

The Perception of Time and Disturbed Behavior

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Time is generally perceived as a linear series (Dunne¹). This pattern of perception actually appears to be a product of social learning imbedded in the structure of language and expressed through the cultural myth, symbol and ritual of the Judeo-Christian world-view, rather than as a metaphysical "given" (Yaker²). Other world-views are possible, although it is the distinct thesis of this paper that the disruption of the perceptual learning-set is expressed in a behavioral disturbance. The Greek philosophical world was governed by the concept of physical law in which time was a derived parameter of motion, and was an expression of *recurrence* in nature (*Timaeus*, 29D; *Theatetus*, 164D). Time was considered as the "moving image of eternity" (*Timeaus*, 37E) in a world-container or "receptacle" (*xwpa*) (*Timaeus*, 52D). The Greeks were a people of "spatial and plastic sight" as opposed to the Hebrews who were a "people of hearing," involving a sense of persistence of events-in-temporal succession (Kohn³).

Liturgical Symbols

In contradistinction to this Greek world-view, the Biblical world moves from the "first to the last days." Time is measured by the historical flow of events, through a succession of on-going generations (Is., 40: 7). The myth, the *Kerygma*, and the liturgical symbol of the Bible all articulate this notion. Every King of Israel, from David the greatest to Menachem the worst, "sleeps with his fathers." A great hour of history does not arise by the injection of a timeless eternity into life, but it arises by remembering the past, pledging the future and "realizing the possibilities of the experienced hour" through a call to action (Buber⁴, cf., Josh., 1:8; Mk., 1:15).

The present derives its meaning and immediacy through this action. A major theme of the Bible is that of the "nocturnal burglar." Man is told that his final end comes like a "thief in the night" (Mt, 24:36-43; Mk., 13:24; Lk., 12:30; I Thess., 5:1). The present hour must be one therefore of repentance (Mk., 1:15). In this way Israel unites itself with the corporate life of the "fathers" of the past and with the generations of the future (Deut, 5:4ff.). Without this linkage of the past and future by the present hour, Biblical man is existentially

dead indeed and he is cut off from the "fathers."

The Judeo-Christian World-view

In spite of the great influence of the Greek philosophical thought upon our culture, Western Man inherited primarily the outlook of the Judeo-Christian world-view. The anthropology of ancient Israel is a legacy preserved in the very language and symbol of the Bible. Time is perceived in our culture as a *linear*. We date the various meanings to life by assigning some kind of existential or historical fulcrum, assigning a before-event and an after-event, not only in our calendar but in our *cultus* and *ethos*. Christ is conceived as the "mid-point of history" (Cullman⁵). Hermeneutically and linguistically, this concept is defined by such phrases as "the theo-political hour" (Buber⁶). Behaviorally we are asked to act *now* (Josh., 1:8; Mk., 1:15). Disruption of the present means holocaust and psychic and spiritual dismemberment.

Perceptual Disturbances

The psychology of Piaget is itself within Western tradition. Piaget stresses the acquisition of a perceptual learning-set in the development of the child, in which the child moves from a purely spatial world-perception to a causal logical world-perception which is seriated by number and temporal flow (Piaget^{7,8}; Hunt⁹). The child begins its learning by interacting with the environment with "circular" hand-hand reflexes, develops a "magical" view of casualty and finally acquires propositional learning in which logic merely "mirrors" thought (*vide supra*). The propositional world governed by Boolean logic involves a serial ordering in time. Language also develops, moving from egocentric speech to social speech (Stern^{10,11}; Vygotsky¹²). The developmental schedule is possible only if there has been continuous interaction of the child with its environment. A disruption in

this learning pattern disrupts his feedback loop (Hunt¹³). Here a perceptual disturbance begins insidiously. More important to note is that the environment with which the child interacts already contains a built-in sociology and anthropology of knowledge. The language is itself time-rooted. Lexical analysis of the Hebrew words used for liturgical symbol as well as for historical description are time-derived, viz., the term "Word" (Word of the Lord) is derived from an Arabic root meaning "to linger" (Yaker²).

The Phenomena of Glossalalia

Behavior also derives from the perceptual learning-set. Some religious sects, defecting from the main stream of normative Judeo-Christian thought produce *glossalalia* or "speaking with tongues." This activity involves an injection of the end of time, the "Last Day" into the present. The phenomena of glossalalia has been observed by many experts who describe it as a phenomena very closely akin to the behavior induced by psychotomimetic and psychedelic drugs. "Speaking with tongues" involves a speaker-listener pair who speak in an utterance which has the structure of language, but is unlike any language known in social communication and is divorced from the mainstream of social communication, involving only the dyadic speaker-listener interpretation.

It is interesting to note that schizophrenics do not differ from normals as "listeners" but differ sizeably as "speakers" in paired communication word-tasks (Cohen and Camhi¹⁴). Aaronson^{15,16,17} has attempted to ablate the perceptual time-set of normal individuals with post-hypnotic suggestion. Accordingly, he has conducted a number of experiments in which a beating metronome has been identified with the meter of personal psychological time, or he has expanded time by direct suggestion, clinically observing the behavior of the



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subjects under these altered
perceptions.

Aaronson shows that stopping time produces catatonic-like sleep and stupor; speeding up the metronome produces a flurry of manic-like psychomotor behavior, and slowing metronome time produces depression (Fogel and Hoffer¹⁸). Extending these experiments, Aaronson attempted to expand the present, past and future; and to expand the present *and* the past; the present *and* the future; and the past *and* the present.^{19,20} As the past was expanded, making the recession of linear time longer, the subjects acted happier; as the future was expanded, the state became mystical-like. The expansion of present *and* past produced the same euphoric behavior. Extension of the present *and* future produced an obsessive, over-philosophical, mystical-transcendent behavior. It was expansion of the past *and* future without adjustment of the present which produced schizophreniform behavior.

The Quality of Perception

These experimental findings are highly important. Intensifying the present, past and future intensifies the quality of perception. Intensifying the present with the past and future produces a mystic-like euphoria. It is most significant that expansion of past *and* future without change in the present produced the schizophrenic-like behavior. This particular mode handles an ablated or stopped present (which is depression and death) by enlarging the pasts and futures, producing thus the disturbed state.

Thus the present cannot be altered in the perception of time series, because it is the

connecting link to the past and future. Aaronson, therefore, suggests that schizophrenia is an opposing or alternate reaction to death. The present stopped, one can enter sleep or one can utilize one's own autochthonous feed-back to produce a psychedelic past and future. Schizophrenia "seems specifically a response to the elimination of some conventional dimension of perception." Schizophrenia may be the psychological alternate to a stopped present (death) just as glossalalia is the religious alternate to a stopped present. The present is both the psychological and religious "mid-point of revelation" (Buber⁴).

Speech as a Function of Behavior

Salzinger and colleagues^{21,22} have attempted to study characteristics of schizophrenic speech as a function of pure behavior. They have examined *type-token ratios* (TTR), the proportion of the number of types of words to the total number (tokens) in a monologue speech sample, and show that schizophrenic speech has a lower TTR. Moreover, they have analyzed the minimum number of tokens (frequency analysis) and have shown similar findings since this frequency analysis is not as dependent upon vocabulary or ethnic factors. They have also shown by analysis of common vocabulary in pairings between individuals of the group and the other-group, that schizophrenic speech is more idiosyncratic and varied, although the group means between normals and schizophrenics are not greatly significant (*vide supra*). This approach suggested that schizophrenic speech could be analyzed in terms of a temporal character by its latent rather than manifest content, considering monologue taped speeches. As a first hypothesis it has been assumed that schizophrenic speech, which articulates the socially learned concepts of time in the serial world, will reflect greater

variability within group comparisons of themselves.

Of particular importance is the role of time in the developmental pattern of aging. As life ages, the goals of the future normally become shorter, and the past becomes historically more remote and often-times psychologically closer to the present. With age we tend to look upon the past as very recent and the psalmist explains this using liturgical language, using projection anthropomorphically for God, and proclaims, "A thousand years are in thy sight as but a moment spent." The aging person would be expected to live more in the present and would be expected to derive greater meaning out of each hour of life.

If this fact is so, a language analysis should bear out this difference. Aaronson attempted to alter the perceptions of normals using post-hypnotic suggestion. This study began with schizophrenic speech on the implicit assumption that all speech is imbedded in culturally learned perceptions of time. Thus we have attempted to replicate Aaronson's work in an entirely different direction.

Method

Twenty-four schizophrenics and 24 normals were matched as closely as possible for age, sex, color and social position as defined by class-position on the Hollings-head *Two-Factor Index of Social Position*.²³ Such variables appear to be quite definitive for speech patterns and language usage. Numerous other variables have not been considered at present, viz., chronicity or acuteness of the schizophrenic illness, institutionalization patterns, family factors, etc., as well as the relatively unknown effects of drugs upon speech (Salzinger, et al.²⁴). These variables are important but beyond the scope of the present study. (As a first rule of epistemology, it is not necessary to know everything to say something about somethings in the world.) Spontaneous audio speech-tapes were prepared

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for both groups attempting to obtain monologue as much as possible, the interviewer speaking to the respondent only to keep the speech moving.

The use of structured stimuli as an incentive to speech, viz., TAT plates, has been considered for a later study. The tapes were run for approximately eight minutes on all subjects with typescripts prepared for each tape. Rather early it was observed that *macroscopic* rate of speech is *approximately* the same for all subjects in both groups, yielding about 800 to 1,000 words per taping with about 250 of these being verbs. It is quite possible that there is a difference in the *microscopic* rate of speed, viz., considering words per second or bits per millisecond. Salzinger has pointed out that TTRs vary widely for 100-word segments, for an integrated series of many 100-word segments, and for a total mean of several hundred words. This factor will be considered in later studies.

A verb frequency-count was taken for all verbs, classifying these as *past*, *present* or *future* verbs. Conditional verbs were defined by their direction, and auxiliaries were counted separately from their participles. Table I shows the frequency distribution of both groups for tense in terms of ratios to the total number of verbs of speech. The analysis, therefore, concerns the latent speech treated as pure behavior without reference to content. Because of the wide variations, unevenly distributed patterns, etc., parametric analyses were not possible.

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TABLE I

FREQUENCY DISTRIBUTION OF VERB-TENSE RATIO

(No. of verbs given tense to total No. verbs of speech)

Case	Normal			Case	Schizophrenic		
	Past	Present	Future		Past	Present	Future
1	.290	.640	.070	1	.520	.447	.033
2	.495	.486	.019	2	.256	.670	.074
3	.510	.436	.054	3	.536	.417	.047
4	.387	.599	.014	4	.316	.644	.040
5	.347	.593	.060	5	.208	.720	.072
6	.283	.708	.008	6	.273	.638	.089
7	.153	.810	.037	7	.320	.613	.047
8	.177	.808	.015	8	.138	.853	.009
9	.205	.726	.069	9	.458	.532	.010
10	.215	.754	.032	10	.408	.503	.089
11	.250	.726	.024	11	.373	.586	.041
12	.333	.647	.020	12	.331	.618	.048
13	.192	.785	.023	13	.265	.687	.048
14	.233	.747	.020	14	.064	.893	.043
15	.507	.478	.015	15	.395	.597	.008
16	.224	.731	.045	16	.347	.597	.056
17	.265	.687	.048	17	.129	.843	.028
18	.516	.462	.022	18	.312	.615	.013
19	.264	.694	.042	19	.313	.641	.046
20	.278	.680	.041	20	.415	.547	.038
21	.311	.654	.035	21	.396	.586	.018
22	.206	.730	.064	22	.315	.660	.025
23	.537	.437	.027	23	.224	.731	.041
24	.095	.731	.174	24	.262	.715	.023

Twenty pairs were finally selected as optimally matched and are shown in Tables II and III. (Statistics of Table IV and V are computed from Table I). Frequency ratios were calculated for the matched pairs for past, present and future; past *and* present; past *and* future, and for present *and* future (using Aaronson's basic typology). A Wilcoxon Matched Pairs Signed-Ranks Test was applied to the matched groups, using a table of critical values (Downie and Heath²⁵). At once it is noted that the use of the future tense is higher for schizophrenics as well as for the past *and* future ($P < .10 > .05$), whereas normals use the past *and* present more

consistently ($P < .10 > .05$). One can conclude that disturbed speakers are more future-bound, although this has not been general popular consensus (Salzinger²⁶). In light of the many uncontrollable intervening variables, the statistical level is sufficiently high enough to be of importance.

Grouping was made by decade-intervals, averaging the total scores for each interval decade. Table IV shows this interval grouping. A *Chi-Square* analysis shows that the relationship of age for future tense-usage is

TABLE II
CRITERIA FOR MATCHING PAIRS
NORMAL - SCHIZOPHRENIC

Pair No.	Sex	Race	Soc. Class	Ages	
				Nor.	Schiz.
1	F	W	III	21	21
2	F	W	III	32	33
3	F	N	V	28	28
4	F	N	V	32	24
5	F	W	IV	51	57
6	M	W	III	30	24
7	F	N	IV	22	29
8	F	W	IV	31	37
9	F	W	IV	20	19
10	M	W	III	20	19
11	F	W	IV	33	37
12	M	N	V	39	40
13	M	W	V	39	39
14	M	W	V	21	19
15	M	W	IV	26	25
16	M	W	V	21	25
17	M	W	IV	32	33
18	M	W	IV	40	40
19	F	W	IV	25	31
20	M	W	V	41	37
	10F	17W	3 III	X =	X =
	10M	3N	9 IV 8V	30.20	30.85

hand, use the present considerably more with age.

appreciably significant ($P < .05$) for schizophrenics. The procedure of averaging by decades of life-age very likely has too wide a variance for the uneven features of speech. Age was averaged, therefore, for one single year of life-span and a rank *rho*-correlation taken for age to tense-ratio. Table V shows the *rho*-correlation of age to tense-usage with *rho* varying from .16 to .70 for different tenses.

As age increases the schizophrenics use the past and future more appreciably as well as the past and present in combination, a feature correlative of increased use of past and future. Normals, on the other

As one gets older, the psychological past contracts and becomes smaller, while the future becomes blocked psychologically.

Table V shows the high degree which normals use their present in their lives. While the past is biographically longer, it has perhaps less meaning in the existential behavior as reflected in the speech. As people get older, they also seek to avoid the inevitable *terminus ad quo*, the common end of life. The schizophrenic, on the other hand, does precisely the opposite; extending the past and enlarging the future. Schizophrenics do not "get their houses in order" as they get older, and have a ruptured link with the present. This perhaps explains their obsessive behavior in which "self-definition overwhelms the possibility for action" (Aaronson¹⁰).

Verb-tense appears, in spite of the many intervening variables, to be related to the perceptual pattern of time in a linear set. Normals use the present most frequently as a function of their temporal perception, but schizophrenics are unable to utilize this present in their perception. While a higher degree of statistical significance is not possible in this study, the findings are demonstrative and of importance.

Discussion

It appears that Aaronson is basically correct in his analyses, judging from the cursory findings of this study. As a hypothesis, this study assumed that the latent pattern of speech, treated as pure behavior, reflects implicitly learned social patterns of perception. Rather than attempting to alter normal perception, as did Aaronson, the authors of this study compared the speech of normals and schizophrenics using the above hypothesis. Linguistic analysis of anthropological concepts in the primitive ancient world shows that this approach is essentially valid (Yaker²).

TABLE III
 FREQUENCY DISTRIBUTION OF VERB-TENSE RATIO FOR MATCHED PAIRS

Pair No.	Past		Present		Future		Past and Present		Past and Future		Present and Future	
	N	S	N	S	N	S	N	S	N	S	N	S
1	.290	.224	.640	.731	.070	.045	.930	.955	.360	.269	.710	.776
2	.495	.331	.486	.618	.019	.051	.981	.949	.514	.382	.505	.669
3	.347	.265	.593	.687	.060	.048	.940	.952	.407	.313	.653	.735
4	.283	.347	.708	.597	.008	.056	.991	.944	.291	.403	.716	.653
5	.177	.256	.808	.670	.015	.074	.985	.926	.192	.330	.823	.744
6	.205	.408	.726	.503	.069	.089	.931	.911	.274	.497	.795	.592
7	.215	.315	.754	.660	.032	.025	.969	.975	.247	.340	.786	.685
8	.250	.262	.726	.715	.024	.023	.976	.977	.274	.285	.750	.738
9	.333	.395	.647	.597	.020	.028	.980	.992	.353	.403	.667	.655
10	.510	.208	.436	.720	.054	.072	.946	.928	.564	.280	.490	.792
11	.192	.373	.785	.586	.023	.041	.977	.959	.215	.414	.808	.627
12	.507	.536	.478	.417	.015	.047	.985	.953	.562	.583	.493	.464
13	.233	.138	.747	.853	.020	.009	.990	.991	.253	.147	.767	.862
14	.278	.320	.680	.613	.041	.047	.950	.933	.311	.367	.721	.660
15	.264	.064	.694	.893	.042	.043	.958	.957	.306	.107	.736	.936
16	.516	.313	.462	.641	.022	.046	.978	.954	.538	.359	.484	.687
17	.311	.415	.654	.547	.035	.038	.965	.962	.346	.453	.689	.585
18	.153	.458	.810	.532	.037	.010	.963	.990	.190	.468	.847	.632
19	.206	.396	.730	.586	.064	.018	.936	.982	.270	.414	.794	.604
20	.537	.316	.437	.644	.027	.040	.974	.960	.564	.366	.464	.684

Wilcoxon (N.S.)

(N.S.)

(p<.07 p>.05)

(p<.10 p>.05)

(p=.05)

(N.S.)

Matched

Pairs Signs

Analysis Test

The most outstanding feature of the study is the schizophrenic's inability to talk in the present. Aaronson has pointed out that disturbances arise when a connecting link in the time-set is interrupted. Eliminating the past and future simultaneously causes a blockage or stopping of the present. The fact that schizophrenics cannot utilize the present but rely on the future supports Aaronson's theory closely. Looking at the date of correlation of age to verb-tense frequency, it is apparent that schizophrenics use the present less and less as they get older. Aaronson has suggested that

the normal manner of handling life is by the present—"the present is the house we live in." This is the very house that the schizophrenics cannot build.

Secondly, the problem of aging has been seen by Aaronson as an effort to inhibit failure and to reinforce success through life-history by a continual series of differentiations and discriminations of meanings. Table V suggests that this is true, with the present becoming more and more important to normals and less and less important to schizophrenics. The schizophrenic has broken or ruptured a connecting

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link in a linear set. If the clock of life has stopped, one can enter into psychic sleep, or one can react alternately by moving into a new dimension of the set. It also appears that schizophrenia can be interpreted as a failure to develop a suitable perceptual learning-set for time. Such a learning set must develop early in the interaction of organism and environment. The feed-back system (TOTE—test, operate, test, exit system), continually reinforcing a non-temporal world, ultimately prevents suitable discriminations of meaning-in-time. Reinforced over a life-time the present finally becomes meaningless. One is unable to "take the cash and let the credit go," for

all that is left is the "rumble of a distant drum."

While it has been general consensus that schizophrenics have no future or past, living only in a "concrete world, paleological thinking" (Arieti²⁷) or "paralogical thinking" (von Domarus²⁸), this opinion about the so-called "concrete thinking" has not been set in terms of measurement and frequency (Salzinger²⁴). To the contrary, the schizophrenic has consistently filtered and screened out the present, stopping it. Unable to "die" at this level, the schizophrenic has moved to another dimension. The psychotic-like character of glossalalia has similarly squeezed the present out of life.

TABLE IV AVERAGE BY DECADES OF AGE

Age Range	Past		Present		Future		Past and Present		Past and Future		Present and Future	
	S	N	S	N	S	N	S	N	S	N	S	N
19-29	(N=11) .365	(N=12) .322	.675	.649	.043	.059	.951	.946	.307	.357	.702	.693
30-39	(N=6) .319	(N=3) .310	.651	.664	.049	.027	.947	.975	.348	.336	.688	.628
40-49	(N=4) .324	(N=3) .359	.532	.615	.030	.026	.976	.974	.398	.385	.651	.641
50-59	(N=2) .324	(N=2) .177	.654	.808	.032	.015	.918	.985	.346	.192	.735	.823
Df=3												
X ² =N.S.			N.S.		(X ² =9.26) (P<.05)		N.S.		N.S.		N.S.	

TABLE V
(RHO) RANK CORRELATION OF VERB-TENSE RATIO TO AGE

	Past	Present	Future	Past and Present	Past and Future	Present and Future
Normals	.16	.41	-.66	.70	-.06	.61
Schizophrenics	.29	.13	-.31	.34	.10	.09
$R = \frac{\rho n}{ps} =$.55	3.16	$\frac{1}{2.13} = .47$	2.06	-.60	6.76

The disengagement with time and with the psychotomimetic drugs similarly destroys the before-event and after-event set, literally stopping the present by alterations of past and future simultaneously. While lengthening the past adds to the depressive features of life, it is the present which is essential.²⁰ Depression has been dynamically described as a poorly repressed internalization of hostility. Without the present no amelioration is possible and hence the increased obsessive inability to act and change the past. The final evangelical appeal to "repent" has been to assure the penitent that the past is "dead" and one is wholly "new."

Summary

Time is considered as a linear perceptual learning set, inextricably defined by the cultural anthropology of the Western world and expressed constantly in language, cultural myth and religious symbol. Other studies have shown that eliminating the present, stopping it or slowing it down has produced strong disturbance. This study has sought to replicate this

thesis by an entirely different method, analyzing verb-tense frequency as a measure of latent speech which in turn is a function of the cultural world-view. Thus it is assumed that learned speech as a construct of the sociology of knowledge shows its character in latent usage as well as in content and semantic meaning.

Using verb-tense frequency analysis for matched normal-schizophrenic groups, it has been shown that schizophrenics cannot relate to the present. With an increase of age the normal mode of speech increases with present usage, whereas schizophrenics move into past and future usage. Derivative to this study is the suggestion that schizophrenia is a learning disturbance involving temporal perception of a linear set. There are implications here for unlearning as well, particularly in the use of condition-ability. Moreover, it appears that this disturbance can be explained within the developmental schedule of Piaget in which the child moves from a spatially-oriented to a temporally perceived world.

REFERENCES

1. Dunne, J. W.: *This Serial Universe*. London, Macmillan, 1948.
2. Yaker, Henri M.: *Motifs of the Biblical view of time*. Doctoral dissertation, Columbia University, 1956.
3. Kohn, Hans: *The Idea of Nationalism*. N.Y., Macmillan, 1944.
4. Buber, Martin: *The Prophetic Faith* (trans. C. Winton Davies). N.Y., Macmillan, 1959.
5. Cullman, Oscar: *Christ and Time*. Philadelphia, Westminster Press, 1950.
6. Buber, Martin: *The man of today and the Jewish Bible*. *Commentary* VI 4:327-333, 1948.
7. Piaget, Jean: *The Psychology of Intelligence* (trans. Malcolm Percy and D. E. Berlyne). Patterson, N.J., Littlefield, Adams & Co., 1963.
8. Piaget, Jean: *The Child's Conception of the World* (trans. Joan and Andrew Tomlinson). Patterson, NJ., Littlefield, Adams & Co., 1963.
9. Hunt, J. McV.: *Intelligence and Experience*. N.Y., Ronald Press, 1960.
10. Stern, Wilhelm: *Person und Sache*. Leipzig, J. A. Barth, 1905.
11. Stern, Wilhelm: *Psychologie der fruehen Kindheit*. Leipzig, Quelle & Meyer, 1914.
12. Vygotsky, L. S.: *Thought and Language* (trans. E. Hanfman and G. Vaker). Cambridge, M.I.T. Press, 1962.
13. Hunt, J. McV.: *How children develop intellectually*. *Children Today*, June, 1965.
14. Cohen, B. D. and Camhi, J.: *Schizophrenic performance in a word-communication task*. *J. Abnorm. Psych.* 72:240-246, 1967.
15. Aaronson, Bernard S.: *Hypnosis, time rate perception and personality*. Presented at Eastern Psych. Assoc., Atlantic City, 1965.

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16. Aaronson, Bernard S.: Hypnosis, being and the conceptual categories of time. Presented at N.J. Psych. Assoc, Princeton, 1965.
17. Aaronson, Bernard S.: Hypnotic alterations of space and time. Presented at Inter. Conf. on Hypnosis, Drugs and Psi Induction, St. Paul-de-Vence, France, 1967.
18. Fogel, S. and Hoffer, A.: Perceptual changes induced by hypnotic suggestion for the posthypnotic state: I - General account of effect on personality. *J. Clin. & Exper. Psychopath.* 23:24-35, 1962.
19. Aaronson, Bernard S.: Hypnosis, time rate perception and Psychopathology. Presented at Eastern Psych. Assoc, N.Y., 1966.
20. Aaronson, Bernard S.: Behavior and the place names of time. *Am. J. Hypnosis* IX, 1:1-17, 1966.
21. Salzinger, K., Portnoy, S. and Feldman, R. S.: Verbal behavior of schizophrenic and normal subjects. *Ann. N.Y. Acad. Sci.* 105:845-860, 1964.
22. Salzinger, K. and Hammer, M.: Some formal characteristics of schizophrenic speech as a measure of social deviance. *Ann. N.Y. Acad. Sci.* 105:861-889, 1964.
23. Hollingshead, A. B.: Two-Factor Index of Social Position. New Haven, Yale Press, 1965.
24. Salzinger, K., Portnoy, S. and Feldman, R.: Verbal behavior in schizophrenics and some comments toward a theory of schizophrenia. J. Zurbin (Ed.): *Psychopathology of Schizophrenia*. N.Y., Grune & Stratton, 1966.
25. Downie, N. J. and Heath, R. W.: *Basic Statistical Methods*. N.Y., Harper, 1959.
26. Salzinger, K.: An hypothesis about schizophrenic behavior. Presented at IVth World Congress of Psychiatry, Madrid, Spain, 1966.
27. Arieti, S.: *Interpretation of Schizophrenia*. N.Y., Brunner, 1955.
28. VonDomarus, E.: The specific laws of logic in schizophrenia. J. S. Kasanin (Ed.): *Thought in Schizophrenia*. Berkeley, Univ. of Calif. Press, 1944.