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Glossolalic Speech from a Psycholinguistic Perspective

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Received September 30, 1971; revised June 30, 1972

This is a psycholinguistic study of glossolalia produced by four speakers in an experimental setting. Acoustical patterns (signal waveform, fundamental frequency, and amplitude changes) were compared. The frequency of occurrence of vowels and consonants was computed for the glossolalic samples and compared with General American English. The results showed that three of the four speakers had substantially higher vowel-to-consonant ratios than are found in English speech. Phonology, morphology, and syntax of the four glossolalic productions were analyzed. This revealed two distinct forms of glossolalia. One form, which we called "formulaic" tends towards stereotypy and repetitiousness. The second form, which we called "innovative" shows more novelty and unpredictability in the chaining of speech-like elements. These contrastive forms of glossolalia may relate to dimensions of linguistic creativity. Precise correlates with personality patterns, educational backgrounds, psychopathology, and other sociolinguistic variables remain to be explored.

INTRODUCTION

Glossolalia is a form of speech behavior occasionally associated with religious experience, and its significance has been hotly debated for centuries. Our purpose in this paper will be to discuss glossolalia as a language-dependent psychosocial phenomenon. Is the term "language" at all appropriate when applied to glossolalia, and if so, how does glossolalia differ from other language forms? In answering this question, we intend to show that it seems

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necessary to distinguish glossolalia that is stereotyped and repetitious from glossolalia that has novelty and variations. Such a distinction might have a bearing on the linguistic structure of "inspired" verbalization in general.

A PSYCHOLINGUISTIC CHARACTERIZATION OF GLOSSOLALIA

The Semantic Component

Glossolalia (and nonsense language in general) can be distinguished from real language by virtue of the apparent impossibility of assigning any objective meaning to its phonological strings. Recognizing that "there is no relationship between the form of the glossolalia segments and the form of the English interpretation," Wolfram (1966) concludes that "organizational control is turned off at the semantic stratum." Samarin (1968) also believes that the absence of a semantic level of organization in glossolalia is the most important characteristic separating it from real language.

Undoubtedly the vast majority of the "meaningful content" of glossolalia is a private meaning derived from the participation of the speaker in a form of religious experience (May, 1956). Linguistic analysis does not enable an investigator to penetrate into this level of meaning, which can only be understood with reference to the personalities of the speakers and the social conditions under which they produce glossolalia. Moreover, in real language as well as glossolalia, intonation is capable of manifesting a variety of attitudinal dimensions which merit investigation. However, such dimensions may be treated as external to the semantic component, when narrowly defined.

Goodman (1968) seeks to include under the heading of glossolalia real language utterances with "a very high pitch and pulse-frequency rate." We object to the use of this acoustic description as a criterial attribute of glossolalia on three grounds. First, the acoustic terms used by Goodman are never given precise definition. Even if we grant a broad interpretation of notions such as "high pulse-frequency rate," we will not be able to include much of what has been called glossolalia in this new framework. Many glossas show a monotone pitch of low to moderate frequency and an irregular or moderate pulse-frequency rate. Second, the nearly complete absence of semanticity must be considered as of greater typological importance than the possible similarity between intonational patterns in two speech forms. Third, the traditional definition of glossolalia has recently been precisely defined by Samarin (1972) as, "a vocal act believed by the speaker to be language and showing rudimentary language-like structure but no consistent word-meaning correspondences recognizable by either speaker or hearers."

Syntactic Structures

Samarin (1968) believes that in analyzing glossolalic speech it is possible to isolate macrosegments and microsegments that are comparable to units in natural language. He admits that "Glossic words, it must be understood, are difficult to determine." But he believes that accentual clues and slight pauses give sufficient information for such a division. Our data basically support Samarin's finding that "there is in each glossa a kind of micro-segmental syntax similar to that of natural language." We have noted that regular patterns are present in glossas which may sometimes be characterized as syntactic and sometimes as morphological, but the lack of semanticity makes both characterizations inaccurate.

Sociolinguistic Aspects

The occurrence of glossolalic speech in a nonreligious context may raise questions regarding the social appropriateness of the speaker's conduct. Occasionally a diagnosis of mental or emotional illness has to be considered (Casey and Pattison, 1967). For example, there may be a superficial similarity between glossolalia and jargon aphasia or schizophasia, two pathological speech forms associated with severe psychopathology. But in these instances additional signs and symptoms of disease are usually disclosed. The aphasic has neurological findings of reflex changes and sensorimotor disturbances. The schizophrenic shows disordered thought processes, peculiar emotional reactions, and generally withdrawn or bizarre social behavior.

Of critical importance is whether the subject is able to speak normally when requested to do so. We consider glossolalia to be pathological only when a patient seems to lack self-control, cannot limit his nonsensical behavior to moments when it is expected or tolerated by others, or speaks in this way for the sole purpose of annoying or confounding the listener. This question has recently been discussed at greater length by Gill (1971).

THE STUDY OF GLOSSOLALIA

Sampling of Speech

Through the cooperation of a Protestant chaplain we obtained the tape-recorded glossolalic speech of four university students. An informal interview was carried out by one of us⁵ with each subject before and after

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each glossolalia recording was made. Several glossolalia samples were taken from each subject, some of the samples being 5 to 6 min in length.

All speakers had recently become "spirit-filled" Christians and were active in religious groups on campus. All of the subjects interviewed emphasized that speaking in tongues did not require a stupor or trance state and that it was a phenomenon they could control. This fact was further emphasized during the recording session, as the subjects consciously and casually switched from glossolalic speech to natural language and back again as they desired.

Analysis of the Data

Tape-recorded interviews were analyzed for patterning on a syntactic and a phonological level. The first stage of this analysis involved the writing of a phonetic transcription using notation as described in *Principles of the IPA*. For each speaker the various syllable forms were noted and their frequencies tabulated. A phonetic transcription appears underneath the five-line display (see p. 16).

Syntactic analysis was possible for Speakers 1 and 4. The grammar written fulfills the general requirements for generative grammars. Since there were no definable words, there is no reliance upon semantic information.

The stretch of glossolalic phonation produced between two pauses in which breath is taken may be called a breath group. Although this unit can be objectively defined, it does not bear a one-to-one relation with the glossolalic "utterance" or "sentence." In the case of Speaker 4, a breath group may contain several repetitions of a basic pattern with varying degrees of modification. Although this speaker breathes with great regularity, each respiration does not isolate single utterances. Speaker 1, on the other hand, takes a breath at the end of what might be judged as an utterance on syntactic and intonational grounds. Speaker 3 also illustrates a correspondence between breath group length and utterance length perceived upon intonational and syntactic clues. However, the breaths of this speaker do not occur with the high periodicity of Speakers 1 and 4. Speaker 2 is the only subject producing breath groups of widely varying length. Within breath groups, pauses are rare for all speakers except 2. The end of an utterance within a breath group cannot be perceived by a pause of significant duration. Nor can the "glossic words" discussed by Samarin (1968) be clearly separated out through pauses in the data we have recorded.

In general it appears to be impossible to state a discovery procedure for glossolalic grammars. In practice, we find that the presence of "recurring partials" or phonological strings of relatively constant shape is a central clue for analysis, and that information from breath groups and pauses is secondary and occasionally misleading.

Results

Syntactic Analysis

On the basis of the following criteria it was possible to observe two distinct forms of glossolalia produced by the speakers. One form, which is called *formulaic*, tends toward stereotypy and repetitiousness. The other form, called *innovative*, tends toward novelty and unpredictability. It is our impression that the two forms differ along a dimension of linguistic creativity. A given speaker might well command each of these styles along with other linguistic and pseudolinguistic styles.

The speakers of formulaic glossolalia seem to utilize a remarkably simple grammar, which moreover is closer in structure to a poetic form than to the customary phrase structure of language. For Speaker 1 an utterance consists of a number of repetitions of the form: Verse + Refrain

Verse -----	e vεno	A
	ftavo	B
	vorɔftə:	C
Refrain -----	kare	D

The peculiarity of this grammar is that the sequence of verses is determined as A - B - C - B producing utterances of the shape AD - BD - CD - BD and no others. The utterances of Speaker 4 display a more complex pattern in which an Initiator is followed by a number of repetitions of Verse + Refrain.

Initiator ----	ke	
Verse -----	kirias	A
	stori kontræs	B
	stefi kontræs	C
Refrain -----	de (fraeɔ, kosde)	D

Unlike Speaker 1 who possesses a fixed sequence of verses, Speaker 4 evidences the order characterized by the pattern: (A) + Alternation Sequence. The Alternation Sequence contains alternating B's and C's repeated up to the limit of the breath group. Either verse may begin the sequence. [This subject (4) was a Greek major at the university, had a background in French, and was aspiring to learn Hebrew.]

Since these grammars are based on small fragments of performance, they fail to even approximate the full glossolalic competence of these two speakers. However, they do serve to contrast the structure of *formulas* which must be incorporated into that competence with the structure of real language utterances and innovative glossolalic sequences. The vocalizations of the other speakers defy characterization through a simple structural description. We suspect that the apparent complexity of form may be attributable to:

1. The presence of syntactic structures taken over from English or some known foreign language. Thus Speaker 2's

na fo ne ələ sɔn də mi krəi

suggests transfer of a Romance structure to glossolalia. (She had recently had 2 years of German language classes and earlier had acquired a background in Latin.)

2. The utilization of a complex pattern of formulas.
3. Actual absence of syntactic forms in the presence of innovative morphological behavior. The marked presence of one or more of these factors determines innovative glossolalia.

None of the speakers recorded by Wolfram (1966) make use of such formulaic glossolalia. However, the speech of several members of the St. Vincent Island Streams of Power congregation and of the Mexico City Apostolic Church gathering, as presented by Goodman (1968), show a similar adherence to formula. Some of these speakers are apparently limited to the repetition of a very small set of syllables, some syllables being repeated up to six times. In others, such as Goodman's Speakers 1, 2, 3, 5, 10, and 11, the production seems to be governed by a syntax similar in complexity to our subject 1. However, Goodman's subjects 4 and 6 (a Dutch evangelist) and all eight of the speakers recorded by Wolfram demonstrate glossolalic behavior more similar to our subjects 2 and 3 in regard to the high level of innovation on the syntactic and morphophonemic level.

In our data for Speakers 2 and 3, the speakers with an innovative style, we have detected to some degree the phenomena of repetition, reduplication, triplication, rhyming, and alliteration noted by Wolfram and Samarin in their attempt to relate glossolalia to the general category of expressive language. Similarly, we have noted the morphological alternations in innovative glossolalia which, in turn, are related to these various "expressive" effects.

For example, the speech of Speaker 2 is rich in such expressive forms. Breath groups 7, 9, 11, and 12 begin with repetitions of groups of two or three introductory syllables. Breath group 3 shows a nicely executed rhyme scheme. Alliteration of n's is common throughout. Several word forms appear in a variety of alternation shapes:

Shape 1	Shape 2	Shape 3
fa:ndiā	tanie	ti - ni
sand'e	t'ania	ti ni a
fan de	kania	p 'a ti ni
ta : ndiā	karia	
sa : 'ne		
sane		

Also, a few syllables seem to be frequently used before larger patterned alternation groups as if they served a modifying or other dependent role:

mi	de
la	ya
na	

Apart from the general characterization of alternation shapes and dependent preceding syllables, little can be said about order regularities in this glossa. However, there are many syllable groups which are not altered in this corpus, but which may well be members of on-going alternation patterns in the larger framework of her total use of glossolalia. Even so, the freeness of ordering and the blending between alternation shapes in syllable groups such as *kantinia* which mixes shapes 2 and 3 is notably different from the formulaic samples. Here a certain core of forms is present, but this core continually undergoes development and elaboration.

Speaker 3 illustrates innovative behavior the most clearly. For example, breath group 2 is built upon alternation of the forms:

mɛrɛ:fə
pəre:sa
fəde:fə

In the alternation of this form several features are held constant, including length and prominence of the vowel of the second syllable, sibilant quality of the third consonant, and labial articulation of the initial consonant. On the other hand, parameters such as nasality, vowel height, and articulator vary. Again, in this breath group, we find the decrease in variety at the end of breath groups noted by Wolfram; here the standard closing form is an /a/. Also in this group, we see use of connectives, in this case /di/. Several other patterns vary in interesting ways similar to the pattern just observed:

k ə r ɔ · st	fa rofə di
k ə r ɔ fa	fə rəitsi ana
k ə r ɔ : sa	pəru'fiani
k ə r ɔ : sa	pəru'fiana

Despite the richness of pattern in this speech, it does not seem possible to write rules describing order regularities. If the phonological form of the alternation shapes is free, word order is even freer.⁶

⁶Investigating the babbling produced in one day by a 13-month-old child, Gruber (1966) found that utterances consisted of syllables beginning with a non-Grave segment followed by a Grave segment. Gruber believed that the child began the utterance with a certain degree of markedness and increased this level in subsequent syllables. This ludic behavior corresponds closely with the pattern of morphophonemic alternations discussed by Wolfram and also present in our data. Of course, the patterns of the child are typically less extensive and less rigid. Nonetheless, the tendency to manipulate various parameters of sound segments, keeping other parameters constant, is present in both forms of behavior.

Goodman (1968) characterizes the intonation pattern of glossolalia as possessing a "threshold of onset, a rising gradient of intensity, a peak and a rapid decay." She believes that this characteristic pattern indicates that "glossolalia is a trance-produced event of phonation." Apart from the question of the trance basis of this behavior, we may question her characterization of intonational curves in glossolalia. Evidence produced instrumentally (Fig. 1) shows that pitch may sometimes vary extremely little. If peaks of signal strength, pitch, or intensity do occur, they occur more frequently in a position early in the breath group, rather than late as Goodman suggested. Our data do not substantiate her claim that all "pauses" must begin with a consonant or glottal stop; indeed, glottal stops are nearly totally absent in our data.

A comparison of the pitch levels of Speakers 1 and 4 with the other speakers shows that, in our sample, speakers of glossa which are characterizable as *formulaic* on syntactic grounds and which contain a minimum of *innovative* morphological behavior also evidence minimal pitch variation across their performance (see Fig. 1). On the other hand, speakers of *innovative* glossas not only show more irregular breath group length and pause distribution (see p. 12) but also demonstrate more pitch variation. The cooccurrence of such features on separate linguistic levels suggests that the characterization of glossas as *formulaic* or *innovative* isolates a fundamental stylistic dimension.

The syllable structure of the four speakers is summarized in Table I. This syllabification was produced by attaching medial consonants to the following vowel and splitting medial clusters between the enclosing syllables.

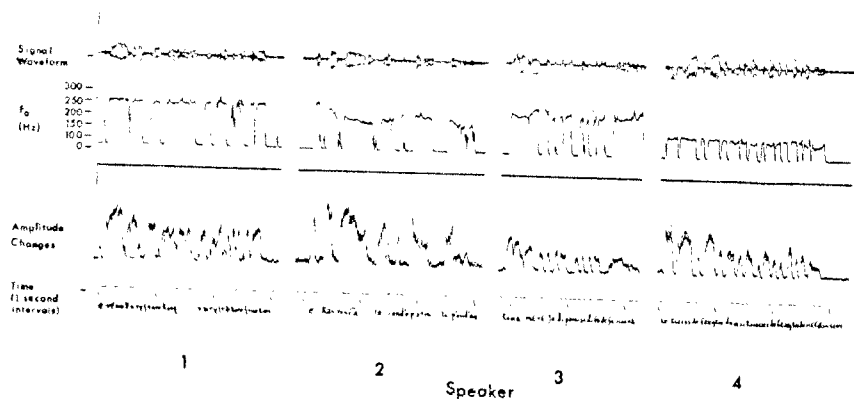


Fig. 1. Instrumental analysis of glossolalic speech, showing total waveform of the signal (top line), fundamental frequency, variations (second line), amplitude variations (third line), and 1-sec intervals (bottom line).

Table I. Syllabic Structure of Speech of Four Glossalalic Speakers

	1	2	3	4
% of CV	77	77	83	34
VC			2	5
V	6	10	2	
CCV	17	1		17
CVC		12	11	22
CCC			1	
CVCC			1	
CCVC				22

Table II. Frequency of Vowels to Consonants in Four Glossalists and in General American English

	1	2	3	4	English (Hayden, 1950)
Vowels	48	48	48	37	37.4
Consonants	52	52	52	63	62.6

Speaker 1 uses only one consonantal cluster /ft/, but use of this cluster occurs in 17% of all syllables. Speaker 2 once uses the initial cluster /kr/. However the 12% of CVC syllables are mostly syllables ending in /n/, then followed by /d/ and in one case /t/. Speaker 3 uses quite a variety of clusters, mostly with sibilants or nasals: /ts/, /st/ (five occurrences), /ft/ (three occurrences), /ns/, /nz/, /sd/, /sl/, /nm/, /kb/, /frf:t/. Speaker 4 has the following clusters: /st/, /fr/, /nk/, and /ntr/. The frequency of vowels to consonants can be seen in Table II.

There is good reason to question the automatic characterization of sounds of glossolalia as derivations of English phonemes, if we remember the degree to which distinctive features may vary with apparent freedom in glossolalia. In order to assess the degree to which glossolalia is derivative of the speaker's native language or his second languages, one might examine the closeness of fit between glossolalia of English speakers and English and two other nonrelated languages.

Analysis of the phonological characteristics of glossolalia has usually been concerned with the type and frequency of the phones used by each speaker (e.g., Jacquith, 1967). The problems of phonemicizing glossolalic speech relate principally to its nonsemanticity and the impossibility of the application of a minimal pair test. Isolation of syllables is no more difficult in glossolalia than in an unknown foreign language, inasmuch as such isolation proceeds independently of considerations of meaning.

Discussion

In the course of this study, glossolalia as a form of speech has been characterized along a number of linguistic dimensions. Specific attention was focused on the possibility of distinguishing at least two basic styles or varieties of glossolalia: formulaic and innovative. It was shown that these styles differ in their characterization in syntactic, morphological, and intonational terms. While we have some descriptive data about the personal backgrounds and language training of the four subjects analyzed, the psychosocial origin of style differences in their glossolalia has not been investigated. Equally important as the characterizations of varying forms of glossic behavior is the creation of a basis for a typology of speech behaviors which should place glossolalia in proper relation to related forms.

In many respects glossolalia differs from other forms of nonsensical speech behavior and should be considered a unique psychosocial phenomenon (Casey and Pattison, 1967). Somniloquy, for example, may be quite coherent, and when occurring during rapid eye movement sleep has content that is 80% concordant with wakeful recall (Arkin *et al.*, 1970). Interjections may well be considered as linguistic since both their phonological form and their semantic form are determined, although they enter into the syntactic system only marginally, if at all. Those ejaculations which are inarticulate cries may well be excluded from both language and nonsense language on the basis of their lack of phonological, semantic, or syntactic structure. The wails of the entranced members of the Umbanda spiritualist cult should similarly be excluded from both language and nonsense speech.

On the other hand, glossolalia is only representative of a group of phenomena which do not display the property of semanticity but yet maintain phonological structure in some systematic sense. We are interested in establishing linguistic and paralinguistic criteria for other nonsemantic speech forms, in particular the utterances of emotionally excited persons in the throes of mystical or transcendental states of altered consciousness. Such information may be useful from a clinical standpoint and also for better understanding of the relationships between speech and emotive soundmaking.

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