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ABSTRACT

These proceedings are a collection of papers by researchers in neurology, bilingualism, linguistics, and the neurolinguistics of bilingualism. Topics are addressed using neurolinguistic data for second language learning, learning models for second language acquisition, and implications for teaching and research. Summaries of the following papers are included: (1) "Lateralization in Bilinguals," by L. Obler; (2) "Polyglot Aphasia," by M. Paradis; (3) "Second Language Acquisition Theory," by S. Krashen; (4) "Neurofunctional Issues in Bilingualism," by H. A. Whitaker; (5) "Neurolinguistic Explanations of the Differences between Language Teaching Methods," by K. Diller; and (6) "Generation of New Ideas for Teaching and Research," by C. B. Paulston. The papers have prepared commentaries by the following: H. Goodglass, J. B. Gleason, V. Fromkin, and A. D. Cohen. A general discussion of the papers concludes the volume. (AMH)

The Neurolinguistics of Second Language Learning

A symposium organized by Loraine Obler and Andrew Cohen, sponsored by the Carl and Durga Spiro Foundation, and held in Rio de Janeiro, April 8-11, 1980.

Summary prepared by Jyotsna Vaid, and edited by Andrew D. Cohen, with revisions by participants.

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THE NEUROLINGUISTICS OF LANGUAGE LEARNING: OPENING SESSION

8 April, 1980, 5:00 p.m.

Curço Oxford/Rio de Janeiro

DURGA SPIRO welcomed the members of the audience and symposium participants (in Portuguese, then English) stated topics to be covered during the symposium and introduced LORAINE OBLER and ANDREW COHEN, the symposium coordinators.

LORAINE OBLER welcomed all "neurolinguists of second language acquisition, and noted that her own interest in neurolinguistic issues related to bilingualism developed during her stay in Jerusalem, where she had worked on the problem of bilingual aphasia, which provided the impetus for her monograph (in collaboration with Martin Albert) entitled the Bilingual Brain (New York; Academic Press, 1978). This book, however, was not specifically concerned with language teaching methods.

Obler then introduced ANDREW COHEN, Director of the Centre for Applied Linguistics, an interdisciplinary research center at the Hebrew University, Jerusalem, Israel, noting that his work provided a complement to her own in that it concerns issues of language teaching and language learning.

Cohen proposed that the symposium address three issues: 1) the relationship between language teaching methods and neurological activity; e.g., whether "certain methods of language teaching are more neurologically sound than others," 2) the relationship between manner of language acquisition (formal & informal) and neurological functioning, and 3) the role of individual differences in student reactions to different second language teaching methods and to success in language learning, as influenced by psychological variables (e.g., self-esteem), age, sex, handedness, cognitive style (field independence/dependence), and motivational factors.

Obler noted that CARL SPIRO, the sponsor of the conference, has long been concerned with the reasons why we seem to remember certain learned or acquired knowledge but have greater difficulty with second language knowledge. He has considered the possibility that there may be a neurochemical basis for memory retention. Such research is just in the earliest stages and difficult to conduct with humans. Thus, he has suggested that the neuropsychological level may provide some insights into this question.

Obler then provided a brief history of interest in neuropsychological research on bilingualism:

1977 Michel Paradis' "Bilingualism and aphasia" chapter in H. Whitaker & Whitaker (Eds.), Studies in Neurolinguistics, Vol. 3, N.Y., Academic Press.

1978 Harry Whitaker's "Bilingualism: a neurolinguistics perspective,"

in W. Ritchie (Ed.), Second language acquisition and research: Issues and implications. N.Y., Academic Press.

1980-81 Conferences on this topic:

-Body for the Advancement of Brain, Behavior and Language Enterprises (BABBLE), Niagara Falls, Ontario (March)

-Symposium at Rio de Janeiro (April)

-Symposium at Albuquerque, New Mexico (July)

-Conference of the New York Academy of Sciences (January 15-16, 1981)

Obler noted that the purpose of the present symposium was to allow the participants (who are researchers in neurology, bilingualism, linguistics, and the neurolinguistics of bilingualism) to talk to one another, and to stimulate creative and speculative thought on the questions raised in the symposium.

Obler presented the symposium schedule and organization: it was to be held for four days--April 8-April 11, 1980--from 8:30 a.m. to 1:00 p.m., daily. Sessions were to address the following topics:

1) Neurolinguistic Data on Second Language Acquisition

2) Learning Models for Second Language Acquisition

3) Implications for Teaching and Research

During each session two topics were to be covered, with two speakers per topic. The speakers and topics, in the order in which they would be appearing, were as follows:

April	Speaker	Affiliation	Topic
9	L. OBLER	Neurology/Boston VA Medical Center, Boston, MA/U.S.A.	Lateralization in Bilinguals
	H. GOODGLASS	Aphasia Research Center/ Boston VA Medical Center Boston, MA/U.S.A.	Comment
	M. PARADIS	Linguistics/McGill University Montreal, Que./Canada	Polyglot Aphasia
	J.B. GLEASON	Psychology/Boston University Boston, MA/U.S.A.	Comment
10	S. KRASHEN	Linguistics/University of Southern California Los Angles, CA/U.S.A.	Second Language Acquisition Theory
	V. FROMKIN	Linguistics/Dean of Graduate School U.C.L.A Los Angeles, CA/U.S.A.	Comment
	H. WHITAKER	Hearing & Speech Sciences/ University of Maryland College Park, MD/U.S.A.	Neurofunctional Issues in Bilingualism
11	K. DILLER	English/University of New Hampshire Durham, NH/U.S.A.	Neurolinguistic Explanations of the Differences between Language Teaching Methods
	A.D. COHEN	Director, Centre for applied Linguistics/Hebrew University Jerusalem/Israel	Comment
	C.B. Paulston	Chair, General Linguistics/ University of Pittsburgh Pittsburgh, PA/U.S.A.	Generation of New Ideas for Teaching and Research

← Obler briefly described the research interests of each speaker:

Goodglass — Research on naming problems in aphasia. Founded Aphasia Research Center at VA Hospital.

Paradis	Ph.D. in philosophy and in linguistics. Research on polyglot aphasia and papers on theoretical issues - e.g., bilingual subtypes, switch mechanism, and cognition in bilinguals.
Krashen	Known for distinction between second language learning vs. acquisition. Research on monitoring L_2 performance, and recently, on the INPUT HYPOTHESIS (i.e., importance of comprehensible input for successful second language acquisition). Also responsible for neurolinguistic research on 1st language acquisition after the critical age (cf. the case of Genie).
Fromkin	Research on linguistic performance as evidenced by slips of the tongue in monolinguals and on 1st language acquisition after the critical age (cf. the case of Genie).
Whitaker	Founder of "Brain and Language" Journal and co-editor of series, Studies in Neurolinguistics (Academic Press). Collaborated with Ojemann (neurologist) on electrocortical stimulation studies on 2 bilingual patients. Research on aphasia, linguistics & neurolinguistics.
Diller	Research on linguistic theory and second language teaching methods; editor of a recent book on individual differences and universals in language learning aptitude.
Cohen	Research on second language learners, language testing, and sociolinguistics aspects of bilingualism.
Paulston	Research of bilingual education from a sociological perspective.

Durga Spiro thanked Loraine Obler, called the symposium a "formidable enterprise," and noted that the symposium provided a means of exploring not only the specific question "what makes an individual learn a language?" but also, more generally, "what makes an individual learn?" She stated that the interests of the Spiro Foundation were in the broad area of education, and noted that it was not important whether or not any immediate implications for language teaching merged from the symposium. Spiro extended a welcom to the participants and audience for attending. She then officially declared the symposium open.

April 9, 1980

LORAINE OBLER

"Lateralization in Bilinguals"

Cerebral lateralization is taken to mean that for a particular function one hemisphere is more responsible than the other. Although it is a fairly difficult phenomenon to define (e.g., does laterality reflect attentional differences or cognitive processing differences), a number of experimental laterality studies of bilinguals have accumulated in the literature which, although conflicting in many ways, suggest that bilingualism engages the right hemisphere (RH) to a greater extent than does monolingualism. Obler discussed four specific forms of this claim, and presented an exemplary study for each position.

Hypothesis 1: There is no difference in cerebral lateralization between bilinguals and monolinguals and between the first and second language in bilinguals.

There was discussion on how one can decide whether groups differ in degree of lateralization and what such a difference might involve, e.g. differences in storage vs. processing.

Hypothesis 2: (strongest form of the argument) For one language, the RH is more involved than for the other; that is, the RH is dominant for one language (not necessarily L_2) and the LH for the other language (cf.: Rogers et al., 197 involving Hopi; Scott et al., 1979, involving Navajo).

Whitaker argued that these studies should not be cited as support for the bilingualism argument, since the languages may engage normal RH processes (e.g., greater use of imagery) even in monolinguals. Goodglass and Fromkin agreed and noted that one should separate hemispheric involvement in thought processes from particular linguistic skills. Vaid pointed out that neither of these studies examined monolingual speakers of Hopi and/or Navajo, so that it was unclear whether the results were solely language-specific or due to the bilingualism parameter or to some interaction of the two.

There was general consensus on the basic argument that bilinguals are presumed to have a "differential" lateralization pattern. That it is in the direction of greater RH participation is so only by default; RH involvement could arise from other factors as well which are in themselves irrelevant to the issue at hand.

Hypothesis 3: Although the LH is dominant for both languages of the bilingual, there is greater RH participation for both languages, as compared to RH participation in monolinguals.

In a concurrent finger tapping and verbalization paradigm Sussman (1980) found that speech interfered with right hand tapping rate to the greatest extent in monolinguals, and to the smallest extent in the second language of bilinguals, with L_2 producing an intermediate degree of interference.

There was discussion on the tasks used--namely, automatized skills, e.g., counting, and debate over whether it is legitimate to explain the results in terms of lateralization.

Hypothesis 4: There is greater RH involvement in the second language of bilinguals than in their first language.

Wesche & Schneiderman (1980) noted a significant right ear advantage in the first language (English) and no significant ear differences in the second language (French) of nonfluent bilinguals.

> In discussion, the possibility was raised that the Ss may have been processing their second (nonproficient) language in a different manner than their first language which, in turn, raised the general question of what is being tapped in laterality studies.

Hypothesis 5: Greater RH participation in the second language is evident only in the early stages.

Silverberg, Bentin, Gaziel, Obler and Albert (1979) undertook a cross-sectional tachistoscopic study of Hebrew-English bilingual children of varying periods of formal exposure to English. The results indicated an overall right visual field (RVF) (LH) superiority for Hebrew words, but a left visual field (LVF) (RH) superiority in the group with the least amount of exposure to English which diminished in the group with the greatest amount of exposure to English.

Discussion

Krashen suggested that an additional hypothesis should be entertained, in which the manner of second language acquisition be considered as a variable, e.g., conscious (formal) vs. unconscious (informal). The studies of Carroll (1978) were relevant to this variable.

Paulston asked if any study had related laterality to language aptitude. Obler referred her to the study by Wesche and Schneiderman (1980).

Prepared Comment on Obler's Paper

HAROLD GOODGLASS

1) Noninvasive techniques are strictly dependent for their validation on prior clinical evidence.

2) Clinical evidence on monolinguals indicates that in about 99% of the (right-handed) cases, aphasia occurs following LH damage, and that RH damage flattens the affective component of speech intonation but does not affect prosodic aspects of syntactic processing.

3) Findings from noninvasive techniques (e.g., dichotic listening or tachistosopic viewing) are suspect because of the discrepancy between the clinical and experimental data in the percentage of subjects who evince LH dominance for speech. There is great fluctuation in laterality measures of the same individual over time.

4) Perceptual lateralization is a correlate of cerebral dominance but only in terms of direction--one cannot make claims about differences in degree of cerebral lateralization on the basis of differences in the degree of lateral asymmetry in perception. A wide variety of artifactual factors influence measures of laterality, making it difficult to make claims about group differences in degree of lateralization. Selection factors in the case of bilingual studies may produce spurious but convincing differences

between groups, as might task differences and language-specific differences.

5) There are various theories that propose why language ought to be more in the LH than in the RH (e.g., the LH's superiority in sequential processing (cf. Kimura and Archibald, 1972) makes it more suitable for language--especially phonetic--processing (cf. Shankweiler and Studdert-Kennedy, 1967)).

6) In light of all this, it is difficult to see why one should even consider that bilinguals as a group would show greater RH involvement. There is no a priori theoretical rationale for adding bilingualism as a variable to all the variables that already exist in the laterality literature.

7) Even in monolinguals, despite the great variety of components that, together, constitute language--e.g., phonology, syntax, lexicon, reading, and writing--the LH is dominant in all of them. It is doubtful that bilingualism would pose a different problem. Indeed, the investigators in the early bilingual studies (e.g., Mishkin & Forgays, 1952; Orbach, 1952) eschewed laterality as a factor in explaining their results, attributing the lateral perceptual asymmetries which they observed to direction of reading.

8) It is futile to seek to derive implications from laterality studies for language teaching. Left and right handers are equally good in language skills, regardless of where in the brain their language is

processed. It should therefore, make no difference to the teacher which side of the brain is being used.

Discussion

Obler and Gleason noted that some evidence exists suggesting that left-handers are poor in acquiring a second language, and that familial sinistrality may be linked to this.

Fromkin noted that several linguists are left handers. Cohen responded that, in fact, several linguists are not good language learners. Fromkin replied that that is precisely what is interesting--that perhaps the process of second language learning is qualitatively different from that of first language learning.

Fromkin suggested that since all humans are born with the same cerebral abilities regarding language, we can expect languages to be more alike than different, i.e., that there will be universal constraints on the form and structure of human language. Goodglass agreed noting that somehow humans have evolved to be able to learn to talk.

April 9, 1980

MICHEL PARADIS

"Polyglot Aphasia"

Paradis summarized the inadequacies of the experimental bilingual laterality literature, arguing that dichotic listening and tachistoscopic tests are:

1) unreliable measuring instruments because:
   a) they cannot control subjects' attention and daydreaming during the experiment.
   b) the results in bilingual studies are rarely significant or are simply trends, and when significant, it is unclear what they are significant of, i.e., what they reflect.
   c) the results are not replicable with the same Ss.
   d) small numbers of subjects are used in whom degree and type of bilingualism are not assessed.
2) not correlated with findings from the Wada test[1]:

   Gleason: Wada tests have only been done with a small number of subjects.

   Diller: Wada tests tap production rather than comprehension ability.

With regard to polyglot aphasia, up to 1977 the main question asked had been "which language is recovered first or best?" This may not be a

1. An injection of sodium anytal anesthetic to one or the other hemisphere, enabling one to observe whether speech functions are controlled by that hemisphere.

good question, since in the 138 cases of polyglot aphasia (reviewed in Paradis, 1977), there is a more varied pattern of recovery than factors such as first or best language would lead one to assume. Paradis described six patterns of recovery: 1) parallel, in which both languages are recovered at the same time or to the same extent (this pattern is characteristic of about 90% of unselected cases in the literature), 2) differential, in which both languages are recovered together but not necessarily to the same degree or at the same rate, 3) successive, in which the second language to be recovered does not appear until the first one maximally recovers, 4) selective, in which one and only one language is recovered, 4a) or one is recovered for expressive purposes only, but not for comprehension, 5) mixed, in which the two languages will be mixed involuntarily and in an unsystematic way unlike language mixing in normal bilinguals; mixing may occur at various linguistic levels, and 6) antagonistic, in which the recovery of one language interferes with recovery of the other--as the first language improves the second regresses. There have been six cases of the latter type reported since 1977. Paradis described two additional recent cases of a subset of this type, which he has termed alternate antagonistic recovery.

A number of principles have been proposed to account for nonparallel recovery:

1) Ribot's rule (primacy)--whatever is acquired first seems stronger and more resistant to deficit.

2) Pitres' rule (habit strength)--the language most familiar to the person at the time of insult, whether or not it was the mother tongue, is the first or best to recover.

3) Environmental principle (usefulness)--the language to be recovered first or best would be that spoken in the patients' (hospital) environment.

4) Emotional ties (cf. Minkowski, 1963).

5) Orthographic modality--whether the language was spoken or visually learned.

6) Context of acquisition, e.g., whether the 2 languages had been learned together or separately, formally or informally.

Fromkin: If you have counterexamples to all of these, they cannot be invoked as principles.

A switching mechanism has been proposed (as late as 1948 by Leischner) and presumed by some authors to be localized in the left supramarginal gyrus. Damage to that area would either prevent speakers from switching from one language to the other, in which case they would manifest the pattern of selective recovery, or they would not be able to stop switching, which would induce mixing. Subsequently, it has been shown that there were at least as many cases with lesions in that area who did not suffer any switching or cases with switching difficulties arising from lesions in very different areas, such as in the temporal lobe.

Other explanations of nonparallel recovery invoked an inhibitory

mechanism; that is, while you use one language you inhibit the other, and in time this inhibition may become permanent. This inhibitory effect was presumed to operate mainly at the output rather than the input level, since it seems to be difficult to inhibit, even voluntarily, input from the other language.

Fromkin: Are there any cases of selective impairment of auditory language comprehension but not production?

Paradis: No.

Whitaker: The clinical aphasiological data suggest that you should find those kinds of patients, i.e., with selective comprehension deficits.

Paradis: Evidence of dissociation of comprehension and production has led Albert and Obler in Bilingual Brain (1978) to posit two separate grammars--however, one need not arrive at such a conclusion.

Whitaker: Given that there are differences in production, it seems surprising that selective differences in comprehension might not also be present. It may be that the reason they have not been reported in the literature is methodological (e.g., observational inadequacies).

Paradis: Agreed and noted that a bilingual battery has been developed which attempts to test in a standardized format as many languages as possible and as many aspects of language as possible.

What does polyglot aphasia tell us about the organization of two or more languages in one brain that could be useful for language teaching strategies? With regard to the first part of the question, one can say that:

1) there is a great deal of individual variability which is manifested in many different ways, e.g.:

a) in patterns of restitution.

b) in the effect of rehabilitation in one language on the other language (e.g., it may be facilitatory or inhibitory).

c) in patterns of lateralization for the second language--different subjects have different degrees of lateralization.

d) in cognitive styles that might influence the receptivity of different teaching. These in turn might be affected by the context of language acquisition (e.g., before 6, the same strategies as in L1 and after 15, different strategies are used), the manner of instruction (formal or informal), and modality of acquisition. Motivational factors (presumably calling on the limbic system) might be the key to success rather

than cultivating (right or left) hemispheric strategies.

e). in other factors, such as the percentage of use of the two languages, the purpose of use, the relative prestige of the two languages, the type of language, and the similarity in writing system of L1 & L2. These may also be important variables to explore in future studies of bilingual aphasia, as the data so far do not provide evidence one way or the other on their importance.

2) two languages can be functionally independent, whether or not they are localized in different places.

3) competence is distinct from performance, as evidenced from the dissociation in performance between comprehension and production.

4) translation is a separate task as evidenced by cases of paradoxical translation behaviour.

Discussion

Fromkin: Do you have any cases where there is differential impairment of the syntax of one language and the phonology of the other?

Paradis: Yes--those of Albert and Obler (1975), Wald (1960) and Silverberg and Gordon (1979). Usually the dissociation shows different levels of severity, so one can treat it as differential recovery, not

differential aphasia, or rather, the recovery of already differential usage. That is, such individuals may have spoken that way even prior to the brain insult.

Prepared Comment on Paradis' Paper

JEAN BERKO GLEASON

The task is 1) to decide what polyglot aphasia can tell us about language acquisition in the brain and 2) what it can tell us about language teaching strategies.

It is problematic to draw inferences about normal brains from brain-damaged brains. We can justify the claim that aphasics are the same as normals before their aphasia in traumatic cases (only 20% of the cases in the polyglot aphasia literature) but not in cases where the aphasia arose from strokes, abcess or anurisms. (Paradis pointed out there are also many polyglot aphasia cases where we do not know the etiology.) We have, moreover, mainly been looking at male brains--70% of the cases reported by Paradis were males. Laterality studies suggest the existence of sex differences, and there is some evidence for sex differences in language learning aptitude.

In sum, the study of polyglot aphasia may not give a clear picture of language in the brain of normal individuals if a) the brain injuries originate from nontraumatic causes and b) the patients are mostly of one sex.

Although individual differences in context of acquisition--in particular, the early/late distinction--are taken to imply differences at the cognitive and/or neurological level, they may, nevertheless, also reflect actual differences in the type of language used by younger vs. older speakers (routinized, repetitive vs. abstract, unpredictable). Affective and environmental factors may also be involved in bringing about differences between early and late second language learning. Factors such as motivation, affect, bodily involvement, community reinforement, routines, and right hemisphere involvement would have to be considered when one is invoking neurologically-based explanations.

One implication for language teaching might be to enhance redundancy of language input, so that the brain would have more pathways representing a particular funtion, which would thus be more resistant to loss following brain damage.

April 10, 1980

STEVE KRASHEN

"Second Language Acquisition Theory"

Second language acquisition theory allows us to discuss individual differences in second language learning and the success or failure of various language teaching methods in a principled way. Current second language acquisition theory may be summarized in terms of nine hypotheses:

Hypothesis 1: Acquisition and learning occur and are different. Technically defined, acquisition refers to the unconscious way in which people develop skills in a language (first or second). It is synonymous with implicit, or informal learning. Acquisition is the way children gain knowledge of their first language. In normal language usage, it is what is meant by the phrase, "picking up a language." Learning, on the other hand, is defined as conscious, explicit, formal knowledge of a language, what, in normal language is meant by "knowing . . . about a language." The distinction between acquisition and learning is central to the second language acquisition theory.

Hypothesis 2: We acquire grammatical structures in a statistically predictable order; that is, there is a natural order to the acquisition of structure in L2, just as there is for grammatical structures in L1 (although the two orders are not completely identical).

Hypothesis 3: Acquisition initiates the utterance in L2; learning may simply increase grammatical accuracy. In other words, our fluency in a

second language comes from what we have acquired (rather than what we consciously know about the language). Learning serves mainly as a Monitor, a corrector or editor. Krashen distinguished between Monitor (use of conscious rules) and a general monitor (general meta-awareness of speech), and noted that research currently suggests that the Monitor is not all that important, and that three conditions seem to be necessary (but not sufficient) in order to use conscious rules successfully:

1. Time--if one does not have time, such as in "free conversation," it is difficult to bring up conscious rules.

2. Focus on form (rather than content)--to use the conscious grammar, performers need to be thinking about "correctness."

3. Knowledge of the rule. This condition drastically limits the use of the Monitor.

Evidence indicates that in a Monitor-free situation, errors that adults make in L2 parallel those that child second language speakers of that language make. In a grammar type test situation, when all three conditions are met, the natural order is disturbed, which reflects the intrusion of the Monitor.

Gleason: By a conscious rule do you mean a generative rule?

Krashen: A pedagogical rule; e.g., for conjugating a verb.

Hypothesis 4: Acquisition proceeds through understanding, which occurs by virtue of extralinguistic, i.e., contextual information.

Comprehensible input is a necessary (but not a sufficient) condition for the acquisition of linguistic structures, that is, for moving from one structure (i) to the next (i + 1).

According to this hypothesis (the input hypothesis), speech "emerges." We do not teach people to talk but to listen; production emerges on its own. A sub-hypothesis states that it is not necessary to teach people particular structures in a particular sequence. As long as one has to understand the message, the structures will be there in the input, and one will acquire them automatically.

Goodglass: Isn't this circular? To understand, you have to decode the syntactic construction, not just make use of contextual cues.

Fromkin: The user may have understood a particular construction (e.g., the passive) but may not know it as such.

Paradis: Is "understanding" defined as intelligent guessing of the overall meaning of the utterance--the meaning in which the rule is embedded?

Krashen: Yes.

Whitaker: Do you assume a "felicity condition," i.e., that there is an accurate language situation being presented to the learner?

Krashen: Yes, but it would work out, even if that were not so.

Fromkin: Does the hypothesis include innate constraints on the kind of grammar that can be learned by the human animal?

Krashen: It is very compatible with that.

(Paradis and Goodglass argued that "compatibility" is a post hoc construct.)

Paulston: Is your model a model of performance or does it account for developmental stages?

Krashen: Hypotheses 1 and 4 are theoretical claims with developmental implications. The Monitor aspect is part of a synchronic description.

Krashen then gave a brief demonstration of two methods of language teaching, one providing contextual input, the other not.

Predictions of the input hypothesis:

1) Caretaker speech (i.e., modification of input to get children to understand, with an emphasis on talking about the here-and-now) should be effective in L1.

2) Foreigner talk (defined as modifications native speakers make when talking to foreigners) should also be effective, in that it is an L2 analogue to caretaker speech.

Cohen: Pointed out the importance of distinguishing this use of "foreigner talk" from that which implies certain forms of non-native speech used by foreigners.

Paradis: Caretakerese and foreigner talk are not comparable since the former is always syntacatically correct, whereas the latter is not. Krashen acknowledged this is a feature of some varieties of foreigner talk.

Gleason: Foreigner talk is not actually well-documented or representative, and is a stereotyped register, at best.

3) Teacher talk, i.e., the language of classroom management in which the goal is comprehension, should also be effetive.

KRASHEN

Krashen argued that children who go through a silent period in second language acquisition, during which they refrain from speaking in that language until they build up competence in it, are taking in input.

Evidence from comparative method research was then briefly discussed. Krashen maintained that language teaching methods that put the focus on the message (input) are far more successful than traditional deductive or inductive methods. He summarized the results of a study by Asher (1969) in which students with 32 hours experience in the Total Physical Response (TPR) method performed as well as controls from an audio-lingual method (150 hrs. exposure) in reading and writing, and were better than controls in listening comprehension. A similar study was conducted by Swaffer and Woodruff (1978).

Krashen suggested that the key to the success of the TPR method may lie not so much in its "physical" aspect as in the fact that the students are attending to and understanding the message; since they are not required to talk, most of the time is filled with comprehensible input.

Fromkin: Particular methods (e.g., TPR) may constrain the kinds of language one gets to use.

Krashen: TPR makes use of complex syntactic constructions.

Krashen noted that if the input hypothesis were true, then the grammatical sequencing approach is not an appropriate teaching method since:

1) by aiming at i + 1, we assume we know what this i + 1 is (not necessarily so).

2) we assume that individuals are at the same stage (not necessarily so).

3) this approach does not go over previously covered information.

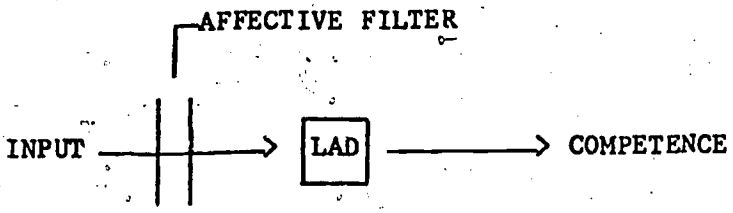
4) this approach focuses on grammar rather than on relevant or meaningful input.

Paulston: I object to (3). Most grammatical sequencing approaches use a spiralling approach, that is, they do go back to previously covered material.

Krashen: Very few actually do.

Hypothesis 5: Affective (e.g., attitudinal) variables influence success in language acquisition.

Krashen hypothesized that attitude has two effects: 1) people with a positive attitude toward language learning are more likely to get input and 2) they allow the input in.



Thus, the effect of affect is outside the language acquisition device.

Hypothesis 6: Aptitude (as defined by performance on the Modern Language Aptitude Test) relates to rate of conscious language learning.

Hypothesis 7: If we are asked to perform in L2 too early, we fall back on L1 (i.e., we use our past knowledge) (Newmark, 1966).

The evidence comes from error analysis studies, i.e., people use the surface structure of their first language and insert lexical items from the second language.

Hypothesis 8: There are individual differences in Monitor use.

One source of variation is the degree to which people involve the conscious grammar, e.g., there are over-users, under-users, and optimal-users. Optimal users are those who use grammar to increase accuracy without letting it get in the way of communication.

Hypothesis 9: Children are ultimately better in second language acquisition than are later learners, but adults are faster than children in language acquisition.

Whitaker: Is this hypothesis independent of age differences in cognitive structures?

Krashen: Yes.

Krashen proposed that these age differences arise because of the combined (counteracting) effects of the emergence of formal operations (cf. Piaget) and feelings of vulnerability and self-consciousness around puberty. The adult has a cognitive advantage (e.g., intelligence), more

input, and greater experience/knowledge of the world leading to faster language acquisition. However, the affective consequences of puberty (cf. Elkind) cause an increase in the strength of the affective filter leading to less successful language acquisition. (There was some discussion on the term "filter.")

Krashen maintained that the LAD does not degenerate with age, but that, for affective reasons, the input is not allowed in. (Thus, the critical period does not necessarily reflect any degeneration of the "language acquisition device.")

Gleason: One evokes a different kind of input language when one reaches puberty than one does as a child. Thus, in addition to cognitive and affective changes, changes in the environment also have to be reckoned with.

Whitaker: Although affective changes during puberty may not necessarily have an effect on learning languages, they do have significant neurochemical repercussions.

/Krashen noted that the affective filter probably leaves out only selective aspects of the second language (e.g., late-acquired structures) and maintained that given sufficient input, an adult can acquire the second language to very high levels. He then summarized the implications of his theory for second language teaching methods, suggesting that the best methods would be those that 1) provide input to the students, 2) provide tools for getting access to input, and 3) keep grammar in its proper place (i.e., do not emphasize it at the expense of communicational goals).

Discussion

Cohen: What would constitute counterevidence to your input hypothesis?

Krashen: Here are a few examples:

1) If under communicative situations people produce an unnatural order (or morpheme acquisition), and if natural orders arise in formal testing situations.

2) Finding significant correlations between attitude and acquisition.

3) Correlations between learning and aptitude.

Paulston: How could one provide falsifiable evidence to the claim that fluency comes from what is acquired?

Krashen: Its status is largely as a logical postulate for the theory. (See arguments against "learning becoming acquisition" in Krashen, 1979, and on page 52 of this report.)

Prepared Comment on Krashen's Paper

VICTORIA FROMKIN

"Why is neurolinguistics of second language learning even of interest?" This question is of interest to different researchers for different reasons, e.g., for what it can tell us about the nature of the human brain, for what it can tell us about the nature of human language, and for what it can tell us about language learning--both first and second.

"How is it possible for a child to acquire a language?" is a pervading and fundamental question in most lines of research on language. Fromkin read a quotation from George Harry Lewes (1879).

"Just as birds have wings, man has language . . ."

She suggested that the reason we have language is that we are genetically endowed with the ability to acquire language.

"What is it about the human brain that can account for the languages a child can acquire?" There is very little evidence on this. She cited John Marshall (1980), who argues that "behavior and physiology pass each other by" and that "we have so far failed to construct functional process models . . . that can mediate between noun phrases and neurons" (p. 106). According to Fromkin, we are at least beginning to get a grasp of the appropriate kinds of questions that need to be asked regarding the representation of language in the brain.

FROMKIN

Fromkin stressed the significance of Krashen's distinction between acquisition and learning, which reduces to a distinction between knowledge and meta-knowledge (which makes linguistics possible), and raised the question "What does it mean to know a language, or even to know a word in a language?". John Marshall suggests that we have many mental lexicons, e.g. orthographic, visual, auditory, etc. Aphasic evidence on the processing of homophones suggests the existence of at least two classes of patients, those who treat homophones (e.g., INN/IN) as if they were all grammatical morphemes, and those who treat them as if they were all content lexical morphemes (F. Newcombe, personal communication).

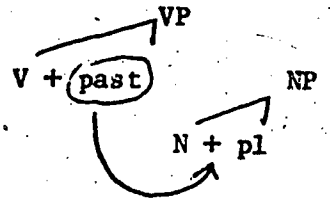
Fromkin proposed that data on speech errors in first language production (of which U.C.L.A. currently has a corpus of over 9,000 errors suggest the existence of linguistic processing rules. She made a distinction between a Monitor which corrects and edits speech and the unconscious use of rules that are part of our internalized grammar and that show up in speech errors.

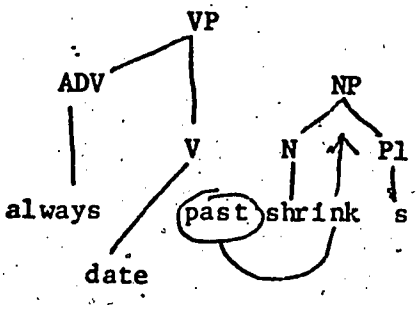
Whitaker: Is there a hierarchy of speech errors which could be related to physiological factors? Fromkin acknowledged such a possibility.

Fromkin presented examples of errors at different levels of language and suggested their theoretical implications with regard to how different aspects of language are stored.

Sample Speech Errors

Type	Error Produced	Intended Target
Phonemic	Spanish cass odd hack	Spanish class ad hoc
Distinctive feature	pig and vat	big and fat
Morphological	immotionly sequencingly he knowed it	motionless sequentially he knew it
Syntactic	Where is the grand ball-room, by any chance?	Do you know where the grand ballroom is, by any chance?
	Rosa always date shranks.	Rosa always dated shrinks.





The fact that "shrink" can be either a noun or a verb may have influenced the movement of the tense mode to the noun retaining the plural ending.

Paradis suggested an alternative analysis.
Fromkin acknowledged the difficulty of
knowing what the true analysis should be.

Fromkin cited another error:

Error	Intended Target
arg of the flute	art of the fugue

This error illustrates that both "fugue" and "flute" must have been selected from the mental lexicon and must have been stored in short term memory to account for the g of arg, even though no g occurred in the actual utterance with flute.

Errors often arise from a combining of influences, e.g., when the words have the same number of syllables and are semantically related, etc.

In sum, the error data suggest that we have a lot of monitors at work, that there is a reality of segments, distinctive features and rules of morphology and syntax.

Fromkin then presented evidence on speech errors elicited in laboratory conditions, describing some experiments of Baars, and Motley (1976, 1980).

The results indicate that if all stimuli are real words and if the errors result in atual words, they are more likely to be produced. But if stimuli include nonsense pairs and regular words, both real and nonsense word errors are produced.

Fromkin concluded that these errors therefore provide us with information about the way we represent and use our knowledge of language and the aspects of grammar that can be differentially impaired in language pathology.

Discussion

Obler: Are you using "Editor" and "monitor" interchangeably?

Fromkin: Yes.

Obler: How does your use of "monitor" relate to that of Krashen?

Fromkin: I am using monitor with a small "m."

Gleason: Who is the error corrector?

Fromkin: It either exists internally or after auditory feedback--the data at present do not allow us to decide between the two possibilities.

Goodglass noted that the two are very different; "We seem to be built as if we cannot perceive errors."

Fromkin described data from shadowing experiments where Ss are either briefed or not about the nature of the stimuli they will be hearing. The results indicate no differences in percentage of errors between those who know that the input will contain speech errors and those who do not. However, in normal listening conditions, one may get a higher percentage of Ss hearing the errors. Evidence on repair of errors suggests that one seldom repairs in the middle of a syllable (Nooteboom, 1980). Evidence on phonological misperceptions from slips of the tongue, hand and ear (cf. Fromkin, 1980) are also relevant.

Obler: How does research in speech errors relate to first and second language interference errors?

Fromkin: It is possible that some of the interference errors arise because we go to both grammars or we get the rules confused in short term memory (if they are stored in the same places).

Obler: Do individuals have specific styles of speech errors?

Fromkin: Yes.

Gleason: People do have different hesitation phenomenon, and different fillers.

Fromkin: The fillers are often fads and differ in different languages, e.g., "uh" in English versus [oe] in French.

(Some discussion on Spooner and spoonerisms followed.)

10 April, 1980

HARRY A. WHITAKER

"Neurofunctional Issues in Bilingualism"

Neurofunctional aspects of bilingual language organization were discussed from three perspectives: 1) electrical stimulation of the exposed language cortex in bilinguals, 2) the relationship (or lack thereof) between brain maturational phenomena and behavioral observations of language acquisition, and 3) neurological correlates of automatized language behavior.

Electrical Stimulation Studies. Individuals who are subjects in these studies suffer from a particular type of epilepsy that cannot be treated by drugs, but that can usually be relieved by neurosurgical resection of seizure-producing foci in the brain. To prevent the possibililty of paralysis and/or aphasia resulting from removal of areas of the brain, it is necessary to establish which side of the brain is dominant for speech (i.e., which areas are to be avoided during surgery). To determine this, patients are administered the Wada test, which involves successive injection of their left and right carotid arteries with sodium amytal, a substance that has the effect of temporarily arresting normal neuronal fuctioning in the unilateral brain areas supplied by the carotid artery. In the brief period during which the amytal is being metabolized, the patient is rendered dysphasic, if it was the language hemisphere that had been injected.

Once the hemisphere dominant for major language functions has been determined by means of the Wada test, a craniatomy is performed, and an array of cortical sites are electrically stimulated, for a period of 4-10 seconds. The effect of electrical stimulation is to disrupt the functioning of the underlying neural circuits. To determine the range of the cortex responsible for language processing, a naming task is chosen since evidence from the aphasia literature suggests that the ability to name objects is diffusely represented in the language cortex.

The electrical stmulation paradigm was first used with humans in the work of Penfield and Roberts (1959, Speech and Brain Mechanisms), who did not, however, examine the factor of bilingualism, even though it is likely that many of their patients were bilingual. The paradigm has recently been used by Ojemaan and Whitaker (1978) and more recently by R. Rapport (unpublished work) on bi- and multi-lingual patients.

The study of Ojemann and Whitaker (1978) reported on two bilingual epileptic patients. One was a 37 year old right-handed male Dutch-English speaker, who had been using English for a period of 12 years at the time of the operation. The Wada test indicated that both his languages were represented in the LH. The second patient was a 20 year old right-handed female English-Spanish early bilingual. The Wada test indicated right hemisphere representation for both her languages.

Both patients were first tested in English and later in their other language. In each testing session, they were asked to name a series of

pictured objects by completing the sentence, "This is a _____." Their performance on the naming task was assessed by statistically comparing their percentage of errors in each language during stimulation with their performance in the absence of electrical stimulation.

The effects of stimulation on naming ability were similar in the two patients, and indicated the existence of three types of sites, areas where stimulation 1) always produced naming errors in both the languages, 2) usually produced naming errors in one of the languages, and occasionally produced errors in the other, and 3) only produced naming errors in one language or the other.

The stimulation data of Rapport (collected from multilingual speakers of Malay, Mandarin, Hokkein and English) produced a similar pattern of findings as those reported by Ojemann and Whitaker. Rapport also found no evidence of bilateral representation of one or more languages of his subjects, as determined by the Wada test.

Taken together, the observed findings of "partially overlapping" brain substrates for the languages of bi- and multi-linguals provide an anatomically-based explanation for the variation in language loss and recovery patterns noted in the polyglot aphasia literature (reviewed by Paradis, 1977).

The validity of these findings are subject to a number of caveats:

1. It is likely that the brains of epileptics are not wholly representative of normal, healthy brains.

2. The level of precision in the electrical stimulation studies, although on the order of millimeters, may not be sufficient for stating that a precise cortical site was stimulated twice.
3. The results reflect performance on only one linguistic function (naming), and may not be representative of other functions.

Discussion

Discussion centered around the last two caveats. Paradis and Goodglass argued that the issue of precision, i.e., of re-stimulating the exact same piece of cortex, is crucial to the reliability of the findings and any interpretations based on them. Whitaker responded that it is not at present feasible to achieve a higher level of precision, and observed that the use of statistical averages of responses drawn from a larger subject sample, obviates the problem of reliability of the data. He also pointed out that even if one were to accept the possibility that the same piece of brain had not been re-stimulated, only the second of the three sets of findings (see p. 38) would be called into question. Note also that the error in placement is on the order of a few millimeters, while the area affected by the electrode is on the order of a centimeter.

Another point that received considerable discussion was raised by Fromkin and Gleason, who questioned the meaning of "differential representation" of language in bilinguals; e.g., whether it refers to separate storage of lexical items from the two languages or to separate pathways

leading to the lexical storage. A related issue concerned the generalizability of the data to other linguistic functions besides naming.

With respect to the first issue, Whitaker acknowledged that the data by themselves do not offer any clues as to the nature of the process being interfered with; that is, whether it is at the level of storage, or access to a stored item. With respect to the second issue, he agreed that it is likely that different components of language have different intra- and/or inter-hemispheric substrates, and cited recent work by Ojemann investigating other linguistic functions which do not reveal the same pattern as does naming. Unfortunately, such studies have yet to be done with bilinguals. Whitaker contended that, to the extent that naming ability reflects a global aspect of language, it is legitimate to make the generalization on the basis of the stimulation data that the languages of the bilingual are differentially represented in the brain, albeit in a complex, overlapping fashion.

Whitaker also noted that "functions that may (or may not) be in the same piece of brain have different thresholds for being interfered with, both chemically and electrically." He presented evidence substantiating this point, drawn from electrical stimulation studies and amytal studies.

Brain maturation. There are three postnatal brain maturational milestones, the first occurring around 10-15 months, when core connections are established in the primary motor areas of the cortex. This coincides with the time that children begin to talk. The next milestone occurs

around three to five years of age when, by biochemical, electrophysiological and morphological criteria, the brain has reached about 80% of its adult state. The next milestone occurs around puberty, when the brain is inundated with hormonal changes.

The rate of maturation up to the age of five differs for different parts of the central nervous system. Indices of maturation indicate that one of the first areas to mature is the motor area, particularly the hand and face areas, and that the last cortical area to mature is the region of the supramarginal and angular gyri.

Whitaker argued that, beyond providing a rough correlation, these maturational phenomena offer little in the way of explanations of observed behavioral differences in first and second language acquisition.

Discussion

Whitaker pointed out the futility of attempts on the part of educators to exercise one side of the brain, in view of the fact that the interconnectedness of the two hemispheres and the rapidity of neural transmission make it inevitable that both sides of the brain will get all of any input within a matter of 50 milliseconds, or less.

Paradis argued that, nevertheless, there is a sense in which one can talk of a given teaching method selectively engaging a particular hemisphere, since the two sides of the brain are specialized in terms of the manner in which they process information.

Automatization model. Automatization refers to the central organization in the nervous system that programs a sequence of muscular actions. According to the automatization model proposed by Whitaker, 1) an effect of automatization is to shift certain aspects of language processing into the peri-sylvian and peri-rolandic cortex, and 2) a more automatized routine uses less cortical tissue than one that is less automatized.

Evidence in support of the first claim derives from a) brain maturational phenomena which indicate that the motor cortex is the first part of the language system to mature and is also the area with the greatest degree of myelinization, and therefore, of functional differentiation, and b) blood flow studies which indicate that there is an increase in regional cerebral blood flow (rCBF) in the peri-sylvian and peri-rolandic areas when subjects are asked to perform automatized speech routines, but that blood flow is greater in frontal regions when the individuals are resting and only thinking of speaking.

Evidence for the second claim derives from blood flow studies in which tapping rate was the dependent variable: right-handed individuals tapping with their left hand produced an increase in rCBF not only in the right hemisphere hand area but also in the left hemisphere hand area. However, tapping with the right hand produced an increase in rCBF just in the left hemisphere hand area, distributed throughout much of the rolandic cortex.

It has been observed that children do not manifest the differentiated aphasic deficits typically observed in adult aphasics; aphasia in children up to the age of eight years tends to be global. Whitaker suggested that this might reflect a more widespread representation of linguistic functions in children and that by adulthood, when automatized routines are established, one uses smaller pieces of brain, making the rest of the brain available for subserving other linguistic tasks, such as storing the lexicon.

With regard to second language acquisition, Whitaker proposed that differences in learning automatized routines in late second language learners may reflect the fact that the brain has already packaged linguistic functions and that repackaging them may either cause interference or may not be possible due to lack of sufficient space.

In concluding, Whitaker suggested that the automatization model and electrical stimulation data provide a potential explanatory basis for observed behavioral differences in language learning and recovery. He noted, however, that other (non-neurological) factors are equally useful sources of explanation.

Discussion

Goodglass: Children who are going to get globally aphasic already have automatized speech routines.

Whitaker: There are, of course, different types of automatization. Note that articulatory automatization develops up until at least five or six years of age.

Gleason: How does fluency in the second language relate to the model?

Whitaker: Presumably, the less fluent language is more widely represented, while the more fluent language is more centrally represented; such a trend was observed in the electrical stimulation data.

11 April, 1980

KARL DILLER

"Neurolinguistic Explanations of the Differences between Language Teaching Methods"

1. Failure in language teaching is sometimes a failure in method. Certain methods, such as the extreme form of the grammar-translation method, may fail for everyone (see, for example, Francois Gouin's spectacular failure to learn German with this method; Diller, 1978, ch. 6). Other methods fail only with certain types of individuals (e.g., the Bull method at UCLA which fails with people who favor their right hemispheres on eye-movement tests; Diller, 1978, ch. 11).

2. Different methods of language teaching utilize different aspects of the faculty of language.

A. The faculty of language is not unitary, as seen by evidence from aptitude tests (which suggests that there are four separate factors: phonetic coding, grammatical sensitivity, rote memory, and inductive language learning ability); by evidence from aphasia (in which we have such syndromes as Broca's Aphasia, Wernicke's Aphasia, Conduction Aphasia, and Isolation of the Speech Area); and by evidence from blood flow studies (which shows that different language tasks utilize different language areas).

B. Examination of methods and their neurolinguistic foundations: Mimicry, memorization and pattern drill; the direct method and its modern variations (de Sauzé, the Multiple Approach, 1929; Winitz, The Learnables, 1978; Gattegno, The Silent Way, 1972; Asher, Total Physical Response, 1974); the structuro-global audio-visual method (Dialogue Canada); and grammar-translation. (These methods are discussed in Diller 1978.)

Diller argued that different teaching methods engage the language areas of the brain differentially, just as blood flow studies have shown that different areas of the brain are engaged by various cognitive activities. He reviewed the hypothesis of Walsh and Diller (1978) that the extreme form of mimicry-memorization and pattern drill does not significantly engage the semantic areas of the supramarginal gyrus, but selectively activates Broca's area, Wernicke's area, and the arcuate fasciculus (as in the aphasic syndrome of Isolation of the speech area). The Winitz and Reeds method of learning solely through listening comprehension would activate Wernicke's area but also the supramarginal gyrus (linking sound and meaning), and would not engage Broca's area significantly. On the other hand, the multiple approach of de Sauzé's direct method would utilize all the language areas of the brain.

DILLER

In discussing the minimal requirements of a good method of language teaching, Diller stressed the importance of meaningful practice, that is, an association between sound and meaning in second language. The grammar-translation method fails as a method to the extent to which it fails to provide meaningful practice (cf. Diller and Walsh, 1978). However, such restricted methods as the acquisition of language through the avoidance of speaking (cf. Winitz and Reeds, 1975) and the total physical response method (Asher et al., 1974), which emphasize listening comprehension, appear to be quite effective language teaching methods in that they stress the link between sound and meaning. The multiple approach direct method would seem to be superior in that it utilizes all the language areas, and is especially concerned with meaningful practice.

Discussion

Discussion centered on the justifiability (in light of the lack of appropriate data and methods of obtaining such data) of positing differential neurolinguistic repercussions of different language teaching methods. Evidence for different language areas, drawn largely from lesion data, may not provide a representative account of language organization in the normal, intact brain. Moreover, neurolinguistic mechanisms involved in the process of learning a language (first or second) might differ from those subserving adult (i.e., mature) language usage. Finally, it was noted that explanations for observed differences in the effectiveness of

different methods of language teaching need not require explanations on the neurolinguistic level, insofar as they could plausibly reflect a host of psychological variables yet to be more fully explored.

Krashen: What you're doing is extrapolating from other studies suggesting that these are the areas of the brain involved in monolinguals to what would happen in the second language?

Diller: Yes.

Krashen: Are you claiming that people process language in fundamentally different ways because they are using different areas of the brain?

Fromkin: I really don't understand your (Diller's) claim--ultimately we all learn a language.

Krashen: Do you want to say that everyone has a different language acquisition device (LAD)?

Diller: No, but that the language acquisition device has different components, some of which function more strongly in certain people.

Goodglass: I don't think it is practical to correlate strategies of learning a language with different aphasic syndromes--we just don't know what the neurological correlates of various learning strategies are. Aphasia lesion data are only one source of evidence for the suggestion of localization. I think it is futile to try and explain the advantages and disadvantages of a learning strategy in terms of what brain system you have

utilized. Krashen's question (see previous page) is an important one, but one which we are a million miles from being able to answer.

Gleason: We're a million miles away from answering what kinds of brain activities may underlie individual differences in ability or cognitive style--clearly, we have differences in ability and cognitive style.

Obler: Diller's claim (that different language teaching methods recruit different brain areas) is testable in principle--perhaps with blood flow studies.

Gleason: The blood flow method tests something at the moment of [illegible], whereas a teaching method operates over time.

Paradis: Yes, but you can compare individuals who have learned with one method with those who have learned with another.

Krashen: I think a necessary bridge between research on second language teaching methods and brain involvement is the cognitive psychological level.

11 April, 1980

ANDREW COHEN

Prepared Comment

It is dangerous to claim, as Diller does, that there are widely differing neurological centers or pathways associated with different teaching methods.

Fromkin: Such a claim is testable but it is just not sufficient as an explanation.

It may be more instructive to look at other factors that may be used to evaluate different teaching methods, such as the characteristics of the drop-outs of different methods.

In reviewing his own ongoing research on the (lack of) success of different language learners, Cohen first discussed the use of introspective data obtained from the learner in the classroom. A major aim of this introspection-eliciting project is to explore the types of operations that all the learners in a given class may be performing on their input at a given moment, whatever the teaching method; e.g., whether they are forming questions, rephrasing the input, characterizing or labelling it, and/or reasoning--deductively or inductively (Cohen, forthcoming). Cohen acknowledged the difficulty in obtaining introspective data of sufficient precision, inasmuch as the learners may not know how to describe what they are experiencing. He noted that the experimenter should be careful not to help the learner to provide the needed information.

Another issue that has been studied is long-term vocabulary acquisition. Language teachers all too often constrain both the amount and type of vocabulary items to be learned by student, and limit the manner by which the items are to be learned (typically, rote memorization). Cohen has examined the effects of giving the learner the option of selecting both the amount of items to be learned and the manner in which they may be associated with words in the native language (Cohen & Aphek, 1980a, 1980b). Other topics of research have included an investigation of how students take notes, and how they perform under test situations.

All these approaches are oriented towards language learning rather than language acquisition (cf. Krashen's distinction), and at unsuccessful learning, in particular.

Discussion

There was discussion on the learning/acquisition distinction.

Cohen: For certain purposes, such as preparing oneself to lecture in a foreign university, learning is a quicker, more efficient route, since it provides more finely-tuned input than is generally available otherwise and may produce learner output that is more amenable to note takers (i.e., more error-free).

Krashen: Whatever is being learned in that case cannot be called language but, simply, conscious knowledge of the rules of a particular language.

COHEN

Diller raised the question that just because something is automatic when one is a fluent speaker doesn't mean that one did not have to go through a conscious stage; he noted that several children go through such a stage in acquiring their first language, as adults do in aquiring other skills, e.g., typing. Krashen acknowledged that the question of whether learning has to precede acquisition is an important one, and argued that several lines of evidence would suggest that it need not: 1) the existence of individuals who know grammar rules but cannot use them properly in context and 2) conversely, the existence of individuals who do not know any rules consciously but use them properly. Fromkin noted that learning need not be necessary but that it might be sufficient. After further discussion on this issue, Krashen suggested the following summary statement as a compromise: Comprehensible input is necessary but not sufficient. Everyone is an acquirer, some people are also learners. Learning is good for some rules some of the time for some of the situations, and has cosmetic effects. Paulston objected to the use of the term "cosmetic."

April 11, 1980

CHRISTINA BRATT PAULSTON

"Generation of New Ideas for Teaching and Research"

Paulston argued that there are few new techniques in the field of language teaching--St. Augustine used pattern drills, the Scholastics used notional-functional methods, and the Romans, a form of immersion. What does change is the combination or constellation of the various methods used in language teaching. She further contended that practical problems of language teaching have little to do with the theories of language learning, and posed the problem of how to bring together the empirical, theory-divorced, trial-and-error method adopted by language teachers and the deductive, logical hypotheses proposed by language acquisition theorists.

With regard to neurolinguistics as a potential means of resolving the problem, Paulston noted that neurolinguistic topics lack theoretical foundations, since neurolinguistics as a field is still largely in the data-gathering stage. "What you get, then, are language teachers looking for a theoretical, explanatory framework within a field which itself has very little explanatory power . . . We are looking to neurolinguistics to do something that it is still clearly not able to do for itself. Clearly, one can't criticize neurolinguistics for that, or reject the validity of the efforts to do that, but it does behoove us to be extremely cautious of what we say." (E.g., advocating methods that appeal to right-brain involvement, or explaining the poor performance of Chicanos in school by the suggestion that they use their right-brain more.)

The question for discussion is "Where do we go from here?" To say that it is futile to pay attention to neurolinguistic issues would be over-pessimistic, yet to skip and jump ahead would be irresponsible. A continued dialogue is important.

General Discussion

Fromkin described the case studied by Frieda Newcombe--of a boy with severe neurological deficits, including central deafness and cerebral palsy, who was still capable of communicating through gestures. She argued that 1) the human brain seems to be wired for human language, 2) although there are an infinite number of languages theoretically possible, only a finite type of languages actually exists and their similarities outweigh their di erences, and 3) to the extent that (1) and (2) are true, the interesting question for research should be "why do we not have difficulties learning our first language, but why do some of us have difficulty learning the second?"

Cohen: But we do have trouble learning the first language. The message may come easily but the form comes with great difficulty, over extended periods of exposure to input.

Fromkin disagreed, noting that children produce complex forms, e.g., interrogatives, imperatives, relative clauses; the fact that cases like Genie exist adds support to the hypothesis of the innateness of the ability to acquire language. Paradis argued that the brain is organized to acquire

language but he agreed with Cohen in that "the case and rapidity with which a child learns his first language may have been overemphasized in the literature (perhaps because of some theoretical bias in linguistics)" and argued that it is time to study how long it takes children to acquire most of the linguistic (e.g., syntacatic) structures. Paradis noted that at age eight or nine a child still cannot understand a passive sentence. Fromkin objected, pointing out that a child may not be able to comprehend a particular linguistic structure in a test situation but can use it appropriately in conversation. Paradis agreed, noting that that was precisely the point--a great deal of what we call language comprehension is not linguistic, in that the child has not yet mastered the code, but is simply good at guessing or inferring meaning from extra-linguistic cues. Goodglass noted that semantically nonreversible passives are acquired earlier than reversible ones, which requires a knowledge of grammatical rules.

Paradis proposed that learning a second language takes a lot of time, practice and conscious effort, but that so does learning a first language. If an adult were to get as much practice (in terms of input and time spent) in the second language as a child does for the first (or second) language, that adult would unquestionably be as fluent in the language as would the child. Paradis cautioned against accepting all too readily the statement that our ability to acquire language is a biological given; "it is true that we are the only ones able to do it, but we can't just do it sitting down."

DISCUSSION

Diller noted that just as we can marvel at the ease with which children seem to acquire second languages, so, too, can one marvel at the relative ease with which some adults can master a second language, in many fewer hours. Goodglass noted that one does not have to learn as much in second language learning since one comes to the task with a first language already under one's belt. Knowledge of phonology, syntax, etc. of the first language may be helpful in acquiring the particular grammar of a second language. Diller mentioned that anecdotal evidence suggests that individuals who have mastered two languages tend to be better than monolinguals at acquiring additional languages, and posed the question "What is it about the bilingual brain that improves language acquisition?" Goodglass noted that people who are good at learning a third language may have been good at learning a second language, whereas those who were not good at learning a second language would have dropped out of the picture. Cohen described a study in Israel of about 300 immigrants; in that study, ". . . number of languages spoken" did not emerge as a significant predictor of success in learning Hebrew, although other variables (e.g., age, religious background, occupation) were significant predictors (Nir, Blum-Kulka, and Cohen, 1978). Paulston suggested that language typology may be a factor.

Paradis argued that "while it may help one to understand the second language better if it is of the same language family, it is not going to help one to speak it." Goodglass responded that, cognates aside, once you have mastered the struggle of first language acquisition, you have a

framework which facilitates second language acquisition. Paradis noted that knowing the concept of gender will not help one to assign gender in specific cases. Gleason argued that "learning a language can give you principles for how to look at another language," e.g., experience with a language that does particular things (e.g., attaches inflections to the ends of words) gives you a kind of cognitive strategy for learning the other language. Paulston noted that semantic salience is also important. Paradis suggested that Kolers' work indicates that transfer to new cognitive tasks only works to the extent that the tasks are similar. Fromkin responded that the analogy was not a good one, since language learning is not like rote learning (as in Kolers' experiments), and maintained that learning a language gives you an internalized knowledge of grammar principles that helps you--or should--in learning a second language. Paradis questioned that, saying that the evidence is overwhelmingly against that.

Cohen noted that positive transfer would be expected between languages that are similar; however, recent second language acquisition data on avoidance are showing that that's not true: language learners appear to be avoiding transfer of large chunks of what is in their native language, for a variety of reasons--e.g., work in the Netherlands (Jordens and Kellerman, 1978) suggests that perceived foreignness of a language will create an avoidance of transfer on the part of the learner even when that transfer would be positive.

DISCUSSION

Paradis summarized his position, noting that "once the learner knows all the things that can happen, this doesn't help him to know all the things that do happen, as evidenced by all the failures."

Obler: Further research is needed into what exactly goes into comprehensibility:

1) How does the person who is teaching or speaking to a language learner devise comprehensible language?

2) What is it about the comprehensibility that permits the learner to learn the language?

Gleason: It depends on its relevance to the learner. Some kids learn language better than others and communicate better than others.

Obler: Are some people better language teachers, and how can what good teachers know be taught?

Gleason: Comprehensible input (e.g., Krashen) is only comprehensible-or-not to the person to whom it is addressed, and you can only know if it is if that person gives you some kind of feedback signal that lets you know if you have hit the target. If you know you are hitting the target you are not having comprehensible input, you are having communication, because the person is communicating back to you.

Krashen: Exactly.

Gleason: How do teachers, parents, etc. pick up the right signals to know how to talk to children or foreigners? That is the question we haven't addressed. People are sensitive to one another . . . language

is not an abstract entity acquired by a brain. Everybody acquires language through interaction with other people.

Paradis noted that considerable data have accumulated supporting the fact that mothers do adapt to the child--why couldn't the teacher similarly adapt; that is, know when the child does or does not understand?

Gleason: In being trained to be students we are not trained to give signals of comprehension or non-comprehension.

Paulston: We all agree that you have to have some kind of human interaction.

Cohen: True--and that can be traumatic for some children. But the method does work.

Paulston: It works in immersion--not in pseudo immersion.

Cohen: That is, it works in submersion.

Paradis: In pseudo immersion, they pick up the pidgin that was spoken around them.

Paulston: One important point should be pointed out--i.e., you do get acquisition in the classroom; you cannot equate learning with formal classroom and acquisition with learning out in the street. Another point we agree on is that the classroom should be so structured that it allows students to acquire language, e.g., through interaction with peers.

Obler: It is clear to me that Christiana has more than done what we expected her to do to stimulate a very fine discussion.

Obler expressed her satisfaction with the way the symposium had gone, its interdisciplinary nature, and the questions--methodological and theoretical--it had raised. She thanked the participants and members of the audience.

Durga Spiro recounted her own experiences in acquiring languages and stressed the importance of affective factors in language acquisition. She made the point that one learns a language for a particular reason which provides the incentive to learn, and therefore, guarantees some effort towards achieving success. The ultimate success will depend on one's intelligence level.

"Learning a second language has a lot to do with . . . survival. You need it for a reason. The motivation is there for you to be a good student. This has nothing to do with whether or not you are good at learning languages. It takes effort to learn a language, which means that you are going to have to work.

Here at Curço Oxford we are aware of the difficulties in learning a second language, especially since English is spoken here exclusively in the context of the classroom--which makes it a great feat for our students to be able to communicate in English in a year or two.

We are very proud of our initiative and very happy to see the efforts put in by the Foundation, Loraine Obler and Andrew Cohen."

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