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Language Production by Normals Under Conditions  
of Personalized Distraction

by

Penelope Thrasher

A Thesis Submitted to the Faculty of the Graduate School  
of Loyola University of Chicago in Partial Fulfillment  
of the Requirements for the Degree of

Master of Arts

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## VITA

Penelope Ann Thrasher, the daughter of Paul McNeel Thrasher and Vesta Cassedy Thrasher, was born May 15, 1954, in Washington, D.C.

She was graduated from Winston Churchill High School in Potomac, Maryland in 1971. She attended the University of Maryland and Northern Virginia Community College, receiving a Bachelor of Arts in psychology from the University of Maryland in May, 1979.

While attending the University of Maryland, Ms. Thrasher was entered onto the Provost's List for academic achievement, and became a member of Psi Chi. During and after her college years, she worked as a researcher in community psychology at the University of Maryland, and then did psychiatric research at the Psychiatric Institute, Washington, D.C. She matriculated at Loyola University of Chicago in 1981, where she has done further research in psychology. Her clinical training has been undertaken at the Veterans Administration Lakeside Medical Center, the Veterans Administration West Side Medical Center, and the Loyola University Counseling Center, all in Chicago, Illinois.

Ms. Thrasher has coauthored The Community Support Project: Final Report, 1980, and Aftercare in the State of Maryland, 1980. She was also coauthor on Memory aids good for a lifetime: A developmental study of memory strategy use, a paper presented at the annual meeting of the Midwestern Psychological Association in 1984.

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## INTRODUCTION

It has long been argued among researchers and theoreticians that differences in communicative styles between normals and psychotics are differences in degree rather than in kind. That is, there is thought to be no clean break between "characteristic" psychotic language and "characteristic" normal language. If this contiguity does in fact exist, it has at least two implications. First, one might expect to find among psychotics evidence of capacity for so-called normal language. This expectation has been amply supported in both the clinical and experimental literatures (see, e.g., Holzman, 1978). Circumstances conducive to more ordinary language behavior among schizophrenics include lack of exposure to conflict-arousing stimuli and optimization of overall level of environmental stimulation (Holzman, 1978). Other, more specific, factors, such as interpersonal supportiveness (Blumenthal, 1964), have been implicated as well in the normalization of schizophrenic language.

The second, and converse, implication is that normals might be capable of producing psychotic-like language at least on occasion. There is some support for this idea, although much of it is speculative. Rosenberg and Tucker (1979) and Harrow and Prosen (1979) are exemplary of workers who believe brief instances of psychotic-like language may in fact occur fairly commonly in the general population. Anxiety or other emotional stress or upset is thought to be evocative of linguistic aberrancy (see, e.g., Harrow & Prosen, 1978; Harrow & Quinlan, 1977), as is excessive arousal (e.g., Gottschalk, 1978; Schwartz, 1978) and



exposure to idiosyncratically disturbing stimulation (e.g., Brown, 1973; Harrow & Miller, 1980).

Although support for the first implication of the thesis of contiguity of language is myriad, surprisingly, very little experimental work has been done investigating the second implication. The present author was able to find only one study directly addressing the issue (Hassol, Cameron, & Magaret, 1952), which work was methodologically flawed and thus difficult to interpret. Briefly, those authors had subjects compose two Thematic Apperception Test (TAT) stories. Half the subjects wrote these undisturbed, while half wrote their second stories while hearing their first stories read back to them. Group comparisons showed the distracted group to have produced more psychotic-like language than the nondistracted group on the second stories. This finding was attributed to the effects of distraction by personally meaningful material.

While Hassol, et al. were on target in seeking effects emergent from intrapsychically relevant material, they unfortunately failed to control for the potentially disruptive effects of distraction alone. As we have seen, psychological proximity to idiosyncratically disturbing material (here, unconscious conflicts as expressed in TAT stories\*) can produce language disruption in schizophrenics and possibly in normals. So, however, can overarousal or sensory inundation (Holzman, 1978), either of which is a viable alternative explanation for Hassol, et al.'s

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\*See Henry (1956 for a defense of the TAT as stimulator of unconscious conflict).

results. Similarly, subjects' linguistic aberrancies could have been due to unknown or not understood effects of being exposed to their own compositions, to material related to the first stimulus picture, or to material personally but not intrapsychically meaningful.

The present study utilizes Hassol, et al.'s basic methodology, with three more control groups added in the hope of accounting for these alternative explanations. There are thus five subject groups. The first wrote two TAT stories, distracted during composition of the second by hearing the first read aloud. The second group wrote an autobiography, which then served as distractor while a TAT story was written. The third group also wrote two TAT stories, but was distracted while writing the second by a generic story composed to accompany the first card. The fourth group wrote an essay on a neutral topic, then was distracted with this while writing a TAT story. The final group simply wrote two TAT stories, with no distractions.

It is hypothesized that the language in the second stories of the first group will be significantly more psychotic-like than in the second compositions of any other group. This is anticipated because of the doubly disruptive effect of pure distraction and exposure to idiosyncratically disturbing material. It is further hypothesized that all four distraction groups will show more aberrancy on their second compositions than will the No-Distraction Group, because of the pure effect of disruption.

## REVIEW OF RELATED LITERATURE

Since there are very few studies of psychotics' written language, attention will be focussed on their spoken language. We will begin with papers on specific characteristics of psychotic language, as these have been discovered clinically and experimentally. The more general characteristic of the communicativeness of such language will then be addressed. Where available, comparisons between normals' and psychotics' language will be pointed out in these first two sections. Finally, we will look at studies which support a thesis of contiguity between normal and psychotic language.

Schwartz (1978) notes that despite years of attempt, definition of "the term 'schizophrenic language' remains elusive" (p. 238). Nevertheless, commonalities in specific findings can be found among various studies; some of this work will here be reviewed.

Roger Brown (1973) has noted the consistency with which professionals and naive subjects alike have been shown to be able to distinguish normal from schizophrenic language samples. Cues for these judgments appear to reside primarily in the semantic characteristics of the stimuli, with "the formal cues of grammar and prosody" (p. 401) seeming to contribute little to the discriminative task.

Bar (1976), in his review of semiotic studies of psychotic language, compared aphasia to schizophrenia. In schizophrenia, speech becomes aberrant on levels of semantic and lexical analysis, while "phonological and syntactic levels remain remarkably intact" (p. 275).

Schizophrenic speech can be quite elaborate syntactically, and often lacks goal-directedness.

Maher's (1972) review of the literature on formal characteristics of schizophrenic language points out the robustness of the finding that such language is less predictable than is language produced by normals. Also much replicated is the finding that schizophrenics' language is repetitive, on levels of phrase, single word, and syllabic analysis. This limited vocabulary range, along with other psychotic symptomatology, is explained by Maher in terms of attentional deficiencies, which, while operative at a biological level, are exacerbated by environmental stressors. In support of this, Harvard University researchers (Distractability seen, 1983) report on a series of experiments comparing distractability of schizophrenics, depressives, and normals. Subjects were exposed to two audio inputs simultaneously and then asked to repeat one of the inputs. Schizophrenics were found to be more distractable than either of the other two groups, in that they more often incorporated components of the distracting inputs into their repetitions.

Maher (1972) also finds syntactical aberrations to be less frequent than semantic or lexical deviations in schizophrenic language. When disruptions of syntactical rules occur, they are signs "of greater clinical gravity than . . . semantic disturbances alone" (p. 13). Rosenberg and Tucker (1979) note that research on syntactical properties of psychotics' language has been disappointing, inasmuch as there does not appear to be a distinctive "psychotic" syntactical pattern. Holzman (1978), Rausch, Prescott, and DeWolfe (1980), and DeWolfe, Rausch, and Eiderka (1984) as well have noted that syntactical rules are generally

not disrupted in schizophrenic speech. Rosenberg and Tucker (1979) state, in fact, that schizophrenic communications "do not represent a characterizable linguistic entity in terms of shared formal properties" (p. 1331) such as loosening of associations and other structural variables.

Grand, Steingart, Freedman, and Buchwald (1975) assessed structural components of schizophrenic speech emitted in clinical interviews, and correlated these findings with subjects' performances on the Stroop Color-Word Interference Test. The four major categories of language structure, in ascending order of sophistication, were: fragmented language, or incomplete sentences; narrative language, or simply structured sentences such as unitary independent clauses with or without modifying terms; complex portrayal language, or sentences with at least one dependent clause; and complex conditional language, complex sentences "in which an individual chooses appropriate grammatical devices which can bring about the articulation of a causal, deductive, or purposive matrix . . . which is applied to immediate experience" (p. 623). Subjects who used the lower levels of language structure were found to be attentive to colors rather than to words on the Stroop task, while users of more complex language showed greater distractability by words.

Siegel, Harrow, Reilly, and Tucker (1976) studied the free verbalizations of hospitalized and nonhospitalized chronic schizophrenics. The two groups were compared on a number of measures of deviant verbalization, such as looseness of association, autistic meaning, and vagueness of ideas, as well as on a composite measure of deviant verbalizations. Significant differences between the groups were few, but

the hospitalized subjects showed significantly greater incidences of overall verbal deviance, paucity of speech, perseveration, and repetition. No group differences were found on measures of looseness of association, gap in communication, private meaning, blocking, delusional thinking, or abrupt time shift. The authors ascribe discovered group differences to severity of illness and/or to clinicians' criteria for improvement and discharge from the hospital.

Subjects' free speech samples in the Siegel, et al. (1976) study were obtained from two interviews, one of which was presumed to be on an affectively laden topic and the other of which was on a more neutral topic. The authors note that there were no differences on any of their measures between these two types of interview.

Kasanin (1946) states that schizophrenics show a reduction in higher level conceptual thinking, operating in modes of thought which are "more concrete, realistic, matter-of-fact" (p. 43) and personalized in meaning. This sort of thinking ramifies into a use of language which is highly idiosyncratic, devoted not to communication but rather to the maintenance of the integrity of the personal world. Cameron (1946) notes the following characteristics of schizophrenic thought and communication: lack of causal links; use of personal idioms and metonyms; interpenetration of themes; overinclusiveness; desire to alter reality constraints; and "varied but ineffectual" (p. 58), i.e., not useful and/or used, generalizations.

In a comparative study of schizophrenic and normal speech, Gottschalk (1978) reported that schizophrenics made significantly more inaudible or not understandable statements; statements which were broken

off in mid-phrase; and repetitions of words, phrases, or clauses, although phenothiazine administration somewhat ameliorated the repetitions and inaudibilities in some schizophrenics.

Andreason (1979), in a study comparing speech in schizophrenics, manics, and depressives, found schizophrenics significantly more impoverished in amount and content of speech than either of the other two groups. Illogicality, perseveration, and loss of goal in speaking were characteristic of schizophrenics and manics both, while other often-cited phenomena such as clanging and neologisms were found very infrequently.

Using quantitative measures of speech components as the basis for her analysis, Fairbanks (1944) undertook a comparative study of normal and schizophrenic speech. Type-token ratio [TTR; this "is computed by dividing the number of different words . . . by the total number of . . . words" (p. 24)] results showed that the psychotic subjects used a significantly more restricted vocabulary than did the normals, though the schizophrenics showed greater variability here. Schizophrenics used significantly fewer articles, conjunctions, nouns, modifiers, and prepositions than normals, while using significantly more verbs, interjections, and pronouns. In terms of specific words used, the psychotic sample showed greater frequencies of such negative words as "not" and "no," and they also utilized past tense verbs more often than normals did.

Seeking pathognomic signs, Gerson, Benson, and Frazier (1977) compared free speech samples of schizophrenics and posterior aphasics. Syntactical disruption was rare to nonexistent in both groups, and

repetition of words and phrases was not discriminatory, being present in both disorders. Use of substantive nouns was more characteristic of schizophrenic than aphasic speech, and schizophrenics, unlike aphasics, did not show paraphasia (i.e., substitutions of incorrect words or letters). And finally, schizophrenics' utterances were notably longer than the aphasics'.

Fischer (1959) concluded, from a study of word identification in schizophrenics and normals, that schizophrenic language is more personal than normal language, and is not characterized by such indices as perseveration and incompleteness of thought.

DeWolfe (1962) compared process schizophrenics, reactive schizophrenics, and normals on word choice in sentence construction. Subjects could use any of four given pronouns with neutral or affective verbs. Normals and reactives used "I" significantly more often with affective verbs, and reactives showed significant increases in response times to affective verbs.

In one of the few studies found which utilized written language as the data base, Ellsworth (1951) examined parts of speech used by schizophrenic and normal adults, and children, in a sentence completion task. Schizophrenics were found to use more nouns and pronouns, and fewer adjectives, than normal adults, with the pronouns more often third- than first-person.

Noting consistent findings in the literature of lower TTRs for schizophrenics than for normals, Pavy, Grinspoon, and Shader (1969) sought to discover variations over time, symptomatology, and medication conditions in the TTRs of chronic and acute schizophrenic inpatients.



For the TTR computations, random samples of 100 words were taken twice from diaries kept by the patients, once while patients were on phenothiazines and once while they were on placebo. Although TTRs, contrary to expectations, fell when patients were on phenothiazines, the authors did discover that TTRs were significantly negatively associated with chronicity; this latter finding was consonant with predictions.

Mabry (1955) compared the performances of more and less bizarre schizophrenics on a sentence completion task. No group differences were found for frequency of words or parts of speech, though global, qualitative judgments of the sentences did produce discrimination between the two groups of schizophrenics and a normal control group. In another study, similarly designed, Mabry (1964) did find that more bizarre schizophrenics showed significantly more interpenetration, autism, and perseveration than did less bizarre schizophrenics or normals. Again, judges were able to discriminate the clinical and nonclinical groups on the basis of their global impressions of the sentences.

The most consistently discovered characteristics of psychotic, as compared to control group, language, then, are: repetitiveness (Fairbanks, 1944; Gerson, et al. 1977; Gottschalk, 1978; Maher, 1972; Pavy, et al., 1969; Siegel, et al., 1976), lack of syntactic disruption (Bar, 1976; Gerson, et al., 1977; Holzman, 1978; Maher, 1972; Rosenberg & Tucker, 1979), distinguishability from normal language (Brown, 1973; Mabry, 1955; Mabry, 1964), greater concreteness (Gerson, et al., 1977; Kasanin, 1946), and paucity of speech (Andreason, 1979; Siegel, et al., 1976) [although Gerson, et al. (1977) found longer utterance lengths in psychotics].

We will next address the issue of the general communicability of psychotic language.

Manschreck, Maher, and Rucklos (1980) compared written and spoken language of normals and schizophrenics by means of fourth- and fifth-word cloze deletion procedures. Results showed equal comprehensibility of normals' and psychotics' written language. Spoken language, however, was significantly less comprehensible among actively thought disordered subjects than among other schizophrenic and normal speakers, when fifth-word deletion was used. The authors speculate that writing influences the communicator in the direction of greater logic and continuity, both because editing is possible and because "a record of prior statements" (p. 328) is immediately available to the writer. Another explanation concerns the use of the cloze procedure, which may be insensitive to incomprehensibilities in written language because of writing's inherently greater organization. "Other linguistic anomalies" (p. 328) in psychotics' writings may thus be detectable with different methods.

Cohen, Nachmani, and Rosenberg (1974) compared acute schizophrenics and normals on the communicativeness of their speech. Subjects were presented with displays of color samples which varied in the numbers of colors shown and in the similarities between the colors. The task was to describe a designated color adequately enough that a listener, shown the same display, could select the referent on the basis of that description. Success of communication was assessed by listeners' abilities to so select. As anticipated, both groups became progressively less able to communicate accurately as similarity between display colors increased. Schizophrenics' decline here was steeper; there were no

significant group differences for dissimilar-color displays and very great differences where colors were similar. Also as predicted, greater display size (i.e., number of different colors shown) produced poorer communication, though there were no group differences in this condition. When communicators served, after an interval, as their own listeners, schizophrenics performed significantly less well than did normals in selecting the referent colors. Schizophrenics were slower to give their descriptions, and gave significantly longer descriptions than normals, particularly when color similarity was high. The authors found also that the later components of schizophrenics' communications appeared "to be drawn . . . from associations to each just prior response resulting in a chain of loosely connected elements" (p. 11) instead of a coherent description of a referent.

These authors explain their results in terms of a "perseverative-chaining" (p. 11) model of schizophrenic communication. The speaker is thought to sample potential verbal responses from a "non-deviant repertoire" (p. 4), and to be able to judge their adequacy, but cannot cease resampling the same (inadequate) responses after rejecting them. In chaining, the speaker's repertoire consists of associations to immediately prior responses; re-referral to the original referent is not undertaken. Salzinger, Portnoy, and Feldman (1977) as well cite findings in support of this sort of immediacy hypothesis: "the behavior of schizophrenics is controlled primarily by stimuli immediate (temporally and spatially close-by) in their environment. In speech, the relevant stimuli include the speaker's own response-produced stimuli" (p. 255). Perseveration, then, accounts for increased reaction times in the Cohen,

et al. (1974) study, while chaining accounts for increased utterance lengths in schizophrenic speakers.

Kantorowitz and Cohen (1977) extended this type of study to examination of chronic schizophrenics' referent communication abilities. They speculated that chronics "have given up, as futile, efforts to edit out sampled but inappropriate associations" (p. 2). Chronic schizophrenics will therefore show decreased response latencies and utterance lengths with increases in display similarities, unlike normals and unlike the acute schizophrenics in the Cohen, et al. (1974) study. These hypotheses were generally supported, with chronic schizophrenics showing no differences in reaction times to low- and high-similarity displays, and normals showing longer latencies to the high-similarity displays. Utterance length also showed effects of chronicity, with chronic process schizophrenics describing referents in high-similarity displays with fewer words than normals or than reactive schizophrenics. The authors take these results to mean that with chronicity, self-editing activities diminish in schizophrenics:

Acute patients . . . persist in the struggle to find a fresh and more appropriate description to replace sampled but inappropriate responses and are unable to bring this off; chronic patients appear . . . to have given up this attempt (p. 7).

In Cohen's (1978) review of these and other studies by him and his colleagues, response latency and utterance length are said to be valid "indices of the amount of self-editing activity engaged in by speakers" (p. 269), but only "insofar as the speaker intends to communicate accurately to his listeners" (p. 269). Results in these studies imply, again, desire to communicate in acute schizophrenic, and

lack of desire in chronics.

Manschreck, Maher, Rucklos, and White (1979) elicited free speech samples from a control group and from schizophrenics, and submitted transcripts of these to judges under fourth- and fifth-word cloze deletion conditions. Under the fifth-word condition, thought-disordered schizophrenics' speech was found to be significantly less predictable than that of non-thought-disordered schizophrenics or controls, and all schizophrenics' speech was less predictable than controls'. Blaney (1974) has noted as well that schizophrenics' speech is less predictable by cloze procedures than is normals' speech. In the Manschreck, et al. (1979) study, no specific element of thought disorder was found to be associated with the predictability scores. Loosened associations, impoverished thought, illogicality and incoherence were all found in varying degrees in various schizophrenic subjects.

Manschreck, et al. (1979) argue that not all schizophrenics show deviant language, and that no schizophrenic shows it at all times. This, in fact, is a recurrent theme in much of the literature on psychotic language, and it is coupled with findings and speculations regarding a contiguity between normals' and psychotics' language. Some of this work will now be reviewed.

Harrow and Quinlan (1977), in a discussion of aberrant thought in schizophrenia and other pathologies, state their suspicion that disordered thinking is not a discrete entity but, rather, a phenomenon "fitting along a continuum with other normal thinking" (p. 15). Thought pathology is by no means unique to schizophrenia, and "factors influencing and creating the potential for mild levels of idiosyncratic-disordered

thinking" (p. 20) include, of course, schizophrenia, along with anxiety or other psychological disturbance or upset.

Gottschalk (1978) argues that throughout the so-called "normal" population we are likely to find

at least transient deficiencies in thinking processes of the kind typifying schizophrenics . . . Indeed, the evidence suggests that schizophrenic disorders involve a set of behaviors distributed on a continuum in the general population . . . (p. 319).

Schwartz (1978) speculates that schizophrenics' characteristically poor or aberrant performance on certain tasks involving language proceed ultimately from chronic overarousal. Highly aroused nonschizophrenic individuals, in fact, often show schizophrenic-like performance decrements.

Harrow and Prosen (1978) investigated bizarre or idiosyncratic schizophrenic speech samples elicited in standard clinical testing or interview situations. They sought to discover whether the peculiarities of speech observed were the products of intermingling, or intrusion of personal concerns into the subject matter more immediately at hand. Results supported an intermingling hypothesis; interpenetration of personal concerns and the consensual topic of conversation was present in the large majority of bizarre or peculiar verbalizations. Although in this sample verbalizations were often grossly aberrant, the authors believe intermingling may be fairly common in the speech of many or most individuals "during the occasional times when they show idiosyncratic or disordered verbalizations" (p. 1218). Indeed, another study in the same series (Harrow & Prosen, 1979) compared the bizarre verbalizations

of schizophrenic and nonschizophrenic inpatients, and intermingling was found to account for the aberrancy of a good many speech samples in both groups, though the schizophrenics showed intermingling more often. Inefficient or nonexistent self-monitoring of appropriateness of communication is implied by the intermingling hypothesis. In comparison to schizophrenics, "nonschizophrenic patients and normals many also have some, but less, trouble in monitoring their verbalizations, leading to small amounts of cognitive slippage, especially during periods of stress or upset" (Harrow & Prosen, 1979, p. 296). It is this slippage which can produce "psychotic-like" language.

Harrow and Miller (1980) investigated the question of whether psychiatric patients, both schizophrenic and nonschizophrenic, were accurate assessors of the bizarreness or typicality of their own and others' verbalizations. All patients as a group were found to be poor self-observers here, with schizophrenics even less able than nonschizophrenics when the diagnostic dimension was considered. Patients were also divided into two groups on the basis of high and low bizarreness of speech, regardless of diagnosis. The more bizarre group was significantly less good at self-assessment than was the less bizarre group. When evaluating others' verbalizations, however, the overall group showed good agreement with normals' consensual judgments as to typicality of language, though, again, the bizarre subgroup was significantly worse in making these judgments. These results, along with Harrow and Prosen's (1978, 1979) findings regarding intermingling (see above), lead the authors to three conclusions. Loss in self-monitoring abilities, and consequent aberrations in language quality, are first, not unique to

schizophrenia, second, in part attributable to emotional upset or over-involvement, and third, "greater in relation to areas of personal pre-occupation than in relation to content" (Harrow & Miller, 1980, p. 725) which is more neutral.

Other work supporting an essential normalcy of schizophrenic associative structure comes from O'Brien and Weingartner (1970). They found that even when schizophrenics associated idiosyncratically to verbal stimuli, they were nevertheless able to choose the more "normal" associations when presented with multiple options.

Rosenberg and Tucker (1979) state that while such linguistic characteristics as associative loosening, overinclusiveness, and illogicality "occur more frequently in schizophrenic patients, they are not exclusive to schizophrenic patients" (p. 1332) and cannot be said to be diagnostic. They are, in fact, not unusual in the ordinary conversational discourse of normals: "Indeed, they represent the rule rather than the exception in everyday spoken language" (p. 1336).

Brown's (1973) perusal of studies attempting to find performance differences between normals and schizophrenics on various types of tasks has convinced him that the paucity of significant differences in such studies can in large part be attributed to the types of tasks utilized. He notes experimenters' apparent assumption that schizophrenia "result[s] from an across-the-board, content-free impairment of a basic function like perception, learning, concept formation, or attention" (p. 402). It has been Brown's experience, however, that the impairments of schizophrenia are very much content-bound, with pathology making itself manifest when an individual's idiosyncratically disturbed content areas are



touched upon. This argument could explain, not only why schizophrenics show impairment only sporadically on laboratory tasks, but also why "only some of the linguistic productions of schizophrenics appear either disorganized or deluded, [while] very many do not" (p. 400).

Gottschalk (1978) reports on a number of his and his colleagues' studies showing drugged normals' susceptibility to schizophrenic-like speech. Lysergic acid diethylamide-25, benzodiazepine derivatives, psilocybin, and nitrous oxide produce speech characterized by incomplete or repeated phrases and clauses, and inaudible or not understandable remarks. Sensory overload as well can produce incomplete statements in normals. In Gottschalk's opinion, verbal characteristics of the cerebrally based schizophrenic syndrome can be evoked in normals by chemical or psychosocial means (though the psychosocial alienation which typifies schizophrenia is not likely to be seen under these circumstances).

Schizophrenic disruption of thought process and language adequacy is phasic and frequently affects only portions of the psychic or linguistic structures (Holzman, 1978). Favorable environmental circumstances can attenuate psychotic characteristics, in that modification of environmental stimulation to optimal levels and minimization of conflict-arousing stimulation both can produce more adaptive language and thinking. Conversely, normals can be induced to manifest transient psychotic-like thought processes and language forms under some circumstances -- that is, psychoticism is contiguous with more ordinary mental processes. Inhibition of maladaptive functioning, it is argued, "can be produced by manipulating the usual and ordinary arrangement of stimuli . . . necessary for effective cognitive functioning" (Holzman, 1978, p. 373),

for example, through sensory deprivation or inundation. The mechanisms producing evidence of psychoticism, be they psychosocial, environmental, or chemical, may be the same for all individuals.

Harrow, Tucker, and Shield (1972) investigated the phenomenon of stimulus overinclusion, defined as:

perceptual experiences characterized by the individual's difficulty in attending selectively to relevant stimuli, or by the person's tendency to be distracted by or to focus unnecessarily on a wide range of irrelevant stimuli (p. 40).

Schizophrenic and nonschizophrenic psychiatric inpatients, and normals, were given a self-report inventory assessing for stimulus overinclusion, and were evaluated on a number of other personality indices as well. The clinical groups were assessed for stimulus overinclusion at or near hospital admission, when acute psychopathology was present, and again some weeks later, when overt symptomatology had subsided. Psychotics in general, and schizophrenics in particular, were found to be most impaired on stimulus overinclusion at the first assessment, with non-psychotic patients rating next highest and normals the lowest, though all groups were positive for this index. At the second assessment period, significant reduction in stimulus overinclusion was found for all psychiatric groups. Schizophrenics continued to rate highest, but the nonschizophrenics "returned to a relatively low premorbid level" (p. 43), which level was comparable to that of the normals. The authors believe that their findings are indicative of a certain universality of hypersensitivity to stimulation when individuals are acutely emotionally or psychologically upset. Stimulus overinclusiveness was found to be significantly associated with measures of trait anxiety both in normals

and in the inpatients, and trait anxiety itself was associated with easy disruption by external stimuli, poor response to stress, and confusion and difficulty in concentrating under pressure.

Blumenthal (1964) examined the effects of interpersonal stress on the spoken language of regressed or nonregressed schizophrenics and of schizophrenics with good or poor premorbid histories. Subjects were engaged in two stressful interviews. In one, personally conflictual material was explored, and in the other the experimenter was disapproving of the subject. Regressed subjects showed significant increases in speech disruption over successive interviews, and subjects with poor premorbid histories showed disruption only when one particular interviewer conducted the disapproving interview. The author concluded that regressed schizophrenics are globally highly anxious and thus easily disrupted, while poor premorbids are excessively responsive to interpersonal context.

Dinoff, Morris, and Hannon (1963) found schizophrenics' speech in dyadic interaction to be stable over time when assessed in terms of time taken up while speaking, utterance lengths, and frequency of speaking.

Heath (1956) discusses the influence of an individual's anxiety thresholds on task performance, stating that anxiety may produce "task irrelevant responses" (p. 403) which impair adequacy of performance. Specific content areas arouse different amounts of anxiety in the individual, and have impact on performance in proportion to the quantity of anxiety present. In a study perhaps relevant to this observation, Bertoch (1966; reported in Maher, 1972) found schizophrenics with more

severe thought disorders to produce less predictable language when they were responding to "ambiguous pictorial stimuli" (p. 6) than when they composed responses to relatively unambiguous pictures.

Feldstein (1962) exposed schizophrenics and normals to affectively laden and non-affective pictures, under conditions of interpersonal closeness to or distance from the experimenter. Measures of general speech disruption were taken, along with measures of inaccuracy and irrelevance in subjects' speech. Both groups showed comparable increases in verbal productivity and in general speech disruption under the affective stimulus condition; the only group difference found was that of schizophrenics' giving more irrelevant responses in interpersonally close conditions.

Davison (1953) administered twenty TAT cards to three groups of neurotic and three groups of schizophrenic inpatients. He found neurotics could be "distinguished from schizophrenics largely on the basis of formal characteristics of TAT stories. These include bizarre verbalizations, illogical twists, guarding and evasion" (p. 31), with the psychotic groups scoring significantly higher on these characteristics. Less useful for making the psychotic-non-psychotic distinction were measures of interpersonal relationships, outcomes, and feelings in the stories.

Hassol, et al. (1952) report a study in which normal subjects wrote two TAT stories. Half the subjects wrote these sequentially, with no distractions, and half wrote the second story while hearing a tape recording of the first story. The authors found significantly more schizophrenic-like language in the second stories of the distracted group,

and more dynamically meaningful themes as well. Hassol, et al. took their results to indicate that disorganized language "is part of the behavioral repertoire of all human beings" (p. 352). They speculated that personally meaningful material (here, TAT stories) is necessary, if not sufficient, to release such language.

The present study proceeds from the works cited above. Methodologically, it is essentially a partial replication and an extension of the Hassol, et al. study, and it takes its theoretical foundation from the many authors who have stated that psychotic-like language is within the repertoire of many or most individuals when they are psychically stressed.

The present study attempts to circumvent shortcomings in Hassol, et al.'s methodology. As they stand, Hassol, et al.'s findings are subject to several explanations, the most important of which has to do with the effects of distraction on the subjects' verbal productions. Quite conceivably, the noise alone could induce writers to produce aberrant language. Once this variable is controlled, however, questions then arise regarding the possible effects of distractors being subjects' own productions, being fictional and stimulus-related accounts, and being personally meaningful in some nondynamic sense. Consequently, the present study was designed with four control groups, in addition to the experimental one, in order to account for all these potential effects.

## METHODS

The basic procedure was for subjects to write two short stories or essays, with or without distraction during production of the second composition.

### EXPERIMENTAL GROUPS

Group A. Subjects were asked to write a two- or three-paragraph story to accompany a TAT card. This story was then read back to subjects while they wrote a second story to accompany a second TAT card. This was the experimental group.

Group B. Subjects in this group wrote a two- or three-paragraph autobiography, which was read back to them by the experimenter while a story to accompany one of two TAT cards was written. This condition was designed to control for the effects of distraction and of personally meaningful input, where such input is presumably less intrapsychically relevant than the distracting input in Condition A.

Group C. Again, subjects wrote two TAT stories. The distractor during composition of the second story was a "generic" story composed to accompany the first card seen by the subject. These "generic" stories were drawn from Henry (1956) and may be found in Appendix A. This condition was designed to control for any effects that hearing (fictional) material relevant to the first stimulus card might have.

Group D. Subjects here were asked to write a two- or three-paragraph essay about trees, and they were asked to "make it as scientific as you can, even if you don't know much about trees." This essay was then read

back to the subject while he or she wrote a TAT story. This condition was designed to control for effects of hearing one's own composition while writing, where this composition presumably has little personal psychological relevance.

Group E. Here, subjects merely wrote stories to accompany two TAT cards, with no distractions. This condition was intended to control for any effects unique to simple, raw exposure and response to the cards.

TAT cards used in the study were cards 1 and 2 of the standard clinical series. Each card was used equally often in each condition, and in each sequential position in the two-card conditions (A,C, and E), in order to control for order effects and for any stimulus properties unique to each card.

#### SUBJECTS

Subjects were 66 introductory psychology students, participating in order to fulfill a course requirement. Before any subjects were run, a randomly ordered list of experimental conditions and TAT card sequences was drawn up, and subjects were then run in this succession until complete data was obtained for twenty subjects in Group A and ten subjects each in the four control groups. Data from six subjects was thrown out because of undue distraction or because of subject or experimenter error.

#### PROCEDURE

Each subject was seen individually by the author in her office. He or she was asked to deposit possessions on a table and to take a seat at a desk. The experimenter seated herself next to the desk and apprised

the subject of: the general purpose of the study (to look at "written language production"); what, in general, he or she would be asked to do; the confidentiality of the procedure; and his or her right to refuse participation or to quit at any time without penalty. Subjects were also told the experiment would last no more than 30 minutes, and were asked to "skip lines so it'll be easier for me to read" when they did their writing. The experimenter provided pen and paper.

Instructions specific to each condition were then given. These narratives may be found in Appendix B.

When the procedure was completed subjects were asked if they had any questions and whether they desired an explanation of the study and of what they had done. Virtually all subjects did ask for such information. Debriefings for each condition may also be found in Appendix B.

#### MEASURES TAKEN

In accordance with the more robust findings in the literature on psychotic language, all 120 stories, eassays, or autobiographies were measured on TTR, composition length, and number of concrete nouns in proportion to all nouns used. Difference scores were also computed as measures of change from first to second composition for all three dependent variables.



## RESULTS

Seeking effects specific to TAT card used,  $t$ -tests were performed for each dependent measure. Significant card differences were found only three times. In Condition B, proportion of concrete nouns (PCN) was found to be significantly greater in stories composed for card 1 than for card 2,  $t(8) = 2.99$ ,  $p = .017$ , and change in PCN from first to second composition was significantly greater for card 1 responders than for card 2 responders,  $t(8) = 2.66$ ,  $p = .029$ . In Condition D, type-taken ratio (TTR) was significantly greater for card 1 stories than for card 2 stories,  $t(8) = 2.46$ ,  $p = .039$ . With the exception of these measures in these conditions, card groups were collapsed into one for all subsequent analyses, making for five groups.

Group comparisons were constructed in the same way for statistical analysis of each dependent variable and its associated change measure. The Experimental Group (A) was first compared with each control group, to test hypotheses specific to the rationale for inclusion of each control in the study. Group A was then compared with the three control distraction groups (B, C, and D combined) to test whether distraction by TAT story was a more potent disrupter than other types of distraction used. Group C, the generic TAT story group, was compared with the other three distraction groups (A, B, and D combined). This was to test whether distraction by own production was more disruptive than distraction by familiar material. And finally, all distraction groups (A through D) were combined and compared to the non-distracted group (E),

to test whether distraction per se disrupts significantly.

Composition Length. No group comparisons yielded significant differences here. The Experimental Group differed from no other single group on composition length for either the first or the second composition. Neither did it differ from all other distracted groups (B, C and D) combined. The comparison of Conditions A, B, and D combined to Group C gave nonsignificant results as well. Finally, all distraction groups were combined and compared with the No-Distracted Group. No significant differences were found.

Group comparisons for the difference scores obtained for composition length (number of words in first composition-number of words in second composition) are shown in Table 1. Two significant results were obtained here. Contrary to predictions, all non-experimental distraction groups (B, C, and D) combined showed a significantly greater change, a decrease, in composition length from first to second compositions than did the Experimental Group. All distraction groups combined, however, showed a decrease in length from first to second composition, significantly different from the increase shown by the No-Distracted Group. This latter finding is consistent with predicted results.

Type-Token Ratio (TTR). Again, very few significant group differences were found. No significant differences were found on TTR for the first composition. For the second composition (see Table 2), the Experimental Group differed significantly from Group D subjects responding to card 1 and from Group E. These differences were in the expected direction, with the Experimental Group using fewer unique words than control groups.

Table 1

Group Comparisons on Change Measure for Composition Length

Group	A	C	E
	M=.050 SD=36.980	M=29.100 SD=43.406	M=-18.800 SD= 38.892
B			
M=28.000 SD=38.053	$\underline{t}(28)=-1.93$ p= .063		
C			
M=29.100 SD=43.406	$\underline{t}(28)=-1.92$ p= .066		
D			
M=18.200 SD=44.216	$\underline{t}(28)=-1.19$ p= .245		
E			
M=-18.800 SD= 38.892	$\underline{t}(28)=1.29$ p= .206		
A+B+D			
M=11.575 SD=40.001		$\underline{t}(48)=1.22$ p= .229	
B+C+D			
M=25.100 SD=40.813	$\underline{t}(48)=-2.21$ p=.032		
A+B+C+D			
M=15.080 SD=40.863			$\underline{t}(58)=2.41$ p= .019

Table 2

Group Comparisons on Type-Token Ratio for Second Composition

Group	A	C	E
	M=.439 SD=.057	M=.419 SD=.079	M=.490 SD=.073
B			
M=.462 SD=.093	$\underline{t}(28)=-0.83$ p= .413		
C			
M=.419 SD=.079	$\underline{t}(28)=0.82$ p= .421		
D			
M=.503* SD=.068	$\underline{t}(23)=-2.18*$ p= .040		
M=.400** SD=.064	$\underline{t}(23)=1.35**$ p= .190		
E			
M=.490 SD=.073	$\underline{t}(28)=-2.09$ p= .046		
A+B+D			
M=.448 SD=.072		$\underline{t}(48)=-1.12$ p= .267	
B+C+D			
M=.444 SD=.084	$\underline{t}(48)=-0.23$ p= .820		
A+B+C+D			
M=.442 SD=.074			$\underline{t}(58)=-1.87$ p= .067

\*Condition D subgroup responding to Card 1 for second composition.

\*\*Condition D subgroup responding to Card 2 for second composition.

In the various other group comparisons and combinations for the second composition, no other significant differences were found.

Table 3 shows group comparisons for the measure of change in TTR from first to second composition (TTR in first composition-TTR in second composition). Only one significant group difference was found, that between the Experimental Group and the subgroup of Condition D subjects responding to card 1. Here, the Experimental Group showed a decrease in TTR over stories, while the control group showed an increase. This is consistent with predicted results.

Proportion of Concrete Nouns (PCN) Analyses concerning the PCN measure showed no significant group differences for PCN on first compositions, though Groups A and B very closely approached significant differentiation,  $t(28) = 1.98$ ,  $p = .058$ .

Table 4 shows several comparisons in which groups differ significantly on PCN in second compositions. The Experimental Group differs from the subgroup of Condition B responding to card 1 and from Group C and Groups B, C, and D (i.e., all other distraction groups) combined. In addition, Group C differs from all the distracted-by-own-composition groups combined. However, all these results are in the direction opposite that predicted. Experimental groups are lower here on PCN than controls in second compositions, using fewer concrete nouns. The one predicted result here can be seen in the comparison of all distraction groups (A, B, C, and D) with the No-Distraction Group (E), where distracted subjects are significantly more concrete than non-distracted subjects on second compositions.

Table 3

Group Comparisons on Change Measure for Type-Token Ratio

Group	A M=.0293 SD=.108	C M=.0048 SD=.074	E M=.0312 SD=.075
B M=.0554 SD=.080	$\underline{t}(28)=-0.67$ p= .507		
C M=.0048 SD=.074	$\underline{t}(28)= 0.64$ p= .525		
D M=-.0572* SD= .026	$\underline{t}(22.97)=3.23*$ p= .004		
M=-.0192** SD= .047	$\underline{t}(23)=0.97**$ p= .343		
E M=.0312 SD=.075	$\underline{t}(28)=-0.05$ p= .962		
A+B+D M=.0190 SD=.094		$\underline{t}(48)=-0.44$ p= .661	
B+C+D M=.0073 SD=.076	$\underline{t}(48)=0.85$ p= .401		
A+B+C+D M=.0161 SD=.090			$\underline{t}(58)=-0.50$ p= .622

\*Condition D subgroup responding to Card 1 for second composition.

\*\*Condition D subgroup responding to Card 2 for second composition.

Table 4

Group Comparisons on Proportion of Concrete Nouns for Second Composition

Group	A M=.6347 SD=.126	C M=.7786 SD=.096	E M=.5583 SD=.226
B M=.8437* SD=.141	$\underline{t}(23)=-3.24*$ p= .004		
M=.5218** SD=.195	$\underline{t}(23)=1.60**$ p= .122		
C M=.7786 SD=.096	$\underline{t}(28)=-3.16$ p= .004		
D M=.7056 SD=.132	$\underline{t}(28)=-1.43$ p= .163		
E M=.5583 SD=.226	$\underline{t}(11.89)=0.99$ p =.340		
A+B+D M=.6644 SD=.159		$\underline{t}(48)=2.16$ p= .036	
B+C+D M=.7223 SD=.164	$\underline{t}(48)=-2.02$ p= .049		
A+B+C+D M=.6873 SD=.155			$\underline{t}(58)=2.22$ p= .030

\*Condition B subgroup responding to Card 1 for second composition.

\*\*Condition B subgroup responding to Card 2 for second composition.

Results of analyses on the PCN change measure (PCN in second composition-PCN in first composition) can be seen in Table 5. Group A differs significantly here from Group B subjects responding to card 1, Group C, and Groups B, C, and D combined. Again, however, these results are the opposite of those predicted. Experimental subjects should have become more concrete from first to second stories, but instead they became less concrete in comparison to these controls.

Summary The first point to be made about these results concerns the comparability of the various types of writing tasks for first compositions on the dependent variables. TAT stories did not differ from autobiographies or "scientific" essays on trees on composition length, TTR, or PCN. This makes defensible the design of control conditions, the use of change measures from first to second compositions as one method of analysis, and exclusive focus on second as opposed to first compositions.

The lack of significant results in predicted directions is striking. Five of the 46 t-tests comparing groups on change measures or second compositions yielded significant and predicted group differences. About half of these five would be expected to appear by chance alone, but it is impossible to ascertain which of the five reveal genuine experimental effects and which occurred as arbitrary outcomes of statistical treatments. In light of this and of the appearance of a number of unpredicted significant results, the experiment must be seen as failing to support its hypotheses.

We find, then, that the Experimental Group never differed from



Table 5

Group Comparisons on Change Measure for Proportion of Concrete Nouns

Group	A	C	E
	M=-.0272 SD= .131	M=.1300 SD=.113	M=-.0852 SD= .282
B			
M=.2621*	$\underline{t}(23)=-4.00*$		
SD=.199	$p= .001$		
M=-.0518**	$\underline{t}(23)=0.35**$		
SD= .173	$p= .727$		
C			
M=.1300	$\underline{t}(28)=-3.24$		
SD=.113	$p= .003$		
D			
M=.0365	$\underline{t}(28)=-1.06$		
SD=.198	$p= .299$		
E			
M=-.0852	$\underline{t}(10.98)=0.62$		
SD= .282	$p= .549$		
A+B+D			
M=.0218		$\underline{t}(48)=1.77$	
SD=.184		$p= .083$	
B+C+D			
M=.0906	$\underline{t}(48)=-2.42$		
SD=.189	$p= .019$		
A+B+C+D			
M=.0434			$\underline{t}(10.46)=1.39$
SD=.177			$p= .193$

\*Condition B subgroup responding to Card 1 for second composition.

\*\*Condition B subgroup responding to Card 2 for second composition.

Autobiography or Generic Story Groups in predicted directions, nor did it ever differ from all other distraction groups combined in predicted directions. The Experimental Group did differ as predicted from the Trees Essay Group, when the controls were responding to card 1, on both TTR and the TTR change measure. Group A also differed significantly from non-distracted groups on TTR, though not on change in TTR. The unpredicted significant results comparing the Experimental Group to Groups B and C indicate that an autobiography or a generic story may be more distracting than one's own TAT story, in terms of PCN used. Also, any other distractor (here, an autobiography, generic story, or neutral essay) may be more disruptive than a personally relevant TAT story.

Generic story subjects were, in terms of the study's hypotheses, no different from the other distracted groups combined. It would thus seem that hearing unfamiliar material may be as distracting or non-distracting as hearing one's own production.

Most surprising is the dearth of significant results in comparisons of non-distracted to distracted groups. Even if the study's hypotheses concerning personalized distraction were false, one might still expect at the very least significant effects of distraction per se. However, Group E differed from the four other groups combined on only two of six measures, PCN and change in composition length.

## DISCUSSION

In view of the scarcity of predicted results obtained, this study must be viewed as failing to support its hypotheses. We will now examine a number of possible explanations for this failure.

The first explanation concerns the hypothesis itself, by which we predict that under conditions of personalized distraction, normals will be seen to produce psychotic-like language. This prediction rests on an assumption of continuity between normal and aberrant language: all individuals, psychotic or not, have within them the capacity to spontaneously produce either psychotic-like or "normal" language. If this assumption can be shown to be incorrect, then we have a quite sensible explanation for the failure of the Experimental Group to differ as predicted from controls.

We saw previously, however, that the continuity hypothesis has received much clinical and empirical support. Harrow and his colleagues (e.g., Harrow & Miller, 1980; Harrow & Prosen, 1978, 1979), for example, find that aberrant language occurs in both normals and in schizophrenics, and tends to appear in the context of emotional or psychic disruption by personally disturbing material. Rosenberg and Tucker (1979) are also exemplary of workers in this area, arguing that markers of "schizophrenic" speech occur with high frequency in the discourse of normals. It would thus appear that the assumption of continuity of language cannot be dismissed. We must explain the failure of the present study by other means.

A second explanation concerns the measures used in this study. The three measures chosen, composition length, type-token ratio, and proportion of concrete nouns, were selected because of the consistency with which they have been shown to be associated with psychotic language, and because of their solidly quantitative nature. It may be, however, that more qualitative measures would have been more appropriate in this study. Naive judges have been shown to be able to accurately discriminate between psychotics' and nonpsychotics' language (e.g., Brown, 1973). Psychotics' language also seems to be less predictable than normals' (Maher, 1972), and there is evidence as reported by Harvard University researchers to the Chicago Sun Times, that psychotics incorporate elements of distracting inputs into their communications (Distractability seen, 1983). Data analysis using such measures as these, where second compositions are hypothesized to be "psychotic," may well have improved group discriminability in the present study.

A third explanation implies a need for alteration of the study's basic methodology. It may be that compositions used in the present study were simply not very disturbing to subjects. It is quite conceivable that well-defended normals will not reveal their conflicts in any automatic way when writing TAT stories, and therefore hearing these stories will be no more or less disturbing than hearing other compositions. Some evocator of personal concerns less subtle than TAT stories might, then, serve as a more potent disruptor. Here one might use a sentence completion task, inasmuch as such tasks are designed to tap conflicted areas directly. The experimenter might alternatively ask explicitly for TAT stories reflective of personal conflicts or con-

cerns. It might also be desirable to make distractors more distracting and thus harder for subjects to "tune out." One way of doing this could be to have subjects compose their first productions orally, and then to play back tape recordings of these during (second) TAT compositions. Possibly, hearing one's own voice, complete with verbal stumblings, and with content unedited, would be more unsettling than hearing another person read aloud.

A fourth explanation, related to the question of potency of distractors raised above, has to do with the distractability of college students. Many of the subjects in the present study spontaneously commented that having another person read aloud was not especially disruptive to them, adding that they frequently wrote papers for school with the radio on or in a noisy dormitory. Thus, the lack of indicators for effects of disruption here may simply reflect subjects' high distraction thresholds, in comparison to schizophrenics'. An alternative but related explanation may be that subjects expended more energy in composing second productions, overcoming distraction potential and producing material less psychotic-like than first productions. Physiological measures could address this possibility in a future study. If this thesis of greater energy expenditure is valid, then we may have an explanation for the significant findings in this study which were in directions opposite those predicted.

Finally, one might seek an explanation of this study's findings in the channel of communication tapped. The large majority of the work done on continuity of language has utilized spontaneously emitted spoken language. Written language, as used in the present study, is more under

the control of the communicator and therefore probably less likely to show any very obvious aberrancy. Also, subjects were permitted in this study to begin writing whenever they were ready to, while the experimenter began reading aloud as soon as instructions had been given. Subjects thus had a few moments to adjust to the experimenter's behavior and to relegate it to background noise before they began composing. Lack of predicted findings may not be so surprising in this context.

The present study's failure to produce hypothesized results is, then, understandable from several viewpoints. We cannot reject the assumption of continuity of language; the existing literature is persuasive on this point. We can, however, find fault with the study's methods and measurements. Future studies could use more qualitative measures of language aberrancy; more potent distractors, such as sentence completion responses or overtly conflict-laden TAT stories; a clinical control group; and physiological measures of energy expended during story composition. Parallel studies also could be run, in which subjects compose their stories aloud and are not permitted any delay before beginning to compose. With some or all of these methodological and analytic techniques, it seems likely that support for the continuity hypothesis among normals would be found.

## REFERENCES

- Andreasen, N.C. (1979). Thought, language, and communication disorders: II. Diagnostic significance. Archives of General Psychiatry, 36, 1325-1330.
- Bar, E.S. (1976). Semiotic studies in schizophrenia and senile psychosis. Semiotica, 16, 269-283.
- Blaney, P.H. (1974). Two studies on the language behavior of schizophrenics. Journal of Abnormal Psychology, 83, 23-31.
- Blumenthal, R. (1964). The effects of level of mental health, premorbid history, and interpersonal stress upon the speech disruption of chronic schizophrenics. Journal of Nervous and Mental Disease, 139, 313-323.
- Brown, R. (1973). Schizophrenia, language, and reality. American Psychologist, 28, 395-403.
- Cameron, N. (1946). Experimental analysis of schizophrenic thinking. In J.S. Kasanin (Ed.), Language and thought in schizophrenia. Berkeley: University of California Press.
- Cohen, B.D. (1978). Self-editing deficits in schizophrenia. Journal of Psychiatric Research, 14, 267-273.
- Cohen, B.D., Nachmani, G., Rosenberg, S. (1974). Referent communication disturbances in acute schizophrenia. Journal of Abnormal Psychology, 83, 1-13.
- Davison, A.H. (1953). A comparison of the fantasy productions on the Thematic Apperception Test of sixty hospitalized psychoneurotic

and psychotic patients. Journal of the Projective Techniques, 17, 20-33.

DeWolfe, A.S. (1962). The effect of affective tone on the verbal behavior of process and reactive schizophrenics. Journal of Abnormal and Social Psychology, 64, 450-455.

DeWolfe, A.S., Rausch, M.A., Eiderka, P.J. (1984). A word-ordering test to differentiate between aphasia and schizophrenia. Journal of Communication Disorders, in press.

Dinoff, M.R., Morris, J.R., Hannon, J.E. (1963). The stability of schizophrenic speech in a standardized interview. Journal of Clinical Psychology, 19, 279-282.

Distractability seen as possible tipoff to schizophrenia. (1983, December). Chicago Sun Times, p. 13.

Ellsworth, R.B. (1951). The regression of schizophrenic language. Journal of Consulting Psychology, 15, 387-391.

Fairbanks, H. (1944). Studies in language behavior: II. The quantitative differentiation of samples of spoken language. Psychological Monographs, 56, 19-38.

Feldstein, S.A. (1962). The relationship of interpersonal involvement and affectiveness of content to the verbal communications of schizophrenic patients. Journal of Abnormal and Social Psychology, 64, 39-45.

Fischer, W.G. (1959). A study of schizophrenic language: A replication. American Psychologist, 14, 404.



- Gerson, S.N., Benson, D.F., Frazier, S.H. (1977). Diagnosis: Schizophrenia versus posterior aphasia. American Journal of Psychiatry, 134, 966-969.
- Gottschalk, L.A. (1978). Cognitive defect in the schizophrenic syndrome as assessed by speech patterns. In George Serban (Ed.), Cognitive defect in the development of mental illness. New York: Brunner/Mazel.
- Grand, S., Steingart, I., Freedman, N., Buchwald, C. (1975). Organization of language behavior and cognitive performance in chronic schizophrenia. Journal of Abnormal Psychology, 84, 621-628.
- Harrow, M., Miller, J.G. (1980). Schizophrenic thought disorders and impaired perspective. Journal of Abnormal Psychology, 89, 717-727.
- Harrow, M., Prosen, M. (1978). Intermingling and disordered logic as influence on schizophrenic "thought disorders." Archives of General Psychiatry, 35, 1213-1218.
- Harrow, M., Quinlan, D. (1977). Is disordered thinking unique to schizophrenia? Archives of General Psychiatry, 34, 15-21.
- Harrow, M., Tucker, G.J., Shield, P. (1972). Stimulus overinclusion in schizophrenic disorders. Archives of General Psychiatry, 27, 40-45.
- Hassol, L., Cameron, N., Magaret, A. (1952). The production of scattered speech via personalized distraction: An investigation of continuity in normal and schizophrenic language. American Psychologist, 7, 351-352.

- Heath, D.H. (1956). Individual anxiety thresholds and their effect on intellectual performance. Journal of Abnormal and Social Psychology, 52, 403-408.
- Henry, William E. (1956). The analysis of fantasy: The Thematic Apperception technique in the study of personality. New York: John Wiley & Sons, Inc.
- Holzman, P.S. (1978). Cognitive impairment and cognitive stability: Towards a theory of thought disorder. In George Serban (Ed.), Cognitive defects in the development of mental illness. New York: Brunner/Mazel.
- Kantorowitz, D.A., Cohen, B.D. (1977). Referent communication in chronic schizophrenia. Journal of Abnormal Psychology, 86, 1-9.
- Kasanin, J.S. (1946). The disturbance of conceptual thinking in schizophrenia. In J.S. Kasanin (Ed.), Language and thought in schizophrenia. Berkeley: University of California Press.
- Mabry, M. (1955). A study comparing the language characteristics of scattered and non-scattered schizophrenics with normals. Dissertation Abstracts, 15, 457-458.
- Mabry, M. (1964). Language characteristics of scattered and nonscattered schizophrenics compared with normals. Journal of Psychology, 57, 29-40.
- Maher, B. (1972). The language of schizophrenia: A review and interpretation. British Journal of Psychiatry, 120, 3-17.
- Manschreck, T.C., Maher, B.A., Rucklos, M.E. (1980). Cloze procedure and written language in schizophrenia. Language and Speech, 23, 323-328.

Manschreck, T.C., Maher, B.A., Rucklos, M.E., White, M.T. (1979).

The predictability of thought disordered speech in schizophrenic patients. British Journal of Psychiatry, 134, 595-601.

O'Brian, J.P., Weingartner, H. (1970). Associative structure in chronic schizophrenia. Archives of General Psychiatry, 22, 136-142.

Pavy, D., Grinspoon, L., Shader, R.I. (1969). Word frequency measures of verbal disorders in schizophrenia. Diseases of the Nervous System, 30, 553-556.

Rabin, A.I., King, G.F. (1958). Psychological studies. In Leopold Bellak and Paul K. Benedict (Eds.), Schizophrenia: A review of the syndrome. New York: Logos Press.

Rausch, M.A., Prescott, T.E., DeWolfe, A.S. (1980). Schizophrenic and aphasic language: Discriminable or not? Journal of Consulting and Clinical Psychology, 48, 63-70.

Rosenberg, S.D., Tucker, G.J. (1979). Verbal behavior and schizophrenia: The semantic dimension. Archives of General Psychiatry, 36, 1331-1337.

Salzinger, K., Portnoy, S., Feldman, R.S. (1977). Intrusions in schizophrenic speech: The immediacy hypothesis vs. the lapse of attention hypothesis. Comprehensive Psychiatry, 18, 255-261.

Schooler, C., Feldman, S.E. (1967). Experimental studies of schizophrenia. Goleta, California: Psychonomic Press.

Schwartz, S. (1978). Language and cognition in schizophrenia: A review and synthesis. In Steven Schwartz (Ed.), Language and cognition in schizophrenia. Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Siegel, A., Harrow, M., Reilly, F., Tucker, G.J. (1976). Loose associations and disordered speech patterns in chronic schizophrenia.

Journal of Nervous and Mental Disease, 162, 105-112.

**APPENDIX A**

STORIES ACCOMPANYING TAT CARDS IN CONDITION C

Card 1 This is a picture of a young boy contemplating a violin. It is difficult to know where to start to pick out the best relevant details. The boy is certainly concerned with some problem about the violin, but does not seem to be greatly disturbed. Possibly he has wanted to go out and play but has been told that he must spend so much time practicing his violin lesson. He is not interested, however, and is sulking. (Henry, 1956, p. 140)

Card 2 Looks like a girl going away to school or has been to school. I don't know whether she is remembering being on a farm or is actually there -- she remembers, I think. The man is either her father or brother and she remembers how he used to look. She probably wanted to go to school for a long time and they didn't have the money and maybe she wonders now whether she should have left the farm. She'll probably come back or -- and be a teacher, teach there or something. (Henry, 1956, p. 120)

**APPENDIX B**

## INSTRUCTIONS FOR EXPERIMENTAL CONDITIONS

### Condition A

(HAND CARD TO S) Please write a story about this picture of no more than two or three paragraphs.

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(TAKE CARD AND STORY) Thank you. Now I'd like you to write another story about a picture, also of no more than two or three paragraphs. This time, though, I'm going to be reading your first story to you while you write. I know it's distracting, but please do the best you can. (HAND CARD AND BEGIN TO READ)

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OK, thank you. That's all I have for you to do. Do you have any questions about what we've done, or what the study is about?

I'm studying the effects of distraction on writing, number one; I'll be comparing first and second stories on things like length, comprehensibility, grammatical structure, things like that. I read your story back to you because I'm studying the effects not only of distraction, but of personalized distraction. Presumably, your story had some meaning to you, and insofar as its content was "personal" in some sense we may find the quality of your language on the second story to be a bit worse than on the first.

### Condition B

Please write an autobiography of no more than two or three paragraphs.

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(TAKE AUTOBIOGRAPHY) Thank you. Now I'd like you to write a story about a picture that I'll give you, also of no more than two or three paragraphs. This time, though, I'm going to be reading your autobiography to you while you write. I know it's distracting, but please do the best you can. (HAND CARD AND BEGIN READING)

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OK, thank you. That's all I have for you to do. Do you have any questions about what we've done, or what the study is about?



I'm studying the effects of distraction on writing, number one; I'll be comparing first and second writings on things like length, comprehensibility, grammatical structure, things like that. I read your autobiography back to you because I'm studying the effects not only of distraction, but of personalized distraction. Presumably your autobiography had some meaning to you, and insofar as its content was "personal" we may find the quality of your language on the story to be a bit worse than on the autobiography.

### Condition C

(HAND CARD TO S) Please write a story about this picture of no more than two or three paragraphs.

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(TAKE CARD AND STORY) Thank you. Now I'd like you to write another story about a picture, also of no more than two or three paragraphs. This time, though, I'm going to be reading a story about the first picture to you while you write. I know it's distracting, but please do the best you can. (HAND CARD AND BEGIN TO READ)

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OK, thank you. That's all I have for you to do. Do you have any questions about what we've done, or what the study is about?

I'm studying the effects of distraction on writing, number one; I'll be comparing first and second stories on things like length, comprehensibility, grammatical structure, things like that. I'm studying the effects not only of distraction, but of personalized distraction. You were a control subject; other subjects are hearing their own stories read back to them and they'll be compared to people like you -- insofar as the stories are personally meaningful in some sense, we may find the quality of the language in the other people's second stories to be a bit worse than the language in the second stories of people run in your condition.

### Condition D

Please write an essay about trees of no more than two or three paragraphs. Try to make your essay as scientific as you can, even if you don't know much about trees.

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(TAKE ESSAY) Thank you. Now I'd like you to write a story about a

picture that I'll give you, also of no more than two or three paragraphs. This time, though, I'm going to be reading your essay to you while you write. I know it's distracting, but please do the best you can. (HAND CARD AND BEGIN READING)

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OK, thank you. That's all I have for you to do. Do you have any questions about what we've done, or what the study is about?

I'm studying the effects of distraction on writing, number one; I'll be comparing first and second writings on things like length, comprehensibility, grammatical structure, things like that. I'm studying the effects not only of distraction, but of personalized distraction. You were a control subject; other subjects wrote two stories to go with pictures, and heard their first stories read back while they wrote their second stories. They'll be compared to people like you -- insofar as the stories are personally meaningful in some sense, we may find the quality of the language in the other people's second stories to be a bit worse than the language in the stories of people run in your condition.

#### Condition E

(HAND CARD TO S) Please write a story about this picture of no more than two or three paragraphs.

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(TAKE CARD AND STORY) Thank you. Now I'd like you to write another story about a picture, also of no more than two or three paragraphs (HAND CARD)

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OK, thank you. That's all I have for you to do. Do you have any questions about what we've done, or what the study is about?

I'm studying the effects of distraction on writing number one; I'll be comparing first and second stories on things like length, comprehensibility, grammatical structure, things like that. I'm studying the effects not only of distraction, but of personalized distraction. You were a control subject. People in other conditions are writing their second stories while I read back to them their first stories. They'll be compared to people like you -- insofar as the stories are personally meaningful in some sense, we may find the quality of the language in the other people's second stories to be a bit worse than the language in the second stories of people run in your condition.

APPROVAL SHEET

The thesis submitted by Penelope Thrasher has been read and approved by the following committee:

Dr. Alan S. DeWolfe, Director  
Professor, Psychology, Loyola

Dr. Robert C. Nicolay  
Professor, Psychology, Loyola

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval by the Committee with reference to content and form.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree of Master of Arts.

Date

11/19/54

Director's Signature

Alan S. DeWolfe