Levels of language mastery and their causative antecedents

ERNST L. MOERK
University of California – El Fresno (USA)

The concept «language» is certainly one of the most wholistic and undifferentiated concepts commonly used in educated communication. Taking English as an example with its estimated vocabulary of millions of words and the infinite number of potential syntactic combinations these words can be assembled in, a statement that somebody «knows the English language» is extremely undefined as to the extent or type of knowledge that is referred to. As any «language» can be mastered only partially, the question which aspects of a language need to be acquired for specific tasks becomes especially important if a «language» is taught in instructional settings. (In everyday training and learning, parents unwittingly trust that the environments of language learning and later language use will be sufficiently similar for easy transfer. This is often not the case, as will be indicated below.) As «English» has become a world «language,» being taught to hundreds of millions of diverse ESL learners, approaches tailored to their diverse goals have become essential. This is the reason why many LPS (language for specific purposes) programs have been developed, such as «Academic English,» «English for Businessmen,» «for Tourists», etc.

These considerations apply not only to second-language training but also to children needing specific skills in their mother tongue which they might not or could not have learned in their homes, as it is common in upwardly mobile families. In this case, parents themselves had never acquired Academic English skills and could therefore not teach it. Even if their children are fluent in basic interpersonal communication skills (BICS), nevertheless they would be deficient in those skills required for cognitive-academic language proficiency (CALP) (Cummins, 1980).

This brief essay sets itself three goals: First to elucidate some of the better known differentiations of «language» that are important for education. Then to indicate the origins of the competencies in early childhood input together with the interactional deficits that prevent their attainment. Finally, a few relations between language and cognition will be suggested as they pertain to academic success.

A) Differentiations of «language»

Certainly, «language» has been analyzed previously by linguists into phonetics/phonology, semantics, and grammar. This basic structural differentiation, applying to every sentence, provides a necessary but not sufficient framework for instructional purposes. Purpose-based differentiations, as indicated in the preceding paragraphs, need to specify which semantic and syntactic skills must be emphasized above the basic skills.

Another subdivision has flourished for a period, deriving from the testing approach. It is probably most fully exemplified by the work of J. B. Carroll (cf. Caroll, 1990 for a survey) and com-

prises factor-analytic studies of cognitive and learning abilities that are centrally involved in language acquisition. This approach focuses not so much on the object of study but on the psychological processes employed in mastering it, such as rehearsals, abstractions of structures, or insights into rules. It should be, but has not yet been, fully integrated into educational endeavors.

Levels of complexity across the entire domain of «language» represent a third dimension which is especially important for intensive and advanced training both in the mother tongue and in second languages. Flexible mastery of diverse registers, or codes, is a prerequisite for the effective use of «language» in diverse social-technical-bureaucratic settings. Some major categorizations are summarized in Table 1.

Table 1
Diverse Classifications of levels of Language

Orality	Restricted Code	BICS	'Directive' Speech
			Simple narratives
	Elaborated/ Formal Code	STAL	Explanatory narratives
Literacy		STAL	Complex narratives
		CALP	Expository code
			Inferential code
			Dialectic code
		TEL	Expository code
			Inferential code
			Dialectic code

Table 1 integrates several well-known differentiations of the verbal code and adds further differentiations, derived mainly from research on advanced «language» skills. Perhaps the broadest, historically oriented, distinction is that between orality and literacy (Goody, 1986; Ong, 1967, 1982). The oral code could best be exemplified by the Iliad and Odyssey. It is characterized by both content and form, the latter largely shaped by task demands. The content focuses predominantly on human beings (including mythological figures) and their interactions, neglecting the physical environment, and especially disregarding analyses of physical laws. It is therefore the opposite of what is found in scientific-technological texts. Storage and production requirements entail formulaic phrases, repetitions, many emphatic aspects, and relatively simple sentences. The opposite pole, literacy, encompasses many subsets that are specified in the rightmost column of Table 1, to be discussed presently. It entails mainly great syntactic complexity and extensive use of abstract terms, due to the complex abstract-cognitive arguments that need to be conveyed.

The next contrast, of restricted and elaborated/formal codes, is well-known from the arguments of Bernstein (1961, 1964) and the controversies the latter aroused. It needs little explanation. Bernstein intended it to reflect differences in complexity and sophistication, as found between social classes and in informal vs. formal speech. The latter comes close to literacy and is employed increasingly in middle-class families in relatively informal situations (Heath, 1982; Tannen 1982).

The next column of Table 1 contains the well-know contrast, proposed by Cummins (1980), between BICS (basic interpersonal communication skills) and CALP (cognitive academic lan-

guage proficiency). These labels are sufficiently self-explanatory for the present discussion, although detailed specification is important for pedagogical applications. Two further distinctions are added in this column: the first one pertains to «standard language» (STAL), because interpersonal communication between, for example, two university professors, entails many aspects of the elaborated code but still differs from CALP. Whereas BICS might have negative effects for the mastery of academic texts, STAL is sufficiently similar to these texts to provide many occasions for positive transfer. Finally, TEL (technical language), specific for the diverse fields of science, complements the general cognitive academic language skills that students acquire in their non-specialized courses.

The last column of Table 1 attempts to integrate much of the literature by providing a more fine-grained differentiation of forms and levels of the language code. The simple directive speech of lower-class parents, that is disadvantageous for language development, is well attested in the developmental literature. On a somewhat higher level, both in regard to vocabulary and syntactic complexity, lies the simple narrative of «who did what to whom,» found partly in oral narrations and in simple literary narratives. Spatial and temporal aspects of the action go often unmentioned, being contextually known to both communication partners. Sentences can therefore remain simple. As soon as narratives introduce explanations of causes and reasons and become decontextualized, their linguistic complexity has to be increased to convey this additional information. This code is found in middle-class «authoritative child raising» (Baumrind, 1971) and also in the narratives of novels and short stories. Whereas it represents a transition to higher literacy, it is still largely focused on human interactions and dynamics. In contrast, the expository style, found mainly in college textbooks and scientific reports, focuses on objects and their diverse relations. If human beings are focused on, they are seen as objects of study, as in psychology, not as agents in a social drama.

The «inferential» style builds upon the expository style. It is found in «Discussion» sections of research articles. As the term indicates, inferences are drawn from the facts reported in the «Result» section, and hypotheses or theories are formulated. These aims imply that the content has to be relatively abstract, and the form has to be complex, establishing relations between premises and conclusions.

Finally, a still higher, «dialectic,» level is suggested. This is the level of comparing theories, weighing differential support of the diverse theories, and arguing for their strength or weakness. It is the epistemological/philosophical level. The content is almost fully abstract, and the arguments have to be highly complex.

The last three code levels are employed in academic texts. They require for mastery the full range of secondary and tertiary education, often in addition to extensive independent study. Ten to twenty years of learning are required for their mastery – even if good foundations have been built in the home and in elementary school. Without these foundations, early failures and the resulting drop-outs prevent large numbers of children from ever gaining access to these advanced levels. The prerequisites for these basic language skills upon which schools try to build advanced knowledge need therefore to be focused on.

When integrating the strictly linguistic differentiations of semantics and grammar (omitting phonetics/phonology as less central) with the purpose-based pragmatic differentiations, a three-dimensional task-space becomes evident. It will have to be matched by an equally differentiated process-space, as provisionally explored by Carroll and as partially recognizable in analyses of input and learning during childhood.

B) Child Raising Antecedents of Language and Cognitive Skills

Large differences in the academic and professional achievement of children from diverse social classes are only too well known. Teachers almost unanimously emphasize missing language skills as a major obstacle when lower-class children enter school. Extensive research (Moerk, 1996) exists on the verbal interactions that promote language skills. Moerk (1998) surveys differences in input across cultural groups and emphasizes the concomitant variations between input and interaction on the one hand and levels of language skills on the other. Some of these differences are briefly summarized in Table 2 and then explained concisely.

Table 2
Social Class Differences in Verbal Affordances

Lower Class	*Middle Class*
	A) Frequency Aspects
i) Input frequencies: Little talk to children; few new words or sentences.	Extensive talk to children; new words/phrases rehearsed.
ii) Production frequencies: Children's speech not rewarded nor encouraged; they learn to be silent.	Much reward, many questions encourage high productivity; child's ideas welcome.
iii) Interactional frequencies: Few mealtime conversations; not responding to children.	Long discussions at meals; many question-answer turns.
	B) Functional Aspects
i) Social vs. referential functions Mainly brief commands with non-verbal deixis.	Referential speech describes objects and relations;
ii) Comprehension vs. production «Authoritarian commands», emphasis on quiet obedience; questions seen as disrespect.	Child may challenge rules; decisions are negotiated; questions welcomed/answered.
	C) Formal Aspects
i) Linguistic forms Narrow vocabulary and syntax; rigid fixed formulas; few literary texts.	Broad vocabulary and syntax; flexible frames with fillers; many books and stories.
ii) Interactional forms Minimal metalanguage (e.g., corrections, testing); no fine-tuning in feedback; little rehearsal; little contingency, short themes.	Correcting, analytic, synthetic, abstracting input; persistently fine-tuned feedback; contingent repetitions; themes build up complexity.

Lower-class parents speak little to their children and give even less verbal feedback to children's speech. This comparative lack of verbal interaction (cf. Hart & Risley, 1995) implies also an absence of rehearsal and reinstatement, two exercises of extreme importance for the long-term storage of any information. The «authoritarian» (Baumrind, 1971) child-raising patterns common in lower-class homes are devoid of verbal explanations of reasons or causes, that is, they are also devoid of complex, multi-clausal, linguistic constructions. When uneducated lower-class parents address their children, it is often in the form of simple commands and constraints that are formulaic and contextualized, so that much of the information is carried by the non-verbal context. Temporal or spatial prepositional phrases are therefore mostly not necessary and not used. Especially the language-specific «distancing function» (Sigel, 1986), referring to absent places and remote times, is missing. This deficit entails almost necessarily cognitive deprivation.

Children's speech productions are generally not welcome and even punished, a norm teaching children to be silent and depriving them of training in productive skills. As child speech is not welcome, it is minimally responded to. This deprives the children of the extensive metalinguistic feedback in the form of corrections, expansions, and of analytic, synthetic, or abstracting exercises (Moerk, 1985) that middle-class parents are wont to provide. Such a lack of contingency entails that linguistic information is not provided at an optimal level of discrepancy, and H. Simon's (1978) «difference-by comparison analyses» for the discovery of mistakes and needed improvements are almost impossible. In summary, wide-ranging deficits in the input many parents provide can account for the widely observed defects in language skills of their children.

C) Relations between Language and Cognition.

All the above descriptions, but especially that focusing on «academic language» or CALP, suggest that the language levels are closely related to cognitive functioning. Both contents of cognition, reflected in habitual use of person-centered versus object-centered language, and levels of cognitive functioning, such as concrete versus abstract, are involved. Lack of complex sentences in input, which would be needed to present complex cognitive arguments and to learn advanced propositional skills, indicates both cognitive and linguistic deprivation.

Whereas the relationship between language and cognition is of great importance, it cannot be attempted here to review the pertinent extensive controversies deriving from the Humboldt-Sapir-Whorf hypothesis. Yet, neither can this important question be disregarded, due to its educational implications. Therefore a few aspects will be discussed for which rather general agreement exists.

The most manifest tie between language and cognition pertains to the realm of comprehension of instructional materials. If learners are not able to comprehend the verbal instructions provided, a negative impact of their language deficits on learning and subsequent cognitive performance follows necessarily. Degrees of comprehension and varying demands on processing resources are important. Relative unfamiliarity with specific forms, necessitating the allocation of considerable resources for linguistic decoding, will interfere with the uptake of complex and extensive information, even if comprehension were possible under optimal conditions.

Furthermore, language provides schemas of perception and conception, that is, it molds habitual tendencies of processing. For example, a habitual focus on persons versus objects is homologous to the contrast between narrative and formal scientific texts. Exclusive focus on

the former might produce negative transfer for the latter and interfere with academic progress. Language serves also as an algorithm for reasoning, whether by providing concrete vs. abstract terminologies or by facilitating either wholistic or analytic styles. A combination of abstract and analytic skills seems necessary for detailed, step-by-step, problem solving. Language becomes especially important as an algorithm for thought in the domain of probabilities, such as the counterconditional, which seems to be hard to conceive in Chinese (Bloom, 1981). As Piaget emphasized, propositional logic with multivariate conditional argument structures, dealing largely with abstract aspects, is almost fully dependent on verbal or mathematical symbol systems.

DISCUSSION

As Slama-Cazacu (1983) has argued so persuasively, complex integrative approaches are required in applied psycholinguistics. In the present case, speech patterns in the home, psychological learning processes, levels of language achieved, and cognitive-academic performance need to be related to each other. Practical applications of the above considerations are obvious and important. Children from lower-class background suffer double deprivation. They do not acquire those verbal skills in their homes that would prepare them to move smoothly from lower language levels to higher ones during the decades of subsequent schooling. Neither do they commonly experience how their parents model the cognitive principles that would prepare them for complex scientific arguments. As parents lack both sets of higher level skills, they could not teach them to their young children even with the best intentions. If teachers too are unawares of the features of diverse levels of «language,» they cannot provide those remedies which are most needed by the children. They might even dwell on remedies least needed, because the children, mastering them at least partly, respond most positively to them. Instead of catching up, both teachers and children would waste valuable time and resources. The present essay is conceived as an invitation to conceptualize and diagnose carefully the differential deficits many children exhibit in order to remedy them in a goal-specific manner.

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