Effect of mode of presentation on semantic satiation¹

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The effects of four different methods of inducing satiation (oral, auditory, written, and verbal) were investigated using multiple response measures: number of associations emitted in 15 sec, commonness of first response, and associative times (response latencies). Significant differences, indicating a facilitative trend for associative times, occurred for auditory satiation, self-satiation, and no satiation groups. Satiation was not noted for number of associations or commonness of first associate under any experimental condition. Auditory satiation techniques were suggested to aid in future research.

Semantic satiation, a change or loss of meaning of a word which has been repeated continuously or fixated upon for a certain period of time, has been investigated in many laboratories. Typically, two categories of satiation studies can be distinguished: connotative and associative; and it is within these two categories that the bulk of the literature is subsumed (Amster, 1964). Although there is some variation within each category, the primary distinction between connotative and associative satiation lies in the techniques of measurement. The former is concerned with changes occurring on a rating scale—usually the Semantic Differential (Lambert & Jakobovits, 1960; Floyd, 1962; Yelen & Schulz, 1963), while the latter, which is of main concern here, utilizes the word association test (Smith & Raygor, 1956; Fillenbaum, 1963; Shima, 1966; Gorfain, 1967). Results with both techniques have been inconsistent. Replications have yielded contradictory findings (Lambert & Jakobovits, 1960; Wolfensberger, 1963; Yelen & Schulz, 1963; Gorfain, 1967), and the use of multiple criterion measures has produced confusing evidence (Wakin & Braun, 1966). The reasons for the discrepancies are unclear, but some of the variables that have been isolated are: relative frequency of the stimulus word and its associative strength, number of syllables in the stimulus word (Wertheimer & Gillis, 1958), psychological set (Gumenik & Spencer, 1965; Gumenik & Perlmutter, 1966), and rate of repetition—slow vs fast (Shima, 1966). Further study of the variables related to satiation is needed and an important area for investigation concerns mode of presentation of stimuli. Lambert & Jakobovits (1960) employed a continuous oral repetition method; Smith & Raygor (1956) utilized a visual satiating technique; while Fillenbaum (1963) used a written method to induce satiation. It seems, however, that no studies have attempted to compare the effects of different procedures using multiple response measures. The purpose of the present study was to investigate the effects of mode of presentation on semantic satiation. Will differing satiation procedures affect commonality of response, association times (response latency), and number of responses elicited in a continuous word association test?

Method. Thirty students, 15 male and 15 female, drawn from introductory psychology classes and randomly assigned to one of five treatment conditions served as Ss (six Ss—three male and three female—to each condition).

The Ss were tested individually in an experimental cubicle which was empty except for a microphone, earphones, and a 9½ in. x 12 in. rear projection screen located in front of S, on which stimuli could be exposed visually by means of a Carousel projector. Adjacent to S's room was E's compartment which housed the other equipment (tape recorders, timer, voice keys, and projector). Ten monosyllabic words were selected as stimuli from the Palermo & Jenkins (1964) word association norms for college students. Only stimulus words which elicited common responses (i.e., a frequency of 300-700/1000) were chosen. Each of the five groups received a different satiation treatment (except for the control group which received no satiation treatment) followed by a stimulus word (the same as the satiated word) to which S would continuously associate. All word association stimuli and instructions for each condition were prerecorded to minimize any experimenter effects and were presented through earphones which S wore throughout the entire testing

session. S's responses were tape recorded, and all satiation treatments lasted 30 sec followed by the presentation of the word association stimulus. Ss were first informed as to the nature of the word association test, and were then instructed to speak into the microphone the first word that occurred (excluding the stimulus word) followed by as many associations as possible. The satiation treatments were as follows:

Group 1—Control groups—received no satiation treatment. Stimulus words were presented aurally every 30 sec.

Group 2—Oral satiation (Self-Satiation): In this condition a stimulus word was projected onto the screen in front of S. After being exposed for 1 sec, S was instructed to repeat the word aloud, over and over again for 30 sec (cf. Lambert & Jakobovits, 1960). At the end of this satiation period a tone sounded, immediately followed by the presentation of the word-association stimulus. The S then began to associate to the stimulus word as soon as it was heard.

Group 3—Auditory satiation: The S was instructed to concentrate as the word to be satiated was aurally presented repeatedly for 30 sec. At the end of this time a tone was sounded, immediately followed by the presentation of the stimulus.

Group 4—Written satiation: The S was presented a word projected onto the screen. After being exposed for 1 sec, S was then instructed to write this word continually as rapidly as possible for 30 sec. Following this satiation period, a tone was sounded followed by the test stimulus (cf. Fillenbaum's (1963) written repetition conditions).

Group 5—Visual satiation: A stimulus word was projected onto the screen for 30 sec. The slide remained in view during the entire satiating period, and S was asked to fixate and concentrate on that word for as long as it appeared on the screen. Terminating the visual stimulus was a tone followed by the test stimulus (cf. Smith & Raygor, 1956). In each condition one practice trial was permitted to familiarize S with the procedure as well as to make sure that the instructions and task had been properly understood.

Results. The data were analyzed in terms of: (a) number of responses (associations) emitted by each S during the first 15 sec of the word association test; (b) commonness of associations—first responses were classified as common or uncommon on the basis of the Palermo & Jenkins (1964) frequency table. A response was designated common if it occurred 35 or more times among the responses of 1000 "normal" Ss, and uncommon if it occurred 34 times or less (after Smith & Raygor, 1956), (c) associative reaction times (latency—the time from the end of the stimulus word to the beginning of the first response word, measured in .01 sec). Association times were transformed to logarithms to stabilize the variance (Winer, 1962) and analyses of variance were performed for all three dependent variables.

Number of responses emitted in 15 sec, and commonality of response yielded no significant differences between the different treatment conditions (oral, auditory, written, or visual satiation) and the control condition. However, the analysis of variance performed on the log latencies was found to produce significant differences between treatment effects ($F = 4.59$; $df = 4/25$; $p < .01$). A Newman-Keuls post-hoc analysis (after Winer, 1962) further indicated a significant difference ($p < .01$) between the control group and the oral satiation group with faster associative times belonging to the oral satiation condition. A significant difference ($p < .05$) was also found between the auditory satiation condition and the control condition. Again, this trend indicated a facilitation effect instead of an inhibitory one.

Discussion. Satiation effects, usually manifesting themselves by inhibitory characteristics such as the retarding of associative times (Gorfain, 1966), or a decrease in the number of common responses (Smith & Raygor, 1956) were not found in the present experiment. Instead, facilitative association times were obtained and no differences were found between treatment groups in number of associations or commonness of first associate. These findings are to some extent consistent with those of Wolfensberger (1963) who found no significant differences in commonness of associations, although he also reported no differences in response latencies, and Shima (1966), who concurring with the results of the present experiment, reported no experimental satiation in number of associations and frequency of first associate. On the other hand, our results are incongruent with the data reported by Gorfain (1967) who found an inhibitory effect on association speed after

verbal repetition, and with Smith & Raygor (1956) who found commonality of responses to be suppressed. These discrepancies might be resolved in future investigations if the diversified methods of inducing satiation are refined; for it appears that past methodologies have confounded their independent variables (e.g., Smith & Raygor's (1956) satiation procedure involved prolonged visual fixation *plus* a written response and subvocal pronunciation, and Wakin & Braun (1966) employed an oral *and* visual satiation technique). Perhaps it was a compounding in these "multiple" satiation procedures which produced the discrepant results reported. Lack of significant differences in association times between visual, written, and control conditions in the present experiment lend further support to possible contaminating effects of mixed satiation procedures. These results suggest two procedures for future research in this area: Oral (Self) satiation and auditory satiation. The auditory satiation procedure seems especially promising for group testing situations considering its elimination of the competing responses inherent in a group self satiation situation. Systematic investigation of relevant parameters is needed if we are to make further progress in understanding the effects of repetition on meaning.

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NOTES

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