

11

Sociocultural Theory and Second Language Learning

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The intent of this chapter is to familiarize readers with the principles and constructs of an approach to learning and mental development known as *Sociocultural Theory*.¹ Sociocultural Theory (SCT) has its origins in the writings of the Russian psychologist L. S. Vygotsky and his colleagues. SCT argues that human mental functioning is fundamentally a *mediated* process that is organized by cultural artifacts, activities, and concepts (Ratner, 2002).² Within this framework, humans are understood to utilize existing cultural artifacts and to create new ones that allow them to regulate their biological and behavioral activity. Language use, organization, and structure are the primary means of mediation. Practically speaking, developmental processes take place through participation in cultural, linguistic, and historically formed settings such as family life and peer group interaction, and in institutional contexts like schooling, organized sports activities, and work places, to name only a few. SCT argues that while human neurobiology is a necessary condition for higher order thinking, the most important forms of human cognitive activity develop

¹Recently, some scholars working in this theory have begun to use the term Cultural-Historical Activity Theory, or CHAT. However, most research conducted on L2 learning within this general theoretical framework has used the term sociocultural, and for this reason we will use this term throughout the chapter. We also think it is important to point out that the term sociocultural has been used by researchers who do not work directly within the theoretical perspective we are addressing in this chapter. These researchers use the terms sociocultural to refer to the general social and cultural circumstances in which individuals conduct the business of living.

²In this chapter, we restrict our discussion to symbolic artifacts, in particular language. For a full discussion of mediation see Lantolf and Thorne (in press).

[MAB1]

through interaction within these social and material environments. This chapter describes the major theoretical principles and constructs associated with SCT and focuses specifically on second language acquisition (SLA). In the first section, we elaborate on mediation—the central construct of the theory. We then discuss and relate to SLA other aspects of SCT, namely internalization, regulation (closely connected to mediation and internalization), the zone of proximal development, and the genetic method.

THE THEORY AND ITS CONSTRUCTS

Mediation

SCT is associated with the work of Vygotsky, whose goal was to overcome what at the time (early 20th century) he characterized as a “crisis in psychology.” This crisis arose because of the diversity of perspectives and objects of study, all of which were grouped under the general rubric of psychology. At that time, various approaches to the study of psychological processes were grouped into two broad categories: one followed a natural science approach to research (e.g., behaviorism) and sought out causes of psychological processes; the second followed the humanistic tradition and emphasized the description and understanding of mental activity (e.g., psychoanalysis). The causal natural science branch of psychology focused its research on the study of elementary, or biologically endowed, mental processes—that is, those processes that humans shared with other species, especially primates. These processes were largely automatic and included involuntary memory and attention, and reflex reactions to external stimuli. The descriptive branch focused its concern on what Vygotsky called higher (mental) processes such as problem-solving, voluntary memory and attention, rational thought, planning, and meaning-making activity.

Vygotsky developed a unified theory of human mental functioning, but he rejected earlier attempts that had tried to cobble together a little of the scientific approach and a little of the humanistic approach.³ Instead he argued that to create a truly unified psychology required a completely new way of thinking about human mental development. Vygotsky acknowledged that the human mind was comprised of a lower-level neurobiological base, but the distinctive dimension of human consciousness was its capacity for voluntary control over biology through the use of higher-level cultural tools (i.e., language, literacy, numeracy, categorization, rationality, logic.). These higher-level cultural tools

³You can read more about the crisis and how Vygotsky proposed dealing with it in the following references: Kozulin (1990); van der Veer and Valsiner (1991); Wertsch (1985).

serve as a buffer between the person and the environment and act to mediate the relationship between the individual and the social–material world.

To better understand psychological mediation via conceptual and semiotic tools, we can consider the more obvious relationship between humans and the physical world that is mediated by concrete material tools. If we want to dig a hole in the ground in order to plant a tree, it is possible, following the behavior of other species, to simply use our hands. However, modern humans rarely engage in such nonmediated activity; instead we mediate the digging process through the use of a shovel, which allows us to make more efficient use of our physical energy and to dig a more precise hole. We can be even more efficient and expend less physical energy if we use a mechanical digging device such as a backhoe. Notice that the object of our activity remains the same whether we dig with our hands or with a tool, but the action of digging itself changes its appearance when we shift from hands to a shovel or a backhoe. Moreover, and this is going to be an important point when we return to our discussion of mental activity, in order to use a tool to dig a hole, we have to first inhibit any automatic digging response as we decide what kind of tool to use. A dog, on the other hand, does no such thing when trying to get at a buried bone. As soon as it senses the bone, it begins an automatic digging response. Once humans select the appropriate tool, however, we are generally not completely free to use it in any way we like. The material form of a tool as well as the habitual patterns of its use affect the purposes to which it is put and methods we use when we employ it (see Thorne, 2003). Thus, a shovel requires one type of motion and a backhoe another. Physical tools, which are culturally constructed objects, imbue humans with a great deal more ability than natural endowments alone. Physical tools allow us to change the world in ways that simple use of our bodies does not. Moreover, by transforming our social and material environment, we also change ourselves and the way we live in the world. [MAB2]

Regulation. One form of mediation is regulation. When children learn language, words not only function to isolate specific objects and actions, they also serve to reshape biological perception into *cultural* perception and concepts. For children, thinking and actions at early stages of ontogenetic development are at first subordinated to the words of adults (Luria & Yudovich, 1972). According to Luria and Yudovich, subordination of the child's actions and thinking to adult speech lifts the child's mental and physical activity to a new, and qualitatively higher, stage of development. It signals the onset of a "long chain of formation of complex aspects of his [sic] conscious and voluntary activity" (p. 24). By subordinating their behavior to adult speech, children acquire the particular language used by the other members of a community (usually adults and older children) and eventually utilize this language to regulate their own behavior. In other words, children develop the capacity to

regulate their own activity through linguistic means by participating in activities (mental and physical) in which their activity is initially subordinated, or regulated, by others. This process of developing self-regulation moves through three general stages.

In the first stage, children are often controlled by or use objects in their environment in order to think. This stage is known as object-regulation. For example, given the task by a parent of fetching a particular object such as a toy, a very young child is easily distracted by other objects (a more colorful, larger, or more proximate toy) and may thus fail to comply with the parent's request. This is a case of the child being regulated by objects. At a slightly later age, children learning mathematics may find it difficult or impossible to carry out simple addition inside of their heads and must rely on objects for external support (e.g., blocks). This is an example of using objects to regulate mental activity. The second stage, termed other-regulation, includes implicit and explicit mediation (involving varying levels of assistance, direction, and what is sometimes described as scaffolding) by parents, siblings, peers, coaches, teachers, and so on. In our discussion of the zone of proximal development we will illustrate how other-regulation functions in the case of second language (L2) learning.

Self-regulation, the final stage, refers to the ability to accomplish activities with minimal or no external support. Self-regulation is made possible through internalization—the process of making what was once external assistance a resource that is internally available to the individual (though still very much social in origin, quality, and function). Thus, at some point children no longer need blocks to add $2 + 5$. Some activities, however, are rarely if ever completely carried out inside of our heads (Wertsch, 1998). Thus, when asked to multiply multidigit numbers, most adults use paper and pencil to write down the numbers and carry out the necessary calculations in culturally specified ways. To be a proficient user of a language, first language (L1) or otherwise, is to be self-regulated; however, self-regulation is not a stable condition. Even the most proficient communicators, including native speakers, may need to re-access earlier stages of development (i.e., other- or object-regulation) when confronted with challenging communicative situations. Under stress, for example, adult native users of a language produce ungrammatical and incoherent utterances (see Frawley, 1997). In this instance, an individual may become regulated by the language as an object, and instead of controlling the language they become disfluent and may require assistance from another person or from objects such as a thesaurus, dictionary, or genre-specific text. Each of the three stages discussed—object-regulation, other-regulation, and self-regulation—are “symmetrical and recoverable, an individual can traverse this sequence at will, given the demands of the task” (Frawley, 1997, p. 98).

[MAB3]

Mediation by symbolic artifacts. Vygotsky reasoned that humans also have the capacity to use symbols as tools—not to control the physical environment but to mediate their own psychological activity. He proposed that while physical tools are outwardly directed, symbolic tools are inwardly or cognitively directed. Just as physical tools serve as auxiliary means to enhance the ability to control and change the physical world, symbolic tools serve as an auxiliary means to control and reorganize our biologically endowed psychological processes. This control is voluntary and intentional and allows humans, unlike other species, to inhibit and delay the functioning of automatic biological processes. Rather than reacting automatically and non-thoughtfully to stimuli, which could result in inappropriate and even dangerous responses, we are able to consider possible actions (i.e., plan) on an ideal plane before realizing them on the objective plane. Planning itself entails memory of previous actions, attention to relevant (and overlooking of irrelevant) aspects of the situation, rational thinking, and projected outcomes. All of this, according to Vygotsky, constitutes human consciousness. From an evolutionary perspective, this capacity imbues humans with a considerable advantage over other species because through the creation of auxiliary means of mediation we are able to assay a situation and consider alternative courses of action and possible outcomes on the ideal or mental plane *before* acting on the concrete objective plane (see Arieviditch & van der Veer, 2004). [MAB4]

We can illustrate the above ideas with an example. A spider spins its web in precisely the same way each time, and it functions efficiently to catch and hold its prey. However, the spider clearly does not plan the web prior to constructing it, nor can it voluntarily decide to change the shape and size of the web. It automatically follows its natural instinct. The human architect, on the one hand, plans a building on paper in the form of a blueprint before actually constructing it in objective physical space. The blueprint is the ideal form of the building, which of course no one can inhabit, but at the same time it must be sensitive to the physics that operate in the concrete world. The blueprint, then, is a culturally constructed symbolic artifact that represents the actual building and also serves to mediate the construction of the real building. It allows the architect to make changes ideally without ever having to act on the objective physical world.

Language is the most pervasive and powerful cultural artifact that humans possess to mediate their connection to the world, to each other, and to themselves.⁴ It is this latter psychological function of language that is our primary concern in this chapter. Language imbues humans with the capacity to

⁴Humans also use other cultural artifacts to mediate their mental and social activity, including numbers, graphs, charts, art, music, and the like.

free themselves from the circumstances of their immediate environment and enables us to talk and think about entities and events that are displaced in both time and space, including those events and entities that do not yet exist in the real world (e.g., the building planned by the architect).

To summarize the discussion so far, Vygotsky's proposal for unifying psychology was that while biological factors formed the basis of human thinking, in and of themselves, they were insufficient to account for our ability to voluntarily and intentionally regulate our mental activity. We achieve this ability as a result of the internalization of culturally constructed mediating artifacts including, above all, language. We now turn our attention to the L2 as a tool for mediation.

Mediation Through a Second Language

We begin with the following question: To what extent are we able to use L2s to mediate our mental activity? The primary way in which we use language to regulate our mental functioning is through *private speech*. When we communicate socially, we appropriate the patterns and meanings of this speech and utilize it inwardly to mediate our mental activity, a phenomenon called private speech. Considerable research has been carried out on the development of private speech among children learning their first language (see Diaz & Berk, 1992; Wertsch, 1985). L2 researchers, beginning with the work of Frawley and Lantolf (1985), have also begun to investigate the cognitive function of private speech in the case of L2 users.

Among the features of private speech are its abbreviation and the meaning that it imparts. Vygotsky suggested that private speech, as is the case of social speech between people who have a great deal of shared knowledge, need not be fully syntactic in its form. Thus, close friends might produce a dialogue such as the following: A: "Eat yet?" B: "No, you?" where it isn't necessary to use the full version of the question and response: "Did you eat yet?" or "Have you eaten?" "No, have/did you?" In the case of private speech, it is assumed that the speaker already knows the topic addressed in the speech and is instead having problems figuring out what to do about it. Hence, in documented cases of private speech in children (e.g., Diaz & Berk, 1992; Wertsch, 1985), we find examples such as the following: The child is trying to solve a puzzle and says to himself or herself, "Now, the red one," or "Next?" Without full access to what it going on, it is difficult to know what the child is referring to in either case, but—and this is the point—the utterances are not intended to be interpreted by others. They are addressed by the child to himself or herself. Frawley (1997) argues that such utterances serve to focus the speaker's attention on what needs to be accomplished, how to accomplish it, and when something has been accomplished, and then allows the speaker evaluate what has

been accomplished. He points out that different languages offer their speakers different linguistic options for carrying out such mental activities. Common expressions frequently encountered in the private speech of L1 English speakers include “Oh!” (often indicating that speakers have discovered what it is they are to do or that they have recovered a particular word from memory), “Next,” “OK” (often used to direct the self to begin to do a task), “Let’s see” (an indication that the speaker needs to take time to think about what the task or problem is), or “There” (indicating that a task has been completed). Importantly, as Frawley (1997) points out, all of these forms are derived from their use in social interaction.

Internalization

The process through which cultural artifacts, such as language, take on a psychological function is known as *internalization*. This process, along with mediation, is one of the core concepts of SCT. As Kozulin (1990, p. 116) puts it, “the essential element in the formation of higher mental functions is the process of internalization.” Internalization is a negotiated process that reorganizes the relationship of the individual to her or his social environment and generally carries it into future performance (Winegar, 1997, p. 31). Internalization accounts for the organic connection between social communication and mental activity and is the mechanism through which we gain control over our brains, the biological organ of thinking (Yaroshevsky, 1989, p. 230). Vygotsky captured the interconnection established by internalization in his general law of genetic development: Every psychological function appears twice, first between people on the interpsychological plane and then within the individual on the intrapsychological plane (Vygotsky, 1987).

Imitation

Vygotsky proposed that the key to internalization resides in the uniquely human capacity to imitate the intentional activity of other humans. Imitation, however, is not understood as the mindless mimicking often associated with behaviorism in psychology and the audiolingual method in language pedagogy.⁵ Instead it involves goal directed cognitive activity that can result in transformations of the original model. As Vygotsky states, “development based on collaboration and imitation is the source of all the specifically human

⁵Imitation is a process that is often associated with behaviorist theories of learning. However, the way Baldwin, Vygotsky and others including recent researchers such as Tomasello (1999) use it, it is not a process connected with behaviorism in any way.

characteristics of consciousness that develop in the child” (Vygotsky, 1987, p. 210) and as such imitation is “the source of instruction’s influence on development” (p. 211).

Child language researchers have recently found that imitation plays an important role in language acquisition. Speidel and Nelson (1989), for instance, note that imitation is a complex mechanism involving motor and neurological processing. It is not a simple copy of what someone else says but is an intentional and self-selective behavior on the child’s part, and one which is not driven by frequency of exemplars in the input (Tomasello, 2003). Indeed, imitation plays a central role in Tomasello’s usage-based model of child language acquisition (see Lantolf & Thorne, in press, for a discussion).

An especially important feature of imitation that is linked to internalization is that the imitative process need not occur immediately after a given pattern appears in the learner’s linguistic environment. Rather imitation can occur with a delay of a day or more, even in children as young as nine months of age (Meltzoff, 2002, p. 21). Deferred imitation permits children to analyze language “off-line” (Meltzoff & Gopnik, 1989, p. 38) and, according to Speidel (1989, p. 163), points to a continuum between imitation and spontaneous language production, with deferred imitation serving as “essential building blocks for spontaneous speech.” The research of Kuczaj (1983) and Weir (1962) recorded examples of delayed imitation among L1 children when they were alone in their cribs just before falling asleep.

Saville-Troike (1988) documents examples of both delayed and immediate imitation produced by L2 children as they engaged in various educational and play activities in their classroom. One five-year-old L1 Japanese child was recorded talking to herself in English: “I finished, I am finished, I have finished, I’m finished” (Saville-Troike, 1988, p. 584). While no direct evidence of this process is available from adult learners, Gillette (1994) and Lantolf and Genung (2002) found, using interview and diary study techniques, that some adults report practicing L2 patterns they heard in their classes when outside of the classroom and engaged in everyday activities such as walking a dog, jogging, or walking across campus.

Children in Saville-Troike’s study also produced immediate imitative responses to the communicative utterances of their teacher and English-speaking classmates, as illustrated in (1) from a four-year-old Chinese L1 speaker:

(1)
Teacher: You guys go brush your teeth. And wipe your hands on the towel.

Child: Wipe your hand. Wipe your teeth.

(Saville-Troike, 1988, p. 584)

This example is interesting because the child did not respond to the teacher with a communicative move but with a self-directed imitative pattern that exhibits the transformative possibilities of this process. The child did not repeat the teacher's utterance verbatim; instead she produced a reduced pattern which overgeneralized the collocate of "wipe" to include "teeth," which normally does not occur in English with the meaning intended by the teacher's original utterance.

Saville-Troike's research also documents instances where children imitated the speech of their classmates while eavesdropping on conversations between peers. Ohta (2001) attests similar patterns, or what she refers to as "vicarious response" in the case of adult foreign language learners of Japanese. Ohta found that learners frequently responded quietly to interactions between the instructor and other students. The students also practiced patterns in Japanese in what appeared to be delayed imitations that were similar to Saville-Troike's children. One of Ohta's students, for example, was observed to experiment with the Japanese stem *waru-* (bad) in which she first expands it to form the adverbial "*waruku*" and then changes it to the non-past adjective form "*warui*" (Ohta, 2001, p. 64).

Among the numerous examples of imitation documented in Centeno-Cortés' (2003) research is the case of a student who reports having encountered the Spanish word for postage stamp, *sello*, "on the street" in Spain. She was then recorded practicing the word in class and alternating between *sello* and *sella*. In a stimulated recall with the researcher, the student mentioned that her motivation for practicing the form was that she wasn't sure of its gender. At one point she is recorded saying to herself "*se . . . ello*" where the pause indicates her uncertainty. The student also comments that she finally figured out the correct form of the word through a combination of classroom and outside experience.

The examples considered above illustrate how learners use private speech in language classrooms as a means of internalizing the linguistic features available in their environment.⁶ An important finding of this research, as attested in the studies by Ohta (2001), Centeno-Cortés (2003), and Lantolf and Yañez (2003), is that learners appear to have their own agendas for which aspects of the language they decide to focus on at any given time. This agenda does not

⁶While the research on private speech and internalization is more robust than we are able to present in our brief discussion here, it is nowhere near as rich as it should be. If SCT research is to make substantive claims about private speech and internalization with regard to second language learning, much more data is required. In particular, future research must focus on establishing a connection between internalization and externalization, or the use of the features in social speech. To date, only Centeno-Cortés's research (2003) has uncovered some evidence that addresses this important issue.

necessarily coincide with the intent of the instructor. As described in Lantolf and Yañez's 2003 study, a teacher may intend for the students to learn the difference between use of the copula *ser* (to be) in true passives (e.g., *La música fue compuesta por Mozart*, "The music was composed by Mozart") and the copula *estar* (to be) in adjective constructions with past participles (e.g., *La montaña estaba cubierta de nieve*, "The mountain was covered by/with snow") but a student may focus on the difference between the prepositions *por* and *de* used in these constructions. This is important information for teachers when deciding on appropriate pedagogical interventions that can maximally promote student learning, a topic that we take up in the following section that deals with the zone of proximal development.

The Zone of Proximal Development

The zone of proximal development (ZPD) has had a substantial impact in a variety of research areas, among them developmental psychology, education, and applied linguistics. The most frequently referenced definition of the ZPD is "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86).

The ZPD has captivated educators and psychologists for a number of reasons. One is the notion of assisted performance, which, although not equivalent to the ZPD, has been the driving force behind much of the interest in Vygotsky's research. Another compelling attribute of the ZPD is that in contrast to traditional tests and measures that only indicate the level of development already attained, the ZPD is forward-looking through its assertion that what one can do today with assistance is indicative of what one will be able to do independently in the future. In this sense, ZPD-oriented assessment provides a nuanced determination of both development achieved and developmental potential.

The story of the ZPD concept begins with Vygotsky's genetic law of cultural development. Vygotsky's well-known formulation is that:

Any function in the child's cultural development appears twice, or on two planes. First it appears on the social plane, and then on the psychological plane. First it appears between people as an interpsychological category, and then within the child as an intrapsychological category. This is equally true with regard to voluntary attention, logical memory, the formation of concepts, and the development of volition. . . . [I]t goes without saying that internalization transforms the process itself and changes its structure and functions. Social relations or relations among people genetically underlie all higher functions and their relationships. (Vygotsky, 1978, p. 57)

Two issues stand out in the preceding characterization of the ZPD: that cognitive development results from social and interpersonal activity becoming the foundation for intrapersonal functioning, and that this process involves internalization (discussed earlier in the chapter).

With the ZPD, Vygotsky put into concise form his more general conviction that “human learning presupposes a specific social nature and a process by which children grow into the intellectual life of those around them” (1978, p. 88).⁷ Vygotsky was particularly intrigued with the complex effects that schooling had on cognitive development. The activity of participation in schooling involved, at least in part, learning through participation in socio-culturally and institutionally organized practices. One of Vygotsky’s most important findings is that learning collaboratively with others, particularly in instructional settings, precedes and shapes development. The relationship between learning and development is not directly causal, but intentionally designed learning environments (e.g., instructed L2 settings) can stimulate qualitative developmental changes. In this sense, the ZPD is not only a model of the developmental process but also a conceptual tool that educators can use to understand aspects of students’ emerging capacities that are in early stages of maturation. When used proactively, teachers using the ZPD as a diagnostic have the potential to create conditions for learning that may give rise to specific forms of development in the future.

WHAT COUNTS AS EVIDENCE?

As we explain in the section on research methodology, sociocultural research is grounded in the genetic method. Consequently, single snapshots of learner performance do not constitute appropriate evidence of learning and development within this theoretical framework. Evidence must have a historical, or genetic, perspective. This is not necessarily an argument for the exclusive use of long-term longitudinal studies that cover extensive time spans. While development may surely occur over the course of months, years, or even the entire lifetime of an individual or group, it may also occur over relatively short periods of time, as documented in the study by Aljaafreh and Lantolf (1992), when learning takes place during a single interaction between the tutor and the student. Moreover, development arises in the dialogic interaction that transpires among individuals (this includes the self-talk that people engage in

[MAB6]

⁷In a related vein, elsewhere Vygotsky remarks that “social relations or relations among people genetically underlie all higher functions and their relationships” (1981, p. 163).

when they are trying to bootstrap themselves through difficult activities such as learning another language) as they collaborate in the ZPD. Evidence of development from this perspective is not limited to the actual linguistic performance of learners. On the face of it, this performance in itself might not change very much from one time to another. What may change, however, as Aljaafreh and Lantolf's study shows, is the frequency and quality of assistance needed by a particular learner in order to perform appropriately in the new language. On one occasion a learner may respond only to explicit mediation from a teacher or peer to produce a specific feature of the L2, and on a later occasion (later in the same interaction or in a future interaction) the individual may only need a subtle hint to be able to produce the feature. Thus, while nothing has ostensibly changed in the learner's actual performance, development has taken place because the quality of mediation needed to prompt the performance has changed.

Development within the ZPD is not just about performance per se; it is also about where the locus of control for that performance resides—in someone else or in learners themselves. As learners assume greater responsibility for appropriate performances of the L2, they can be said to have developed, even when they exhibit little in the way of improvement in their overt performance. This means that evidence of development can be observed at two distinct levels: at the level of overt independent performance and at the level where performance is mediated by someone else. This second type of evidence will go undetected unless we keep in mind that development in the ZPD is understood as the difference between what an individual can do independently and what he or she is able to do with mediation. As a corollary to this principle, it is necessary to observe if and how the mediation is modified over time. By the same token, two learners who appear to be at the same developmental level, assessed on the basis of their independent performance, may be at very different levels of development when we take account of the quantity and quality of mediation they each require to perform appropriately. Finally, because SCT construes language as a cultural tool used to carry out concrete goal directed activities, tasks such as traditional language tests designed to elicit displays of a learner's linguistic knowledge are insufficient evidence of development. Such evidence must be sought in tasks in which language is a means to some concrete end. These can be tasks that parallel activities in the everyday world, or they may be tasks that are typical of instructional programs in the classroom setting, such as in the case of project-based learning. In sum, evidence of development in a new language is taken to be changes in control over the new language as a means of regulating the behavior of the self and of others in carrying out goal-directed activity.

COMMON MISCONCEPTIONS ABOUT SCT

Within the field of second language research, two misconceptions about the nature of SCT have arisen. Both are related to the theoretical claim that mental functioning develops from external social interaction to internal psychological activity. The first, more general misconception claims that because the source of development in SCT is social interaction, the theory has difficulty accounting for the appearance of unattested L1 forms in L2 speaker performance, and therefore it is better seen as a sociolinguistic rather than a psycholinguistic theory (e.g., Ellis, 1997). To give a specific example, L2 speakers frequently regularize the past tense of English verbs such as *eat*, *take*, and *go* (**eated*, **taked*, **goed*), but the regular forms do not occur in the speech of adult native speakers of English. They must therefore be created by the learners through an analogical process that uses regular past tense forms as a model (e.g., *talked*, *reached*, *pushed*). Given that the incorrect regular forms are not in the linguistic environment and are instead manufactured by the learners, social factors alone are not sufficient to explain the learning process. The problem is that the argument is grounded in the mistaken assumption that SCT proposes that learning is simply a copying process. As we showed in our discussion of internalization, specifically with regard to imitation, this is not what the theory proposes. Indeed, it argues that internalization through imitation is not a matter of copying but entails an active, and frequently creative, reasoning process.

The second misconception relates more directly to the ZPD, which is easily the most widely used and yet least understood of the central concepts of SCT (Chaiklin, 2003). There are two general misconceptions about the ZPD. The first is that the ZPD is the same thing as scaffolding or assisted performance, and the second is that it is similar to Krashen's notion of $i + 1$ (e.g., Krashen, 1982). Both assumptions are inaccurate. Scaffolding, a term coined by Jerome Bruner and his colleagues nearly three decades ago (see Wood, Bruner, & Ross, 1976), refers to any type of adult-child (expert-novice) assisted performance. This is not what the ZPD is about. For one thing, in such expert-novice interactions, the goal is to complete the task rather than to help the child develop, and therefore the task is usually carried out through other-regulation, whereby the adult controls the child's performance instead of searching for opportunities to relinquish control to the child. Scaffolding, unlike the ZPD, is thought of in terms of the amount of assistance provided by the expert to the novice rather than in terms of the quality, and changes in the quality, of assistance negotiated between expert and novice (Stetsenko, 1999).

With regard to misconceptions about the ZPD and Krashen's $i + 1$, the fundamental problem is that the ZPD focuses on the nature of the concrete

dialogic relationship between expert and novice and its goal of moving the novice toward greater self-regulation through the new language, while Krashen's concept focuses on language and the language acquisition device, which is assumed to be the same for all learners, with very little room for differential development (e.g., Dunn & Lantolf, 1998; Thorne, 2000). Krashen's hypothesis claims that language develops as a result of learners comprehending input that contains features of the new language and that are "slightly" beyond their current developmental level. As researchers have pointed out, there is no way of determining precisely the $i + 1$ of any given learner in advance of development. It can only be assumed after the fact. In terms of the ZPD, development can be predicted in advance for any given learner on the basis of his or her responsiveness to mediation. This means that what an individual is capable of with assistance at one point in time, he or she will be able to do without assistance at a future point in time. Moreover, as we mentioned in our discussion of the ZPD, development is not merely a function of shifts in linguistic performance, as in the case of Krashen's model, but is also determined by the type of, and changes in, mediation negotiated between expert and novice.

**EXEMPLARY STUDY:
ALJAAFREH AND LANTOLF (1994)**

The research literature on corrective feedback and its relation to L2 development is substantial. Though findings have been divergent, the bulk of studies have focused on implicit versus explicit input or the amount and type of negotiation involved. Research based in SCT addresses feedback from a different vantage point. Specifically, corrective feedback and negotiation are contextualized as a collaborative process in which the dynamics of the interaction itself shape the nature of the feedback and inform its usefulness to the learner (or learners in the case of more symmetrical peer interaction). There is also a concern with the timing and quality of the feedback as it aligns with the participant's ZPD. The following case study provides a detailed overview of a seminal study in this area.

Aljaafreh and Lantolf framed their study on error correction and feedback within the ZPD. In so doing, they looked at the evolving nature of the negotiation process between learners and their tutor in an ESL context. In their review of the L2 acquisition research literature on the role of negative feedback on L2 development, they assert that findings are mixed and do not explicitly link learning outcomes with particular kinds of feedback procedures. The authors claim that both implicit and explicit feedback impact linguistic development, but that "the relevance of the type of feedback offered (as marked by a learner's reactive response to the feedback) is as important an

index of development in second language as are the actual linguistic forms produced by the learner” (p. 467). Development in this context is the internalization of the mediation that is dialogically negotiated between the learner and others that results in enhanced self-regulation. The ZPD in this case forms an activity frame that relates the current developmental level to the potential development that is possible through collaboration with a more competent tutor. The potential level of development is suggested by the kinds of assistance needed to carry out the activity and the visible ability of the learner to utilize forms of external assistance.

Aljaafreh and Lantolf identify a number of “mechanisms of effective help” relating to intervention within the ZPD. Assistance should be *graduated*—with no more help provided than is necessary because the assumption is that over-assistance decreases the student’s ability to become fully self-regulated. At the same time, a minimum level of guidance must be given so that the novice can successfully carry out the action at hand. Related to this is that help should be *contingent* on actual need and similarly removed when the person demonstrates the capacity to function independently. Graduation and contingency are critical elements of developmentally productive joint activity. This process is *dialogic* and entails continuous assessment of the learner’s ZPD and subsequent *tailoring* of help to best facilitate developmental progression from other-regulation to self-regulation.

The participants in the study are three English-as-a-second-language (ESL) learners enrolled in an eight-week early-intermediate ESL writing and reading course, at level 2, where 6 is the highest level. The learners volunteered for one extra tutorial session a week that would focus on their required weekly composition. Although other usage problems were also addressed in the tutorial sessions, Aljaafreh and Lantolf analyzed interactions around four frequently recurring grammatical problems: articles, tense marking, use of prepositions, and modal verbs. Before each session, the tutor would familiarize himself with the essays. As described earlier, however, interactions within the actual tutorial sessions were emergent in the way they played out as the need for quantity and quality of assistance changed within and between sessions.

At the start of each session, the learner was asked to read through her essay and to identify any problems or mistakes. The tutor–tutee pair would then read through the essay sentence by sentence. When either the tutee or tutor observed a problem, they would stop for discussion. Though each interaction was variable, assistance usually took the form of tutor-initiated prompts that began at a very general level, such as “Do you notice any problem?” or “Is there anything wrong in this sentence?” (p. 469). Should this strategy fail, the tutor would become progressively more focused and specific, such as “Is there anything wrong with this segment?” or “Pay attention to the tense of the verb” (pp. 469–470). If yet more help was needed, the tutor would explicitly point

out the problem, give clues as to necessary corrections, or ultimately provide the learner with the correct answer and, if appropriate, a grammatical explanation. Analysis of the interactions showed changes in grammatical competence that illustrated learners were moving from the need for other-regulation provided by the tutor to the partially or completely self-generated capacity to notice and correct errors in written production. Aljaafreh and Lantolf describe ESL development as a process of moving from other-regulation to self-regulation through a series of stages, each of which is characterized by differing abilities to notice and correct an error, and in the quantity and quality of assistance needed to do this.

A principle challenge to research based on educational interventions is the issue of how to operationalize the quantity and quality of assistance. Unstructured and/or entirely emergent assistance may provide the essential help needed for a learner to carry out a task that he or she is unable to manage alone, but such conditions are problematic in two ways: a) tutors may inadvertently over- or underprovide assistance, and b) qualitative and quantitative differences in assistance and their precise correlations to learner performance cannot be consistently documented. To address these issues, Aljaafreh and Lantolf developed a thirteen-point “regulatory scale” that models tutor behaviors ranging from broad and implicit leading questions to explicitly phrased corrections. This scale was used to code observable behavior with particular attention to qualitative differences in assistance provided by the tutor. Level 0 (zero) marks independent functioning on the part of the learner (independent reading and marking of errors/problems in the essay). Levels 1–12 describe collaborative interaction between the tutor and learner, and the higher the number on the scale, the more explicit the assistance provided by the tutor. As Aljaafreh and Lantolf argued, however, even Level 0 is “social” in that the learner is reviewing her essay at the request of the tutor and would do so in ways that reflect her understanding of the nature of the task. In other words, her behavior, although carried out with minimal or no temporally immediate assistance from the tutor, is still inscribed by the acculturation processes that influence her construction of what independent reading and error detection entails.

Changes in the category and quantity of feedback were tracked over time for each of the three participants in the study as they engaged in the tutorial. An important finding is that, though the three learners in this study demonstrated similar proficiency on a placement exam, according to Vygotsky’s formulation of the ZPD, one “cannot arbitrarily assume that any two learners who attain identical scores on a test are necessarily at the same stage . . . if all we assess is their actual developmental level. It is imperative to assess the learners’ potential level of development as well” (p. 473). Through a discussion of use of the definite article, Aljaafreh and Lantolf show that the same

error made by different learners represents different problems. Though neither of the learners appropriately used the definite article with “U.S.” (for example, in regard to travel to *the U.S.*), in one example occurring over 36 turns at talk, a learner needed explicit intervention that concluded with the tutor eventually providing the correct form, while a second learner immediately produced the definite article only after being asked to read aloud and think about what might be missing from a particular sentence in her essay. At the surface level, both learners had omitted the same obligatory linguistic feature, but their need for qualitatively different assistance to remedy this problem indicates that they required qualitatively different mediation in order to develop increased grammatical sophistication and accuracy.

At the start of the interaction cycle, Aljaafreh and Lantolf note that the novice’s linguistic performance is mediated and enhanced by the tutor. Over time, both within a session and across sessions, each of the participants demonstrated that they had internalized aspects of assistance and gained a greater ability to function autonomously. Importantly, “for this to happen . . . the expert must relinquish control (itself dialogically negotiated) to the novice at the appropriate time. There can be no real development otherwise” (p. 480).

Another critical issue is that all feedback has the *potential* to be relevant for learning, “but their relevance depends on where in the learner’s ZPD a particular property of the L2 is situated” (p. 480). The hierarchy of regulation captures the dynamic character of feedback when it is organized and interactionally deployed within the pedagogical framework provided by the ZPD.

EXPLANATION OF OBSERVED FINDINGS IN SLA

In this section we will consider if and how SCT addresses the observed phenomena in SLA raised by the editors in the first chapter of the present volume. As a preamble to this discussion, however, we would like to point to a fundamental difference between the observed phenomena taken as a whole and how SCT approaches the learning process. It is clear that the ten phenomena taken together are predicated on a theoretical assumption that separates individuals from the social world (in our view, and in the view of many other researchers, scientific observations are never theory free). In other words, the phenomena assume a dualism between autonomous learners and their social environment represented as linguistic input—a concept closely linked to the computational metaphor of cognition and learning. As we have argued throughout this chapter, SCT is grounded in a perspective that does not separate the individual from the social and in fact argues that the individual emerges from social interaction and as such is always fundamentally a social being. This includes not only obvious social relationships but also the qualities

that comprise higher-order mental activity that is rooted in semiotically mediated social interaction. With this as a background we will briefly address each of the ten observations from an SCT perspective.

Observation #1. Exposure to input is necessary for SLA. Since the social world is the source of all learning in SCT, participation in culturally organized activity is essential for learning to happen. This entails not just the obvious case of interaction with others, but also the artifacts that others have produced, including written texts. It also includes Ohta's (2001) "vicarious" participation in which learners observe the linguistic behavior of others and attempt to imitate it through private speech or dialogue with the self. Learning is always an active engagement; the engagement may be overt, as in the case of social dialogue, or it may be covert as in the case of private dialogue.

Observation #2. A good deal of SLA happens incidentally. Here we believe a bit of clarification is in order. From the perspective of SCT, what matters is the specific subgoal that learners form in which the language itself becomes the intentional object of their attention in the service of a higher goal. Thus, looking up a word in a dictionary, asking for clarification or help, or guessing at the meaning of a word when reading a text for comprehension may not constitute an activity conducive for optimal learning of the language. This is because reading a text is itself not normally a primary goal. We normally read, write, talk, and listen in the service of higher goals—for example, to write a research paper, to pass a test, to find our way through an unknown city, and so on. In order to achieve the higher goal, we form subgoals along the way. This process reflects the tool function of language—that is, the use of language to achieve specific concrete goals. It is analogous to learning how to shift gears when learning to drive a car. It would be odd for shifting gears to be the primary goal, but it must at some point in the process be the focus of the learner's attention and therefore at least a temporary and intentional goal that serves the higher goal of moving the car. Thus, what is called incidental learning is not really incidental. It is intentional, goal-directed, meaningful activity. From the SCT perspective, there are no passive learners and there is no incidental learning.

Observation #4. Learner's output (speech) often follows predictable paths with predictable stages in the acquisition of a given structure, and Observation #9. There are limits on the effects of instruction on SLA. In order to consider these observations, it is important to distinguish between learning in untutored immersion settings and highly organized educational settings. The evidence reported in the L2 literature supports the developmental hypothesis position in the case of untutored learners. There is also research that shows

that learners follow the same paths in classroom settings. This research, however, did not take into account the ZPD, as far as we are aware. In other words, it provided a uniform intervention for all learners and did not engage learners in the type of negotiated mediation demanded by the concept of ZPD. Unfortunately, the research that has been carried out so far on learning in the ZPD has not focused on features of the new language that are supposedly acquired in stages. Until this research is conducted, the matter remains empirically unresolved.

Observations #5. Second language learning is variable in its outcome, and Observations #6. Second language learning is variable across linguistic subsystems. As we have shown in our discussion of the ZPD, variability in the development of any given learner and across learners is a characteristic of L2 acquisition. In addition, the evidence shows that learners variably acquire different subsystems of a new language depending on the type of mediation they receive and the specific goals for which they use the language.

Observation # 8. There are limits on the effect of a learner's first language on SLA. From an SCT perspective it is important to distinguish form from meaning when addressing this observation. While L1 forms may have a limited effect on L2 learning, it is clear from the kind of evidence considered with regard to observations on variability that L1 meanings continue to have a pervasive effect in the L2 learning. In addition, as we saw in our discussion of L2 private speech, L2 users have a difficult time using the new language to mediate their cognitive activity, notwithstanding high levels of communicative proficiency.

Observation # 9. There are limits on the effects of output (learner production) on language acquisition. In this case it is important to distinguish between the use of the L1 to mediate the learning of the L2 and the effects of L1 on L2 production. Because our first language is used not only for communicative interaction but also to regulate our cognitive processes, it stands to reason that learners must necessarily rely on this language in order to mediate their learning of the L2. This was our response to the previous observation. However, there is also evidence showing that social speech produced in the L1 and the L2 also impacts on L2 learning. In a continuing series of studies, Merrill Swain and her colleagues have documented how classroom learners of second languages, including immersion learners, push linguistic development forward by talking, either in the L1 or L2, about features of the new language (Swain, 2000, in press; Swain & Lapkin, 2002). In addition, recall our discussion of the function of imitation in the internalization process. Learners [MAB7]

clearly rely on L2 imitative production (albeit in their private speech) as a means of acquiring the new language.

CONCLUSION

[MAB8] In this chapter we have outlined the primary constructs of SCT, namely mediation and regulation, internalization, and the zone of proximal development (ZPD), and have considered how they inform the study of SLA. Mediation is the principle construct that unites all varieties of SCT and is rooted in the observation that humans do not act directly on the world—rather their cognitive and material activities are mediated by symbolic artifacts (such as languages, literacy, numeracy, concepts, and forms of logic and rationality) as well as by material artifacts and technologies. The claim is that higher-order mental functions, including voluntary memory, logic thought, learning, and attention, are organized and amplified through participation in culturally organized activity. This emphasis within the theory embraces a wide range of research including linguistic relativity, distributed cognition, and cognitive linguistics. We also addressed the concept of internalization, the processes through which interpersonal and person–environment interaction both forms and transform one’s internal mental functions, and the role of imitation in learning and development. Finally, we discussed the ZPD, the difference between the level of development already obtained and the cognitive functions comprising the proximal next stage of development that may be visible through participation in collaborative activity. We emphasized that the ZPD is not only a model of developmental processes but also a conceptual and pedagogical tool that educators can use to better understand aspects of students’ emerging capacities that are in early stages of maturation.

Because of its emphasis on praxis, SCT does not rigidly separate understanding (research) from transformation (concrete action). While SCT is used descriptively and analytically as a research framework, it is also an applied methodology that can be used to improve educational processes and environments (see Thorne, 2004, 2005). SCT encourages engaged critical inquiry wherein an investigation would lead to the development of material and symbolic tools necessary to enact positive interventions. In other words, the value of the theory resides not just in the analytical lens it provides for the understanding of psychological development but also in its capacity to directly impact that development. Although certainly not unique among theoretical perspectives, SCT approaches take seriously the issue of applying research to practice by understanding communicative processes as inherently cognitive processes, and cognitive processes as indivisible from humanistic issues of self-efficacy, agency, and the effects of participation in culturally organized activity.

DISCUSSION QUESTIONS

1. Both Lantolf and Thorne's and Gass and Mackey's approaches are "interactional" in nature. How are they different?
2. What is private speech? Thinking on your own language learning experiences, can you relate any instances in which private speech has played some role?
3. Lantolf and Thorne reject the need to describe language itself in any way. This contrasts with a good number of other theories applied to SLA. What is your perspective on this issue?
4. In the exemplary study, learners produce a target linguistic feature with assistance from an expert speaker. Lantolf and Thorne appear to equate this production with acquisition. How does this view of acquisition differ from other approaches?
5. If you were to adopt a sociocultural approach, what implications would this have for conducting classroom SLA research? How would it compare with research using any other approach you might adopt?

SUGGESTED FURTHER READING

Lantolf, J. P., & Thorne, S. L. (2006). *Sociocultural theory and the genesis of second language development*. Oxford: Oxford University Press.

This book presents an in-depth introduction to sociocultural theory and to research carried out on L2 development within this framework. It also includes two chapters that focus on how SCT principles can be implemented in second language classrooms.

Lantolf, J. P. (2006) Sociocultural theory and second language development: State-of-the-art. *Studies in Second Language Acquisition*, 28, [NB: no pp. yet] [MAB9]

This article presents a critical survey of research conducted on L2 learning from the perspective of sociocultural theory over the past decade.

Thorne, S. L. (2003). Artifacts and cultures-of-use in intercultural communication. *Language Learning & Technology*, 7, 38–67.

This article provides an overview of the concept of mediation and describes three case studies of Internet-mediated intercultural foreign language learning.

Thorne, S. L. (2005). Epistemology, politics, and ethics in sociocultural theory. *The Modern Language Journal*, 89, 393–409.

This article describes the history of Vygotsky-inspired research, provides a select review of L2 investigations taking this approach, and outlines recent conceptual and methodological innovations.

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[MAB1]Provide date of publication if available.

[MAB2]This is redundant with the sentences that follow, which make this point much better.

[MAB3]Disfluent? Perhaps “they falter and may require . . . “

[MAB4]Or perhaps “automatically and without thought to stimuli . . .”

[MAB5]Include date of publication if available.

[MAB6]citation is 1994 in references.

[MAB7]Provide date of publication if available.

[MAB8]Is this one item or two? . . . voluntary memory, logic, thought, learning, . . . or . . . memory, logic-thought, learning, . . .

[MAB9]Provide page numbers if they are available.

[MAB10]Citation in text as 1992, page 17.

[MAB11]This reference is not cited in the text. Add citation or move this reference to Suggested Reading list.

[MAB12]Provide date of publication if available.

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