

The Catholic University of America

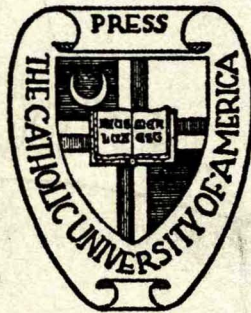
The Influence of Hospitalization on the Verbal Behavior of Chronic Schizophrenics

ABSTRACT OF A DISSERTATION

SUBMITTED TO THE FACULTY OF THE GRADUATE SCHOOL OF ARTS AND
SCIENCES OF THE CATHOLIC UNIVERSITY OF AMERICA IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY.

BY

RONALD D. WYNNE, B.A., M.A.



THE CATHOLIC UNIVERSITY OF AMERICA PRESS
WASHINGTON, D. C.
1961

W
4

W989i

THE INFLUENCE OF HOSPITALIZATION ON THE
VERBAL BEHAVIOR OF CHRONIC SCHIZOPHRENICS

This dissertation was approved by John C. Townsend, Professor of Psychology, as director, and by Dr. James P. O'Connor, and Dr. Edward C. Stefic, as readers. Copies of the complete dissertation have been deposited in the John K. Mullen Library of The Catholic University of America.

The Catholic University of America

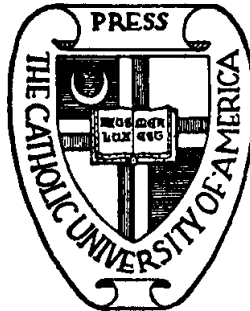
The Influence of Hospitalization on the Verbal Behavior of Chronic Schizophrenics

ABSTRACT OF A DISSERTATION

SUBMITTED TO THE FACULTY OF THE GRADUATE SCHOOL OF ARTS AND
SCIENCES OF THE CATHOLIC UNIVERSITY OF AMERICA IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY.

BY

RONALD D. WYNNE, B.A., M.A.



THE CATHOLIC UNIVERSITY OF AMERICA PRESS
WASHINGTON, D. C.
1961

10 NOV 1969

ACKNOWLEDGEMENTS

The writer wishes to express his gratitude to his dissertation committee: Dr. J. C. Townsend, major professor, and Drs. J. P. O'Connor and Edward Stefic, for their help and encouragement. Many thanks are due Dr. John W. Stafford, former Chairman of the Department of Psychology, for his invaluable aid in formulating the problem.

I am indebted to the National Institute of Mental Health for providing a Predoctoral Research Fellowship for the term of the research. The Fellowship was taken under the sponsorship of Dr. Cyril Franks, Director of the Psychology Service and Research Center of the New Jersey Neuro-Psychiatric Institute at Princeton.

I also wish to thank staff and patients of the four hospitals at which the study was conducted: the New Jersey State Hospital at Trenton; Essex County Overbrook Hospital, Cedar Grove, New Jersey; Goldwater Memorial Hospital, and Bird S. Coler Memorial Hospital, both on Welfare Island, New York City.

THE INFLUENCE OF HOSPITALIZATION ON THE
VERBAL BEHAVIOR OF CHRONIC
SCHIZOPHRENICS^{1, 2}

RONALD D. WYNNE

The Catholic University of America³

The purpose of this study was to test Yates' (1956) hypothesis that length of hospitalization is of prime importance in determining the extent of vocabulary decline so evident in schizophrenic patients. Previous studies of the influence of hospitalization on language behavior of both mental and non-mental patients have shown that long-term patients generally do more poorly on several types of language tests (notably verbal subtests from intelligence scales) than do short-term patients (Capps, 1939; Fox and Birren, 1949; Nelson, 1953; Rabin, King, and Ehrmann, 1955). Results of these studies are conflicting, however. Several variables have been confounded with the length of hospitalization, such as severity of illness (long-term patients often being more severely ill than short-term patients); age; socio-economic variables; and so on. An attempt was made in the present study to control as many of the variables as possible to test clearly the influence of hospitalization on a variety of verbal abilities. Language tests were selected which had been shown either to differentiate between schizophrenic and normals, or between schizophrenic patients at various levels of severity of the illness. Both schizophrenic and non-psychotic patients (in a chronic physical disease hospital), hospitalized in large public institutions were tested.

¹ This article was composed for the fulfillment of the publication requirement for the degree of Doctor of Philosophy in the Graduate School of Arts and Sciences of the Catholic University of America, Washington, D.C.

² This investigation was supported by a USPHS Research Fellowship MF-10,782 from the National Institute of Mental Health, Public Health Service.

³ Now Research Psychologist at the Institute of the Pennsylvania Hospital, Philadelphia 39, Pa.

HYPOTHESES

Long-term and short-term schizophrenic patients, in a large public psychiatric hospital, matched for severity of illness and several other factors relevant to verbal behavior, will differ on a wide range of verbal abilities. Test results of long-term Ss will be less like those of normal persons, and more like those of severely ill patients, than will the test results of short-term Ss.

Long-term hospitalization in other large public institutions, especially chronic physical disease hospitals, will have similar effects on the verbal behavior of non-psychiatric patients. The test results of long-term non-mental patients should be less like that of normal persons and more like that of psychiatrically ill persons, than the test results of short-term non-mental Ss.

METHOD

Two groups of white, male, chronic schizophrenics (primarily diagnosed as chronic undifferentiated) were selected from two public psychiatric hospitals (total population 6900). The shorter (ST) group (N=13) had been hospitalized an average of 2.5 years; the long-term (LT) group (N=11) an average of 14.4 years.

After hospital records were screened to select groups matched on demographic variables, suitable Ss were administered the vocabulary subtest of the WAIS. If the raw score indicated IQ within the normal limits of 90-110, Ss were removed from any medications for at least three weeks. During the five days preceding testing, ward attendants completed the Baker-Thorpe (1956) rating scale, which measures severity of the schizophrenic illness. If the score on this scale was within preselected limits, Ss were then administered a battery of eight verbal tests, requiring roughly two hours per patient. After testing, E completed the Tulane Behavioral Rating Scale (King, 1954), which measures behavior (especially cooperation), during testing. The final 24 Ss were the only patients in the hospitals who fitted all criteria.

It was not possible to find non-mental patients matched on all relevant variables with the schizophrenic sample, so selection cri-

teria were altered and a sample selected from two public chronic physical disease hospitals (total population 3400) serving a population similar to that of the psychiatric hospitals. Thirty-eight Ss were selected; 19 LT patients (9 females) averaging 14.6 years in hospital; and 19 ST patients (7 females) averaging 1.8 years in hospital.

SUBJECTS

A. Schizophrenic patients

All schizophrenic Ss were white, male, native-born, and English-speaking, and from urban environments. All Ss (but one) were single. No S was selected with more than two blood relatives (first cousin and closer) who had ever been hospitalized for any emotional disorder. Most of the Ss were diagnosed as chronic undifferentiated schizophrenia, an attempt being made to minimize the number of paranoids selected. All Ss were free of CNS damage. No S had received more than a total of 40 ECT and/or insulin shock treatments (again, to control for CNS damage). All Ss were removed from medication at least three weeks prior to testing. All Ss were between 20-45 years old (ST averaged 27.1 years: range 21-33; LT averaged 38.7 years; range 32-44). Patients were hospitalized between 1-3 years (ST; mean 2.5) or 9-18 years (LT; mean 14.4).

Group comparisons of the following measures were made by means of the Mann-Whitney U test, and no group differences were significant.

No S was selected with less than an eighth grade education, and mean education for ST was 10.7 years; for LT 10.6 years. Mean IQ for ST was 100.9; for LT 100.3. Mean age at onset of the illness for ST was 21.6; for LT 19.8. Mean age at first admission to a psychiatric hospital for ST was 23.9; for LT 22.4. Groups were matched for social class, as determined by the Redlich and Hollingshead (1957) Two-factor Index of Social Position (a weighted combination of education and occupation). Subjects were predominantly from the lowest social classes. Groups were matched for severity of illness, as determined by the Baker-Thorpe Scale, and for behavior during testing, as determined by the Tulane Scale.

B. Chronic physical disease patients

The physical disease Ss were also white, native-born, English-speaking, and from urban environments. They were of both sexes, however. All Ss were suffering from chronic physical diseases that require long-term hospitalization (i.e.; polio, rheumatoid arthritis, muscular dystrophy, etc.). All Ss were free of CNS damage, in the psychiatric sense, and of psychosis. All Ss were between 20-53 years old (ST averaged 31.4 years; range 20-45; LT averaged 38.9 years; range 25-53). Patients were hospitalized between 0-4 years (ST; mean 0.9) or 8-22 years (LT; mean 14.6).

Group comparisons of the following measures were made by means of the Mann-Whitney U test, and no differences were significant.

Mean years of education for ST was 10.6; for LT 9.6. Two Ss had less than an 8th grade education. Mean age at onset of illness for ST was 25.4 years; for LT 20.1 years ($p. < .10 > .05$). Mean age at first admission to the hospital for ST was 28.9 years; for LT 23.5 years ($p. < .10 > .05$). Groups were matched for social class on the Two-factor Index, and most Ss were from the lowest social classes.

TEST BATTERY AND RESULTS

A. For the schizophrenic patients

Tests are described in the order of administration. All tests were untimed, and administration averaged about two hours. Group comparisons are made by means of the Mann-Whitney U test and hypotheses were generally supported for six of the eight tests. Results (major findings) are shown in Table 1.

1. *Sentence construction test.* A 13 item test, based on Moran's (1953) 25 word list was given and Ss were instructed to construct sentences using all words shown them. Items were presented in the order listed by Moran: first one word, then two, then three words at a time. Sentences were scored "adequate" by Moran's criteria. The first 10 words in the list are "concrete," the last 15 "abstract," so that 7 sentences contain primarily "abstract" words.

ST patients construct more adequate sentences, and in particular, more with the abstract stimulus words than do LT patients, as predicted.

2. *Free Word association test.* Thirty-six words from the Kent-Rosanoff list were given orally, with standard instructions (omitting reproduction). Items were selected on the basis of primary responses given by a sample of 1008 college students (the "Minnesota" norms, Russell and Jenkins, 1954). At least 25% of the normative sample gave a specific primary to each of the words, and in no case was an antonym a primary response. Scores were the number of primary responses given by the Ss, and the number of responses falling outside those given by at least 90% of the normative sample (unusual responses).

ST patients produced more primary responses and less unusual responses than did the LT patients, as predicted.

3. *Recall definitions test.* Moran's (1953) 25 word list was given under WAIS-type instructions. Definitions were scored according to both Moran's system (3 categories) and Feifel's (1949) system (a 5 category qualitative scheme). It was predicted that ST patients would show higher scores with both scoring schemes, but there were no significant group differences. ($p < .01$), so that the test seems to be duplicating the matching function of the WAIS subtest.

4. *Multiple-choice test of word meanings.* Ss were given Flavell's (1956) 72 item vocabulary test. Ss were presented a stimulus word, and two choice words, standing in various abstract or concrete relationships to it, and instructed to pick the choice word closest in meaning to the stimulus. A total abstract score is obtained by summing all choices of abstract choice words, and a similar concrete score is computed.

No significant group differences were found. The test shows high correlation with IQ, and in its present form have been too easy for Ss at this IQ level.

5. *Proverbs test.* The 40 item multiple-choice proverb test of Gorham (1956) was given. The test is scored in terms of number of "abstract" and "concrete" responses chosen.

ST patients chose more "abstract" and less "concrete" responses than did LT patients, as predicted.

6. *Multiple-choice size of vocabulary test.* Ss were given a 50 item modification (Fox and Birren, 1949) of the 173 item Size of English Vocabulary Test (Seashore and Eckerson, 1937). Ss were shown cards with a stimulus word and four possible choices,

and instructed to pick the best possible definition. Score is rights minus a chance correction, and may be converted into an estimate of the actual number of words known.

Consideration of results, exclusive of those of one LT patient whose IQ estimate (141) was quite out of line with the other Ss, indicates that ST patients had larger vocabularies than LT patients, as predicted. Although the trend is clear (see Table 1), the significance level ($p < .10 > .05$) is not satisfactory when the results of this atypical S are included.

7. *Recordings of speech patterns.* Ss were instructed to tell of

TABLE 1.

Comparison of language test results (Major findings) between long-term and short-term schizophrenics. All comparisons made by Mann-Whitney U tests. Group means and ranges are tabled.

Measure	Short-term N=13		Long-term N=11		p values
	Mean	Range	Mean	Range	
1. <i>Sentence construction test</i>					
no. adequate sentences	11.5	(10-13)	9.2	(6-12)	p < .01
no. adequate "abstract" sentences	6.1	(4- 7)	4.4	(3- 6)	p < .01
2. <i>Word association test</i>					
no. popular responses	12.2	(7-19)	9.3	(4-13)	p < .05
no. unusual responses	5.8	(3-10)	9.8	(4-17)	p < .01
3. <i>Recall definitions test</i>					
no. adequate definitions (Moran)	23.4	(18-25)	23.1	(20-25)	N. S.
Total score (Feifel)	67.2	(44-89)	68.4	(51-92)	N. S.
4. <i>Multiple-Choice vocabulary test</i>					
combined abstract score	31.9	(28-36)	31.1	(27-35)	N. S.
combined concrete score	23.9	(20-28)	24.6	(21-28)	N. S.
5. <i>Gorham Proverbs Test</i>					
Abstract score	19.8	(11-32)	13.4	(6-23)	p < .01
Concrete score	3.1	(0-10)	6.8	(1-12)	p < .025
6. <i>Size of vocabulary test</i>					
Total score (all Ss)	27.3	(17-37)	24.4	(17-34)	p < .10 > .05
Total score (less one LT-S)	27.3	(17-37)	22.9	(17-30)	p < .05
7. <i>Speech recordings</i>					
Type-token rates432	(.25 - .59)	.402	(.26-.55)	N. S.
Total adjusted score	-1.05	(-5.0-2.1)	-3.32	(-6.9-0.2)	p < .01
8. <i>Directed word associations</i>					
no. popular responses	7.0	(1-13)	4.45	(1-11)	p < .05
no. unusual responses	7.2	(1-18)	10.6	(5-15)	p < .05

some interesting or dramatic life experience they had had, and five minute samples were recorded. Transcriptions were scored with the content analysis scheme of Gottschalk *et al.* (1958) which yields scores of "personal disorganization and social alienation." The higher the total score, the "healthier" is the patient. Also, a type-token ratio (TTR) was computed for each sample, as a measure of speech variability.

ST patients had higher total scores on the content analysis measure, as predicted. There was no significant difference for the TTR, though ST patients had a higher mean score (the higher the score, the greater the variability of speech).

8. *Directed word association test.* Thirty-six of the Kent-Rosanoff words were administered to the Ss under instructions to give the associations that "most people might give" (Herr, 1957). Results, as on the word association test, were scored in terms of primary and unusual responses on the Minnesota norms.

ST patients produced more primary and less unusual responses than did LT patients, as predicted.

B. Chronic physical disease patients

These Ss were administered only the word association test, scored by the Minnesota norms. This test discriminates between the schizophrenic group, and since scores show little correlation with verbal IQ (within normal limits), it is unnecessary to match groups closely for IQ. These groups were matched for education, however, which correlates highly with IQ. Intergroup comparisons were by means of the *t* test for uncorrelated means. Specific predictions were tested by one-tailed tests, and results are shown in Table 2.

TABLE 2.

Comparison of word association test results for long-term and short-term physical disease patients. All comparisons made by *t* test for uncorrelated means. Group means and ranges are tabled.

<i>Measure</i>	Short-term N=19		Long-term N=19		<i>p values</i>
	<i>Mean</i>	<i>Range</i>	<i>Mean</i>	<i>Range</i>	
1. No. of popular responses . . .	16.0	(11-24)	12.6	(7-18)	p < .05
2. No. of unusual responses . . .	3.8	(1-10)	5.5	(2-14)	p < .05

ST patients produced more primary, and less unusual associations than did LT patients, as predicted. Comparisons of responses of both male and female Ss, within each subject group, showed little difference in pattern of word associations.

DISCUSSION

The major hypotheses of the study were supported. Long-term schizophrenic patients are less normal than ST patients in terms of both associative behavior and the ability to handle abstract aspects of the language. LT patients also seem more ill, in terms of language behavior, even though an independent measure of the severity of the illness showed them to be no more ill than short-term patients. In addition, chronic physical disease patients, hospitalized for long terms, are less normal than ST patients, in terms of associative behavior. These findings lead to the conclusion that hospitalization, of and by itself, has a detrimental influence on verbal behavior, in both schizophrenic and non-psychiatric patients.

Long-term schizophrenic patients are less able to handle abstractions than the ST patients. Scores on the Proverbs test are low, indicating impaired abstract judgment ability. Their ability to use simple abstract concepts meaningfully, as measured by the Sentence construction test, is impaired. LT patients have smaller total English vocabularies, as measured by the Seashore-Eckerson test. LT patients produce associations that are relatively uncommon when compared to normative data. They indicate less ability, also, to share the associational patterns of normals, even when given specific instructions to that effect (as on the Directed associations test). Analysis of speech patterns indicates that LT patients are relatively more disoriented as to person, place, and time; tend to have lower self-valuations; to feel themselves more rejected by, and socially alienated from other people; and to place lower valuations on persons and objects in their environments. They also tend to have more bizarre speech patterns than ST patients.

Contrary to hypotheses, there seems little difference in the precision with which the two schizophrenic groups are able to define words or recognize word meanings. Blatt (1959) feels that recall vocabulary measures should show the effects of deterioration

(and thus of hospitalization), while recognition vocabulary measures (such as the Flavell test) should not. These results are conflicting and confusing.

Long-term physical disease patients show results in line with those from the schizophrenic groups. These are less able than ST patients to share the associational patterns of non-hospitalized, or "normal" persons. It is unclear whether they would have shown the general pattern of differences over all the language measures employed with the schizophrenic sample.

Two alternative explanations for the present findings remain; age differences and possible subtle differences in severity of illness.

Yates (1956) reports no evidence for age differences in many aspects of verbal behavior with the age range of 27-39 sampled (group means).

If deterioration of language abilities is due to increased severity of illness in the LT patients, the group differences should be most pronounced on those tests most clearly indicative, according to the literature of schizophrenic pathology (i.e.; associations; proverbs, speech patterns). Results are in line with this view. However, there were no group differences on either the recall or recognition vocabulary tests, both of which have been presumed to measure severity of illness, though these latter measures are highly correlated with IQ on which groups were initially matched. But, word association scores (primary responses) are not significantly correlated with the severity of illness measure ($r = -.02$) so that the data does not completely support this alternative hypothesis.

Flavell (1956) found a correlation between the abilities of schizophrenics to think abstractly, communicate effectively with others, and to interact adequately in everyday situations. The Baker-Thorpe Scale indicates that both groups get along equally well with others in the hospital environment, though there is no doubt that LT patients show relative impairment in abstract thinking, and effective communication.

The hospitals from which Ss were drawn are large public institutions, generally overcrowded, understaffed, and financially limited. Overpopulation might produce detrimental effects that would be reflected in impaired communicative abilities. A recent discus-

sion of the administration of public hospitals (GAP, 1960) concluded "... This rigidity and formality necessary to keep a large organization functioning is particularly harmful to psychotic people who are suffering from grave disturbances in interpersonal relationships (p. 142)." Similar lines of reasoning are followed by Schwartz (1953) in a discussion of the unique problems of public hospitals. Schwartz and other writers discuss the advent of "open-door" hospitals, quite prevalent in England, and increasingly popular here. These hospitals may offer patients a chance for increased socialization and lessened feelings of restriction, which may alleviate the decline in verbal abilities noted in the present study. It would be of interest to study possible decline in verbal abilities in private psychiatric hospitals which offer less crowded conditions and higher staff patient rates than do public hospitals.

SUMMARY

Two groups of schizophrenics; 11 long-term and 13 short-term patients, matched for severity of illness, IQ, socio-economic status, age of onset and admission, and other variables, were tested with eight verbal tests, to determine the influence of hospitalization alone in inducing decline in verbal performance. Long-term patients produced results (on six of the eight tests) that indicated they are less normal, and more severely ill, in terms of language behavior, than are short-term patients. Further study showed a similar decline in verbal performance in two groups of 19 chronic physical disease patients, hospitalized for similar periods in a non-psychiatric hospital.

REFERENCES

- BAKER, A. A., and J. G. THORPE. Some simple measures of schizophrenic deterioration. *J. Ment. Sci.*, 1957, 102, 838-46.
- BLATT, S. J. Recall and recognition vocabulary. *A. M. A. Arch. gen. Psychiat.*, 1959, 1, 473-76.
- CAPPS, H. M. Vocabulary changes in mental deterioration. *Arch. Psychol.*, 1939, #242.
- FEIFEL, H. Qualitative differences in the vocabulary responses of normals and abnormals. *Genet. Psychol. Monogr.*, 1949, 39, 151-204.
- FLAVELL, J. H. Abstract thinking and social behavior in schizophrenia. *J. abn. soc. Psychol.*, 1956, 52, 208-211.
- FOX, C. and J. E. BIRREN. Some factors affecting vocabulary size in later maturity: age, education, and length of institutionalization. *J. Gerontol.*, 1949, 4, 19-26.
- GORHAM, D. R. Use of the proverbs test for differentiating schizophrenics from normals. *J. consult. Psychol.*, 1956, 20, 435-40.
- GOTTSCHALK, L. A., G. C. GLESER, R. S. DANIELS, and S. BLOCK. The speech patterns of schizophrenic patients: a method of assessing relative degree of personal disorganization and social alienation. *J. nerv. ment. Dis.*, 1958, 127, 153-66.
- GROUP FOR THE ADVANCEMENT OF PSYCHIATRY. *Administration of the public psychiatric hospital*. Report no. 46. July, 1960.
- HERR, V. V. The Loyola language study. *J. clin. Psychol.*, 1957, 13, 258-62.
- KING, H. E. *Psychomotor aspects of mental disease*. Cambridge; Harvard Press. 1954.
- MORAN, L. J. Vocabulary knowledge and usage among normal and schizophrenic subjects. *Psychol. Monogr.*, 1953, 67(20). Whole no. 370.
- NELSON, E. H. An experimental investigation of intellectual speed and power in mental disorders. Unpublished PhD. thesis. University of London, 1953.
- RABIN, A. J., G. F. KING, and J. C. EHRMANN. Vocabulary performance of short-term and long-term schizophrenics. *J. abn. soc. Psychol.*, 1955, 50, 255-58.
- REDLICH, F., and A. HOLLINGSHEAD. *Social class and mental illness*. New Haven: Yale Press. 1957.
- RUSSELL, W. A. and J. J. JENKINS. The complete Minnesota norms for responses to 100 words from the Kent-Rosanoff word association test. Tech. report no. 11. Studies on the role of language in behavior. U. of Minnesota. 1954.

SCHWARTZ, C. *Rehabilitation of mental hospital patients*. Public Health Monogr. no. 17. U.S.D.H.E.W. Publication no. 297. Washington: Gov't. Printing Office, 1953.

YATES, A. J. The use of vocabulary tests in the measurement of intellectual deterioration. *J. Ment. Sci.*, 1956, 102, 409-40.