Psychological Linguistics

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ABSTRACT

Currently, linguistic problems are studied under the influence of three unsatisfactory types of postulation.

General linguists following the philological or textual tradition assume that language consists of things, and thus employ a chemical model of structuration moving from elements (phonemes) to molecules (words, morphs) and higher order syntactual compounds. The postulates of the other two classes of language students are more behavioral or psychological in nature.

The first of these adheres closely to the mind-body tradition according to which language behavior consists of the expression of mental states by means of verbal utterances.

The second group rejects mentalism but reduces speech to verbal utterances on the model of physiological reflexes. The writer submits that the scientific investigation of language requires a different approach from all three mentioned.

Accordingly, in this paper is presented the hypothesis of concrete interbehavioral fields which provides a naturalistic foundation for the psychological substructure, and the superstructure of psychological linguistics.

RESUMEN

En la actualidad, los problemas lingüísticos se estudian bajo la influencia de tres tipos insatisfactorios de postulación.

Los lingüistas generales, siguiendo la tradición filológica o textual suponen que el lenguaje consiste de cosas, y así emplean un modelo químico de estructuración que se desplaza de los elementos (fonemas) a las moléculas (palabras morfema) y a compuestos sintácticos de orden complejo. Los postulados de las otras dos clases de estudiosos del lenguaje son de naturaleza más psicológica o conductual.

El primero se adhiere estrechamente a la tradición mente-cuerpo, de acuerdo con la cual la conducta de lenguaje consiste en la expresión de estados mentales por medio de manifestaciones verbales. El segundo grupo rechaza el mentalismo pero reduce el habla a expresiones verbales basadas en el modelo de los reflejos fisiológicos. El autor plantea que la investigación científica del lenguaje requiere de un enfoque diferente a los tres mencionados.

En consecuencia, en este artículo se presenta la hipótesis de campos interconductuales concretos que proporciona un fundamento naturalista para la subestructura y la superestructura psicológicas de la lingüística psicológica.

I. Language as Interbehavioral Fields

While the psychology of language has long been a well-cultivated department of psychology it has recently experienced a very laudable intensification of interest and research. Unfortunately, however, there still remains much room for clarifying and improving linguistic study in psychology. Still required is the effective differentiation between intrinsically psychological language from other things and actions blanketed under the same name, but most important is the need to amend the analysis and description of psychological lenguage performances. To achieve these ends I propose the hypothesis of Interbehavioral Linguistic Fields.

In support of this hypothesis I contend that it enables us to distinguish the complex intercommunicative and symbolizing events from word and symbol things and their structures as studied in the philological and general linguistic traditions.

To be concerned with interbehavioral fields and situations is to respect the scientific demand to derive descriptions and interpretations from observed events rather from established linguistic institutions. Within the domain of psychology careful observation reveals the differences between linguistic and nonlinguistic behavior as well as the varying traits of speaking and symbolizing performances.

Furthermore, as a matter of course, after we have isolated the types of authentic psychological language the interbehavioral hypothesis shows the way to radical departure from the historical mind-body assumptions derived from theology, and specious philosophy. In this article I describe psychological language events as definitely observable interbehavioral fields. However, before doing so I must point out some precautionary preliminaries.

Terminological Issues. Immediately upon beginning the study of linguistic events we must be aware of the possible untoward influences of the

long-established use of the term "linguistics". The use of this term may conceal the fact that the essential data to be studied are communicative and symbolic adjustments and not just words and combinations of words. It is a confusing committment to associate all the complex and varied communicative and symbolic behavior exclusively with the anatomy and physiology of the tongue. While this association may not be improper when dealing with verbo-vocal behavior, even despite the fact that much more is in action beside the tongue, in fact the entire organism, it is misleading to disregard manual, head, and other kinds of gestures, including silent speech, as well as the behavior of hearing and listening in interpersonal performances. The problem here is similar to the customary use of the term "psychology" for disciplines entirely different from those originally employing the term. While cultural circumstances compel us to use the term "linguistics," that fact should not prejudice the description and interpretation of extremely important psychological events.

Three Psychological Approaches to Language. Granting that we successfully isolate the specific events that comprise psychological language, we are still obliged to make certain that our descriptions and interpretations conform to the canons of natural science. To aid in the clarification of the basic postulates of psychological linguistics we consider briefly the three types of psychological approaches to the study of communication and symbolizing behavior fields.

A. *The Mentalistic Approach.* Speech or language, according to the mentalistic tradition, begins with an "idea" in the mind of the speaker which is then "expressed" in terms of sound produced by means of the tongue, lips, vocal cords, and other physiological processes. The sounds or air vibrations are then presumed to set up impulses in the inner ear of the listener which are conducted to a terminal center in the brain. At that point there results the mysterious arousal of an "idea" or mental state in his "mind." The mentalistic approach is well illustrated in the accompanying diagram from de Saussure (1959), Fig. 1.
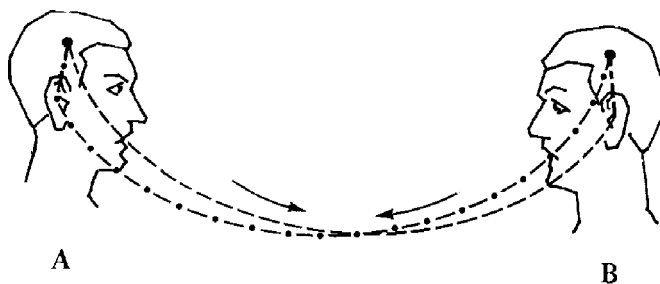

A   B

Figure 1.

De Saussure (1959) and other linguists of course follow in the footsteps of the historical mentalistic psychologists. They are not to be censured for accepting the standard views of the time. It is important, however, for current students of psychological linguistics to be aware of the completely fallacious character of such descriptions and to realize how distant they are from any actual occurrence.

B. *The Behavioristic Approach.* The behavioristic movement in psychology which was developed primarily in the 20th century also influenced both general and psychological linguistics, though not in the basic and wide reaching manner of the mentalistic tradition.

Nonpsychological students of language were enabled to adopt the neutralistic attitude that they could tacitly continue with the perennially prevailing mentalism, or like Bloomfield (1933) adopt the old view of Delbrück (1901) that language can be studied without reference to any particular psychological doctrine.[1] Consequently, general linguistics could build up a structuralistic system beginning with phonemes, words, and sentences similar to the chemist's analysis of compounds into radicals, molecules, atoms, and finally subatomic particles.

Psychologist interested in language who either ignored or rejected traditional mentalism could choose between two general types of word study. On one side they could limit their research to numerous types of association between words or verbal forms among others in various kinds of lists. On the other they could simply attempt to construct reflexological conditioning models for conventional verbal utterances.

However great an improvement it is to banish mentalism from language study, this maneuver hardly touches the problems of speech, communication, or symbolic behavior. Yet enough is known about these activities to make possible valid and significant descriptions of such events. To essay this task it is only necessary to respect the boundaries between the various aspects of general and psychological linguistics and to investigate psychological linguistic behavior by direct observation of speech and symbology in line with other branches of science. The interbehavioral approach satisfies these requirements.

C. *The Interbehavioral Approach.* Two inviolable tenets vitalize interbehavioral psychology. First the study of psychological events must be completely free from all of the traditional dichotomies like mind and matter, the mental and the physical, and so on. This applies as well to vague verbal derivatives such as "meaning", "universals", "surface structure", "deep structure" and other intangible attributes of behavior including language.

This prescription is coupled with the warning against the domination by established authority and tradition which encourages the substitution of accepted formulations for confrontable events. Applied to problems of

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1 The history of psychology is replete with the dominance of Herbatian and Woundtian dualistic psychology over the work of such linguists as Paul, Steinthal, and even sometime Bloomfield. See Kantor (1936).

speaking and symbolizing, psychological students of language should revolt against the dominant philological and literary textual traditions that language consists only of oral utterances or written words solo or in various combinations, but rather cleave consistently to linguistic adjustments. No interpretations should be borrowed from historical linguistics and imposed upon the interactions of speaking and symbolizing. All constructions should be derived from observation.

II. Interbehavioral Psychology of Language

We are now ready to analyze linguistic events on the interbehavioral plan, and at once we conform to the primary task of science, namely, to isolate a specific type of things and events for accurate and precise investigation. Hence we must separate activities properly classifiable as speaking and symbolizing from each other and both from other varying types of behavior. We begin by separating linguistic from nonlinguistic behavior fields.

Nonlinguistic Behavior Fields. Essentially, nonlinguistic adjustments consist of behavior fields in which the behaving organism interacts with stimulus objects on the basis of single mutually interacting stimulus and response functions. The accompanying diagram (Fig. 2) represents the nonlinguistic or noncommunicating field.
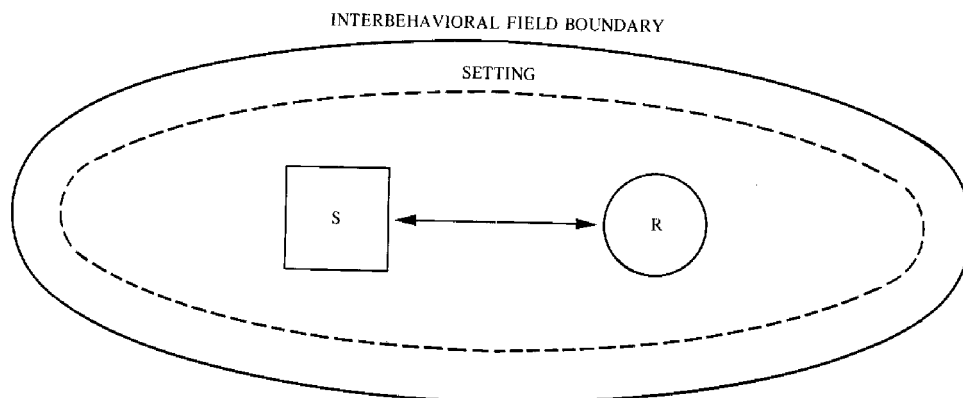

INTERBEHAVIORAL FIELD BOUNDARY

SETTING

S   R

Figure 2. Nonlinguistic Behavior Fields. R = Action of Organism; S = Action of Stimulus Object.

This type of field contrasts with the more complicated linguistic and symbolic fields as indicated in Figures 3 and 4.

Two Types of Linguistic Fields[1] . Within the linguistic domain there are two types of behavior fields. One is the intercommunicative behavior which is so well known by every body since everyone speaks ad intercommunicates with others in interpersonal situations. The second consists of making and using symbol objects of many sorts. It is highly important to observe the differences betweeen these two types of behavior fields.

In order to differentiate between speaking and symbolizing behavior it is well to describe the essential traits of the two types of language behavior in turn so the differences between them stand out clearly. First we consider the speaking or referential type of field which includes two outstanding factors.

A. *The Referential Type of Interbehavior*

Referential behavior fields differ markedly from nonreferential adjustments by their triangular form. When a person speaks he stands at the vertex of a triangle and interbehaves with two stimulus objects. One is the person to whom he speaks and the other the thing or condition about which he speaks. What the speaker does essentially is to refer the listener to the thing or aspect of it about which he is talking. Historically, this triangularity became imbedded in the *person* descriptions of grammar. *Person* in traditional language studies was divided into three phases: 1. "I" represents the person speaking; 2. "you", the person spoken to; and 3. "it", the thing spoken of. The referential field may aptly be characterized as a simultaneous bistimulational field.

The Referential Behavior Field. By comparison with the nonreferential behavior fields, the referential behavior field involves the interconnection of *two* simultaneously operating response and stimulus functions. The diagram in Fig. 3 shows the various factors in the field.

It is essential to note that the referential behavioral fields do not always include another person besides the speaker. We can talk to ourselves or to some imaginary person besides the speaker. We can talk to ourselves or to some imaginary person as well as to some object, or force. In strictly technical language this signifies that the auxiliary stimulus function may inhere in the speaking person himself as well as in some other stimulus object. It may also reside in the same object in which the adjustment stimulus function inheres, as when one speaks to someone about himself.

Referential behavior contrasts both with such overt action as picking up something and with implicit action such as reminiscing about a past event. Speech, unlike direct overt action, does not produce immediate effects in things. Speaking, however, differs from reminiscent behavior in being active accomplishment instead of passive revery.

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1 Among linguists it is conventional not to distinguish between speaking and symbolizing behavior. This results in overlooking the fundamental difference between speaking adjustments and symbolizing interbehavior.
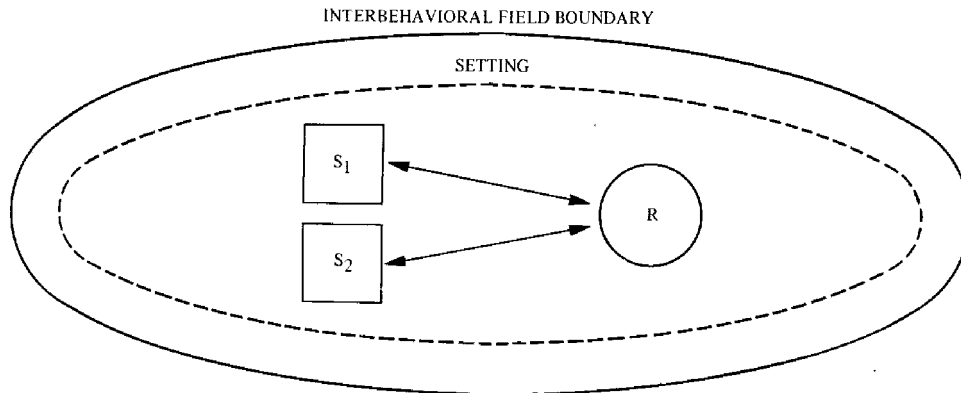
INTERBEHAVIORAL FIELD BOUNDARY

Figure 3. Referential Behavior Field. S_1 = Adjustment Stimulus Object, the Referent; S_2 = Auxiliary Stimulus Object, the Referee; R = Reference Act of the Referor.

Though linguistic behavior does not directly produce effects in things, it may, of course, do so indirectly. Instead of picking up a thing myself, I may ask someone else to do so. For this reason speech may be called indirect adjustment behavior.

Speaking or referential behavior need not be vocal. Instead of saying, "Look at that bird", we can point to it with the same effect. Entire conversations can be carried on without making a sound. Language may be entirely subvocal, or it may be manuo-gestural as it must be in the case of mutes.

B. Symbolizing Interbehavior

By contrast with referential behavior, symbolizing interbehavior is unistimulational. The slight resemblance between the two behavior segments or types of field is owing to the fact that symbolizing interbehavior entails a series of two successive behavior segments, as indicated in Fig. 4.

An object sign or signal is endowed with the function of pointing to some other thing or event. The Greek letter psi Ψ is very frequently used as a symbol for psychology, either the name or the subject. A skull and crossed bones symbolizes or stands for danger, at a railway crossing, at a high tension enclosure, or on a bottle of liquid. The awareness of the thing pointed to or the recognition of it is often spoken of as decoding, either when performed by the original symbolizer or someone else. It is clear of course that the significance function may point to positive as well as to negative behavior.
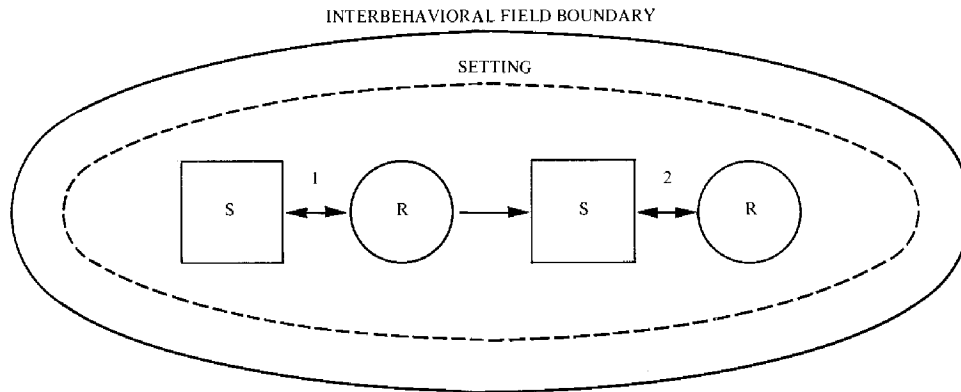
INTERBEHAVIORAL FIELD BOUNDARY

Figure 4. Symbolizing Interbehavior. $S \overset{1}{\leftrightarrow} R$ = Response to Encoded Objects, Sign or Character Functioning as Symbol. Arrow Points to Second Interaction with $R \overset{2}{\leftrightarrow} S$.

Verbal Behavior as Symbolic Behavior. It should be evident that the two types of linguistic behavior are quite different and should not be confused. This confusion, however, is extremely common when words are the symbols, with the result that referential speech is regarded as symbolic. Though this is certainly not the case, nonreferential verbal behavior in its independence of referential interbehavior is extremely important. The initiating and performing of symbolic interbehavior enable the individual to make adjustments that otherwise would be impossible.

Observe a child who is sent to get an object from the next room. Notice that he keeps repeating to himself "red book", "red book", for he has learned that unless he continues to restimulate himself he might not know for what he came. It is through such word responses operating as substitute stimuli that the performance of many actions is made possible. Such substitute word stimuli serve as behavior symbols for many objects to be acted upon and also for acts that are to be performed.

In adult life we observe the operation of such symbolic behavior in a large variety of situations —for instance, when we add and subtract. By performing such acts we keep informed as to the total we have already reached in the long column of figures we are adding. Without verbal reactions there probably would be no counting at all.

Verbal substitute actions is also indispensable for recording things and events.[2] Especially in primitive societies the glories and adventures of the

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[2] It appears quite evident that the essential mechanisms in symbolic behavior involves substitute stimulation.

group are recorded and preserved in verbal terms of song and tale. Certain duly appointed men or women of the tribe hand down from generation to generation in the form of oral tradition the records of events, and the wisdom of the tribe. Here vocal behavior serves as do written or printed materials in more complicated societies. Such recording and preservation behavior may be ranged beside the processes of speaking about the events as high points in human behavior.

Naming behavior likewise involves verbal conduct in an essential way. The vocal action in the situation serves as a very effective tool for producing a desirable and important result. Naming is a process of isolating things from each other and labeling them. It is more; it is a basis for analyzing, abstracting, and summarizing things and their qualities. Symbolic verbal behavior of this kind is an integral feature of thinking and reasoning. The view that symbolic behavior is more important in the life of persons than speech or communication signalizes the difference between the two types of linguistic behavior.

Referential and Symbolic Behavior versus Linguistic Things. The fact that the terms "language" and "symbolization" stand for much else than speech and symbol behavior suggests that we must be careful to distinguish the different kinds of subject matter. To emphasize the difference between the different kinds of subject matter offers distinct aid in appreciating the nature of psychological language. The primary mark of differentiation is of course behavior, the actions of organisms. When we are dealing with a thing, instead of a stimulus-response interaction we may be dealing with language objects, but not with psychological language.

This is true even of objects which stimulate psychological language. Thus printed or written words in advertising matter or in literature which stimulate speech are not psychological language phenomena although they may have been ultimately derived from sounds performed in actual language adjustments.

Psychological language may also be separated from things that have never played any part in linguistic adjustments. Such is the case with writings which are merely records. The chronicles of history may stimulate future generations of persons to think of the greatness and goodness of kings and nations. These materials are products of psychological behavior, but themselves are only things without any identification with speech or intercommunicative behavior, unless they should happen to stimulate someone to speak of them. But even in that case, we still must differentiate between the functions performed by organisms and by stimulus objects.

There is, however, such a thing as crystallized language-namely, dead language. Thus, nonpsychological language may be derived from language behavior, just as the wood of my table was once a living organism. When A tells B something by means of writing, the written material may be regarded as the crystallization of speech. In this sense literature is a descendant of word of mouth reference to important or interesting events.

But we must notice that these records are connected with referential language only as survivals and reminiscenses of living speech and not because they are immediate stimuli for our reading responses. Such objects may be called products of living language. They are the results of particular language adjustments, but they must not be confused with the acts which constitute the sources of their origin.

If we must use the name language for both psychological and nonpsychological language we might do well to distinguish between them by calling the former functional and the latter morphological language.

III. Characteristic Traits of Language Fields

Referential Behavior is Conventional and Metaphorical. To be effective in social intercourse speaking conduct must be conventional. It must be similarly performed by the several individuals in linguistic fields. Otherwise, the conditions essential to mutual understanding would be lacking.

This is not to overlook the individuality of speakers. As unique individuals each person reacts differently so their adjustments are varied and like all language behavior, are metaphorical. The fixity and permanance of the words in general linguistics are lacking here.

The conventional features of language are easily comprehended. Consider formal articulate speech. Whenever we speak, our action can be classified as part of some language system. It is either French, English, or Italian, etc. This means in effect that language consists of uttering certain sound patterns belonging to a particular vocabulary and subject to certain grammatical organization. Also the pronunciation must be more or less standard. Thus persons who speak a colloquial dialect in common may converse, but they will not be able to interact linguistically with persons who speak within the same language system but with a different enunciation. It is for this reason that it is sometimes said that British English and American English are two entirely different kinds of language.

Much the same situation prevails when we consider the gestural aspects of speech. These, too, are conventional modes of behavior and readily mark off the speaker of one dialect from another. The gestures of the hand, head, and shoulders are also patterned by group intercourse. Both Parisian waiters and taxi-drivers speak eloquently with gestures but they perform different gestures.

Individual Differences in Linguistic Behavior. The principle of individual differences holds for speech as it does for every other kind of behavior. Despite the general conventional character of speech, it appears that our language reactions still have this individual and personal aspect.

The conventionality of speech after all refers mostly to the way we speak, but the manner in which we make our references is not by far the whole or even the main part of the response. Besides, even the manner of speaking affords many opportunities for individual variations. Every individuals belongs to many different social groups, each of which has its own

distinctive linguistic differences. To choose our vocabulary or to slip into legal or scientific speech mannerisms gives a tone of singularity and uniqueness to one's linguistic behavior. An amusing example of such personal vocabulary is the expression of Dana, the author of *Two Years Before the Mast*, who upon returning from his brief sea-going experiences, wrote about "steering a horse". Physicians frequently report that patients at charitable clinics must speak individually of their anatomy and their ills because they never have learned any conventional way of referring to them.

The individuality of speech is further exemplified by the variations in voice quality. Some persons have clear, distinct, and even musical voices; other speak raucously, while still others have what James amusingly termed blotting paper voices. Such individual differences influence the clarity and pleasingness of pronunciation. It is not difficult to divide off those who speak distinctly and evenly from those who mumble, or discharge their words like bullets. Researches conducted by telephone engineers demonstrate that only a minimum of sound is necessary actually to reach the hearer. This fact provides ample basis for variations in the speech of individuals.

Speech style is likewise a fertile source of individual linguistic difference. Some persons speak picturesquelly, using many individual gestures and springhtly metaphors, while others speak coldly and drily as though reciting out of a book.

We all know, too, that the pathological and partially abnormal linguistic behavior of persons gives a distinct individualistic character to their language responses. We need only mention the exaggerated hesitancy, dynamic volubility, stuttering, or stammering which mark off particular language adjustments.

When we turn from the manner of speaking to the more distinctly referential phase of speech, we probably find even greater possibilities for individual differences. We must be reminded once more that language is a definite psychological adaptation. Accordingly, the person with greater experience in a particular field of human activity can say more about that field and more expertly than others. Whether or not it was even true that there were only twelve men in the world who could discuss Einstein's mathematical theories, the suggestion amply illustrates the linguistic differences between persons.

The question whether we are in conversing about certain topics or with certain people, or whether we inhibit our linguistic behavior brings us squarely in touch with the problem of individual differences.

In general, when we pay strict attention to the concrete facts of speech behavior and do not merely think in terms of its formal aspects, we find that language reactions, perhaps even more than other kinds of behavior, are subject to wide individual variations.

Nonreferential Verbal Behavior. All verbal behavior is psychological,

but it is not always referential. There is a wide gulf between genuine referential behavior and the activity of uttering sounds or words.

A intends to strike the nail squarely on the head, but he hits his finger. We must affirm that the exclamation "ouch", "damn", "oh God", are perfect verbal articulations, but they are not referential speech. Popular psychology pronounces such vocal utterances to be expressions of feelings. Whether or not this is an apt characterization, such utterances are certainly not genuine referantial behavior, but rather oral utterance.

Psychological language behavior is not merely making word-sounds. There are numerous facts that argue eloquently to the contrary. Consider one from abnormal psychology. Certain pathological persons keep repeating stereotyped verbal forms. For hours on end they continue to mutter series of words, while they keep pacing up and down their rooms. Though this verbigeration consists of definite words, we must rule it out as referential language.

We know that psychological language and vocal utterances are not identical since we can speak without performing vocal behavior. Our most intimate linguistic responses are performed in gestural terms. We speak by means of manual gestures, facial expressions, and so forth. Moreover, probably in our most authentic referential behavior, even when we do perform vocal articulations or words, we at the same time perform gestural behavior, which not only facilitates vocal speech, but also constitutes coordinate conduct along with it.

IV. Situational Aspects of Language

Linguistic behavior is performed under every conceivable circumstance. Certainly every possible kind of human situation affords occasion for speaking or symbological action. In this section we discuss a series of situations in which language behavior is interrelated with nonlinguistic performances.

Independent and Dependent Reference. Linguistic behavior is performed under every conceivable human circumstance. Every possible kind of situation affords occasion for speaking. When this behavior is intimately connected with other action we call it dependent as over against the purely referential type which is independent of other types of behavior. We distinguish four ways in which speech is connected or associated with other performances.

a. Mediative Speech. When one says, "Please sweep my room", one secures the sweeping performance indirectly by the language response. This is undoubtedly the most intimate connection of speech with other kinds of action. It is this sort of instrumental function, in which language is connected with some kind of work or achievement, that best justifies the term mediative speech.

b. Accompanying Speech. Referential reactions may be performed as essential or non-essential accompaniments of other types of performances.

When two persons are lifting a heavy object, they not only lift and bear weight, but they may say to each other: "It is getting heavier." A single person, too, may be encouraged by telling himself that the work he is doing is coming nicely.

c. Succeeding Speech. Now that's done", is a language reaction we frequently perform after some uncongenial task has been finished. All references in which we glorify or bewail some event that has occurred are like-wise examples of the succeeding form of linguistic reference.

d. Substitute Speech. The poor woman who calls out that her child is perishing, instead of herself rushing into the burning building to carry out the child, illustrates the substitute type of language. Similarly, the alibis for action we failed to perform fall into the same class.

e. Purely Referential Speech. Though referential speech may be entirely independent of other action it may be just as necessary or important as dependent speech. Perhaps it is equally essential to inform somebody of some kind of event as to tell him to do something. When we recall that much of our education consists of discussing things and events, we need say nothing more about the importance of referential speech. However, since referential speech ranges from the frivolity of gossip to the profundity of scientific and philosophical discussion, we see that necessity and importance merely illustrate, but do not characterize, independent speech.

There are many reasons for purely referential speech. Such behavior may be performed out of pure sociality, or we may converse because we like to talk to some person, or because convention demands it. Then, too, it may amuse us to perform this sort of behavior. In still other cases we refer to some object because we are interested in it, rather than in the person spoken to or in our own behavior.

Expressive and Intercommunicative Speech. Speech behavior is usually interpersonal. In conversation persons mutually interact with each other, so that the responses of one person become the stimuli for the other and vice versa. Such language is *intercommunicative.*

Speech behavior, however, need not estimulate responses in other persons. One can speak to an individual who is absent. Speech of this form we call *expressive.* This type need not be further discussed, but communicative language requires additional analysis and description.

In studying communicative language we must differentiate between the referor and referee types. The former constitutes linguistic action which serves as a stimulus for the language behavior of another person. Referee language, on the other hand, is a definite response to referor language, either of the vocal auditory type (speech heard) or of the graphic visual form (speech read).

All kinds of speech can be of the referor type. Vocal auditory speech consists of making sounds by means of our vocal apparatus. Then there is a whole set of activities that we call vocal gestures, such as tonal emphasis

and accents, and in general what is popularly described as vocal expression.

In addition, there are gestures which are non-vocal that range from subtle facial gesturing to mimetic movements of the arms and hands, including shoulder shrugging. Bistimulational referor responses are also performed by writing and in general making signs and symbols of all sorts. If we actually can say anything with flowers or stamps we may regard such behavior as likewise referor language.

V. Evolution of Linguistic Interbehavior

Since nothing exists or acts except what has been developed in fields of particular circumstances, the same principle must apply to the evolution of linguistic capabilities and performances. Accordingly, to observe the circumstances attending the initiation and growth of linguistic adjustments not only affords valuable insights into the nature of speech and communication, but also the nature of psychological adjustments in general. Furthermore, because of the constant and copious linguistic behavior such behavior throws light on the nature and growth of personality and its changes.

The study of language development, of course, is no easy matter. In the first place, linguistic behavior development is not only a long drawn out process but also enormously complex. Moreover, since it is performed only upon specific occasions the child must be kept under constant observation.

Despite the difficulties, psychologists are producing considerable literature on the subject of speech development. These writings are of two general types. The first consists mostly of word studies. Parents and other observers report the age when their children first utter words, when they make sentences, how long the sentences are, how they can be divided up according to the classification of the conventional parts of speech, and how boys and girls compare in their lenguage development. A variation of this type of study departs from observing the development of individual children to consider numbers of children at once. Suitable stimulation in the form of questions can be offered to many children of different age groups, home status, etc, and in this way a great many comparative data can be collected in a relatively short time.

A second type of study consists of observing and recording children's conversations with each other and with adults. Both types of study are best treated as integrated fields of interbehavior.

A quickly noticeable paradox is presented by the conventional studies of linguistic behavior in children. The general emphasis is upon words and word combinations and the organocentric development of children. In this connection we notice the erroneous notion that language development is simply a function of growth or maturation. Actually, language develop-

ment is rather a complex adjustmental process which, like all psychological behavior, is dependent upon a number of conditions.

What are lacking for the understanding of the intrinsic nature of language are the surroundings to which the growing individual is inevitably and constantly adjusting itself. It is the adjustmental principle that can solve numerous problems. For the precise form of linguistic behavior, account must be taken of the child's family, the kind of home in which he grows up, and the number and kind of his contacts with adults and children. These and many other conditions exert their effects upon the course of the child's language development and later performance.

Taking the adjustmental circumstances into consideration constitutes the primary emphasis of the interbehavioral approach to psychology. Evidence favoring the interbehavioral approach is found in the observation that language adjustments are much more subtle and begin long before children perform highly coordinated vocal or other conventional action. It is for this reason that the view has developed that language starts not as words but as gestures. That the language behavior of infants begins before they perform conventional verbal action is indicated by the fact that even at fairly advanced ages children often speak their own vocal languages so that nurses and parents must learn them.

Further evidence of the interbehavioral aspect of language is that children intercommunicate by means of such generalized action as gestures of various sorts: crying, head shaking, tugging at the clothing or hands of a nearby person, etc. Later, vocalizations appear which become the basis for the elements of verbo-vocal utterances. It is, however, wrongly implied in this description that gestures, vowels, consonants, words, and sentences develop in fixed succession. There is definitely apparent the supposition that language or speech consists of the conventional utterances of a formal dialect.

Language as referential behavior undoubtedly can be most satisfactorily studied by observing the spontaneous conversational or interpersonal behavior of children. One finds immediately that formal utterances are subordinate to the adjustmental phase of speech behavior, light is also thrown on the question whether children perform utterances independently of referees but simply as expressive behavior. Certainly much of the behavior of children is egocentric and this is true of speech as well as other types of adjustments. But this is not to be taken as inevitably characterizing the speech behavior of children.

Conventional Word Utterances Versus Linguistic Adjustments. Within the language domain we should differentiate between development of the capacity to the development of conventional word usage and the perform referential or bistimulational adjustments. The two developments are quite different. To a great extent, conventional speech requires a learning procedure while speech adjustments are developed casually in adjustmental situations.

Children develop conventional verbal language as a hierarchy of

behavior acquisition. Most psychologists agree that the first level consists of learning to name things conventionally. This is to a great extent a process connecting articulated words with objects. The child is faced with a problem of pronunciation, to produce articulate words that sound the same as those of its elders. Psychologist differ as to the details of this development. Word actions consist of entirely new behavioral configurations developed by merely repeating what other persons do. Certainly, conventional language responses are already performed by the parents. The child learns to do as others do in linguistic situations exactly as he does in the craftsman situation when he uses a hammer instead of a chisel to drive a nail. While all behavior development must occur in terms of the child's actions, such actions are not the mere elaboration of his physiological functions (vocal reflexes), but rather general interactions, with environing things and acts as stimulus objects. The same processes of interaction operate in the development of more elaborate patterns of conventional referential responses. The child builds up responses as phrases, sentences, idioms, and series of sentences. All this language behavior is at first definitely of the family type of dialect but later becomes influenced by the dialect of the larger units of the community and nation.

Genuine language adjustments can be performed in many ways. The utterance of conventional words and phrases is only one. Another striking way is indicated by the case of the son of the German psychologist Stumpf who for two years stuck to the private vocabulary which he had himself developed.

"With these words he formed in royal fashion all possible word compounds, long sentences, and series of sentences giving entirely the impression of a foreign language." This type of language adjustment illustrates a middle stage between purely personal forms of language adjustment and the completely conventional patterns of dictionary words.

In the development of conventional language the child's action is holophrastic. The utterance of single words constitutes complete adaptation. It is well known that children develop conventional speech by way of holophrastic utterances. When a child says "hat" this so-called word is equivalent to what is conventionally called a complete sentence. At this stage it is the child's way of saying, "give me the hat" or "take the hat", as the situation indicates. Observe, therefore, that when the child says "hat" or "dog" it is not because he learns nouns first or in greatest number, but rather that his language adjustments from the standpoint of words are immaturely undifferentiated and unelaborated.

Varying Theories of Linguistic Evolution. So complicated and so important is language in the lives of human organisms that it is not surprising that great variation marks the theories as well as the observational approaches to language development.

On the whole, the prevailing approach to language is influenced by two considerations. On the theoretical side, speech behavior is regarded as symbology. Words are looked upon as symbols of ideas or things, while on

the investigational side the conditioning approach influences the conduct of observers. Both aspects are antagonistic to the adjustmental nature of speech and symbolization.

Owing to these two disturbing influences the conventional approach to linguistic evolution is to interpret it as primarily conditioning.

To illustrate, the child is shown an object and repeats the word that is spoken in connection with it. A glass of milk is pointed to and the nurse says "milk", which the child repeats. After a certain number of such stimulus presentations and vocal repetitions the child says the word whenever the object is presented.

But where do these word acts come from? Of one thing we may be certain. They are not the natural unfolding of laryngeal processes. Rather, they are developments from contact with speech performances of other children and adults. Conventional language behavior exists before any particular child is born. In general, although these actions are the inevitable performances of a biological mechanism or organism they are cultural phenomena.

Linguistic learning is not at all limited to conditioning. Most of the development of referential speech consists of the original S↔R coordination type. For it is clear that the child must connect verbal or gestural references with the original stimulus objects in the first place. Since theoretically all conditioned learning must be preceded by the original S↔R process it is not unlikely that much linguistic learning consists of both processes at once.

Other learning forms are not excluded either. On the whole we must regard the development of language as a complicated process in which all the various forms of learning cooperate with uncontrived behavior acquisition to enable the individual to adapt himself linguistically.

VI. Linguistic Interbehavior and Verbal Institutions

Throughout this article we have been constrasting the performance of linguistic and symbolizing adjustments with verbal things. In this section we explicate the nature of verbal things as institutional entities and indicate their varying structures and functions with relation to linguistic behavior.

Linguistic Institutions Described. Institutions may be described as things, events, and conditions that are instituted and persist for a longer or shorter time, and constitute the behavioral perspectives of individuals and communities. Linguistic institutions assume many forms that can be scaled from actual physiochemical objects to the forms and styles of performing referential behavior which are unique to the systems to which they belong. Thus individual language adjustments are instituted as English, French, Chinese, Russian or other language institutions.

Now these language systems exemplify variant institutions with intricate histories of growth and development including contacts with other systems involving mutual influences that have changed and modified each

other. Also, while the characteristics or traits of the systems as indicated by the vocabularies and grammars determine the style of an individual's speech, there is a feedback effect such that the system itself is modified. Accordingly, linguistic systems or institutions display constant changes despite the factors that make for stability and lastingness.

On the whole, linguistic institutions consist of verbo-vocal types of speech and therefore the stabilizing influence upon them is exercised by written transcriptions. The worlds and combinations of words in sentences serve as fixations of living language but they can only operate as brakes that slow down changes but do not exclude them.

So close in a literate society are writing and reading with speech behavior that they appear to be similar or even identical, but actually confusion is impossible since language things and language behavior can never be identical. The great difference between these two is of course that speech consists of behavior, action that can never be matched by static things though the latter are products of past actions.

When we turn to non-verbo-vocal speech we face the same general problem concerning the relation of specific instances of personal adjustment as over against the language system or referential institutions. We refer here of course to gestural speech which may or may not accompany verbo-vocal adjustments. Complete referential adjustments are performed entirely by means of manual or total bodily gestures. It must be noticed, however, that because of the absence of tangible word or sentence things as in verbo-vocal speech there is an emphasis on the individual's own behavior as over against institutional styles; there is still only the minimization but not the abolition of institutional influence. The gestures of persons from different cultural groups, Frenchmen, Italians, Chinese, or others, display the stylistic features of the groups. They maintain the unmistakable resemblance to the group institutions.

The great difference between linguistic institutions and linguistic behavior is clearly reflected in the descriptions made by psychologists and by general linguists of a simple situation. The former describe an action on the part of a particular person with respect to a particular object, while the linguist converts the living situations to words. An example follows.
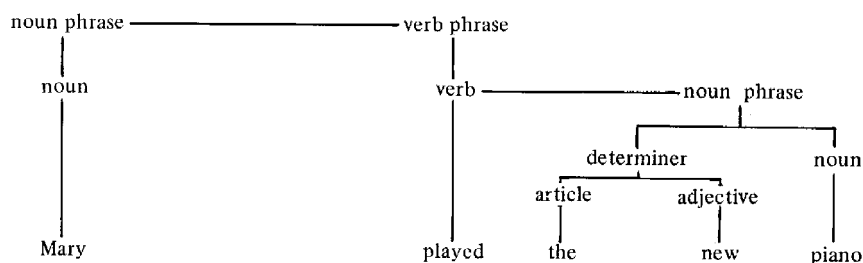
The Situation

John enters the home following sounds that emanated from the music room, which contains a new piano. He asks who played the new instrument. James answers that it was Mary.

The Psychological Description. It is indicated that James said, "Mary did", or just, "Mary".

The Linguistic Description. The linguist formalizes the situation and reduces it to a standard set of utterances represented by conventional words or parts of words making up a sentence as follows:

The Lingustic Sentence

```
noun phrase ──────────────── verb phrase
    │                             │
  noun                          verb ──────────── noun  phrase
                                                   │
                                          ┌────────┴────────┐
                                      determiner          noun
                                     ┌────┴────┐            │
                                  article   adjective       │
                                     │         │            │
  Mary                            played      the         new      piano
```

Clearly this schema is an arbitrary interpretation of sentence structures which are only distantly related to actual speech adjustment. Moreover, while such interpretations may be made without reference to any basic psychological activity, psychological linguistic behavior is frequently performed without any connection with the supposed rules of conventional grammar. Verbo-vocal actions need not be a part of the behavior adjustments; they may be gestural or if verbo-vocal they can be partial, fragmentary, and altogether at variance with the prescriptive systematization of the conventional schemas that students of linguistics construct.

VII. Recapitulation

This paper stems from the conviction that while psychologists have long included language study in their curricula, there remains still the great need to improve linguistic studies.

Outstanding among the desiderata is to differentiate between psychological data and the aspects of language derived from the philological and general linguistic traditions. The latter, of course, are based upon texts produced in various language systems, and the constructions built upon arbitrarily standardized speech. Plainly, psychological linguists should be sharply separated from the forms and other structures pertaining to historical and comparative linguistics.

A no less important amendment to the psychology of language is to make certain that the basic axioms conform to the rules of natural science. There are three prevailing systems: (1) the mentalism of traditional dualism; (2) behavioristic reflexology; and (3) the interbehavioral field approach. It is the interbehavioral approach that is the foundation of the present exposition.

Language, according to the interbehavioral view, consists of a definite type of adjustmental field. Within that isolated domain there are two distinct varieties of linguistic adjustment which we name the referential and the symbological.

Following a description of each of the two types of psychological language emphasis is placed upon the contrast between language behavior and the language things of the linguistic tradition.

Concerning the referential type of language of which live interpersonal intercommunication is the most representative example, the distinctive trait is the presence in the language field of two stimulus objects, the referee and the referent.

Symbological fields comprise a succession of two intersubreactions, the first to an encoded stimulus object or symbol, and the second to a decoded or symbolic stimulus object.

With the delineation of the essential features of psychological linguistic behavior comparisons have been made with the *things* of historical linguistics. Prominent sections, too, have been devoted to the evolution of speech and symbol behavior in the growth process of individuals as the preparation for later language adjustments.

Two important topics conclude the exposition. The first is the situational locus of speech. Obviously language fields are most frequently associated with other types of adjustment. And finally, consideration is given to the contrasting items of actual adjustments and the structural institutions erected to describe words and word systems on various levels.

REFERENCES

Bloomfield, L. *Language*. New York: Henry Holt and Company, 1933.
Delbruck, B. Grundfragen der Sprachforschung. (Strassburg): Trübner, 1901.
De Saussure, F. *Course in General Linguistics.* New York: Philosophical Library, 1959.
Kantor, J.R. *An Objective Psychology of Grammar.* Chicago: Principia Press, 1936.