygotsky’s death, USSR dictator Joseph Stalin banned his ideas from publication for more than twenty years, and later his works remained inaccessible to the West due to the Cold War. Compounding the problem, early translations into English removed most of Vygotsky’s references to Marx and Engels, and all of his references to Lenin. Thus, reclaiming the revolutionary Marxist origins of Vygotsky’s approach is a necessary struggle to fully establish it as a potent weapon against static, conservative notions of human psychology. As psychologists Michael Cole and Sylvia Scribner explain, “A psychologically relevant application of dialectical and historical materialism” would be an apt summary of Vygotsky’s theory.

But first, to answer why the revolutionary idea of the social origins of mind was avoided in Vygotsky’s time and remains anathema today, we must begin with a bold assertion: the most accurate and effective science comes out of the practical attempt to change the world. Under modern capitalism, the class that runs society relentlessly transforms the material world. It does this in the interest of more intensely exploiting workers and natural resources, producing deadlier weapons, and generating larger profits. As a result, the natural and applied sciences which can be made to serve these ends (for example, physics, chemistry, engineering, aerospace, computer science) constantly advance the understanding of material reality and methods for transforming it.

When it comes to social and economic relations, however, the capitalist class not only gave up long ago on progressive change, but aggressively imposes austerity and attacks the achievements of past social struggles. As a result, mainstream social science—including psychology—effectively obscures the truth about a social arrangement that benefits the few at the expense of the many, and which uses racism, sexism, and other oppressions to maintain itself. As Leon Trotsky put it, while the capitalist class demands precision in its scientific understanding of natural phenomena, “Social research [has] primarily devoted its efforts toward justifying historically-arisen society... Herein is rooted the apologetic role of the official social sciences of bourgeois society; and this is the reason why their accomplishments are of little value.”

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In reality, social science must politically demystify its subject matter before it can discover how it works. As psychologist Carl Ratner explains, “It is impossible to be scientifically objective if one adopts an apolitical stance or a conservative endorsement of the status quo.” This is why it falls to the working class—which has the political power and interest in transforming capitalist society—to take up the revolutionary pursuit of truth about social relations and human nature. Workers’ interest in this truth has been seen in struggles and revolutions throughout history, and in the Russian Revolution during Vygotsky’s lifetime. As Marx frequently wrote, the working class has the potential to become a universal class, representing the aspirations of all humanity. In so doing, the working class eliminates the exploitation and oppression at the heart of bourgeois society that requires pseudoscientific mystification.

Vygotsky believed that a truly scientific psychology could aid in the revolutionary transformation of society, and could help to expose the capitalist myth of the lone individual predating society. Vygotskian psychology provides a deeper understanding of the social basis of human nature and psychology—that human needs and aspirations are satisfied in collaboration with others, and that “human” development is impossible outside of human society. Emancipation from slavery, oppression, and exploitation has always necessitated mass, collaborative, social struggle. For this reason, Vygotsky ruthlessly critiqued the dominant international schools of psychology for neglecting the dynamic social, cultural, and historical bases of human development. In the wake of the Russian Revolution, Vygotsky and his colleagues dedicated their lives to developing a psychology built on these very foundations. Vygotsky’s approach is often called sociohistorical or cultural-historical psychology to indicate these origins.

Vygotsky realized that a scientific understanding of human psychology would first require a scientific theory of human society. Vygotsky found that revolutionary Marxism provided such a basis for understanding and transforming society, and he also saw that a Marxist approach could salvage and integrate the fragmented insights and empirical findings of competing schools of psychology. While a ruthless critic of mechanical materialist (reflexologist/behaviorist) and idealist (introspectionist) approaches in psychology, few psychologists before or since have worked in such dialogue with other theoretical orientations, critically assimilating their valid contributions, while rejecting their erroneous proposals. This is what lies behind Vygotsky’s fundamental assertion that “Marxist psychology is not a school amidst schools, but the only genuine psychology as a science . . . and the other way around: everything that was and is genuinely scientific belongs to Marxist psychology.”
For activists today, not only does the Vygotskian approach provide an antidote to the various ruling-class distortions of human psychological nature, but it can help us to better understand psychology under class society, and how it might be remade by transforming society. As Vygotsky wrote, the fight for socialism is necessary because “along with the liberation of the many millions of human beings from suppression, will come the liberation of the human personality from its fetters which curb its development.” Understanding the social and historical basis of human psychology is central to the ultimate goal of socialism: the full self-actualization and multi-sided development of every human individual.

Whose psychology?

Sadly, Vygotsky’s critique rings just as true today, as many prominent psychological trends are imbued with conservative ideas about human nature that make capitalism seem like the natural order of things. A particularly nasty strain is evolutionary psychology (EP), one of the latest forms of biological determinism. Based upon a pseudoscientific version of evolution, EP claims the human mind is comprised of static traits and innate “processing modules” that evolved during early hominid hunter-gatherer society and remain fossilized in our brains today. EP views humans as riddled with biologically-based tendencies toward aggression, competition, sexual inequality, and selfishness, despite the fact that overwhelming evidence points to early foraging societies as cooperative and egalitarian. Pushed through the corporate media, EP is highly useful to society’s ruling circles, as war, racism, and other social ills are cast as inevitable. The idea that biology determines human behavior and potential has a most sordid history, from the American eugenics movement to Nazi genocide.

Behaviorism, still widely applied and accepted, shares the idea that human psychology is historically static, but in this theory is determined by stimulus-response mechanisms similar to those of rats and pigeons (if quantitatively more complex). The behaviorist approach either disavows the existence of consciousness completely, or sees it as beyond the reach of scientific investigation. Behaviorists spend a lot of energy trying to prove empirically that human behavior can be controlled through the selective administration of reinforcement and punishment. This approach has been widely (mis)applied to children’s education, and is a favorite of corporate bosses and merit pay enthusiasts. Though behaviorist techniques have proven fairly effective in shaping animal behavior, research has shown that when applied to human beings, these “carrot and stick” tactics cause people to lose intrinsic moti-
vation for discovery and learning, to be less creative, and to generally feel resentful and manipulated." Needless to say, a psychology built on external control does not lend itself to human liberation and, tellingly, became the approved model of psychological thinking in the Soviet Union under Stalin, while Vygotsky’s work was banned.

Even quite progressive psychological approaches such as the constructivism pioneered by Swiss developmental psychologist Jean Piaget (1896–1980) put relatively less emphasis on the social origin of mind, and relatively greater emphasis on biological maturation and individual exploration of the environment in generating new mental processes. Vygotsky instead asserted that development is socially co-constructed, and that the wealth of psychological tools that humankind has developed should be taught to children by others in the culture (e.g., adults, teachers, knowledgeable peers). Vygotsky averred that education should engage the proximal, ripening functions within the ZPD, which a child can carry out in social cooperation. These are "functions that will mature tomorrow but are currently in an embryonic state . . . the 'buds' or 'flowers' rather than the 'fruits' of development."13

Vygotsky’s fundamental thesis was that the mind develops dynamically through the internalization of social interaction using human-created (cultural) tools. This developmental process occurs both historically and within an individual’s lifespan. This insight, in all its complex detail, is pivotal to those who dream of a better world today. Vygotsky’s dialectical, materialist methods illustrate Marxism in action, and his work stands as a confirmation that human consciousness springs from material, social activity, and that by transforming the world we also transform ourselves psychologically. As Vygotsky wrote in “The Socialist Alteration of Man,”

The human personality is formed basically under the influence of social relations, i.e. the system which it is a part of, from the earliest childhood onward. . . . A fundamental change of the whole system of these relationships which man is a part of, will also inevitably lead to a change in consciousness, a change in man’s whole behavior.14

The ensemble of social relations

Vygotsky aimed “to approach the study of the mind having learned the whole of Marx’s method . . . in other words, to create one’s own Capital.”15 Though Marx was not a psychologist, Vygotsky took his general conception of human nature as a starting point for investigation: “To paraphrase a well-known position of Marx’s [his sixth thesis on Feuerbach], we could say that humans’ psychological nature represents the aggregate of internalized social
relations that have become functions for the individual and forms of the individual’s structure.”

This implies that human nature is flexible and multifaceted, that we are formed through the social relations around us; thus, we are all capable of greed as well as generosity, racism, or solidarity, depending on the social circumstances and influences in our society. Even more radically, Vygotsky took Marx to mean that social relations create the very essence of our psychological processes, the fabric of our “innermost” thoughts. For Vygotsky, seemingly private psychological phenomena were quintessentially social because they originate in social interaction, they are structured by social relations, and they employ socially created cultural tools, such as language. Vygotsky’s research was dedicated to discovering the process by which what is “out there” in the social world gets “in here” to our individual psyches.

Marxist dialectics were central to Vygotsky’s decision to study human psychology in the process of change and transformation, rather than in static “snapshots.” He wrote, “We need to concentrate not on the product of development but on the very process by which higher forms are established… for it is only in movement that a body shows what it is.” To understand the historic formation of human psychology, Vygotsky analyzed three different levels of human development: evolutionary, sociohistorical, and individual. Applying this approach, Vygotsky found that human development essentially involves the transformation of biologically given “lower mental functions” into more flexible and powerful socially generated “higher mental processes.”

Because Vygotsky’s work is extremely vast and wide-ranging, this article will aim to show the core of his theory in action, using it to help answer two crucial questions which emphasize the connections and transitions between these levels of development. The first question, “What separates human and animal psychology?” addresses the transition from evolutionary to sociohistorical development. The second question, “What is the connection between human society and the individual mind?” emphasizes the dialectical relation between social history and the individual. As might be guessed, Vygotsky’s answers to these questions are radically different from other psychological schools. First, however, let’s take a look at how Vygotsky himself developed, answering the question “How did Vygotsky become a Vygotskian?”

Born of revolution

Vygotsky’s unique, socially grounded account of psychology is intimately connected to his political views and life experiences. Vygotsky grew up in tsarist Russia, where as a Jew living in the pale he likely witnessed pogroms
during his youth, and was banned from teaching, the profession he most desired. In 1914, while attending law school at Moscow State University, Vygotsky simultaneously enrolled in the historical-philosophical division of Shanavsky University, an unofficial Jewish public university. This progressive school accepted individuals regardless of nationality, religion, or politics, and most of the faculty were leading scientists who had been fired from other universities for opposing tsarism. For this reason, the degrees Shanavsky awarded were not recognized by the government.

Vygotsky graduated with a law degree in 1917, the year of the Russian Revolution. Instead of practicing law, however, Vygotsky became a teacher, a path now open to him as the revolutionary government abolished tsarism’s restrictions on Jews in the professions. Electrified by the events unfolding around him, he read extensively in pedagogy and psychology, and lectured at teachers’ colleges and workers’ schools on a wide range of topics, including art and literature (his dissertation was entitled “The Psychology of Art”). Completely self-taught in psychology, he opened his own lab in the basement of the workers’ school and began conducting experiments.

Based on his psychological explorations, in 1924 the unknown Vygotsky gave a stunning speech to the graybeards of his profession at the second All-Union Congress on Psychoneurology in Leningrad (as legend has it, he spoke extemporaneously with only a page of “notes” that turned out to be blank). In this talk, Vygotsky argued against the mechanical “reflexologists” that the study of human consciousness must remain at the center of psychology, but that it must be studied by objective, scientific means. Right on the spot, he was invited to join the staff of the Moscow Institute of Experimental Psychology.

The revolution had opened whole new fields of inquiry as well as new opportunities for enthusiastic, young researchers. Colleagues Alexander Luria and Alexei Leontiev joined him in developing the new sociohistorical psychology, and the “Vygotsky Circle” continued to widen, eventually including people such as radical filmmaker Sergei Eisenstein, with whom Vygotsky discussed new ways of depicting the ideas of historical materialism in images.

For Vygotsky, the revolution dramatically illustrated the dynamic social basis of psychology. The soldiers, sailors, peasants, and workers of Russia swept away tsarism and then capitalism, transforming their own consciousness in the process. The streets were filled with people discussing and debating at all hours of day and night. Starving soldiers in the trenches of WWI were desperate for reading material. People who until recently believed the Tsar had a direct connection with God were now discussing how they were the ones who would lead society forward. Vygotsky envisioned Russia as transitioning
to a classless society that would eliminate social conflict and exploitation, and he wrote that the revolutionary transformation of society was necessary to overcome alienation and transform human psychological capabilities.20

Vygotsky and his colleagues, many of them women (for example, Natalia Morozova, Josefina Shif, Roza Levina, Lidija Bozhovich, Lija Slavina), collaborated closely to help construct the new society in post-revolutionary Russia. At the same time that Vygotsky set about reformulating psychology along truly Marxist lines (rather than just quoting Marx, as some other psychologists were doing), he plunged into developing ways to address the massive practical problems confronting Soviet society—above all, massive illiteracy, and an almost total absence of services for children who were hearing impaired, or intellectually or learning disabled. Vygotsky specialized in working with the most vulnerable populations in Russia, including children with intellectual disabilities, children with vision or hearing impairment, and children who had never been exposed to formal education. He worked with many children who were orphans and refugees from the civil war to defend the revolution. Many of these children suffered missing limbs and other injuries.

Vygotsky was dedicated to improving practical conditions for general and special education, even amidst the relative chaos that still existed because of the civil war. In 1924, Vygotsky headed the new division of special education within the Department of Public Education in Moscow, and he began to organize the Laboratory of Psychology for Abnormal Childhood, the first of its kind in the Soviet Union. Vygotsky was the first director of the institute and was heavily involved in its workings until his death. In 1925, his organizational activities in the field of special education led Lunacharsky (the People’s Commissar of Education and Culture) to send him as the Soviet representative to the International Congress on the Teaching of Deaf Mutes, held in England. There, Vygotsky fervently argued to his western colleagues that the most important aspect of physical “defects” are the social ramifications they have for the child, which need not be so debilitating in a different, better society.21 As Vygotsky said, “A disability in and of itself is not a tragedy. It is only the occasion to provoke a tragedy.”22 Vygotsky’s colleagues and successors inspired by his approach (for example, Alexander Mescheryakov) later developed breakthrough methods based in symbolic communication, centered around everyday social activities, for educating children who were born both blind and deaf.23

Vygotsky became known as an expert in conducting clinical interviews of children, ascertaining their current needs and capabilities, and figuring out the next steps in their treatment and development. Vygotsky’s colleague Piotr Galperin recounted how “all of Moscow came running” to hear Vy-
gotsky’s clinical diagnoses, and remarked that students often listened to his lectures through open windows because the auditoriums were packed. Among other places, Vygotsky conducted investigations and lectured at Moscow University, the Russian Psychoanalytic Society, the Krupskaya Academy of Communist Education, the Institute for Child and Adolescent Health, the second Medical Institute, and the Karl Liebknecht Industrial-Pedagogical Institute. With seemingly boundless energy, he held professorships and headed departments in all these various institutions.

Despite recurring painful and debilitating bouts of tuberculosis, Vygotsky produced massive amounts of writing and travelled extensively around the USSR to lecture, train teachers and psychologists, and to help set up new research laboratories. In the last few years of his life, Vygotsky began to undertake studies in medicine and neurology, his interest stemming from his work with children with neurological disorders of speaking and thinking, such as aphasia. In addition to theoretical works (for example, “Tool and Sign” and “The History of Development of Higher Mental Functions”) he wrote many directly applied works such as “The Diagnosis of Development and Pedagogical Clinics for Difficult Children,” “The Problem of Instruction and Cognitive Development during the School Years,” and “Thought in Schizophrenia.” This fusion of theory and practice was characteristic of Vygotsky, who wrote, “It is practice which poses the tasks and is the supreme judge of theory.”

Of course, Vygotsky’s revolutionary approach eventually brought him into conflict with the ascendant Stalinist bureaucracy, who by now had become suspicious of the field of “pedology” (educational psychology) with which Vygotsky was so closely associated. Vygotsky’s papers from the mid-1920s (“The Crisis in Psychology” and “The Psychology of Art”), peppered with quotations from Left Opposition leader Leon Trotsky, were later censored as Stalin tightened his grip over science and society. Although reconstructing Vygotsky’s exact political views of Russia in the early 1930s is difficult—and many of his manuscripts have been lost (or were destroyed during WWII)—there is reason to believe that Vygotsky was quite critical of the social and political situation under Stalin. According to psychologist Carl Ratner,

He criticized class stratification in Soviet society as having deleterious effects on the motivation, cognition, and education of lower class youth. He also condemned authoritarian leadership in the workplace as crippling the incentive and creativity of workers. These social concerns earned him the enmity of the ruling bureaucrats and led to his work being suppressed.

However, before his death from tuberculosis at age thirty-eight, Vygotsky contributed to a remarkable number of areas, including literacy, edu-
cational psychology, pedagogy and special education, the psychology of art and creativity, adult worker education, transcultural psychology, neuropsychology, and the treatment of thought disorder in schizophrenia. In addition to addressing central topics in psychology like perception, memory, language, thought, and emotion, Vygotsky wasn’t afraid to tackle areas—such as imagination, will, and consciousness—that discomfited many psychologists who assumed they could not be addressed scientifically.

Let us now turn to our key questions about human psychology and see how Vygotsky went about investigating them.

What separates human and animal psychology?

In order to uncover the unique nature of human psychological development, Vygotsky saw it essential to begin by exploring the evolutionary and historical divergences between animal and human cognition. It is important to note that this comparison of human and animal psychology was not undertaken to denigrate animals in any way, but rather to more clearly understand the psychology of each. Vygotsky held that the role of mental processes in both animals and humans is the same: to serve their practical activity. However, human practical activity differs qualitatively from the practical activity of animals, as does human biology.

Through evolution (genetic variation plus natural selection), animals have developed adaptive mechanisms known as “instincts,” which are innate, fixed patterns of behavior in response to stimuli. These instincts are genetically transmitted from generation to generation. As psychologist Yuri Karpov describes, “The behavior of lower animals (invertebrates) is predominantly of an instinctive nature. Vertebrate animals, in addition to instinctive forms of behavior, demonstrate many learned behavioral patterns, which are called conditioned reflexes.”

The discovery of conditioned reflexes was an important breakthrough of the behaviorists. Vygotsky saw that the formation of conditioned reflexes within an individual animal’s lifetime represented a qualitative “new step” in the historical development of animal behavior, built upon the previous step (instincts). In contrast to instincts, conditioned reflexes are “a much more flexible, delicate, and perfected mechanism of adaptation to the environment.”

Vygotsky emphasized, however, that conditioned reactions are not really new reactions, but rather automatic, inherited reactions which simply become associated with and triggered by new stimuli. A famous example is “Pavlov’s dog,” which was made to salivate (an instinctive reflex) at the sound of a bell (the conditioned stimulus) by repeatedly pairing the bell with the
presentation of food. B.F. Skinner’s “operant conditioning” (randomly “emitted” behavior that becomes reinforced by its subsequent success) could be considered another step in the complexity of animal behavior. However, conditioning processes are not much use in explaining animal behaviors beyond this level of complexity, much less complex human phenomena such as the acquisition of language (see Chomsky’s critique of behaviorism on this score) and the development of consciousness. The central behaviorist mistake was an attempt to extend the discovery of conditioning processes in animals to explain all of human behavior.

Some of the highest levels of animals’ adaptive behavior are found in apes that are able to use and even create simple tools to solve everyday problems (for example, using a thin stick to extract termites from a hole in the mound). Vygotsky closely followed Wolfgang Köhler’s experiments with primates to explore what Köhler called “insight learning.” In one such study, an ape was observed trying to reach a fruit placed outside his cage. The ape tried to reach the fruit with its hand or one of the reeds inside the cage, but was unsuccessful and soon appeared to “give up,” resigning himself to idly playing with the reeds. During play, the ape happened to place two reeds end to end. As if something had dawned on him, the ape immediately stuck the thinner reed into the thicker reed, ran to the cage bars, and used the new, longer reed he had created to reach the fruit.

Evidently, the ape’s tool-mediated behavior is neither inherited nor completely random behavior that happens to become conditioned by its accidental success. Vygotsky surmised that an ape seems to use a form of rudimentary “mental trials” to solve the problem, which is qualitatively more advanced mental activity. However, Vygotsky noted limits to this mental activity in apes: if, during play, the reeds happen to cross to form an “X,” the ape is no longer able to lengthen the tool, even if this has been practiced many times before. In addition, the apes typically had to have both the goal (the fruit) and the tools (the reeds) present within the same visual field in order to solve the problem correctly. Thus, the slight separation of the goal (fruit) and the means for achieving it (reeds) by time or space disrupts problem-solving in apes. In contrast, Köhler found that human children overcome this difficulty and by the tender age of two begin to outperform apes on these types of problem-solving tasks.

Vygotsky viewed the creation and use of tools by apes as “a precondition for the historical development of humans.” And yet, Vygotsky asserted a qualitative difference between the sporadic use of tools by apes and their systematic use by humans: “The use of tools, which is the basis of human labor . . . is the distinctive feature of humans’ adaptation to the environment, which makes
them different from other animals.” More recent “neo-Vygotskian” research has illuminated additional differences in animal and human tool use. Whereas animals mostly use tools as a physical extension of their hand (reeds and sticks to reach things), children use tools according to their “cultural logic” (holding a spoon in the fingers perpendicular to the hand, rather than straight out in the fist as a direct extension of the hand). Most crucially, whereas apes in the wild mostly learn through individual trial-and-error, human children are able to learn socially by collaborating with an adult, and reading the “intentions” of the adult who is modeling the use and cultural meaning of the tool.

Labor and the creation of humankind

Vygotsky launched his scientific investigations into comparative human/animal psychology from the foundation laid by Friedrich Engels in The Part Played by Labor in the Transition from Ape to Man. Following Engels, Vygotsky emphasized that although the episodic use of tools by apes is associated with a new level of mental processes compared to lower animals, the systematic and social use of tools to transform the environment—that is, labor—requires a fundamentally higher level of mental processes. He and Luria argued that at a certain point in history labor replaced evolutionary, biological mechanisms as the driving force of human development:

The use and “invention” of tools in humanlike apes crowns the organic development of behavior in evolution and paves the way for the transition of all development to take place along new paths. It creates the basic psychological prerequisites for the historical development of behavior. Labor and the associated development of human speech and other psychological signs with which [primitive humans] attempt to master their behavior, signify the beginning of the genuine cultural or historical development of behavior.

In the Vygotskian view, cooperative labor in hunter-gatherer society stimulated the development of meaningful communication—first gestures and later speech—to coordinate human action in producing the necessities for survival. Just as physical tools came to mediate humans’ productive relationship with the environment, culturally created psychological tools came to mediate human relationships with each other and with themselves: “Like tool systems, sign systems (e.g., speech, number systems, writing systems) are created by societies over the course of human history and change with the form of society and its level of cultural development.” At this point, “the nature of development itself changes, from biological to sociohistorical.”

The advent of divisions of labor encouraged the development of stable verbal codes that could be kept in mind while humans were physically apart,
fulfilling their economic activities of hunting, fishing, or gathering. Divisions of labor also required that subgoals be carried out on the way to the final goal; this promoted conscious, cooperative planning and the delay of individual gratification in service of the overarching social objective. In the early activity of hunting, for instance, subgoals (or subactivities) began with the creation and distribution of spears, as well as other types of sticks. On the hunt, one group of hunters would beat the bushes with sticks to “flush” the animal out, while another group surrounded and killed the animal with spears. Next, simple knives and other implements were used in preparing and cooking the animal. The cooked meat was added to the fruits, roots, and berries collected by the gatherers, and finally the ultimate goal was reached—shared eating.

Though new discoveries about the animal world continue to take place, the preponderance of evidence seems to suggest that even when animals hunt in groups, there is no division of labor, tool use, subgoals, or consciously planned “cooperation” taking place. For example, what may appear to be conscious, cooperative hunting behavior among apes is better explained as individual apes pursuing the same prey in spontaneous fashion, from whatever their current physical position may be. Since several individual apes pursue the moving prey as it comes in their direction, this results in their surrounding the prey and blocking its escape. The lack of true cooperation is underscored by the aftermath of animal hunts, where a fight over the spoils is the norm, and the observation that “systematic food sharing exists in no primate other than man.” In experimental settings, apes have great difficulty cooperating, even when it is in both of their interests (e.g., to gain food), because they seem to sense a fight over the food spoils and cannot “work it out” in advance.

Psychology is distinct from biology

Human psychology is built upon the biological foundation supplied by evolution, yet is also distinct from it. Vygotskian psychology is not “anti-biological,” but rather recognizes that the significance of biology differs sharply between animals and humans. While various forms of biological determinism may apply in the animal world, the unique effect of human biology is to minimize the direct control of biology over psychology and behavior. Biologically evolved human characteristics, such as a child’s prolonged dependence on adults after birth and a disproportionately large cerebral cortex, in fact allow the development of conscious, flexible behavior through a long childhood period of intensive social learning.

As Carl Ratner aptly summarized:

Biology provides a potentiating substratum that allows a wide range of behaviors
to be organized by cultural processes. Biology provides the energy, anatomical structure, physiology, and neuroanatomy that make psychological functioning possible, but biology itself does not make psychological functioning occur, nor does it determine what its specific form will be.

For Vygotsky the distinctively human “higher” mental functions—verbal thought, intentional memory, purposive attention, and, ultimately, consciousness, self-awareness, and volition—are not part of a built-in biological program, but are erected socially and culturally upon an advanced biological foundation. This is the meaning of Vygotsky’s statement: “Most basic is the fact that man not only develops [naturally]; he also constructs himself.”

Far from the brain being “hardwired” and inflexible, as evolutionary psychologists hold, the cortex is neurologically plastic (modifiable) and could be said to “wire and rewire” itself under the influence of social experience. Even areas of the brain consistently identified as involved in language use are subject to modification to serve different forms of language. For instance, in individuals with “normal” hearing, language is typically associated with activity in various parts of the left hemisphere, with spatial perception corresponding to neural activity in the right hemisphere. However, in deaf individuals who use spatially perceived sign language, this process is reversed. Through social interaction using sign language, spatial perception comes to be processed in the left hemisphere, and typically auditory areas are reallocated for visual processing.

As Alva Noe describes, a dominant view in modern neuroscience (which fits nicely with evolutionary psychology’s outlook) has been that humans’ extraordinary perception of faces is regulated by a built-in “face recognition module” near the back of the cortex. This area, called the fusiform face area (FFA), shows high neural activity on brain scans while people are engaged in perceiving, recognizing, and distinguishing faces. A more convincing explanation that has recently emerged is that our powers of face recognition are simply a special case of our ability to develop expertise in all kinds of visual perception. New evidence finds that the FFA is active during perception of any class of objects in which a person has become “expert.” This area “lights up” on brain scans when car experts look at cars, birding experts look at birds, or when chess grandmasters consider a chess position. Thus, these findings do not indicate the presence of a “face module,” but rather a portion of the brain that can flexibly develop visual expertise in any area of important human social activity, with facial perception being one of them.

The truth is that biology in and of itself creates nothing “human,” since a human being born outside the system of social relations would be little different from any of the other higher primates. The literature on “feral children”
(e.g., *The Wild Boy of Aveyron*) provides a glimpse at the devastating effects of extended isolation from human society on children's development. These children, orphaned by war, sequestered by abuse, or abandoned in the wild, generally had great difficulty learning language, appeared severely mentally impaired, did not show interest in human activity around them, did not comprehend or express human emotions, and often did not even walk upright, making animal noises and clawing. These cases demonstrate that the tremendous cognitive and emotional growth of children can only be attributed to social interaction within human culture, beginning from birth. Our next question leads us to examine some of the ways in which participation in this social, cultural activity is the true source of individual psychological development.

**Human society and the individual mind?**

“We may say that we become ourselves through others and that this rule applies not only to the personality as a whole, but also to the history of every individual function.”

—Vygotsky

The Vygotskian position, simply put, is that individuals internalize the social interactions and activities in which they engage. As Vygotsky wrote,

> Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people..., and then within the child. This applies equally to voluntary attention, to logical memory, and to the formation of concepts. All the higher [mental] functions originate as actual relations between human individuals.

As we will see, individuals also internalize the use of the cultural artifacts or tools that they use during social interaction. Vygotskians often say that these tools “mediate” the transformation of social phenomena into individual phenomena, acting as a bridge between social activity and individual psychology. Once internalized, these psychological tools come to “mediate” our thinking as well.

**Psychological tools**

Just as humans invent mechanical tools to extend their physical capabilities, Vygotsky proposed we also invent cultural or psychological tools to extend our powers of mind. He often referred to these symbolic tools as “signs,” with a few examples being numbers, maps, calendars, computer programs, and above all, language. Historically, this began in simple forms:

> The use of notched sticks and knots [for remembering things], the beginnings
of writing and simple memory aids all demonstrate that even at early stages of human development humans went beyond the limits of the psychological functions given to them by nature and proceeded to a new culturally elaborated organization of their behavior. Comparative analysis shows that such activity is absent even in the highest species of animals; we believe that these sign operations are the product of specific conditions of social development. 59

These symbolic tools are aimed not only at mastering and transforming the external world, but at regulating and directing human behavior as well. As Vygotsky put it, “Humans master themselves from the outside—through psychological tools.” 60 These tools allow humans to plan ahead, solve complex problems, and work together toward common goals. In a way that animals cannot, humans develop the ability to carry out conscious, purposeful lines of action, even revolutionary political action, despite unfavorable circumstances, distractions, or “punishments.” Using psychological tools, humans can self-reflect and assess their own activity before, during, and after carrying it out.

Throughout history, various human cultures have developed different psychological tools and purposes for using them, creating different ways and means of thinking that reflect the material needs of their society. In the modern world, for instance, trade and economic activity have led to the need for this reasoning and operating with quantity in virtually all cultures, though the form it takes may differ. For example, “In some African cultures children use their hands in a specific rhythm to help them add, in parts of Asia they use an abacus, and in some North American classrooms, children count using Cuisinaire rods. The children in all three cultures learn the same mental skills but in different ways.” 61

In another instance of cultural variation, there exist a variety of notions of time among human cultures, whether cyclical, linear, or extremely present-oriented cultures, without notions of an extended past or future. 62 Individuals within each of these cultures appropriate the tools for operating with time that social and economic activity within that culture require, and in which they have a meaningful interest. In the United States, for instance, one tool for working with time that children learn is the Gregorian calendar, and marking and discussing the calendar is a quite popular morning classroom activity.

As an illustration of the process of acquiring cultural/psychological tools for practical use, I offer my personal observations, as a school psychologist, of an elementary school student learning this calendar. This particular child entered kindergarten with virtually no sense of time outside of the present moment. The child was considered to be on the high-functioning end of the autism spectrum, a disability that made it more difficult for him to learn socially, as well as to acquire cultural tools. As a result, when the teacher
pointed to a box in the month of October on the calendar, and said “this is
today,” the child did not understand. Notions of “yesterday” and “tomorrow”
were even more abstract and challenging, but the child did have some prac-
tical experience to build upon. He knew that when he woke in the morning
the sun was up, and when he went to bed at night the sun was down.

Things took a great leap forward when the teacher mentioned an up-
coming trip to the Kids’ Funhouse, which the child became very excited
about. The teacher talked with him using the calendar: “See, today is Octo-
ber fourth, tomorrow is the fifth, and then comes the sixth, when we go to
the Funhouse.”

“Funhouse on number six?” he asked.

“Yes, on number six,” she replied with a smile, circling the box in bright
red marker.

Starting with the excitement built around the sixth box, the child was
able to get some visual sense of the Funhouse visit taking place on a different
day in the future. As the year progressed, he went on to learn the rhythm of a
week—that there are certain days when children go to school, and Saturday
and Sunday when they do not. Soon he learned to operate with the abstract
concept of a month, and could begin to think about more distant future
events, such as Christmas. Acquiring and internalizing this cultural tool, the
child was beginning to acquire what Vygotsky might call a more “scientific”
concept of time, built on the foundation of “spontaneous” everyday concep-
tions, and a meaningful activity worth marking in time.

The internalization of social speech

“A sign is always originally a means used for social purposes, a means of influencing
others, and only later becomes a means of influencing oneself.”

—Vygotsky

Language is a universal psychological tool developed by all human cultures
through speech, and by many cultures through written forms. As Vygotsky
wrote, “Social interaction … requires some system of means. Human speech,
a system that emerged with the need to interact socially in the labor process,
has always been and will always be the prototype of this kind of means.”

Speech and language are used within larger social systems to create shared
meaning, based upon a particular society’s historical activities. In his mas-
ter work Thinking and Speech (also translated as Thought and Language), Vy-
gotsky wrote, “Language is a practical consciousness-for-others, and, con-
sequently, consciousness-for-myself. . . . The word is a direct expression of
the historical nature of human consciousness. Consciousness is reflected in a word as the sun in a drop of water."

One of Vygotsky’s great accomplishments was outlining the trajectory of this cultural tool in individual development, from its beginnings in social interaction to its full internalization as a tool of verbal thought and volitional consciousness. We will follow him in this developmental path of communication, from nonverbal gesture to social speech to private speech to fully internalized, silent inner speech, commonly thought of as “the little voice inside your head.”

For Vygotsky, an early step in the development of symbolic communication was the act of an infant pointing to indicate objects of interest or desire. Vygotsky gave the following account of its origins: an infant tries to grasp an object, say a rattle, but cannot because it is too far away. When the child’s father hands the rattle to the infant, he socially supplies the indicatory meaning to the infant’s grasping. As a result, the infant realizes that she does not actually need to grasp an object in order to procure it. Her grasping movement then reduces in scope (becoming pointing), which can direct adults to fetch objects that are further away, such as a dropped toy.

This type of early gesture lays the basis for an infant to later acquire language, a more sophisticated means of communication. In the course of social interactions with infants and toddlers, adults use language to label objects, actions, and emotions, as well as to direct children’s attention and to influence their behavior. A caregiver may say “look at the doggie run” to direct the child’s attention, as well as to label the animal and its action. As a child learns and uses ever more complex words for objects, actions, and their qualities (e.g., adjectives and adverbs), the child’s perception becomes more systematic, utilizing culturally meaningful categories. As Vygotsky said, “the child begins to perceive the world not only through his [or her] eyes but also through his [or her] speech.”

As adults use social speech to direct and influence the child, they also supply the child with verbal tools for influencing others and themselves. For instance, an adult may say “Don’t touch that, it’s dirty!” to prevent a child from picking up garbage. Though initially a child uses speech exclusively for communication with others, eventually the child begins to speak aloud directly to herself, saying “Don’t touch that!” to stop herself from touching the garbage. This phenomenon of children speaking aloud to themselves, most frequently seen from around three to seven years of age, was originally labeled “egocentric speech” by Piaget, but is now generally referred to by Vygotsky’s term “private speech,” as mounting evidence has supported Vygotsky’s interpretation of its role in the internalization of social speech.
Private speech—partially internalized

In an important debate, Vygotsky and Piaget explained children’s audible, self-directed speech in opposing ways. For Piaget, it represented the main shortcoming of children’s functioning: their egocentrism.\(^6\) Piaget saw young children as functioning in an asocial manner, with egocentric speech representing an intermediate stage in which the child is not yet a social creature, but has mastered the use of language. For Piaget, this speech was an extraneous “accompaniment” to the child’s actions, and its decline around age seven or eight represented declining egocentrism, and the growing of the child into society.

Sharply critiquing Piaget’s view, Vygotsky argued that the child is an engaged, social being from the beginning of life, and that self-directed, private speech instead represents an intermediate stage in the child’s internalization of social speech. Rather than a useless accompaniment to the child’s activity, he argued that private speech “serves mental orientation, conscious understanding; it helps in overcoming difficulties.”\(^7\) Around seven or eight years of age, private speech “went underground,” and was more fully internalized as nonvocal, inner speech, commonly referred to as “the voice in your head.” Thus the overall developmental sequence of speech went social speech—private speech—inner speech.

Vygotsky’s experimental studies revealed that children use private speech more frequently when facing difficult challenges, as if to “talk themselves through” the steps and strategies for solving the problem. As a school psychologist, I observed this phenomenon many times among preschool and elementary school students. One particular child frequently used private speech laden with both strategy and emotion when solving puzzles. When solving a puzzle involving physical hooks and latches that unlocked things like treasure chests, he said things like “Can I move this, move this up? What next, does it go up or down? Wow, there’s treasure in there!” When unlocking the barn door, he monologued: “Okay, gotta move this—to the left? Right? Yeah, the left. Then go down, over—a horsie! I did it! That wasn’t so hard!” Note that the type of questions he asked himself are questions that a parent or teacher may have previously posed to him while they were working on puzzles together. Now he was able to ask those same questions of himself, and to provide the answers in a sort of self-dialogue.

When adults or more skilled peers collaborate with children, asking them helpful questions, using language or other means to guide their attention and thinking, Vygotskians call this process “scaffolding.”\(^7\) When a child engages with a new task or difficult problem, the adult or peer will typ-
ically provide more extensive scaffolding (e.g., modeling the process, leading questions, insights, or encouragement). As the child develops the new skills or way of thinking, the scaffolding can be gradually lessened and then withdrawn completely as the child masters the new tool or activity. Children will then often use self-directed speech to guide and motivate themselves while carrying out the activity independently. In fact, research has shown that if the activity is within the child’s zone of proximal development (i.e., challenging, but within reach given social collaboration), the child will tend to use private speech to carry it out. If the activity has been completely mastered by the child and is more automatic, the child is more likely to use inner speech.72

Luria73 observed that, when using private speech, children not only tended to repeat the exact words that their teachers or caregivers had used with them (e.g., “Come on now, you can do it!”) but they sometimes even imitated the caregiver’s voice or accent, indicating the direct social origins of this phenomenon. Students I observed would often suddenly affect a Long Island accent when giving themselves verbal commands, imitating the intonation of their teacher’s injunctions. Studies have found that when children collaborate with adults who use greater amounts of speech to guide their actions, they later use more private speech in directing their self-activity, and use similar strategies that the adults used with them.74

The internalization of language is in no way limited to spoken language. Deaf children involved in demanding activities have been found to use self-directed sign language, which appears to play the same role that it does in hearing children.75 The cultural tool of singing can also be used to sustain attention and motivate action; for example, singing the “Clean-Up Song” to themselves helps young children remain mentally and physically engaged in cleaning up their toys. One girl I observed was an enthusiastic singer and great cleaner-upper until she stopped singing. Then she quickly became distracted, wandered off, and began doing something else. Later in her development, she will most likely be able to use a less overt form of inner speech, simply saying “clean up” to herself in her head.

The internalization of social interaction has been found to affect several different mental functions, and new discoveries in this area continue. To take one example, Vygotsky asserted that in the course of developing higher forms of memory, a child will pass through a stage involving the “external” or social use of cultural memory tools (like the quipu knots used by our ancestors as memory aids76). Children’s development of long-term memory may involve collaborative remembering and storytelling, or reminiscing about past events with adults using language or looking at pictures. Recent Vygotsky-inspired research has shown that such parent-child reminiscing
promotes the emergence and development of *autobiographical memory* in children.77 Through these types of activities, children develop internal psychological tools (mnemonic devices) that come to mediate their memory.

All of these are specific examples of a more general process of internalization, in which social relations become self-relations. As Vygotsky wrote, “The child begins to practice with respect to himself the same forms of behavior that others formerly practiced with respect to him.”78 This illustrates why internalization processes can work in beneficial or harmful ways depending on the nature of the social conditions in which we develop. Children benefit psychologically when schools promote cooperation, exploration, and choice in meaningful learning. Tragically, in today’s typical conditions of schooling, which prize test scores, competition with peers, and extrinsic rewards (or punishments) based on performance, children often internalize the competition, becoming harshly evaluative of themselves, anxious, and depressed. They come to think more about how they stack up against others, rather than the intricacies of what they are learning. Not only does their performance actually decline, but they lose intrinsic motivation for learning in general, and no longer want to attempt new activities for fear of failure. Students who do manage to outperform others often pay a price as well, becoming their own jailers. Their creativity and ability to engage in divergent thinking decline as they force themselves to grind through their education in joyless fashion, while having no real passion for the process itself.79 The good news is that the social internalization process also gives humans the ability to question their society, to direct their own behavior, and to *transform* their society by collaborating with others; in other words, to make history within their given conditions.

**Inner speech, verbal thought, and will**

Though adults often speak aloud to themselves, especially in cognitively or emotionally demanding situations, there is a general decline in private speech in late childhood. This decline represents the growing interiorization of formerly audible speech. Eventually, private speech becomes fully internalized as silent, nonvocal *inner speech*, a tool for verbal thinking, planning, and self-regulation.80 Vygotsky described inner speech as grammatically “abbreviated” and “folded,” where perhaps a single inner word or phrase is enough to trigger an entire idea, concept, or analysis. He also hypothesized inner speech to have a “dialogic” quality, being a sort of conversation with oneself; this echoes the back-and-forth nature of social conversations, from which it is internalized. Through the process of internalization, speech and
thinking—initially completely separate processes in young children—become dialectically intertwined to create verbal thought, a powerful new form of cognition. As Vygotsky wrote, “Speech does not merely serve as an expression of developed thought. Thought is restructured as it is transformed into speech. It is not expressed but completed in the word.”

A central idea in sociohistorical psychology is that language not only affects the content of thought, but constitutes the very fabric of thinking and consciousness in general. Luria expressed the revolutionary impact of verbal thought on human development:

Men can deal even with “absent” objects…reorder their relationships and thus serve as the basis for highly complex creative processes. . . . Such codes enable a person to go beyond direct experience and to draw conclusions that have the same objectivity as the data of direct sensory experience . . . logical codes permit men to make the leap from the sensory to the rational; for the founders of materialistic philosophy, this transition was as important as that from non-living to living matter.

Marxist psychologist David Lethbridge also writes about the ramifications of inner speech:

The internalization of social speech permits the individual to plan behavior before it occurs, to examine it from a multiplicity of points of view, to inhibit behavior or encourage it, in essence to treat it objectively. . . . Behavior, for humans, becomes no longer simply reflexive and thoughtless, but conscious and aware. . . . On the basis of this system of consciousness, made possible by the internalization of the system of signs produced in culture and history . . . emerges the central personality structure of voluntary activity or, simply, will.

In light of having traced the social development of volition, formerly the province of philosophy or theology (and abandoned by the behaviorists), Vygotsky declared that psychology no longer had to rely on idealist speculation.

It is surprising to us that traditional psychology has completely failed to notice this phenomenon which we can call mastering one’s own reactions. In attempts to explain this fact of “will”, this psychology resorted to a miracle, to the intervention of a spiritual factor in the operation of nervous processes.

Something immeasurable

Although it seems hard to imagine today, postrevolutionary Russia abolished its educational grading system, and largely did away with testing, including high-stakes entrance exams for higher education. For a time, cooperative learning reigned in the classroom. Unfortunately, Stalin had reintroduced competition and testing by the time of the following anecdote from Vygotsky:

Something immeasurable
gotsky’s daughter, Gita Vygodskaya. After her father’s death, Gita hid his manuscripts safely under her bed for many years during Stalin’s ban. Gita eventually became a psychologist herself, worked with deaf children for many years, and helped to publish her father’s manuscripts. Her remembrance of her father illustrates his conviction that social cooperation is the heart of learning, life, and who we are:

There is one more thing that happened that I will recount. It’s still unpleasant to talk about it, but it happened and it taught me a lesson for life. By now I was in school. I remember it was late May. In class we had an important final coming up. I had a very serious attitude toward it, and was rather anxious. It so happened that I did well on the exam and got a high mark. I returned home in high spirit and was doubly overjoyed: my father was home! When he asked me what was new in school, I proudly told him of my success, and added with ill-concealed pleasure that the girl sitting next to me could not copy from me as I had turned the page of the notebook, and because of this got a poorer grade than me. I was beaming, and expecting praise, looked at father. I was surprised at the expression on his face: he looked very disappointed. I could not understand what was wrong. Maybe he did not realize I passed? After a short silence he began to speak, slowly and deliberately so I would remember everything he said. He told me that it was not nice to be happy of others’ misfortunes, that only selfish people enjoyed it. He went on saying that I should always try to help those who need it, and it’s only for those who help others that life is rewarding and brings true joy. I remember I was very upset from his words and asked what I should do now. As always in these situations he offered me a solution: he did not want me to feel like once I did something wrong I was now incapable of doing good. He suggested to me that I go and ask my classmate about what she didn’t understand, and try to patiently explain it to her, and if I couldn’t do it so she would understand perfectly, then he would be glad to help me. “But here is the most important thing,” he added, “you must do all this so your friend is sure you really want to help her, and really mean her well, and so it would not be unpleasant for her to accept your help.” More than sixty years have passed since this incident and I still remember all of his words and try to follow them as best I can in life.86

Vygotsky’s legacy today

Vygotsky saw as the historical task of his time the creation of an integrated scientific psychology on a dialectical, material, and historical foundation that would help the practical transformation of society in the Soviet Union and internationally. As Vygotsky realized, “Our science could not and cannot develop in the old society. We cannot master the truth about personality itself so long as mankind has not mastered the truth about society itself.”87 Although this historical task was incomplete upon his death at age thirty-eight, and both Vygotsky’s work and the revolution itself were derailed by Stalinism, he laid a foundation that inspired others to build on his approach within
the Soviet Union (Leontiev, Luria, and the development of cultural-historical activity theory) and internationally today. Further work on the impact of exploitation, alienation, and the effects of rapid societal transformation on cognition (which Vygotsky and Luria had just begun in Soviet Central Asia around the time of Vygotsky’s death) would be important advancements of the Vygotskian project.

Of course, the Left finds itself in a very different position today than during Vygotsky’s time, and there are many challenges to further developing a revolutionary scientific psychology in nonrevolutionary times. Today, even psychologists who consciously build on Vygotsky’s work are often silent or dismissive about its basis in revolutionary Marxism. Nevertheless, application of Vygotsky’s theory and method has led to much scientific progress in developmental psychology. Michael Tomasello, a leading international figure in developmental and comparative psychology, does excellent work inspired by the Vygotskian tradition on the differences between human and animal cognition, the social acquisition of language, and the cultural basis of mind.88 Neo-Vygotskian activity theory has also made great progress in understanding the dynamics of children’s psychological development through engagement in various social activities.89

While today’s predominant mode is to fragment and selectively apply a few Vygotskian insights within existing educational and social structures, there are also psychologists (such as Anna Stetsenko and Igor Arievitch) who recognize that the origin and essence of Vygotsky’s cultural-historical theory is in the struggle for a socially just world, and in its central mission to help the most vulnerable populations and to contribute toward transforming society.90 Carl Ratner and David Lethbridge are also among those psychologists who openly acknowledge (and politically support) Vygotskian psychology’s basis in Marxism, and who have made contributions to continuing and expanding Vygotsky’s project.91

As Vygotsky wrote about the revolutionary political and scientific project of his day (and ours):

The very attempt to approach the soul scientifically…contains in itself the entire past and future path of psychology because science is the path to truth, albeit one that passes through periods of error….We do not suffer from illusions of grandeur, thinking that history begins with us….We want a name on which the dust of centuries settles. In this we see our historical right, an indication of our historical role, the claim of realizing psychology as a science.92

It is up to today’s revolutionaries and the working class as a whole to continue this struggle for a new society and a new psychology.

Summer 2014
Recommended reading on Vygotsky and cultural-historical psychology

E. Bodrova and D. J. Leong, *Tools of the Mind: The Vygotskian Approach to Early Childhood Education* (2nd ed.) (Columbus, Ohio: Merrill/Prentice Hall, 2006). This is a useful and accessible book for Vygotskian approaches at home or in the classroom. The title is also the name of a comprehensive Vygotskian-based early childhood program which has recently developed a pedagogical approach centered around “mature dramatic play,” and operates in several schools.


10. Ibid.


31. Ibid., 24.

32. Ibid., 24–25.

37. Ibid., vi.
38. Ibid., v.
43. Vygotsky, Mind in Society, 7.
47. Ibid.
48. La Barre (1973, 29), as quoted in Ratner, Vygotsky’s Sociohistorical Psychology and Its Contemporary Applications, 28.
49. Tomasello, Why We Cooperate.
52. Ratner, Vygotsky’s Sociohistorical Psychology and Its Contemporary Applications, 232.
54. Ibid., 199.
58. Vygotsky, Mind in Society, 57.
59. Ibid., 39.
68. Vygotsky, Mind in Society, 32.
72. Ibid.
76. See Karpov, *The Neo-Vygotskian Approach to Child Development*.
79. Kohn, *Punished by Rewards: The Trouble with Gold Stars, Incentive Plans, A’s, Praise, and Other Bribes*