CONDITIONING AND POST-HOSPITAL GENERALIZATION OF
NONDELUSIONAL RESPONSES IN A
CHRONIC PSYCHOTIC PATIENT¹

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An operant conditioning approach was successful in getting a chronic psychotic patient to give factual answers to direct questions that had previously elicited only delusional responses. Multiple baseline and reversal controls established that the changes were due to the experimental procedure. The subject was a female patient classified as paranoid schizophrenic who had persisted in giving bizarre responses to direct questions regarding her identity, age, and personal history during 26 yr of hospitalization. She was discharged after factual answers to these questions had been obtained, but operant conditioning trials were continued in the community to promote generalization. Two follow-up interviews were conducted 36 and 52 days after discharge to evaluate generalization. No generalization was found in the first interview, but the second gave evidence of some generalization.

While it has been shown that reinforcement for rational talk coupled with extinction for bizarre talk decreases the frequency of bizarre verbalizations during conditioning sessions (Ayllon and Haughton, 1964; Rickard, Dignam, and Horner, 1960; Rickard and Dinoff, 1960; Wincze, Leitenberg, and Agras, 1972), the amount of generalization to new situations has been modest. This present study extends work (Liberman, Teigen, Patterson, and Baker, 1973) that demonstrated that the duration of rational talk during time-sample interviews increased when the length of a free conversation and snack period was made contingent on the duration of rational talk during daily time-sample interviews. The subject of the present report, Mary N., had shown increased rational talk under these conditions, but continued to answer with

bizarre, incorrect responses when asked direct questions concerning her personal history. Therefore, it was decided to use additional operant conditioning procedures utilizing instructions and token reinforcement to produce factual responses in reply to direct personal questions. The treatment also attempted to obtain greater generalization than has previously been reported, by means of post-hospital conditioning trials.

METHOD

Subject

Mary N. was a 60-yr-old woman who had been continuously hospitalized for 25 yr. When asked questions concerning her identity and personal history, she would reply that she was Sandy F., an 18-yr-old girl; that she was hospitalized at Modesto State Hospital in 1952 when the plane on which she was a passenger was hi-jacked; (she was originally hospitalized at another hospital in 1946), that her parents were very wealthy and owned estates in Algeria (where she claimed she was born), France, and other places, and that she was married to Richard F., who was, in reality, a rehabilitation therapist at another hospital. When confronted with the obvious fact of her aged appearance by being

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required to look in a mirror, she said that her beautiful hair and bodily parts had been stolen from her and replaced by parts from an old woman.

At the time of this study, Mary N. was a patient on the Clinical Research Unit of Camarillo State Hospital. This unit (Lieberman, *et al.*, 1973) is a 12-bed token economy ward in which patients are treated with specific behavior modification programs. Mary N. had been living on the unit for 10 months. She was well established in the token economy, and was accustomed to working regularly to earn all her daily needs.

Procedure

Before beginning the experiment, Mary was removed from all work assignments and given a quantity of tokens equal to her previous average daily earnings each morning. She was told that she could continue as many of her previous duties as she liked, but that she would be given the same number of tokens each day "for free" regardless of what she did. Beginning at this time, she was asked a list of five questions concerning her identity (including signing her name) and past history (see Table 1) three times daily immediately before each meal. She was told only that she was expected to answer the questions correctly.² The reliability of the categorization of the answers as correct or incorrect by the nursing staff had been previously established as being high (Lieberman, *et al.*, 1973).

During the first contingent period, the staff continued to ask Mary the entire list of questions before each meal but the procedure differed for the question(s) on which the contingency was placed. Starting with question 1 (her name), Mary was told that she would not be given her usual free daily supply of tokens but that she must give her correct name when asked before

each meal in order to receive tokens. She was told that she could earn one third of her previous daily supply before each meal so that it would be possible for her to earn the same amount each day that she had previously been given. She was then asked to state and sign her name. On trials that she answered and/or signed incorrectly, she was told: "No, your name is Mary N." and asked again. The tokens were given and the trial was counted as correct whether she answered and signed correctly before or after being told her name. After she had given and signed her correct name three consecutive times without being prompted, the contingency was placed on the next question; and so on.

Table 1
Questions Asked of Mary

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1. Who are you? (Mary N.)
Sign your name.
  2. How old are you? (60)
When were you born? (1911)
  3. Where were you born? (New York)
  4. When and where were you first hospitalized?
(Patton State Hospital, 1946)
  5. Who are your family members?
(Mr. and Mrs. William N.)
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After Mary was able to answer all questions correctly (six question sessions with all correct answers), partial reinforcement was introduced. During Sessions 48 through 53, she was given the tokens contingent upon correct answers on alternate interviews, and in Sessions 54 through 59 on every third interview. During this phase, she was given one third of her daily token supply before the noncontingent interviews to avoid reducing her token supply drastically, as it was felt that this would introduce a new variable.

For the next 24 interviews, tokens were given noncontingently before each interview. Mary was not given any explanation as to why the tokens were given before the interviews during the partial reinforcement or the totally noncontingent periods.

²Mary was inadvertently supplied with a list of the correct answers to all the questions during the first and third interviews of the baseline period. She was never again shown the written answers.

The next procedure (beginning in Session 85) was to instruct her that she would be given the tokens regardless of her replies. This noncontingent period with instructions was continued for nine trials. Finally, the contingency for Mary answering all the questions correctly was reinstated and she was so informed; this phase continued until her discharge.

Post-Discharge Treatment

To get Mary's factual responses to occur in settings other than the hospital, the owner of Mary's new home continued to administer the same interview once each evening, with Mary's daily supply of cigarettes made contingent upon her giving correct responses to all the questions. These interviews in the residential care home were still being conducted 67 days after discharge.

Two generalization interviews were arranged 36 and 52 days after discharge, respectively. The first was conducted by a social welfare

worker (identified as such) previously unknown to Mary who visited the home and asked Mary questions regarding her identity, history, and family situation as if this were a routine interview given to all clients. The second was conducted by a psychiatric nurse (not identified as a nurse), also unknown to Mary, who was introduced as a friend of the caretaker from out of state. This nurse spent time talking with several of the residents in addition to Mary in order to disguise the interview as informal conversation.

RESULTS

As is shown in Figure 1, during the baseline period, Mary answered all the questions incorrectly each time they were asked. During the contingent period, she answered the first questions correctly after eight trials. This occurred in a tearful scene in which she tried to convince the first author to discontinue the program. When she saw that she could not, she answered

Fig. 1. Responses to each of the standard interview questions as a function of trials and experimental conditions.

with her correct name and signature after being told which name and signature were required. She continued to answer correctly without prompts for the next three trials, so the contingency was placed on both questions 1 and 2. She answered these questions correctly, with verbal prompting on question 2, on the first contingent trial. She correctly answered question 3 after being prompted on the first trial in which the token contingency was placed on this question in addition to questions 1 and 2. It proved unnecessary to place the contingency on questions 4 and 5 separately or verbally to supply the answers to these questions, as she spontaneously answered these questions factually on the next trial after answering question 3 correctly. Consequently, she was told that in the future she would be given the tokens only after she had answered all the questions correctly, which she did for the remainder of the contingent period.

Mary also answered all the questions correctly every trial during the partial reinforcement period and for the 24 noncontingent trials. However, when told that she would receive tokens regardless of her answers, she answered all the questions with bizarre responses very similar to those given during the baseline; although to the first question she answered: "Sandy F.----- I guess." She continued to answer all five questions incorrectly on every trial but one (in which she answered all correctly) during this last noncontingent period, which lasted for nine trials. After the contingency for answering all five questions correctly was reinstated and she was told of this, she immediately answered all the questions correctly for all but one trial (in which she answered all five incorrectly) during the second contingent period.

Shortly before Mary left the hospital, she made several remarks regarding her age, which were in marked contrast to her earlier protestations of youthfulness. For example, she once remarked to a technician who was waiting for her: "Oh, you have to wait for old grandmas, you know." On another occasion she had difficulty

exiting from a bus and told the author: "I can't move too fast anymore at my age."

During the 67 days that the daily interviews were held in the residential care home, Mary answered all questions correctly on every trial. Some indications of generalization of correct responding beyond the structured interview situation were noted during this post-discharge period. She was heard to complain of being old while doing chores, and she went to a neighborhood grocery alone where she introduced herself as Mary N. However, she referred to herself as Sandy once in the home, and was also heard to mention Richard F., her nonexistent husband, on one occasion.

The two follow-up interviews achieved different results. During the first interview, Mary gave bizarre answers similar to those given during baseline. When asked her identity during the second follow-up interview, she gave her correct name. She gave her place of origin as "back East". When asked her age, she said: "It doesn't really matter." An inquiry about her family yielded the report that they lived in California, which may or may not be true. However, she did not mention the family name. To get an answer to the question of her previous history, the nurse asked: "Where have you been before?" In reply, she described the jobs she had performed at Camarillo and Modesto State Hospitals, without mentioning that she had been a patient at these places. The overall impression of the second interviewer at that time was that Mary had learned to give acceptable, though evasive, answers in place of her previous bizarre ones.

DISCUSSION

The bizarre responses to specific personal questions were quickly eliminated by using the procedure of prompts and token reinforcement for factual responses. This result is similar to that obtained with delusional patients by Wincze *et al.*, (1972). This approach was attempted with this patient because previous reinforcement of

rational talk combined with extinction for delusional talk (Liberman, *et al.*, 1973) had failed to eliminate delusional responding to direct questions, although this method used earlier had reduced the overall frequency of delusional conversation. The method of verbally prompting the expected response combined with immediate reinforcement for correct responding resembles the methods used to teach speech to autistic (Lovaas, 1966) and echolalic (Risley and Wolf, 1967) children; and in reinstating speech in mute, psychotic adults (Sherman, 1965; Wilson and Walters, 1966).

Two types of experimental controls were used to ensure that the experimental procedures were indeed responsible for the obtained result. Placing the contingencies on each question in turn constituted a multiple baseline design. (Baer, Wolf, and Risley, 1968). The answers to the first three questions were given correctly only after the contingency was placed on each of these consecutively, demonstrating the effectiveness of the contingency. Including a noncontingent phase, in which the original delusional statements were obtained, followed by the reinstatement of the contingencies that produced the non-delusional answers (ABAB design) provided further evidence that the experimental procedures produced the observed changes. It is interesting to note that the return to delusional responding was obtained only after the patient was instructed that the contingencies were no longer in effect, although the tokens had been given on a noncontingent basis long before she was informed. Verbalization of contingencies has also been found to be important in verbal operant conditioning with college students, (DeNike, 1964; Spielberger, Bernstein, and Ratliff, 1966; Spielberger and DeNike, 1966).

The present experiment included an extensive effort to promote generalization beyond the original treatment environment. This case differed from previous studies in that this effort was conducted after discharge in a non-hospital environment. However, as in previous studies (Liberman, *et al.*, 1973; Wincze, *et al.*, 1972),

only limited generalization was obtained. These results suggest that much greater efforts than have previously been employed are necessary to obtain a more desirable level of generalization of newly acquired (or newly reacquired) factual responses with similar patients. Such efforts might include the prompting and reinforcement of rational speech combined with extinction of irrational speech in a wide variety of settings with a variety of types of personnel.

REFERENCES

- Ayllon, T. and Haughton, E. Modification of symptomatic verbal behavior of mental patients. *Behaviour Research and Therapy*, 1964, **2**, 87-97.
- Ayllon, T. and Azrin, N. *The token economy: a motivational system for therapy and rehabilitation*. New York: Appleton-Century-Crofts, 1968.
- Baer, D. M., Wolf, M. W., and Risley, T. R. Some current dimension of applied behavioral analysis. *Journal of Applied Behavior Analysis*, 1968, **1**, 91-97.
- DeNike, L. D. The temporal relationship between awareness and performance in verbal conditioning. *Journal of Experimental Psychology*, 1964, **68**, 521-529.
- Liberman, R. P., Teigen, J., Patterson, R., and Baker, V. Modification of delusional speech in paranoid schizophrenics. *Journal of Applied Behavior Analysis*, 1973, **6**, 57-70.
- Lovaas, O. I. A program for the establishment of speech in psychotic children. In J. K. Wing (Ed.), *Early childhood autism*. Oxford: Pergamon, 1966. Pp. 115-144.
- Rickard, H. C., Dignam, P. J., and Horner, R. F. Verbal manipulation in a psychotherapeutic relationship. *Journal of Clinical Psychology*, 1960, **16**, 364-367.
- Rickard, H. C. and Dinoff, M. A follow-up on "Verbal Manipulation in a Psychotherapeutic Relationship." *Psychological Reports*, 1962, **11**, 506.
- Risley, T. and Wolf, M. Establishing functional speech in echolalic children. *Behaviour Research and Therapy*, 1967, **5**, 73-88.
- Sherman, J. A. Use of reinforcement and imitation to reinstate verbal behavior in mute psychotics. *Journal of Abnormal Psychology*, 1965, **70**, 155-164.
- Spielberger, C. D., Bernstein, I. H., and Ratliff, R. G. Information and incentive value of the reinforcing stimulus in verbal conditioning. *Journal of Experimental Psychology*, 1966, **71**, 26-31.
- Spielberger, C. D. and DeNike, L. D. Descriptive behaviorism versus cognitive theory in verbal

- operant conditioning. *Psychological Review*, 1966, **73**, 306-326.
- Wilson, F. S. and Walters, R. H. Modification of speech output of near-mute schizophrenics through social-learning procedures. *Behaviour Research and Therapy*, 1966, **4**, 59-67.
- Wincze, J. P., Leitenberg, H., and Agras, W. S. The effects of token reinforcement and feedback on the delusional verbal behavior of chronic paranoid schizophrenics. *Journal of Applied Behavior Analysis*, 1972, **5**, 247-262.

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