

# Glossolalia as Learned Behavior: An Experimental Demonstration

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Sixty subjects listened to a 60-s sample of glossolalia (defined to them as pseudolanguage) and then attempted to produce glossolalia on a 30-s baseline trial. Afterward, half of the subjects received two training sessions that included audio- and videotaped samples of glossolalia interspersed with opportunities to practice glossolalia. Also, live modeling of glossolalia, direct instruction, and encouragement were provided by an experimenter. Both the trained subjects and untreated controls attempted to produce glossolalia on a 30-s posttest trial. About 20% of subjects exhibited fluent glossolalia on the baseline trial, and training significantly enhanced fluency. Seventy percent of trained subjects spoke fluent glossolalia on the posttest. Our findings are more consistent with social learning than with altered state conceptions of glossolalia.

Glossolalia (i.e., speaking in tongues) is vocalization that sounds languagelike but is devoid of semantic meaning or syntax (Samarin, 1972). In the Christian tradition this vocalization pattern is associated with the ideas of possession by the Holy Spirit and communication with God through prayer or prophecy (Samarin, 1972). Some scientific investigators conceptualize glossolalia as the product of an altered or dissociated state of consciousness (cf. Goodman, 1972), whereas others view it as symptomatic of psychopathology (e.g., Lapsley & Simpson, 1964; Stagg, Hinson, & Oates, 1967).

The available empirical data fail to support either of these hypotheses. For example, both ethnographic observations (Samarin, 1972) and experimental findings (Spanos & Hewitt, 1979) indicate that glossolalia can occur in the absence of kinetic activity, disorientation, and other purported indexes of trance, and that experienced glossolalics do not differ from nonglossolalic controls on measures of absorption in subjective experience and hypnotic susceptibility. Relatedly, the available empirical data fail to support the hypothesis that glossolalics suffer higher levels of psychopathology than nonglossolalics (for reviews see Hine, 1969; Richardson, 1973).

Social psychological formulations of glossolalia view it as learned vocal behavior that can be acquired by almost anyone who possesses the requisite motivations and who is regularly exposed to others who model this behavior (Pattison, 1968; Samarin, 1972). The motivations for speaking glossolalia must be understood in terms of the belief systems of the speakers. For example, among modern Protestant pentecostals, glossolalia represents a "bridge-burning" act that separates new believers from their earlier identities and reference groups and legitimizes

them as full members of their new religious fraternity (Hine, 1970). In many groups that engage in glossolalia, the practice is explicitly encouraged and its initial enactments are met with acceptance and praise by other group members (Pattison, 1968). Thus, for individuals committed to pentecostalist beliefs, glossolalia serves to affirm these beliefs, reinforces a sense of belonging and cohesiveness, and provides recognition from significant others (Hine, 1970; Samarin, 1972).

Within religious groups the acquisition of glossolalia is facilitated by frequent exposure to experienced tongue speakers. Sometimes novices also receive encouragement to pay careful attention to experienced glossolalics, to practice tongue speaking silently, to begin their speaking by mimicking the utterances of practiced glossolalics, and so on (Pattison, 1968; Samarin, 1972).

The present study tested the hypothesis that glossolalia can be easily learned by normal individuals who are not in an altered state but who are exposed to appropriate encouragement, modeling, and practice.<sup>1</sup>

## Method

### Subjects

A total of 60 (36 men, 24 women) Carleton University undergraduates (ages 18-44 years) volunteered and were accepted to participate in a two-session experiment on "pseudolanguage." All subjects received course credit for their participation, and none spoke glossolalia or had heard it spoken.<sup>2</sup>

### Procedure

Subjects were randomly assigned to experimental and control treatments with the restriction of an equal number of men ( $n = 18$ ) and an equal number of women ( $n = 12$ ) in each condition.

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<sup>1</sup> Two previous reports (Carlson, 1967; Cohn, 1968) have investigated the experimental production of glossolalia. Unfortunately, both reports refer to unpublished studies. The procedural details and findings are sketchy and unclear, and no quantitative data are provided.

<sup>2</sup> Two volunteers were not accepted as participants in this study because they had previous exposure to glossolalia. One volunteer was a religious glossolalic. The other was not a glossolalic but belonged to a prayer group where glossolalia was frequently spoken.

*Baseline Testing.* Subjects were administered the following instructions:

Your task today is to listen to a 1-minute tape of a person speaking pseudolanguage. As you listen to the tape, try to get a sense of the language rather than trying to memorize certain phrases. Notice any rhythm, repetitions, or patterns in the utterances. Immediately afterward you will be asked to produce pseudolanguage yourself for a 30-second period. This will be taped. Pay close attention.

Following these instructions subjects listened to a 60-s tape-recorded sample of glossolalia. Immediately following presentation of the glossolalia sample, subjects were asked to do their best to speak pseudolanguage continuously for 30 s. At the end of 30 s, the experimenter signaled them to stop speaking. Subjects' vocalizations during the 30-s speaking interval were tape-recorded.

*Treatments.* Subjects assigned to the control group were dismissed immediately after their baseline pseudolanguage trial and were scheduled to return for a second session in 2 to 10 days. Experimental subjects began the first of two training periods immediately after baseline testing. During their first training period, these subjects were exposed to four 60-s audiotaped segments of glossolalia and one videotaped segment showing a model speaking glossolalia for 60 s. Between the second and third audiotaped glossolalia samples, the experimenter directly modeled glossolalia and informed the subject about what he or she (the experimenter) did to facilitate its occurrence (e.g., "Did you notice my breath? I start my utterances with a full breath and then keep a constant stream of sounds until the end of the breath").

Each audiotaped sample and the videotaped sample were obtained from different speakers. Half of the audiotaped samples were obtained from male speakers and half from female speakers.

Following each prerecorded sample of glossolalia, subjects received a 30-s pseudolanguage practice trial. Throughout the training session the experimenter provided the subject with encouragement and direct instruction (e.g., "Good, now you're really getting it"). The instructions and encouragement were similar to those provided to novice tongue speakers in many religious groups (Pattison, 1968; Samarin, 1972). The first training period lasted approximately 30 min. Afterward, subjects were scheduled to return for a second session in 2 to 10 days.

The training period given to experimental subjects during Session 2 was very similar to their Session 1 training period. Subjects were again exposed to four 60-s audiotaped glossolalia segments and one videotaped segment. Following each segment, subjects were again given a 30-s practice trial. The experimenter again modeled pseudolanguage and provided instruction and encouragement. The audiotaped glossolalia segments used in the second training period were produced by different speakers than the audiotaped segments used in the first training period.

*Posttesting.* At the end of their second training period, experimental subjects were instructed to listen to a final 60-s audiotaped glossolalia segment and then to produce a final 30-s segment of continuous pseudolanguage. The subject's final segment was tape-recorded and constituted his or her posttest trial.

As soon as they returned for their second session, control subjects also listened to a 60-s audiotaped segment of glossolalia and afterward were instructed to try their best to produce a 30-s continuous sample of pseudolanguage. This sample constituted their posttest and was tape-recorded.

### *Stimulus Material and Scoring of Glossolalia*

The glossolalia segments employed as stimulus material were obtained from speakers who defined their glossolalia as religious activity, belonged to religious groups that encouraged glossolalia, and had been speaking glossolalia regularly for over 2 years. Audio- and videotaped segments were obtained from these speakers in the laboratory.

The subject's pseudolanguage was rated for fluency on a 5-point scale with alternatives that ranged from *very poor* (scored 0) to *highly fluent*

(scored 4). Pseudolanguage segments scored as very poor contained more than one of the following characteristics: excessive repetition of the same sounds; three or more pauses of 3 s or longer; three or more English or French words; three or more laughs or guffaws; and very slow, hesitant speech. Pseudolanguage segments scored as highly fluent included 20 or more distinctly different sounds; were spoken at the same rate and with the same intonation as normal speech; and contained no English or French words, no unusual pauses, and no laughing or guffawing. Ratings of 3 or 4 were given only to samples of pseudolanguage that sounded like the speaking in tongues of experienced glossolalics.

Two judges, one of whom was blind to subjects' treatment or session rated each baseline and posttest pseudolanguage segment. Both judges were experienced listeners of religious glossolalia, and in addition, the judge who was blind to subjects' treatment or session had, for over a year, been a speaker of religious glossolalia. The correlation between the judges' ratings (averaged across the two sessions) was very high ( $r = .91$ ). Discrepancies were resolved through discussion.

## Results

### *Pseudolanguage (Glossolalia) Fluency*

Fluency of pseudolanguage was assessed with a  $2 \times 2$  mixed analysis of variance (ANOVA) that contained two between-subjects factors (treatments: training vs. control and two experimenters) and one within-subjects factor (trials: baseline vs. posttest). The Treatment  $\times$  Trials interaction was highly significant,  $F(1, 56) = 27.92, p < .001$ . No effects involving the experimenters factor approached significance ( $ps > .20$ ).

The significant interaction was analyzed further in terms of simple effects. Because the simple effects analyses involved four nonorthogonal post hoc comparisons, the experimentwise error rate was adjusted to  $\alpha = .0125$ . The simple main effect of trials was nonsignificant in the control group ( $p > .10$ ) but highly significant in the experimental group,  $F(1, 56) = 80.12, p < .001$ . Thus, there was no change in fluency of glossolalia from baseline ( $M = 1.23, SD = 1.30$ ) to posttest ( $M = 1.47, SD = 1.17$ ) among control subjects but a very substantial baseline ( $M = 1.53, SD = 1.25$ ) to posttest ( $M = 3.03, SD = .81$ ) increment in fluency among subjects who received training. Between-groups simple effects indicated that controls and trained subjects failed to differ significantly in fluency on the baseline trial ( $p > .10$ ) but that trained subjects were significantly more fluent than controls on the posttest trial,  $F(1, 56) = 27.86, p < .001$ .<sup>3</sup>

Examination of the raw data indicated three findings worthy of note: (a) After only a single 60-s baseline exposure, 13 (21.6%) of the unpracticed subjects spoke glossolalia as fluently as experienced glossolalics; (b) after their two brief training periods, 21 (70%) of the experimental subjects spoke fluent glossolalia; and (c) after training, all subjects spoke glossolalia with at least moderate levels of proficiency (e.g., obtained scores of 2 or above, which indicated that subjects' glossolalia incorporated a range of different sounds, sounded languagelike, and was maintained at a steady rate throughout at least half of the test period).<sup>4</sup>

<sup>3</sup> To eliminate the possibility that these results were biased by the ratings of the nonblind judge, separate  $2 \times 2$  ANOVAs with the factors described above were performed on each judge's ratings. The two ANOVAs yielded equivalent results (the same as those described in the body). In short, the ratings of the nonblind judge did not differ from those of the blind judge.

<sup>4</sup> All subjects were preexperimentally administered the Tellegen and Atkinson (1974) Absorption Questionnaire and the Hood (1975) Mystical

### Discussion

The present findings are consistent with the social learning hypothesis that glossolalia can be acquired with relative ease by almost anyone with the requisite motivations. All of our subjects were unfamiliar with glossolalia prior to their participation in this study. Nevertheless, after only two brief training sessions that included practice at glossolalia, encouragement, and modeling, 70% of them spoke fluent glossolalia throughout the entire posttest trial and all of the remainder spoke recognizable glossolalia throughout most of the posttest interval. Importantly, 21% of our subjects spoke fluent glossolalia after their one baseline exposure. This finding is consistent with reports indicating that, in religious groups, some individuals begin speaking glossolalia on their first try and after only brief exposure to other glossolalics (Samarin, 1972).

Although our posttest was only 30 s long, it is worth noting that in naturalistic religious settings, even experienced tongue speakers often maintain uninterrupted glossolalia for only relatively short intervals, and they frequently intersperse their glossolalia with meaningful utterances of varying length (e.g., thanks or praises to God; Samarin, 1972). Moreover, glossolalia invariably involves a high level of redundancy. By periodically reorganizing relatively few basic sounds, even the novice speakers can continue glossolalia for extended periods of time if they so choose (Samarin, 1972). For example, the two experimenters in the present study learned glossolalia preexperimentally by using the same procedures that were later administered to subjects. With relatively little practice, both experimenters found it easy to maintain fluent glossolalia for as long as they wished.

Our findings that glossolalia can be easily learned through direct instruction, along with demonstrations that tongue speakers

can initiate and terminate glossolalia upon request and can exhibit glossolalia in the absence of any indexes of trance (Samarin, 1972; Spanos & Hewitt, 1979), support the hypothesis that glossolalic utterances are goal-directed actions rather than involuntary happenings.

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Experience Questionnaire. Neither instrument correlated significantly with baseline levels of a glossolalia fluency. Subjects also rated each foreign language they spoke on a 4-point fluency scale, and these ratings were summed to yield a single foreign language competency score for each subject. Foreign language competency correlated significantly with baseline glossolalia fluency,  $r(58) = .38, p < .05$ .

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