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COGNITIVE PROCESSES OF HUMAN NATURE IN LANGUAGE LEARNING AND TEACHING

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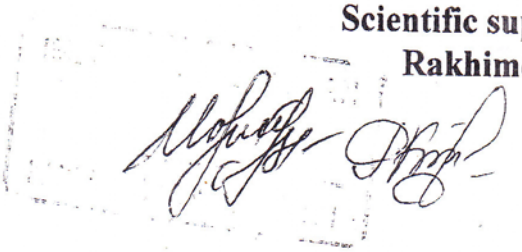

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INTRODUCTION

The relationship between certain factors has been examined extensively by educational, social, general, cognitive psychologists, psycholinguists and methodologists.

Different researches have tried to categorize learner styles in accordance with their scientific fields. One of the aspects of learning styles is the dominance of either left (logical) or right (gestalt) hemisphere. Whereas Logical learners acquire knowledge step by step and draw much on analysis, Gestalt learners acquire knowledge holistically, i.e. all at once, and rely a lot on visual and auditory memory associations. The differences in learners are obvious. However, what is meant by “learning style” and “cognitive” styles?

According to Russian psychologists marina Kholodnaya (2001) a cognitive style is an individual special way of processing information about a present factual situation (including perception, analyses, categorization, evaluation and etc.).

While they (cognitive styles) are highly organized mechanisms of intellectual regulation which can be found in a wide range of situations,» learning styles are certain learning strategies which characterize individual response of a learner to a particular situation in the classroom”(Kholodnaya2004).

Thus, individual learning styles depend on specific educational technology (such as the classroom environment, textbook design, teacher’s attitude, type of school or college, learner's motivation and their needs as well as cognitive, metacognitive and intentional experience).

Taking into account this information, innovative teachers can give their students a variety of learning activities, which are not only best suited to the students' individual cognitive styles but also are challenging and stimulating for the development of their personality-centered style.

The new teaching goal in teaching foreign languages to students is to trainspecialists to use a language in autonomous searching, processing, exchanging professionallyuseful information. Students can discover benefits and pleasures of

being able to read in Englishin order to get this information from authentic sources, as reading is central in teaching students.

Autonomous Cognitive learning integrates some language teaching approaches such as communicative and cognitive approaches which can be combined, humanistic approach andlearner - centered approach. Autonomous cognitive learning is an activity which is guided by a teacher who takes intoaccount learners previous knowledge of the language and his experience or knowledgeconcerning his future profession. But we should remember that a teacher is not an instructor or a transmitter of knowledge in the context of autonomous cognitive learning, he\she is a facilitator,apartner suggesting strategies of learning to a student who can accept knowledge critically andevaluate himself.

So to define autonomous cognitive learning we can say that it is students' ability to reflectcritically to what they read, to make decisions and act independently in reading process.

Supporters of the cognitive approach regard language learning as sensible bringing target language phenomena in correlation with the learner's cognitive system. Cognitivists take into consideration not only superficial accuracy of the utterance but also its correctness in a certain context. Grammatically correct utterances, which do not help the speaker to achieve the communicative goal he or she has in mind, are considered erroneous. Consequently, the cognitive attitude holds an error as that, of aim-achieving.

Thus, each language teaching approach has its own vision of the problem of learner errors. Ideas of researchers on the phenomenon and its nature differ depending on the way they see the nature of human behavior, thinking and language learning process. Interpretations given within the bounds of the theories considered discover different aspects of such a complex appearance as learner errors and contribute to its better understanding.

The President of our Republic, Islam AbduganiyevichKarimov, in his book “Harmoniously developed generation is the basis of progress of Uzbekistan”, states the global importance of learning and qualitative teaching foreign languages in the

development of all spheres of our country and adds, that "…, the government of Uzbekistan has the possibility to radically reform the educational system, to bring its contents, forms and methods close to the real needs of the society, to save the high and secondary schools from conservatism and formalities which rooted deeply into the system of education during the former, previous regime." Educational establishments of a new type, such as professional colleges and lyceums are intensively being created and each of them has the opportunity to give education on foreign language. What's up to us, we, the young generation, must do our best to realize these plans, because we are the future of Uzbekistan.

The matter of language learning and teaching is being paid much attention to, and the ***actuality*** of our final qualification work, which studies one of its aspects and named "Cognitive processes of human nature in Language Learning and Teaching", caused us to study this branch of education. Though this matter was greatly appealed to, there is a very few works, containing cognitive principles, human nature was not widely studied by the methodologists of our country. It makes up the ***novelty*** of our work.

We can name the following ***investigated levels*** dealt within the process of our work: philosophical studies, general didactic and methodological principles.

The***object***of the investigationisthe process of foreign language learning and teaching and rules of its mastering as a new means of communication.

The ***aim*** of our work is the study of the speech acts' mechanisms in the mother tongue.

Theoretical value of the work: We think that the results of our investigation will be useful for achieving effective and educative teaching, and influence on the character of the common instructions, rules and norms, controlling the process of education.

Practical value of the work: We hope that the results of our investigation will serve as a material for a practical usage and for composing lectures on the foreign language teaching.

CHAPTER I.HUMANLEARNING

The cognitive domain of human behavior is of key importance in the acquisition of both a first and a second language. The processes of perceiving, attending, storing, and recalling are central to the task of internalizing a language. In this chapter we focus specifically on cognitive processes by examining the general nature of human learning. In the first part of the chapter, different learning theories are outlined. Then, we deal with some other universal learning principles. Finally, some current thoughts about aptitude and intelligence are presented.

1.1. DIFFERENT LEARNING THEORIES

How do human beings learn? Are there certain basic principles of learning that apply to all learning acts? Is one theory of learning "better" than another? If so, how can you evaluate the usefulness of a theory? These and other important questions need to be answered in order to achieve an integrated understanding of second language acquisition.Before tackling theories of human learning directly, consider the following situation as an illustration of sorting out cognitive considerations in any task in which you are trying to determine what it means to conclude that an organism has learned something. Suppose you have decided to train your somewhat untalented pet dog to catch frisbees in midair at a distanceof thirty or more yards. What would you need to know about your dog and how would you go about the training program?

First, you will need to specify *entry behavior:* what your dog already "knows." What abilities does it possess upon which you, the trainer, can build? What are its drives, needs, motivations, limitations? Next, you need to formulate explicitly the *goals* of the task. You have a general directive; what are your specific objectives? How successfully and with what sort of "style points" must this dog perform? In what differing environments? You would also need to devise some *methods of training.* Based on what you know about entry behavior and goals of the task, how would you go about the training process? Where would you begin? Would you start at three feet? Place the frisbee in the dog's mouth? Would you use rewards? Punishment? What alternatives would you have ready if the dog failed to learn? Finally, you would need some sort of *evaluation procedure.* How would you deter-

mine whether or not the dog had indeed learned what you set out to teach? You would need to determine short-term and long-term evaluation measures. If the dog performs correctly after one day of training, what will happen one month later? That is, will the dog *maintain* what it has learned?

Already a somewhat simple task has become quite complex with questions that require considerable forethought and expertise. But we are talking only about a dog performing a simple trick. If we talk about human beings learning a second language, the task is of course much, much more complex. Nevertheless, the questions and procedures that apply to you, the language teacher, are akin to those that applied to you, the dog trainer. You must have a comprehensive knowledge of the entry behavior of a person, of objectives you wish to reach, of possible methods that follow from your understanding of the first two factors, and of an evaluation procedure. These steps derive from your conception of how human beings learn, and that is what this work is all about.

In turning now to varied theories of how human beings learn, consider the definition of learning:"acquiring or getting of knowledge of a subject or a skill by study, experience, or instruction," or "a relatively permanent change in a behavioral tendency, . . . the result of reinforced practice." When we consider such definitions, it is clear that one can understand learning in many different ways, which is why there are so many different theories, extended definitions, and schools of thought on the topic of learning.

We now focus on how psychologists have definedlearning, and we will look at these theories through the eyes of four psychologists, two representing a behaviorist viewpoint (Pavlov and Skinner), one representing a rational/cognitive stance (Ausubel), and one that stretches into what could be loosely defined as a constructivist school of thought (Rogers). Thefour positions should illustrate not only some of the history of learning theory, but also the diverse perspectives that form the foundations of varying language teaching approaches and methods.

PAVLOV'S CLASSICAL BEHAVIORISM

Certainly the best-known classical behaviorist is the Russian psychologist Ivan Pavlov, who at the turn of the century conducted a series of experiments in which he trained a dog to salivate to the tone of a tuning fork through a procedure that has come to be labeledclassical conditioning**.** For Pavlov the learning process consisted of the formation of associations between stimuli and reflexive responses. All of us are aware that certain stimuli automatically produce or elicit rather specific responses or reflexes, and we have also observed that sometimes that reflex occurs in response to stimuli that appear to be indirectly related to the reflex. Pavlov used the salivation response to the sight or smell of food (an unconditioned response) in many of his pioneering experiments. In the classical experiment he trained a dog, by repeated occurrences, to associate the sound of a tuning fork with salivation until the dog acquired a conditioned response**:** salivation at the sound of the tuning fork. A previously neutral stimulus (the sound of the tuning fork) had acquired the power to elicit a response (salivation) that was originally elicited by another stimulus (the smell of meat).

Drawing on Pavlov's findings,JohnB.Watson (1913) coined the term behaviorism**.** In the empirical tradition of John Locke, Watson contended that human behavior should be studied objectively, rejecting mentality notions of innateness and instinct. He adopted classical conditioning theory as the explanation for all learning: by the process of conditioning, we build an array of stimulus-response connections, and more complex behaviors are learned by building up series or chains of responses. Pavlov's and Watson's emphasis on the study of overt behavior and rigorous adherence to the scientific method had a tremendous influence on learning theories for decades. Language teaching practices likewise for many years were influenced by a behaviorist tradition.

SKINNER'S OPERANT CONDITIONING

In 1938 B.F. Skinner published his *Behavior of Organisms* and in so doing established himself as one of the leading behaviorists in the United States. He followed the tradition of Watson, but other psychologists (see Anderson and Ausubel 1965: 5) have called Skinner a neobehaviorist because headed a unique dimension to

behaviorist psychology. The classical conditioning of Pavlov was, according to Skinner, a highly specialized form of learning utilized mainly by animals and playing little part in human conditioning. Skinner called Pavlovian conditioning respondent conditioning since it was concerned with respondent behavior—that is, behavior that is *elicited* by a preceding stimulus.

Skinner's operant conditioning attempted to account for most of human learning and behavior. Operant behavior is behavior in which one "operates" on the environment; within this model the importance of stimuli is de-emphasized. For example, we cannot identify a specific stimulus leading a baby to rise to a standing position or to take a first step; we therefore need not be concerned about that stimulus, but we should be concerned about the consequences—the stimuli that follow the response. Stressing Thorndike's Law of Effect, Skinner demonstrated the importance of those events that follow a response. Suppose that another baby accidentally touches a nearby object and a tinkling bell-sound occurs. The infant may look in the direction from which the sound came, become curious about it, and after several such "accidental" responses discover exactly which toy it is that makes the sound and how to produce that sound. The baby operated on her environment. Her responses were reinforced until finally a particular concept or behavior was learned.

According to Skinner, the events or stimuli—the reinforcers—that follow a response and that tend to strengthen behavior or increase the probability of a recurrence of that response constitute a powerful force in the control of human behavior. Reinforcers are far stronger aspects of learning than is mere association of a prior stimulus with a following response, as in the classical conditioning model. We are governed by the consequences of our behavior, and therefore Skinner felt we ought, in studying human behavior, to study the effect of those consequences. And if we wish to control behavior, say, to teach someone something, we ought to attend carefully to reinforcers.

Operants are classes of responses. Crying, sitting down, walking, and batting a baseball are operants. They are sets of responses that areemittedand governed by the consequences they produce. In contrast,respondentsare sets of responses that

areelicited by identifiable stimuli. Certain physical reflex actions are respondents. Crying can be respondent or operant behavior. Sometimes crying is elicited in direct reaction to a hurt. Often, however, it is an *emitted* response that produces the consequences of getting fed, cuddled, played with, comforted, and so forth. Such operant crying can be controlled. If parents wait until a child's crying reaches a certain intensity before responding, loud crying is more likely to appear in the future. If parents ignore crying (when they are certain that it is operant crying), eventually the absence of reinforcers will extinguish the behavior.

Operant crying depends on its effect on the parents and is maintained or changed according to their response to it.Skinner believed that, in keeping with the above principle, punishment "works to the disadvantage of both the punished organism and the punishing agency" (1953:183). Punishment can be either the withdrawal of a positive reinforcer or the presentation of an aversive stimulus. More commonly we think of punishment as the latter—a spanking, a harsh reprimand—but the removal of certain positive reinforcers, such as a privilege, can also be considered a form of punishment. Skinner felt that in the long run, punishment does not actually eliminate behavior, but that mild punishment may be necessary for temporary suppression of an undesired response, although no punishment of such a kind should be meted out without positively reinforcing *alternate* responses.

The best method of extinction, said Skinner, is the absence of any reinforcement; however, the active reinforcement of alternative responses hastens that extinction. So if a parent wishes the children would not kick a football in the living room, Skinner would maintain that instead of punishing them adversely for such behavior when it occurs, the parent should refrain from any negative reaction and should instead provide positive reinforcement for kicking footballs outside; in this way the undesired behavior will be effectively extinguished. Such a procedure is, of course, easier said than done, especially if the children break your best table lamp in the absence of any punishment!

Skinner was extremely methodical and empirical in his theory of learning, to the point of being preoccupied with scientific controls. While many of his experiments

were performed on lower animals, his theories had an impact on our understanding of human learning and on education. His book *The Technology of Teaching* (1968) was a classic in the field of programmed instruction. Following Skinner's model, one is led to believe that virtually any subject matter can be taught effectively and successfully by a carefully designed program of step-by-step reinforcement. Programmed instruction had its impact on foreign language teaching, though language is such complex behavior, penetrating so deeply into both cognitive and affective domains, that programmed instruction in languages was limited to very specialized subsets of language.

The impact of Skinnerian psychology on foreign language teaching extended well beyond programmed instruction. Skinner's *Verbal Behavior* (1957) described language as a system of verbal operants, and his understanding of the role of conditioning led to a whole new era in language teaching around the middle of the twentieth century. A Skinnerian view of both language and language learning dominated foreign language teaching methodology for several decades, leading to a heavy reliance in the classroom on the controlled practice of verbal operants under carefullydesigned schedules of reinforcement. The popular Audiolingual Method was a prime example of Skinner's impact on American language teaching practices in the decades of the 1950s, 1960s, and early 1970s.

There is no doubt that behavioristic learning theories have had a lasting impact on our understanding of the process of human learning. There is much in the theory that is true and valuable. There is another side to the coin, however. We have looked at the side that claims that human behavior can be predicted and controlled and scientifically studied and validated. We have not looked at the side that views human behavior as essentially abstract in nature, as being composed of such a complex of variables that behavior, except in its extreme abnormality, simply cannot be predicted or easily controlled. We turn next to two representatives of this side of the coin—David Ausubel's meaningful learning theory and Carl Rogers's humanistic psychology.

AUSUBEL'S MEANINGFUL LEARNING THEORY

David Ausubel contended that learning takes place in the human organism through a meaningful process of relating new events or items to already existing cognitive concepts or propositions—hanging new items on existing cognitive pegs. Meaning is not an implicit response, but a "clearly articulated and precisely differentiated conscious experience that emerges when potentially meaningful signs, symbols, concepts, or propositions are related to and incorporated within a given individual's cognitive structure on a nonarbitrary and substantive basis" (Anderson &Ausubel 1965:8). It is this relatability that, according to Ausubel, accounts for a number of phenomena: the acquisition of new meanings (knowledge), retention, the psychological organization of knowledge as a hierarchical structure, and the eventual occurrence of forgetting.

The cognitive theory of learning as put forth by Ausubel is perhaps best understood by contrastingrote learning andmeaningfullearning. In the perspective of rote learning, the concept of meaningful learning takes on new significance. Ausubel described rote learning as the process of acquiring material as "discrete and relatively isolated entities that are relat- able to cognitive structure only in an arbitrary and verbatim fashion, not permitting the establishment of [meaningful] relationships" (1968: 108). That is, rote learning involves the mental storage of items having little or no association with existing cognitive structure. Most of us, for example, can learn a few necessary phone numbers and ZIP codes by rote without reference to cognitive hierarchical organization.

Meaningful learning, on the other hand, may be described as a process of relating and anchoring new material to relevant established entities incognitive structure. As new material enters the cognitive field, it interacts with, and is appropriatelysubsumed under, a more inclusive conceptual system.The very fact that material is subsumable, that is, relatable to stable elements in cognitive structure, accounts for its meaningfulness. If we think of cognitive structure as a system of building blocks, then rote learning is the process of acquiring isolated blocks with no particular function in the building of a structure and no relationship to other blocks.

Meaningful learning is the process whereby blocks become an integral part of already established categories or systematic clusters of blocks.

Any learning situation can be meaningful if (a) learners have a meaningful learning set—that is, a disposition to relate the new learning task to what they already know, and (b) the learning task itself is potentially meaningful to the learners—that is, relatable to the learners' structure of knowledge. The second method of establishing meaningfulness—one that Frank Smith (1975:162) called "manufacturing meaningfulness"—is a potentially powerful factor in human learning. We can make things meaningful if necessary and if we are strongly motivated to do so. Students cramming for an examination often invent a mnemonic device for remembering a list of items; the meaningful retention of the device successfully retrieves the whole list of items.

Frank Smith (1975) also noted that similar strategies can be used in parlor games in which, for example, you are called upon to remember for a few moments several items presented to you. By associating items either in groups or with some external stimuli, retention is enhanced. Imagine "putting" each object in a different location on your person: a safety pin in your pocket, a toothpick in your mouth, a marble in your shoe. By later "taking a tour around your person," you can "feel" the objects there in your imagination. More than a century ago William James (1890:662) described meaningful learning:

In mental terms, the more other facts a fact is associated with in the mind, the better possession of it our memory retains. Each of its associates becomes a hook to which it hangs, a means to fish it up by when sunk beneath the surface. Together, they form a network of attachments by which it is woven into the entire issue of our thought. The "secret of good memory" is thus the secret of forming diverse and multiple associations with every fact we careto retain. Briefly, then, of two men with the same outwardexperiences and the same amount of mere native tenacity, the one who thinks over his experiences most, and weaves them into systematic relation with each other, will be the one with the best memory.

The distinction between rote and meaningful learning may not at first appear to be important since in either case material can be learned. But the significance of the distinction becomes clear when we consider the relative efficiency of the two kinds of learning in terms of retention, or long- term memory. We are often tempted to examine learning from the perspective of input alone, failing to consider the uselessness of a learned item that is not retained. Human beings are capable of learning almost any given item within the so-called "magic seven, plus or minus two" (Miller 1956) units for perhaps a few seconds, but long-term memory is a differentmatter. We can remember an unfamiliar phone number, for example, long enough to dial the number, after which point it is usually extinguished by interfering factors. But a meaningfully learned, subsumed item has far greater potential for retention. Try, for example, to recall all your previous phone numbers (assuming you have moved a number of times in your life). It is doubtful you will be very successful; a phone number is quite arbitrary, bearing little meaningful relationship to reality (other than perhaps area codes and other such numerical systematization). But previous street addresses, for example, are sometimes more efficiently retained since they bear some meaningful relationship to the reality of physical images, directions, streets, houses, and the rest of the town, and are therefore more suitable for long-term retention without concerted reinforcement.

Systematic Forgetting

Ausubel provided a plausible explanation for the universal nature of forgetting. Since rotely learned materials do not interact with cognitive structure in a substantive fashion, they are learned in conformity with the laws of association, and their retention is influenced primarily by the interfering effects of similar rote materials learned immediately before or after the learning task (commonly referred to asproactiveandretroactive inhibition**).** In the case of meaningfully learned material, retention is influenced primarily by the properties of "relevant and cumulatively established ideational systems in cognitive structure with which the learning task interacts" (Ausubel 1968: 108). Compared to this kind of extended interaction, concurrent interfering effects have relatively little influence on meaningful learning,

and retention is highly efficient. Hence, addresses are retained as part of a meaningful set, while phone numbers, being self-contained, isolated entities, are easily forgotten.

We cannot say, of course, that meaningfully learned material is never forgotten. But in the case of such learning, forgetting takes place in a much more intentional and purposeful manner because it is a continuation of the very process of subsumption by which one learns; forgetting is really a second or "obliterative" stage of subsumption, characterized as "memorial reduction to the least common denominator" (Ausubel 1963:218). Because it is more economical and less burdensome to retain a single inclusive concept than to remember a large number of more specific items, the importance of a specific item tends to be incorporated into the generalized meaning of the larger item. In this obliterative stage of subsumption, the specific items become progressively less identifiable as entities in their own right until they are finally no longer available and are said to be forgotten (see Figure 4.2).

It is this second stage of subsumption that operates through what I have called "cognitive pruning" procedures (Brown 1972). Pruning is the elimination of unnecessary clutter and a clearing of the way for more material to enter the cognitive field, in the same way that pruning a tree ultimately allows greater and fuller growth. Using the building-block analogy, one might say that, at the outset, a structure made of blocks is seen as a few individual blocks, but as "nucleation" begins to give the structure a perceived shape, some of the single blocks achieve less and less identity in their own right and become subsumed into the larger structure. Finally, the single blocks are lost to perception, or pruned out, to use the metaphor, and the total structure is perceived as a single whole without clearly defined parts.

An example of such pruning may be found in a child's learning of the concept of "hot"—that is, excessive heat capable of burning. A small child's first exposure to such heat may be either direct contact with or verbally mediated exposure to hot coffee, a pan of boiling water, a stove, an iron, a candle. That first exposure may be readily recalled for some time as the child maintains a meaningful association between a parent's hot coffee and hurting. After a number of exposures to things that are very hot, the child begins to form a concept of "hotness" by clustering

experiences together and forming a generalization. In so doing the bits and pieces of experience that actually built the concept are slowly forgotten—pruned— in favor of the general concept that, in the years that follow, enables the child to extrapolate to future experiences and to avoid burning fingers on hot objects.

An important aspect of the pruning stage of learning is that subsumptive forgetting, or pruning, is not haphazard or chance—it is systematic. Thus by promoting optimal pruning procedures, we have a potential learning situation that will produce retention beyond that normally expected under more traditional theories of forgetting.

Research on languageattritionhas focused on a variety of possible causes for the loss of second language skills (see Weltens& Cohen 1989; Weltens 1987; Lambert & Freed 1982). Some of the more common reasons center on the strength and conditions of initial learning, on the kind of use that a second language has been put to, and on the motivational factors contributing to forgetting. Robert Gardner (1982) contended that in some contexts a lack of an "integrative" orientation toward the target culture could contribute to forgetting.Native language forgetting occurs in some cases ofsubtractive bilingualism (members of a minority group learn the language of the majority group, and the latter group downgrades speakers of the minority language). Some researchers have suggested that "neurolinguistic blocking" and left-/right-brain functioning could contribute to forgetting (Obler 1982). And it appears that long-term forgetting can apply to certain linguistic features (lexical, phonological, syntactic, and so on) and not to others (Andersen 1982). Finally, Olshtain (1989) suggested that some aspects of attrition can be explained as a reversal of the acquisition process.

Research on language attrition usually focuses on long-term loss and not on those minute-by-minute or day-by-day losses of material that learners experience as they cope with large quantities of new material in the course of a semester or year of classroom language learning. It is this classroom context that poses the more immediate problem for the language teacher. Ausubel's solution to that problem

would lie in the initial learning process: systematic, meaningful subsumption of material at the outset in order to enhance the retention process.

Ausubel's theory of learning has important implications for second language learning and teaching. Too much rote activity, at the expense of meaningful communication in language classes, could stifle the learning process.Subsumption theory provides a strong theoretical basis for the rejection of conditioning models of practice and repetition in language teaching. In a meaningful process like second language learning, mindless repetition, imitation, and other rote practices in the language classroom have no place. The Audiolingual Method, which emerged as a widely used and accepted method of foreign language teaching, was based almost exclusively on a behavioristic theory of conditioning that relied heavily on rote learning.The mechanical "stamping in" of the language through saturation with little reference to meaning is seriously challenged by subsumption theory. Rote learning can be effective on a short-term basis, but for any long-term retention it fails because of the tremendous buildup of interference. In those cases in which efficient long-term retention *is* attained in rote-learning situations like those often found in the Audiolingual Method, maybe by sheer dogged determination, the learner has somehow subsumed the material meaningfully *in spite* of the method!

The notion that forgetting is systematic also has important implications for language learning and teaching. In the early stages of language learning, certain devices (definitions, paradigms, illustrations, or rules) are often used to facilitate subsumption. These devices can be made initially meaningful by assigning or "manufacturing" meaningfulness. But in the process of making language automatic, the devices serve only as interim entities, meaningful at a low level of subsumption, and then they are systematically pruned out at later stages of language learning. We might thus better achieve the goal of communicative competence by removing unnecessary barriers to automaticity. A definition or a paraphrase, for example might be initially facilitative, but as its need is minimized by larger and more global conceptualizations, it is pruned.

While we are all fully aware of the decreasing dependence upon such devices in language learning, Ausubel's theory of learning may help to give explanatory adequacy to the notion. Language teachers might consider urging students to "forget" these interim, mechanical items as they make progress in a language and instead to focus more on the communicative use (comprehension or production) of language.

ROGERS'S HUMANISTIC PSYCHOLOGY

Carl Rogers is not traditionally thought of as a "learning" psychologist, yet he and his colleagues and followers have had a significant impact on our present understanding of learning, particularly learning in an educational or pedagogical context. Rogers's humanistic psychology has more of an affective focus than a cognitive one, and so it may be said to fall into the perspective of a constructivist view of learning. Certainly, Rogers and Vygotsky (1978) share some views in common in their highlighting of the social and interactive nature of learning.

Rogers devoted most of his professional life to clinical work in an attempt to be of therapeutic help to individuals. In his classic work *Client- Centered Therapy* (1951), Rogers carefully analyzed human behavior in general, including the learning process, by means of the presentation of nineteen formal principles of human behavior. All nineteen principles were concerned with learning from a "phenomenological" perspective, a perspective that is in sharp contrast to that of Skinner. Rogers studied the "whole person" as a physical and cognitive, but primarily emotional, being. His formal principles focused on the development of an individual's self- concept and of his or her personal sense of reality, those internal forces that cause a person to act. Rogers felt that inherent in principles of behavior is the ability of human beings to adapt and to grow in the direction that enhances their existence. Given a nonthreatening environment, a person will form a picture of reality that is indeed congruent with reality and will grow and learn. "Fully functioning persons," according to Rogers, live at peace with all of their feelings and reactions; they are able to reach their full potential.

Rogers's position has important implications for education (see Curran 1972; Rogers 1983). The focus is away from "teaching" and toward "learning." The goal of

education is the facilitation of change and learning. Learning how to learn is more important than being taught something from the "superior" vantage point of a teacher who unilaterally decides what shall be taught. Many of our present systems of education, in prescribingcurricular goals and dictating what shall be learned, deny persons both freedom and dignity. What is needed, according to Rogers, is for teachers to become facilitators of learning through the establishment of interpersonal relationships with learners. Teachers, to be facilitators, must first be real and genuine, discarding masks of superiority and omniscience. Second, teachers need to have genuine trust, acceptance, and a prizing of the other person—the student—as a worthy, valuable individual. And third, teachers need to communicate openly and empathetically with their students and vice versa. Teachers with these characteristics will not only understand themselves better but will also be effective teachers, who, having set the optimal stage and context for learning, will succeed in the goals of education.

We can see in Carl Rogers's humanism quite a departure from the scientific analysis of Skinnerian psychology and even from Ausubel's rationalistic theory. Rogers is not as concerned about the actual cognitive process of learning because, he feels, if the context for learning is properly created, then human beings will, in fact, learn everything they need to.

Rogers's theory is not without its flaws. The educator may be tempted to take the nondirective approach too far, to the point that valuable time is lost in the process of allowing students to "discover" facts and principles for themselves. Also, a nonthreatening environment might become so non- threatening that the facilitative tension needed for learning is absent. There is ample research documenting the positive effects of competitiveness in a classroom, as long as that competitiveness does not damage self-esteem and hinder motivation to learn (see Bailey 1983).

One much talked-about educational theorist in the Rogersian tradition is the well-known Brazilian educator Paolo Freire, whose seminal work, *Pedagogy of the Oppressed* (1970), has inspired many a teacher to consider the importance of the *empowerment* of students in classrooms. Freire vigorously objected to traditional

"banking" concepts of education in which teachers think of their task as one of "filling" students "by making deposits of information which [they] consider to constitute true knowledge— deposits which are detached from reality" (1970: 62). Instead, Freire has continued to argue, students should be allowed to negotiate learning outcomes, to cooperate with teachers and other learners in a process of discovery, to engage in critical thinking, and to relate everything they do in school to their reality outside the classroom. While such "liberationist" views of education must be approached with some caution (Clarke 1990), learners may nevertheless be empowered to achieve solutions to real problems in the real world.

The work of Rogers (1983), Freire (1970), and other educators of a similar frame of mind has contributed significantly in recent years to a redefinition of the educational process. In adapting Rogers's ideas to language teaching and learning, we need to see to it that learners understandthemselves and communicate this self to others freely and nondefensively. Teachers as facilitators must therefore provide the nurturing context for learners to construct their meanings in interaction with others. When teachers rather programmatically feed students quantities of knowledge, which they subsequently devour, they may foster a climate of defensive learning in which learners try to protect themselves from failure, from criticism, from competition with fellow students, and possibly from punishment. Classroom activities and materials in language learning should therefore utilize meaningful contexts of genuine communication with students engaged together in the process of becoming "persons."

1.2. UNIVERSAL LEARNING PRINCIPLES

Theories of learning of course do not capture all of the possible elements of general principles of human learning. In addition to the four learning theories just considered are various taxonomies of types of human learning and other mental processes universal to all. The educational psychologist Robert Gagne (1965), for example, ably demonstrated the importance of identifying a number of *types* of learning that all human beings use. Types of learning vary according to the context and subject matter to be learned, but a complex task such as language learning involves every one of Gagne'stypes of learning—from simple signal learning to problem solving. Gagne(1965: 58-59) identifiedeighttypesoflearning:

4. Signal learning. The individual learns to make a general diffuse response to a signal. ThisistheclassicalconditionedresponseofPavlov.
5. Stimulus-response learning.The learner acquires a precise response to a discriminated stimulus. What is learned is a connection or, in Skinnerian terms, a discriminated operant, sometimes called an instrumental response.

3- Chaining. What is acquired is a chain of two or morestimulus-response connections.The conditions for such learning have also been described by Skinner.

4. Verbal association. Verbal association is the learning of chains that are verbal. Basically, the conditions resemble those for other (motor) chains. However, the presence of language in the human being makes this a special type of chaining because internal links may be selected from the individual's previously learned repertoire of language.
5. Multiple discrimination. The individual learns to make a number of different identifying responses to many different stimuli, which may resemble each other in physical appearance to a greater or lesser degree. Although the learning of each stimulus-response connection is a simple occurrence, the connections tend to interfere with one another.
6. Concept learning. The learner acquires the ability to make a common response to a class of stimuli even though the individual members of that class may differ widely from each other. The learner is able to make a response that identifies an entire class of objects or events.
7. Principle learning. In simplest terms, a principle is a chain of two or more concepts. It functions to organize behavior and experience. In Ausubel's terminology, a principle is a "subsumer"—a cluster of related concepts.
8. Problem solving. Problem solving is a kind of learning that requires the internal events usually referred to as "thinking." Previously acquired concepts and principles are combined in a conscious focus on an unresolved or ambiguous set of events.

It is apparent from just a cursory definition of these eight types of learning that some types are better explained by certain theories than others. For example, the first five types seem to fit easily into a behavioristic framework, while the last three are better explained by Ausubel'sorRogers's theories of learning. Since all eight types of learning are relevant to second language learning, the implication is that certain "lower"-level aspects of second language learning may be more adequately treated by behavioristic approaches and methods, while certain "higher"-order types of learning are more effectively taught by methods derived from a cognitive approach to learning.

It is not difficult, upon some reflection, to discern the importance of varied types of learning in the second language acquisition process (see Larsen-Freeman 1991). Teachers and researchers have all too often dismissed certain theories of learning as irrelevant or useless because of the misperception that language learning consists of only one type of learning. "Language is concept learning," say some; "Language is a conditioning process," say others. Both are correct in that part of language learning consists of each of the above. But both are incorrect to assume that all of language learning can be so simply classified. Methods of teaching, in recognizing different levels of learning, need to be consonant with whichever aspect of language is being taught at a particular time while also recognizing the interrelatedness of all levels of language learning.

TRANSFER, INTERFERENCE, AND OVERGENERALIZATION

Human beings approach any new problem with an existing set of cognitive structures and, through insight, logical thinking, and various forms of hypothesis testing, call upon whatever prior experiences they have had and whatever cognitive structures they possess to attempt a solution. In the literature on language learning processes, three terms have commonly been singled out for explication: transfer, interference, and overgeneralization. The three terms are sometimes mistakenly considered to represent separate processes; they are more correctly understood as several manifestations of one principle of learning—the interaction of previously learned material with a present learning event. From the beginning of life the human

organism, or any organism for that matter, builds a structure of knowledge by the accumulation of experiences and by the storage of aspects of those experiences in memory. Let us consider these common terms in two associated pairs.

Transferis a general term describing the carryover of previous performance or knowledge to subsequent learning. Positive transfer occurs when the prior knowledge benefits the learning task—that is, when a previous item is correctly applied to present subject matter. Negative transferoccurs when previous performance disrupts the performance of a second task. The latter can be referred to as interference**,** in that previously learned material interferes with subsequent material—a previous item is incorrectly transferred or incorrectly associated with an item to be learned.

It has been common in second language teaching to stress the role of interference—that is, the interfering effects of the native language on the target (the second) language. It is of course not surprising that this process has been so singled out, for native language interference is surely the most immediately noticeable source of error among second language learners. The saliency of interference has been so strong that some have viewed second language learning as exclusively involving the overcoming of the effects of the native language. It is clear from learning theory that a person will use whatever previous experience he or she has had with language to facilitate the second language learning process. The native language is an obvious set of prior experiences. Sometimes the native language is negatively transferred, and we say then that interference has occurred. For example, a French native speaker might say in English, "I am in New York since January," a perfectly logical transfer of the comparable French sentence "Je suis a New York depuisjanvier." Because of the negative transfer of the French verb form to English, the French system has, in this case, interfered with the person's production of a correct English form.

It is exceedingly important to remember, however, that the native language of a second language learner is often positively transferred, in which case the learner benefits from the facilitating effects of the first language. In the above sentence, for example, the correct one-to-one word order correspondence, the personal pronoun, and the preposition have been positively transferred from French to English.We often

mistakenly overlook the facilitating effects of the native language in our penchant for analyzing errors in the second language and for overstressing the interfering effects of the first language.

In the literature on second language acquisition, interference is almost as frequent a term asovergeneralization, which is, of course, a particular subset of generalization. Generalization is a crucially important and pervading strategy in human learning. To generalize means to infer or derive a law, rule, or conclusion, usually from the observation of particular instances. The principle of generalization can be explained by Ausubel's concept of meaningful learning. Meaningful learning is, in fact, generalization: items are subsumed (generalized) under higher-order categories for meaningful retention. Much of human learning involves generalization. The learning of concepts in early childhood is a process of generalizing. A child who has been exposed to various kinds of animals gradually acquires a generalized concept of "animal." That same child, however, at an early stage ofgeneralization, might in his or her familiarity with dogs see a horse for the first time and overgeneralize the concept of "dog" and call the horse a dog. Similarly, a number of animals might be placed into a category of "dog" until the general attributes of a larger category, "animal," have been learned.

In second language acquisition it has been common to refer to over-generalization as a process that occurs as the second language learner acts within the target language, generalizing a particular rule or item in the second language—irrespective of the native language—beyond legitimate bounds. We have already observed that children, at a particular stage of learning English as a native language, overgeneralize regular past-tense endings (walked, opened) as applicable to all past-tense forms (goed, flied) until they recognize a subset of verbs that belong in an "irregular" category. After gaining some exposure and familiarity with the second language, second language learners similarly will overgeneralize within the target language. Typical examples in learning English as a second language are past- tense regularization and utterances like "John doesn't can study" (negativization requires insertion of the *do* auxiliary before verbs) or "He told me when should I get off the

train" (indirect discourse requires normal word order, not question word order, after the*wh-* word). Unaware that these rules have special constraints, the learner overgeneralizes. Such over- generalization is committed by learners of English from almost any native language background.

Many have been led to believe that there are only two processes of second language acquisition: interference and overgeneralization. This is obviously a misconception. First, interference and overgeneralization are the negative counterparts of the facilitating processes of transfer and generalization. Second, while they are indeed aspects ofsomewhat different processes, they represent fundamental and interrelated components of all human learning, and when applied to second language acquisition, are simply extensions of general psychological principles. Interference of the first language in the second is simply a form of generalizing that takes prior first language experiences and applies them incorrectly. Overgeneralization is the incorrect application—negative transfer—of previously learned second language material to a present second language context. All generalizing involves transfer, and all transfer involves generalizing.

INDUCTIVE AND DEDUCTIVE REASONING

Inductive and deductive reasoning are two polar aspects of the generalization process. In the case ofinductive reasoning, one stores a number of specific instances and induces a general law or rule or conclusion that governs or subsumes the specific instances.Deductive reasoning is a movement from a generalization to specific instances: specific subsumed facts are inferred or deduced from a general principle. Second language learning in the "field" (natural, untutored language learning), as well as first language learning, involves a largely inductive process, in which learners must infer certain rules and meanings from all the data around them.

Classroom learning tends to rely more than it should on deductive reasoning. Traditional—especially Grammar Translation—methods have overemphasized the use of deductive reasoning in language teaching. While it may be appropriate at times to articulate a rule and then proceed to its instances, most of the evidence in communicative second language learning points to the superiority of an inductive

approach to rules and generalizations. However, both inductively and deductively oriented teaching methods can be effective, depending on the goals and contexts of a particular language teaching situation.

An interesting extension of the inductive/deductive dichotomy was reported in Peters's (1981) case study of a child learning a first language. Peters pointed out that we are inclined, too often, to assume that a child's linguistic development proceeds from the parts to the whole, that is, children first learn sounds, then words, then sentences, and so forth. However, Peters's subject manifested a number of "Gestalt" characteristics, perceiving the whole before the parts. The subject demonstrated the perception of these wholes in the form of intonation patterns that appeared in his speech well before the particular words that would make up sentences. Peters cited other evidence of Gestalt learning in children and concluded that such "sentence learners" (versus "word learners") may be more common than researchers had previously assumed.

The implications of Peters's study for second language teaching are rather tantalizing. We should perhaps pay close attention to learners' production of overall, meaning-bearing intonation patterns. Wong (1986) capitalizes on just such a concept in a discussion of teaching communicative oral production.

1.3. APTITUDE AND INTELLIGENCE

The learning theories, types of learning, and other processes that have so far been explained in this chapter deal with mental perception, storage, and recall. Little has been said about two related and somewhat controversial issues in learning psychology: aptitude and intelligence. Inbrief, thequestionsare:

1. Is there such a thing as foreign language aptitude? If so, what are its properties? Can they be reliably measured? Are aptitudinal factors predictive of success in learning a foreign language?
2. What is intelligence? How is intelligence defined in terms of the foreign language learning process? What kinds of intelligence are related to foreign language learning?

Aptitude

Do certain people have a "knack" for learning foreign languages? Anecdotal evidence would suggest that, for a variety of causal factors, some people are indeed able to learn languages faster and more efficiently than others. One perspective of looking at such aptitude is the identification of a number of characteristics of successful language learners. Risk-taking behavior, memory efficiency, intelligent guessing, and ambiguity tolerance are but a few of the many variables that have been cited (see Brown 1991 and Rubin & Thompson 1982, among others).

A more traditional way of examining what we mean by aptitude is through a historical progression of research that began around the middle of the twentieth century with John Carroll's (Carroll &Sapon 1958) construction of the Modern Language Aptitude Test (MLAT). The MLAT required prospective language learners (before they began to learn a foreign language) to perform such tasks as learning numbers, listening, detecting spelling clues and grammatical patterns, and memorizing, all either in the native language, English, or utilizing words and morphemes from a constructed, hypothetical language. The MLAT was considered to be

independent of a specific foreign language, and therefore predictive of success in the learning of any language. This test, along with another similar one, the Pimsleur Language Aptitude Battery (PLAB) (Pimsleur 1966), was used for some time in such contexts as Peace Corps volunteer training programs to help predict successful language learners.

In the decade or so following their publication, these two aptitude tests were quite well received by foreign language teachers and administrators. Since then, their popularity has steadily waned, with few attempts to experiment with alternative measures of language aptitude (Skehan 1998; Parry & Child 1990). Two factors account for this decline. First, even though the MLAT and the PLAB claimed to measure language aptitude, it soon became apparent that they simply reflected the general intelligence or academic ability of a student (see Skehan 1989a). At best, they measured ability to perform focused, analytical, *context-reduced* activities that occupy a student in a traditional language classroom. They hardly even began to tap

into the kinds of learning strategies and styles that recent research (Cohen 1998; Reid 1995; Ehrman 1990; Oxford 1990b, 1996, for example) has shown to be crucial in the acquisition of communicative competence in *context-embedded* situations. Learners can be successful for a multitude of reasons, many of which are much more related to motivation and determination than to so- called "native" abilities (Lett& O'Mara 1990).

Second, how is one to interpret a language aptitude test? Rarely does an institution have the luxury or capability to test people before they take a foreign language in order to counsel certain people out of their decision to do so. And in cases where an aptitude test might be administered, such a test clearly biases both student and teacher. Both are led to believe that they will be successful or unsuccessful, depending on the aptitude test score, and a self-fulfilling prophecy is likely to occur. It is better for teachers to be optimistic for students, and in the early stages of a student's process of language learning, to monitor styles and strategies carefully, leading the student toward strategies that will aid in the process of learning and away from those blocking factors that will hinder the process.

Only a few isolated recent efforts have continued to address foreign language aptitude and success (Harley & Hart 1997; Sasaki 1993a, 1993b, for example). Skehan's (1998) bold attempts to pursue the construct of aptitude have exposed some of the weaknesses of aptitude constructs, but unfortunately have not yielded a coherent theory of language aptitude. So today the search for verifiable factors that make up aptitude, or "knack," is headed in the direction of a broader spectrum of learner characteristics. Some of those characteristics fall into the question of intelligence and foreign language learning. How does general cognitive ability intersect with successful language learning?

Intelligence

Intelligence has traditionally been defined and measured in terms of linguistic and logical-mathematical abilities. Our notion of **IQ** (intelligence quotient) is based on several generations of testing of these two domains, stemming from the research of Alfred Binet early in the twentieth century. Success in educational institutions and in

life in general seems to be a correlate of high IQ. In terms of Ausubel's meaningful learning model, high intelligence would no doubt imply a very efficient process of storing items that are particularly useful in building conceptual hierarchies and systematically pruning those that are not useful. Other cognitive psychologists have dealt in a much more sophisticated way with memory processing and recall systems.

In relating intelligence to second language learning, can we say simply that a "smart" person will be capable of learning a second language more successfully because of greater intelligence? After all, the greatest barrier to second language learning seems to boil down to a matter of memory, in the sense that if you could just remember everything you were ever taught, or you ever heard, you would be a very successful language learner. Or would you? It appears that our "language learning IQs" are much more complicated than that.

Howard Gardner (1983) advanced a controversial theory of intelligence that blew apart our traditional thoughts about IQ. Gardner described seven different forms of knowing which, in his view, provide a much more comprehensive picture of intelligence. Beyond the usual two forms of intelligence (listed as 1 and 2 below), he added five more:

1. linguistic
2. logical-mathematical
3. spatial (the ability to find one's way around an environment, to form mental images of reality, and to transform them readily)
4. musical (the ability to perceive and create pitch and rhythmic patterns)
5 bodily-kinesthetic (fine motor movement, athletic prowess)
6. interpersonal (the ability to understand others, how they feel, what motivates them, how they interact with one another)
7. intrapersonal intelligence (the ability to see oneself, to develop a sense of self-identity)

Gardner maintained that by looking only at the first two categories we rule out a great number of the human being's mental abilities; we see only a portion of the total capacity of the human mind. Moreover, he showed that our traditional definitions of

intelligence are culture-bound.The "sixth- sense" of a hunter in New Guinea or the navigational abilities of a sailor in Micronesia are not accounted for in our Westernized definitions of IQ. In a likewise revolutionary style, Robert Sternberg (1985, 1988) has also been shaking up the world of traditional intelligence measurement. In his "triarchic" view of intelligence, Sternberg proposed three types of "smartness":

- componentialabilityforanalyticalthinking
- experiential ability to engage in creative thinking, combining disparate experiences in insightful ways
- contextual ability: "street smartness" that enables people to "play the game" of manipulating their environment (others, situations, institutions, contexts).

Sternberg contended that too much of psychometric theory is obsessed with mental speed, and therefore dedicated his research to tests that measure insight, real-life problem solving, "common sense," getting a wider picture of things, and other practical tasks that are closely related to success in the real world.

Finally, in another effort to remind us of the bias of traditional definitions and tests of intelligence, Daniel Goleman's *Emotional Intelligence* (1995) is persuasive in placing emotion at the seat of intellectual functioning. The management of even a handful of core emotions—anger, fear, enjoyment, love, disgust, shame, and others—drives and controls efficient mental or cognitive processing. Even more to the point, Goleman argued that "the emotional mind is far quicker than the rational mind, springing into action without even pausing to consider what it is doing. Its quickness precludes the deliberate, analytic reflection that is the hallmark of the thinking mind" (Goleman 1995: 291). Gardner's sixth and seventh types of intelligence (inter- and intrapersonal) are of course laden with emotional processing, but Goleman would place emotion at the highest level of a hierarchy of human abilities.

By expanding constructs of intelligence as Gardner, Sternberg, and Goleman have done, we can more easily discern a relationship between intelligence and second language learning. In its traditional definition, intelligence may have little to do with one's success as a second language learner: people within a wide range of

IQs have proven to be successful in acquiring a second language. But Gardner attaches other important attributes to the notion of intelligence, attributes that could be crucial to second language success. Musical intelligence could explain the relative ease that some learners have in perceiving and producing the intonation patterns of a language. Bodily-kinesthetic modes have already been discussed in connection with the learning of the phonology of a language.

Interpersonal intelligence is of obvious importance in the communicative process. One might even be able to speculate on the extent to which spatial intelligence, especially a "sense of direction," may assist the second culture learner in growing comfortable in a new environment. Sternberg's experiential and contextual abilities cast further light on the components of the "knack" that some people have for quick, efficient, unabashed language acquisition. Finally, the EQ (emotional quotient) suggested by Goleman may be far more important than any other factor in accounting for second language success both in classrooms and in untutored contexts.

Educational institutions have recently been applying Gardner's seven intelligences to a multitude of school-oriented learning.Thomas Armstrong (1993, 1994), for example, has focused teachers and learners on "seven ways of being smart," and helped educators to see that linguistics and logical-mathematical intelligences are not the only pathways to success in the real world. A high IQ in the traditional sense may garner high scholastic test scores, but may not indicate success in business, marketing, art, communications, counseling, or teaching.

Quite some time ago, Oiler suggested, in an eloquent essay, that intelligence may after all be language-based. "Language may not be merely a vital link in the social side of intellectual development, it may be the very foundation of intelligence itself" (1981a: 466). According to Oiler, arguments from genetics and neurology suggest "a deep relationship, perhaps even an identity, between intelligence and language ability" (p. 487). The implications of Oiler's hypothesis for second language learning are enticing. Both first and second languages must be closely tied to meaning in its deepest sense. Effective second language learning thus links surface forms of a

language with meaningful experiences, as we have already noted in Ausubel's learning theory. The strength of that link may indeed be a factor of intelligence in a multiple number of ways.

AS A CONCLUSION we can say, that we have much to gain from the understanding of learning principles that have been presented here, and of the various ways of understanding what intelligence is. Some aspects of language learning may call upon a conditioning process; other aspects require a meaningful cognitive process; others depend upon the security of supportive co-learners interacting freely and willingly with one another; still others are related to one's total intellectual structure. Each aspect is important, but there is no consistent amalgamation of theory that works for every context of second language learning. Each teacher has to adopt a somewhat intuitive process of discerning the best synthesis of theory for an enlightened analysis of theparticular context at hand. That intuition will be nurtured by an integrated understanding of the appropriateness and of the strengths and weaknesses of each theory of learning.

CHAPTER II COGNITIVE APPROACHES

We have touched different learning theories, universal learning principles; have studied two issues in learning psychology: aptitude and intelligence. Now it is important to pay attention to cognitive and affective domains, and to analyze cognitive models of different scholars.

Human beings are emotional creatures. At the heart of all thought and meaning and action is emotion. As "intellectual" as we would like to think we are, we are influenced by our emotions. It is only logical, then, to look at the affective (emotional) domain for some of the most significant answers to the problems of contrasting the differences between first and second language acquisition.

2.1. COGNITIVE CONSIDERATIONS

Human cognition develops rapidly throughout the first sixteen years of life and less rapidly thereafter. Some cognitive changes are critical; others are more gradual and difficult

to detect. Jean Piaget (1972; Piaget &Inhelder 1969) outlined the course of intellectual development in a child through various stages:

- Sensorimotor stage (birth to two)
- Preoperational stage (ages two to seven)
- Operational stage (ages seven to sixteen)
- Concrete operational stage (ages seven to eleven)
- Formal operational stage (ages eleven to sixteen).

A critical stage for a consideration of the effects of age on second language acquisition appears to occur, in Piaget's outline, at puberty (age eleven in his model). It is here that a person becomes capable of abstraction, of formal thinking which transcends concrete experience and direct perception. Cognitively, then, a strong argument can be made for a critical period of language acquisition by connecting language acquisition and the concrete/formal stage transition.

Ausubel (1964) hinted at the relevance of such a connection when he noted that adults learning a second language could profit from certain grammatical explanations and deductive thinking that obviously would be pointless for a child. Whether adults do in fact profit from such explanations depends, of course, on the suitability and efficiency of the explanation, the teacher, the context, and other pedagogical variables. We have observed, though, that children do learn second languages well without the benefit—or hindrance—of formal operational thought. Does this capacity of formal, abstract thought have a facilitating or inhibiting effect on language acquisition in adults? Ellen Rosansky (1975: 96) offered an explanation noting that initial language acquisition takes place when the child is highly "centered": "He is not only egocentric at this time, but when faced with a problem he can focus (and then only fleetingly) on one dimension at a time. This lack of flexibility and lack of decentration may well be a necessity for language acquisition."

Young children are generally not "aware" that they are acquiring a language, nor are they aware of societal values and attitudes placed on one language or another. It is said that "a watched pot never boils"; is it possible that a language learner who is too consciously aware of what he or she is doing will have difficulty in learning the

second language?You may be tempted to answer that question affirmatively, but there is both logical and anecdotal counterevidence. Logically, a superior intellect should facilitate what is in one sense a highly complex intellectual activity. Anecdotal evidence shows that some adults who have been successful language learners have been very much aware of the process they were going through, even to the point of utilizing self-made paradigms and other fabricated linguistic devices to facilitate the learning process. So, if mature cognition is a liability to successful second language acquisition, clearly some intervening variables allow some persons to be very successful second language learners after puberty. These variables may in most cases lie outside the cognitive domain entirely, perhaps more centrally in the affective—or emotional—domain.

The lateralization hypothesis may provide another key to cognitive differences between child and adult language acquisition. As the child matures into adulthood, the left hemisphere (which controls the analytical and intellectual functions) becomes more dominant than the right hemisphere (which controls the emotional functions). It is possible that the dominance of the left hemisphere contributes to a tendency to overanalyze and to be too intellectually centered on the task of second language learning.

Another construct that should be considered in examining the cognitive domain is the Piagetian notion ofequilibration. Equilibration is defined as "progressive interior organization of knowledge in a stepwise fashion" (Sullivan 1967: 12), and is related to the concept of equilibrium. That is, cognition develops as a process of moving from states of doubt and uncertainty (disequilibrium) to stages of resolution and certainty (equilibrium) and then back to further doubt that is, in time, also resolved. And so the cycle continues. Piaget (1970) claimed that conceptual development is a process of progressively moving from states of disequilibrium to equilibrium and that periods of disequilibrium mark virtually all cognitive development up through age fourteen or fifteen, when formal operations finally are firmly organized and equilibrium is reached.

It is conceivable that disequilibrium may provide significant motivation for language acquisition: language interacts with cognition to achieve equilibrium. Perhaps until that state of final equilibrium is reached, the child is cognitively ready and eager to acquire the language necessary for achieving the cognitive equilibrium of adulthood. That same child was, until that time, decreasingly tolerant of cognitive ambiguities. Children are amazingly indifferent to contradictions, but intellectual growth produces an awareness of ambiguities about them and heightens the need for resolution. Perhaps a general intolerance of contradictions produces an acute awareness of the enormous complexities of acquiring an additional language, and so perhaps around the age of fourteen or fifteen, the prospectof learning a second language becomes overwhelming, thus discouraging the learner from proceeding a step at a time as a younger child would do.

The final consideration in the cognitive domain is the distinction that Ausubel made between *rote* and *meaningful* learning. Ausubel noted that people of all ages have little need for rote, mechanistic learning that is not related to existing knowledge and experience. Rather, most items are acquired by meaningful learning, by anchoring and relating new items and experiences to knowledge that exists in the cognitive framework. It is a myth to contend that children are good rote learners, that they make good use of meaningless repetition and mimicking. Children's practice and imitation is a very meaningful activity that is contextualized and purposeful. Adults have developed even greater concentration and so have greater ability for rote learning, but they usually use rote learning only for short-term memory or for somewhat artificial purposes. By inference, we may conclude that the foreign language classroom should not become the locus of excessive rote activity: rote drills, pattern practice without context, rule recitation, and other activities that are not in the context of meaningful communication.

It is interesting to note that C2-A2 comparisons almost always refer, in the case of children, to natural untutored learning, and for adults, to the classroom learning of a second language. Even so, many foreign language classrooms around the world still utilize an excessive number of rote- learning procedures. So, if adults learning a

foreign language by rote methods are compared with children learning a second language in a natural, meaningful context, the child's learning will seem to be superior. The cause of such superiority may not be in the age of the person, but in the context of learning. The child happens to be learning language meaningfully, and the adult is not.

The cognitive domain holds yet other areas of interest for comparing first and second language acquisition.We turn now to what may be the most complex, yet the most illuminating, perspective on age and acquisition: the affective domain.

2.2COGNITIVE MODELS

It is quite tempting, with Krashen, to conceptualize SLA in terms of conscious and subconscious processes. In explaining the difference between a child's and an adult's second language acquisition, our first appeal is to children's "knack" for "picking up" a language, which, in everyday terms, appears to refer to what we think of as subconscious. But there are two problems with such an appeal: (a) as both McLaughlin (1990a) and Schmidt (1990) agreed, "consciousness" is a tricky term, and (b) younger (child language acquisition) is not necessarily better (Scovel 1999).

McLaughlin's Attention-Processing Model

So, if we rule out a consciousness continuum in constructing a viable theory of SLA, and we do not hold child first language acquisition up as the ideal model of language acquisition, we must look elsewhere for the foundation stones of a theory. A more sound heuristic for conceptualizing the language acquisition process, one that did indeed avoid any direct appeal to a consciousness continuum, was proposed by Barry McLaughlin and his colleagues (McLaughlin 1978; McLaughlin, Rossman, & McLeod 1983; McLeod & McLaughlin 1986; McLaughlin 1987,1990b). Their model juxtaposes processing mechanisms(controlled **and** automatic) and categories ofattentionto form four cells (see Table 10.1).

Controlled processes are "capacity limited and temporary," and automatic processes are a relatively permanent" (McLaughlin et al. 1983: 142). We can think of controlled processing as typical of anyone learning a brand new skill in which only a very few elements of the skill can be retained.

When you first learn to play tennis, for example, you can only manage the elements of, say, making contact between ball and racquet, getting theball over the net, and hitting the ball into the green space on the other side of the net. Everything else about the game is far too complex for your capacity-limited ability.

Automatic processes, on the other hand, refer to processing in a more accomplished skill, where the "hard drive" (to borrow a computer metaphor) of your brain can manage hundreds and thousands of bits of information simultaneously. The automatizing of this multiplicity of data is accomplished by a process ofrestructuring(McLeod & McLaughlin 1986; McLaughlin 1987,1990b) in which "the components of a task are coordinated, integrated, or reorganized into new units, thereby allowing the ... old components to be replaced by a more efficient procedure" (McLaughlin 1990b: 118).

Both ends of this continuum of processing can occur with eitherfocal**or** peripheral attention to the task at hand; that is, focusing attention either centrally or simply on the periphery. It is easy to fall into the temptation of thinking of focal attention as "conscious" attention, but such a pitfall must be avoided. Both focal and peripheral attention to some task may be quite conscious (Hulstijn 1990). When you are driving a car, for example, your focal attention may center on cars directly in front of you as you move forward; but your peripheral attention to cars beside you and behind you, to potential hazards, and of course to the other thoughts "running through your mind," is all very much within your conscious awareness.

While many controlled processes are focal, some, like child first language learning or the learning of skills without any instruction, can be peripheral. Similarly, many automatic processes are peripheral, but some can be focal, as in the case of an accomplished pianist performing in a concert or an experienced driver paying particular attention to the road on a foggy night. It is very important to note that in virtually every act of performing something, focal and peripheral attention actually occur simultaneously, and the question is: What, specifically, occupies a person's focal and peripheral attention? So, for example, a very young child who says to a parent "Nobody don't like me" is undoubtedly focally attending to conveying

emotion, mental anguish, or loneliness, and peripherally attending to words and morphemes that underlie the central meaning. Other factors that garner attention somewhere in between centrally focal and extremely peripheral may be reading the parent's facial features, mental recall of an uncomfortable incident of rejection, awareness of a sibling overhearing the communication, and even such peripheral nonlinguistic, noncognitive factors as the temperature in the room at the moment, a light in the background, the smell of dinner cooking, or the warmth of the parent's arms enfolding the child. All of these perceptions, from highly focal to very peripheral, are within the *awareness* of the child. McLaughlin (1990a) noted that the literature in experimental psychology indicates that there is no long-term learning (of new material) without awareness, an observation well documented by Loew (1997) and Schmidt (1990) for second language learning in particular. A cognitive perspective of SLA entirely obviates the need to distinguish conscious and subconscious processing.

Table 1. Practical applications of McLaughlin's attention-processing model

	CONTROLLED: new skill, capacity limited	AUTOMATIC: Well trained, practiced skill capacity is relatively unlimited
FOCAL intentional attention	A • grammatical explanation of a specific point • world definition • copy a written model • the first stages of "memorizing" a dialogue • prefabricated patterns • various discrete-point exercises	B • "keeping an eye out" for something • advanced l2 learner focuses on modals, clause formation, etc. • monitoring oneself while talking or writing • scanning • editing, peer-editing

PERIPHERAL	C • simple greetings • the later stages of "memorizing a dialogue" • TPR/Natural Approach • new L2 learner successfully completes a brief conversation	D • open-ended group work • rapid reading, skimming • free writes • normal conversational exchanges of some length

How does McLaughlin's model apply to practical aspects of learning a second language? I have attempted to "demystify" some of the rather complex constructs of the attention-processing model in Table 2. It is important to note that these cells are described in terms of one's processing of and attention to language forms (grammatical, phonological, discourse rules and categories, lexical choices, etc.). If, for example, peripheral attention is given to language forms in a more advanced language classroom, focal attention is no doubt being given to meaning, function, purpose, or person. Child second language learning may consist almost exclusively of peripheral (cells C and D) attention to language forms. Most adult second language learning of language forms in the classroom involves a movement from cell A through a combination of C and B, to D (DeKeyser 1997). Peripheral, automatic attention-processing of the bits and pieces of language is thus an ultimate communicative goal for language learners.

Implicit and Explicit Models

Another set of constructs for conceptualizing the varied processes of second language learning is found in models that make a distinction between explicit and implicit linguistic knowledge. In theexplicit **c**ategory are the facts that a person knows about language and the ability to articulate those facts in some way. Explicit processing differs from McLaughlin's focal attention in that explicit signals one's knowledge about language.Implicit knowledge is information that is automatically and spontaneously used in language tasks. Children implicitly learn phonological,

syntactic, semantic, and pragmatic rules for language, but do not have access to an explanation, explicitly, of those rules. Implicit processes enable a learner to perform language but not necessarily to cite rules governing the performance.

Among those who have proposed models of SLA using the implicit/explicit distinction are Ellen Bialystok (1978, 1982, 1990a), Rod Ellis (1994a, 1997), and Nick Ellis (1994a). Bialystok's (1978) diagrammatic conception of SLA (see Figure 10.2) featured a flow chart showing implicit and explicit processing as central to the total act of learning a second language. Bialystok later (1982: 183) equated implicit and explicit with thesynonymoustermsunanalyzedandanalyzed knowledge: "Unanalyzed knowledge is the general form in which we know most things without being aware of the structure of that knowledge"; on the other hand, learners are overtly aware of the structure of analyzed knowledge. For example, at the unanalyzed extreme of this knowledge dimension, learners have little awareness of language rules, but at the analyzed end, learners can verbalize complex rules governing language.

These same models feature a distinction betweenautomatic and non-automatic processing, building on McLaughlin's conception of automaticity. Automaticity refers to the learner's relative access to the knowledge. Knowledge that can be retrieved easily and quickly is automatic. Knowledge that takes time and effort to retrieve is non-automatic. As was true for the McLaughlin model, both forms of attention can be either analyzed or unanalyzed. An important dimension of this distinction is *time.* Processing time is a significant factor in second language performance, one that has pedagogical salience in the classroom. The length of time that a learner takes before oral production performance, for example, can be indicative of the perceived complexity of certain language forms in a task. Mehnert (1998) found that planning time had a significant effect on the accuracy and fluency of second language learners' production.

The constructs of automaticity/nonautomaticity and of explicit/implicit knowledge have drawn the attention of numerous researchers over the past decade or so. On the one hand, arguments were raised about the identification of just what we

mean by implicit and explicit (Hulstijn 1990; Robinson 1994, 1995, 1997), and responses offered (see Bialystok 1990b, for example). On the other hand, some useful applications have emerged in Rod Ellis's (1994,1997:107-133; Han & Ellis 1998) proposals of a theory of classroom instruction using implicit/explicit continua. Here, we are given some suggestions for grammar consciousness raising, for example, in which some explicit attention to language form is blended with implicit communicative tasks.

CONCLUSION

We have focused on how psychologists have definedlearning**,** and we have looked at these theories through the eyes of four psychologists, two representing a behavioristic viewpoint (Pavlov and Skinner), one representing a rational/cognitive stance (Ausubel), and one that stretches into what could be loosely defined as a constructivist school of thought (Rogers). Thefour positions should illustrate not only some of the history of learning theory, but also the diverse perspectives that form the foundations of varying language teaching approaches and methods.

The various perspectives on learning that have been outlined in the first chaptercan be schematically represented in the following table.

Theories of learning

BEHAVIORISTIC		COGNITIVE	CONSTRUCTIVE
Classical	Operant		
[Pavlov] • respondent conditioning • elicited response • S->R	[Skinner] • governed by consequences • emitted response • R —» S (reward) • no punishment • programmed	[Ausubel] • meaningful = powerful • rote = weak • subsumption • association • systematic	[Rogers] • fully functioning person • learn how to learn • communityoflearners • empowerment

	instruction	forgetting • cognitive "pruning"	
Note: S = stimulus, R = response-reward			

The second language learning process can be efficiently categorized and sequenced in cognitive terms by means of the eight types of learning.

1. Signal learning in general occurs in the total language process: human beings make a general response of some kind (emotional, cognitive, verbal, or nonverbal) to language.
2. Stimulus-response learning is evident in the acquisition of the sound system of a foreign language in which, through a process of conditioning and trial and error, the learner makes closer and closer approximations to nativelike pronunciation. Simple lexical items are, in one sense, acquired by stimulus-response connections; in another sense they are related to higher-order types of learning.
3. Chaining is evident in the acquisition of phonological sequences and syntactic patterns—the stringing together of several responses—although we should not be misled into believing that verbal chains are necessarily linear. Generative linguists have wisely shown that sentence structure is hierarchical.
4. The fourth type of learning involves Gagne's distinction between verbal and nonverbal chains, and is not really therefore a separate type of language learning.
5. Multiple discriminations are necessary particularly in second language learning where, for example, a word has to take on several meanings, or a rule in the native language is reshaped to fit a second language context.
6. Concept learning includes the notion that language and cognition are inextricably interrelated, also that rules themselves: rules of syntax, rules of conversation—are linguistic concepts that have to be acquired.

7. Principle learning is the extension of concept learning to the formation of a linguistic system, in which rules are not isolated in rote memory, but conjoined and subsumed in a total system.
8. Finally, problem solving is clearly evident in second language learning as the learner is continually faced with sets of events that are truly problems to be solved—problems every bit as difficult as algebra problems or other "intellectual" problems. Solutions to the problems involve the creative interaction of all eight types of learning as the learner sifts and weighs previous information and knowledge in order to correctly deter-mine the meaning of a word, the interpretation of an utterance, the rule that governs a common class of linguistic items, or a conversationally appropriate response.

A cognitive style is an individual special way of processing information about a present factual situation (including perception, analyses, categorization, evaluation and etc.).

While cognitive styles are highly organized mechanisms of intellectual regulation which can be found in a wide range of situations, learning styles are certain learning strategies which characterize individual response of a learner to a particular situation in the classroom.

Thus, individual learning styles depend on specific educational technology (such as the classroom environment, textbook design, teacher’s attitude, type of school or college, learner's motivation and their needs as well as cognitive, metacognitive and intentional experience).

Taking into account this information, innovative teachers can give their students a variety of learning activities, which are not only best suited to the students' individual cognitive styles but also are challenging and stimulating for the development of their personality-centered style.

We have much to gain from the understanding of learning principles that have been presented here, and of the various ways of understanding what intelligence is. Some aspects of language learning may call upon a conditioning process; other

aspects require a meaningful cognitive process; others depend upon the security of supportive co-learners interacting freely and willingly with one another; still others are related to one's total intellectual structure. Each aspect is important, but there is no consistent amalgamation of theory that works for every context of second language learning. Each teacher has to adopt a somewhat intuitive process of discerning the best synthesis of theory for an enlightened analysis of theparticular context at hand. That intuition will be nurtured by an integrated understanding of theappropriateness and of the strengths and weaknesses of each theory of learning.

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ОТЗЫВ

на выпускную квалификационную работу студента 404-группы отделения английского языка факультета иностранных языков Ким Алексея, под названием "Cognitive Processes of Human Nature in Language Learning and Teaching"

5220100 филология (английский язык)

Тема, выбранная студентом, является одной из самых глобальных в сфере обучения иностранных языков. Выпускная квалификационная работа состоит из введения, двух глав, заключения и списка использованной литературы.

Первая глава под названием " Examining the General Nature of Human Learning " посвящается изучению когнитивных аспектов человеческого поведения. В ней автор рассматривает различные теории обучения, предложенные ведущими отечественными и зарубежными психологами, как И.Павлов, Б.Ф.Скинер, К.Роджер и другие. Также здесь идёт речь о различных принципах обучения, опирающиеся на человеческую психологию.

Вторая глава под названием "Analyzing the Cognitive models of Different Scholars" изучает когнитивные суждения, методы и подходы относительно изучения иностранного языка с учитыванием психологических факторов человеческого поведения. Здесь внимание уделяется когнитивным и эмоциональным аспектам, анализируются когнитивные модели разных учёных.

Когнитивный аспект человеческого поведения является важным звеном в восприятии и родного и иностранного языков. Люди являются эмоциональными созданиями. В основе всех мышлений, значений и действий лежат эмоции. Совершенно логичным представляется обращение к

эмоциональным аспектам при выявлении различий восприятия родного и иностранного языков.

Изучение принципов обучения и различных способов понимания понятия ум, представленных в данной работе, даёт очень многое. Некоторые аспекты изучения языка находятся в зависимости от условий процесса, другие требуют значимый когнитивный процесс, другие зависят от свободного и желаемого общения соучащихся, остальные относятся интеллектуальной структуре отдельного человека. Каждый аспект является важным. Каждый учитель должен избрать какой-то свой интуитивный подход, который будет являться эффективным.

Рассмотрев и изучив данную работу, я пришла к выводу, что она отвечает всем требованиям. Я рекомендую выпускную квалификационную работу Ким Алексея под названием “Cognitive Processes of Human Nature in Language Learning and Teaching” на защиту.

Научный руководитель: **Рахимова Х.К.**

Преподаватель кафедры английского языка УрГУ

РЕЦЕНЗИЯ

официального оппонента на выпускную квалификационную работу студента 404- группы английского отделения факультета иностранных языков УрГУ Ким Алексея Дмитриевича на тему «Cognitive Processes of Human Nature Learning and Teaching»
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Дипломная работа Ким Алексея Дмитриевича посвящена изучению одной из наиболее важных процессов когнитивных аспектов человеческого поведения.

Данная работа представляет большой интерес не только для учащихся, но и для учителей. Ведь психологические и когнитивные процессы обучения и изучения языка, являются одним из важных аспектов в методике преподавания. Новизна работы: главную роль играют когнитивные и психологические аспекты в обучение иностранного языка.

Квалификационная работа состоит из введения, двух глав, заключения и списка использованной литературы.

В первой главе под названием “Examining the General Nature of Human Learning” изучаются когнитивные аспекты человеческого поведения. В данной главе автор рассматривает различные теории обучения таких ведущих психологов, как И.Павлов, К.Роджер, Б.Скиннер и другие. Также в этой главе описываются различные принципы обучения, которые опираются на психологию человека.

Вторая глава, которая носит название “Analyzing the Cognitive models of Different Scholars”, представляет собой когнитивные суждения, методы и подходы относительно изучения иностранного языка с учитыванием психологических факторов человеческого поведения.

Когнитивный аспект человеческого поведения играет важную роль в восприятии и родного и иностранного языков. Эмоции являются важным проявлением различных чувств у каждого человека. Эмоции лежат в основе всех мышлений, значений и действий. Интеллект также находится под влиянием наших эмоций. Автор совершенно верно и логично обратил внимание к эмоциональным аспектам при выявлении различий восприятия родного и иностранного языков.

В заключительной части подведены итоги исследования, содержаться выводы.

Таким образом, я могу сделать следующие выводы, что дипломная работа Ким Алексея Дмитриевича отвечает всем требованиям государственной аттестационной комиссии, заслуживает высокой оценки и может быть допущена к защите.

Рецензист: **Матмуратова Г.**

Преподаватель

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