
DISTRACTIBILITY CORRELATES OF
NORMAL AND OBESE SUBJECTS

William Robert Hailey

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ABSTRACT

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Schacter and his associates demonstrated that peripheral physiological correlates of deprivation had little effect on obese eating behavior. Rodin, Herman and Schacter, 1969, extended the externality hypothesis to salient non-food cues requiring anticipatory attention. Rodin, 1971, showed that female obese were more distracted by competing stimuli in a proofreading task. However, in an attempt to clinically extend the distractibility dimension to prediction of performance in a behavior modification weight loss program, Nathan , 1975, failed to replicate Rodin's findings. The present study is an attempt to partially replicate Rodin's study; extend Rodin's externality of non-food proofreading cues to male obese subjects; and extend the distractibility dimension to the repression of stimulus cues required by the Stroop Color-word test.

The effects of distraction on the performance of obese and normal subjects were tested. It was hypothesized that a high correlation would be found between

weight deviation and each of the distractibility scores, proofreading performance and Stroop performance. A high correlation was also predicted between scores from the proofreading task and Stroop scores.

To test these hypotheses, 32 subjects were tested on a counterbalanced, randomly assigned design. Subjects proofread two passages standardized according to number of errors, type of errors, and distribution of errors while listening to one of two tapes. One tape was a heavily emotional, high distraction tape describing the terrors of Hiroshima. The second tape was a low emotional, low distraction tape describing the associations of seashells. A questionnaire was administered after each proofreading task.

Upon completing these tasks, each subject was tested on a standard form of the Stroop XXX and Color-word tests. The Stroop XXX test is a low stress, low distractibility test where performance is a function of calling out colors. The Stroop Color-word test is a high stress, high distractibility test involving the repression of a learned response.

Subjects read approximately the same number of lines, and corrected proof about as accurately as other subject groups. (Groups were Male normal, Male obese, Female normal, and Female obese.) Female normals performed significantly better than Female obese in the main Stroop effect. A high

was found between weight deviation and the difference in number of lines completed. ($\#lines\ B - \#lines\ A$, r equal to $-.8$) Good correlations were found between the main Stroop effect and weight deviation (male obese Ss, r equal to $.6$) and between the main Stroop effect and low distract accuracy (male obese Ss, r equal to $.6$).

Results were discussed in relationship to Nathan's failure to replicate Rodin's (1971) findings on obese proofreading accuracy. Experimental findings are taken to be of positive potential for extension of Stroop test to prediction of success in behavior therapy of obese males.

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CHAPTER I
INTRODUCTION

"Remove far from me vanity and lies: give me neither poverty nor riches; feed me with food convenient for me ..."
(KJV Old Testament, Proverbs 30:8) Perhaps Solomon was the first psychologist to observe food cues and their relationships to people's lives. Vanity and lives are distractions a man wouldn't want to be susceptible to. Perhaps Solomon himself was obese. Are obese more susceptible to this "distractibility" dimension than normals? The present experiment is an attempt to understand the relationships between the hypothesized distractibility dimension and concrete data such as weight deviation from the norm and cognitive distraction tests.

How do the obese become overweight? Work by Stunkard (1961) suggested that obese didn't really know when they were physiologically hungry. While isolating gastric motility, which is a good indicator of physiological hunger, Stunkard found no differences between obese and normal subjects. However, the correlation between self-reported hunger and gastric motility was much lower for obese than non-obese Ss. Bruche (1961) noticed that overweight clients going through psychoanalysis didn't seem to know when they were hungry.

Perhaps the major breakthrough in the study of obesity came in 1968, when Schacter initiated a series of laboratory and naturalistic studies testing the hypothesis that obese were more responsive to external food cues than normals. An external food cue, for example, could be a clock set to dinner time, or a pastry shop as seen from the freeway. Schacter assumed that food deprivation would increase gastric motility, and fear would decrease motility. Thus, the eating behavior of the non-obese would correspond to these induced changes, while the eating behavior of the obese would not. All subjects missed one meal prior to the experiment. Unlimited helpings of roast beef sandwiches were given to half of the Ss, who were designated as being in the "full stomach condition". Ss in the "empty stomach condition" were left unfed. Fear was manipulated by the presentations of two differential introductions to a "forthcoming" electrical shock. The dependent variable was the number of crackers consumed while Ss filled out spurious task ratings. Both interactions (Obesity X Deprivation, Obesity X Fear) were significant and in the predicted directions. (Schacter, Goldman, and Gordon, 1968)

Schacter and Gross (1968) used perceived time as a variable in a food cue study using clocks that ran at either twice as fast, or twice as slow as true time. All subjects were stripped of their watches by the necessity of attaching electrodes to their wrists. The experimenter then left the subject with only two things

to do, watch the presumed record of his heart rate and GSR roll off the polygraph, and gaze at a large clock mounted on the wall directly in front of him. The experimenter reentered the room with a sheaf of paper in one hand and a box of crackers in the other, saying, "I like to mix pleasure with business, help yourself if you want any." Twice while administering a five minute task the experimenter took two crackers and told the subject to help himself. Leaving the subject with a long questionnaire and the box of crackers, the experimenter said, "I'll leave these here, you might want some." After ten minutes, the experimenter returned, left some more questionnaires, casually picked up the box, and left the room. Obese subjects ate close to twice as many crackers in the fast time condition as opposed to the slow condition. The Subject X Condition interaction was significant. The experimental manipulation of time was judged to be effective, with only three subjects raising questions about the clock being either wrong or a little fast. The hypothesis that the fast time manipulation would stimulate eating among obese subjects was verified by the data. However, contrary to expectations, the fast time actually inhibited the eating of normal subjects. Apparently, this was due to several normal fast subjects declining the crackers on the grounds that it might spoil their dinner. Thus it is important that the experimental eating was introduced as a casual, pre-dinner affair. If the experiment had been

presented in the context of a full meal, different results might be expected.

Goldman, Jaffra, and Schacter (1968) supported the externality hypothesis with a series of field studies. One study showed significantly more obese Jews fasting on Yom Kippur (a day of religious fasting) than non-obese Jewish students (83.3 as compared to 68.8%). Presumably, there are relatively few food cues available in a synagogue, making it easier for the obese to fast.

Goldman, Jaffra, and Schacter (1968) also studied the eating habits of freshman students at Columbia. A significantly larger percentage of obese students were found to have cancelled their institutional food contracts than of non-obese students (86.5 as compared to 67.1%).

The same investigators (Goldman, Jaffra, and Schacter, 1968) studied the proportion of overweight versus non-overweight fliers who complained about the effects of time on their eating patterns. Significantly more non-overweight (25.3%) fliers complained than overweight (11.9%) fliers.

Ross (1969) demonstrated the susceptibility of the obese to the saliency of external food cues. Saliency was elegantly confirmed in studies by Ross (1970) and Johnson (1970) by varying the illumination and type of wrapping around the food. Nisbett (1968) put three sandwiches at hand (high saliency), with more available, and one sandwich out (low saliency) with more available. In the high saliency condition the obese ate more than

the non-obese (2.32 as compared to 1.88). However, in the low saliency condition the reverse was true, the obese eating 1.48 to the normals 1.96 sandwiches.

Rodin (1971) extended the stimulus boundedness hypothesis to noneating cues. She found the obese to be more distractible than non-obese in tasks requiring concentration. Rodin, Herman, and Schacter (1969) demonstrated that obese subjects were somewhat slower than normals in simple reaction time, and significantly faster than normals in choice reaction time. The obese also had shorter tachistoscopic recognition thresholds, and a better immediate recall for items present briefly on a slide. The fatties were also superior in an unanticipated task requiring recall of a room's furnishings.

Rodin (1971) found that, in measures of proofreading accuracy and reaction time latency, overweight Ss were more disrupted by interesting, emotionally toned material than normal Ss. However, in no distraction conditions the obese outperformed the normals. Cue potency was manipulated by varying how interesting the different tapes were to the students recruited from Columbia University. These tapes were played while the students were engaged in tasks requiring concentration--reaction time and proofreading a passage for errors. The quantity and quality of proofreading performance was assessed by the number of pages read and the accuracy achieved. Questionnaires presented during the experiment showed that obese Ss listening to emotionally laden taped rated themselves

more emotionally aroused than normals dis. However, when listening to neutral tapes obese Ss reported less arousal than normal Ss. Obese subjects tended to think more about immediate and compelling things than normal Ss. The obese thought more about the test at hand than normals, and far less about things unrelated to the immediate task.

Nathan (1975) attempted a partial replication and a clinical extension of the work by Rodin (1971). He failed to replicate the study both in terms of the direction of the data and its statistical significance. Nathan attributed this to the different populations involved. Rodin's sample consisted of students, while Nathan's sample was drawn from older people from the general Houston community.

The obese seem to be susceptible to salient, external, non-food cues. The Stroop Color-Word Test, which requires the inhibition of a prominent response, might differentiate on this dimension of distractibility. In the Stroop Color-Word (CW) Test, the stimuli are the names of four colors (green, red, yellow, and blue), each of which is printed in one of the other three colors. The subject is asked to say the name of the color in which each word is printed. In order to reach good performance, the S must inhibit the response of simply reading the word. The CW test, as in Rodin's (1971) study using interesting, emotion laden tapes, is physiologically arousing.

(See Table One) Frankenhaeser, et al (1967) demonstrated elevated skin conductance and catecholamine levels while taking the Stroop. Klein (1964) reported behavioral signs of tension and frustration on the Stroop. Thackray and Jones (1971) found the Stroop effect to occur only when both relevant and irrelevant stimuli were presented in the same sense modality (visual). Upon observing and questioning Stroop subjects, Thackray and Jones suggested that the perceptual conflict might reflect attentional processes which are only minimally related to the general level of "arousal." Thus the Stroop CW test represents a more relevant and refined indication of the disruption of attentional processes demonstrated in the proofreading tasks, which distract along two different sense modalities.

DISTRACTIBILITY

How reliable is the extension from external food cues to external non-food cues? How does stimulus boundedness differ between male and female obese, and male and female non-obese? Nathan's (1975) failure to replicate Rodin's (1971) findings demonstrates the need to go back and investigate these relationships. A more refined tool to measure the disruption of attentional processes appears to be available in the Stroop Color-Word test. How does the Stroop CW test correlate with Rodin's (1971) proofreadings takes?

HYPOTHESES

1. A high correlation between weight deviation and proofreading distraction scores.

2. A high correlation between weight deviation and Stroop scores.

3. A high correlation between measures of distractibility.

CHAPTER II

METHOD

A. Design

Percentage overweight was the independent variable. Proofreading and Stroop Color-Word scores were the dependent variables. Correlations were used to determine the association between these factors. ANOVA and t-tests were used to test significance.

B. Subjects

Thirty-two subjects were drawn from the experimental subject pool of the University of Houston. Ss were contacted on the telephone.

C. Stimulus Materials

The distraction tapes were ten minutes long and were taken from Rodin's verbatim account of her tapes. The low distraction tape asks the subject to relax and think about seashells. A description is given of associations of seashells and how they are perceived. The high distraction tape tells about the horrors of Hiroshima. (Appendices A and B)

The proofreading passages were taken from Jane Jacob's, The Death and Life of Great American Cities (1961). Each passage was altered so as to have the same number and type of errors as the passage Rodin used. (Appendices C, D, and E)

D. Measures

Self-reported weight and height in pounds and inches were recorded from the subject during the screening process.

The distractibility scores were the percentage errors identified in the high distract condition and the percentage errors identified in the low distract condition; and by subtracting the number of lines read in the high distract from the number of lines read in the low distract condition.

The Stroop CW test was scored for total time taken for color-word ranks minus total time taken for XXX time. (Jensen and Rohwer, 1966, p. 46, scoring system J) The first component of the Stroop test is called the XXX time. This component measures the time taken for a subject to complete a series of XXX's in the four Stroop colors. The subject is required to call out the color of each group of XXX's as quickly and accurately as possible. The second component of the Stroop test involves discriminating between the color of ink the word is written in and the name of a color. For example, the word "blue" might be written in red ink, or the word "yellow" might be written in green ink. The task is to call out the color of the ink. If the subject stopped, stuttered, or burst out laughing, he was urged to continue.

Thus as disruption is increased, the time taken to perform the Stroup task increases.

E. Procedure

Subjects were contacted from the experimental volunteer pool of the University of Houston Psychology Department by telephone.

Upon arriveing at the small, windowless experimental room, subjects were greeted according to a standard introduction.

This is an experiment comparing multisensory stimulation. As a volunteer, you maintain the option of terminating the experiment at any time with no penalty. Do you understand this?

The first half of the experiment will involve your proofreading a pair of standard passages while tapes are being played through these earphones. Underline every error that you find. The tape will tell you when to stop. Underline the final line of the passage that you have proofread before taking off the earphones. Any questions?

Two proofreading passages were assigned. Subjects were randomly asked to complete either the high distraction or low distraction task first. The remaining proofreading task was then completed. Each tape was ten minutes long. When the subject took off his earphones, he was handed a self-explanatory physiological questionnaire. Thus, a questionnaire was completed after each proofreading task.

Upon completion of the proofreading tasks,

subjects were required to complete the Stroup XXX test as described in the previous section. The Stroup Color-Word (CW) Test was then administered.

The following demographic data was then extracted from the subject: sex, height, weight, age, and grade point average.

Subjects were then thanked for their participation in the experiment and asked to keep the content confidential.

CHAPTER III

RESULTS

If obese subjects are susceptible to salient external cues, then obese Ss, while performing anticipatory attention tasks, should be more distracted by competing, irrelevant stimuli. Performance decrement provided measures of distractibility. In order to extend the limits of the distractibility dimension, two independent tasks - proofreading and Stroop Color-Word time - were assigned.

A. Potency of Tapes

The tapes used were previously evaluated by subjects as being highly emotional (Tape B- high distract) and as being low emotional (Tape A- low distract) . (Rodin,1971). (See Table I + VIII)

B. Proofreading

Were obese Ss worse at correcting proof than normals when distraction was introduced? Two measures of how badly they performed are how much the Ss actually did and how well they did it. Thus, two independent indices were incorporated: 1) the number of lines each subject read, a measure of quantity of performance, 2) the accuracy of the Ss proofreading, a measure of the quality of performance.

TABLE IMean Ratings of Attention to Tapes *

	<u>Neutral Tape (Seashells)</u>	<u>Emotional Tape (Hiroshima)</u>
Normals	26	64
Obese	25	70

*Ratings were made on a scale from 0-100 with female Ss.
(Rodin, 1971)

1) Number of Lines. Subjects were asked to correct proof by circling each error they found. Instructions gave no information about how quickly they were expected to work nor whether they would have time to finish. The number of lines finished is, therefore, a measure of the Ss own proofreading speed.

The results are provided in Table II. By subtracting the scores on the low distract tape from the high distract tape, a measure is produced indicative of the main effect of emotionally distracting the subjects. Analysis of Variance. showed no significance. Subjects in both conditions read approximately the same number of pages. Quantity does not seem to be the crucial variable of distractibility. Figure I.

2) Accuracy. While the number of lines a subject completed reveals how much was done, an index of accuracy tells how well he did it. Since it is possible for a subject to rapidly and randomly underline every n-th word, it is crucial to determine how many items a subject correctly identified as errors.

Accuracy was measured by dividing the number of errors found by the number of errors he could have found. Thus, if a subject identified 23 errors out of a possible 50 covered, his accuracy index is .46.

The means for each group are provided in Table III and plotted in Fig. II. Analysis of Variance showed

TABLE II

Mean Number of Lines Completed

	<u>Normals</u>	<u>Obese</u>
#Lines Tape A (Low Distract)		
Males	100	98
Females	97	111
#Lines Tape B (High Distract)		
Males	102	92
Females	100	111

FIGURE I
Mean number of Lines Completed

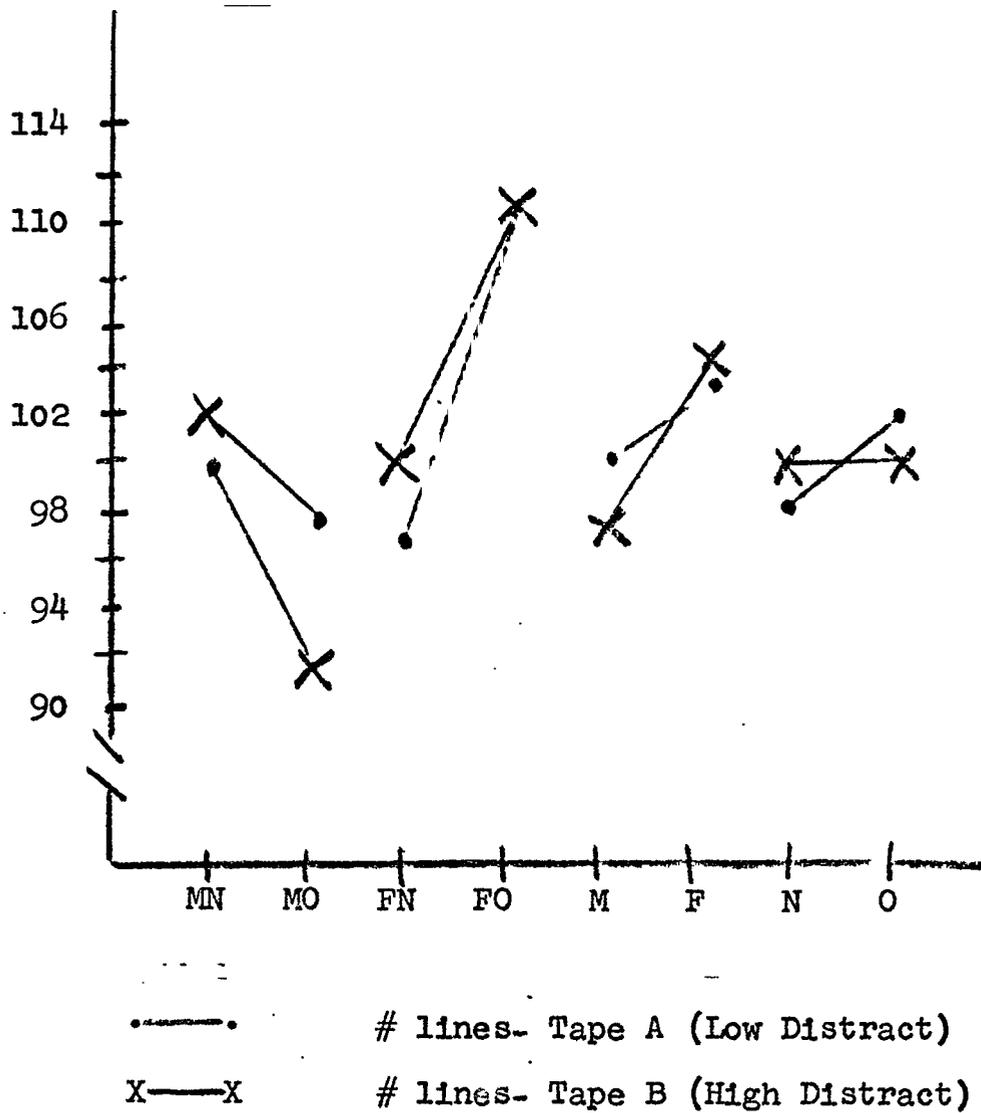


TABLE III

Mean Accuracy

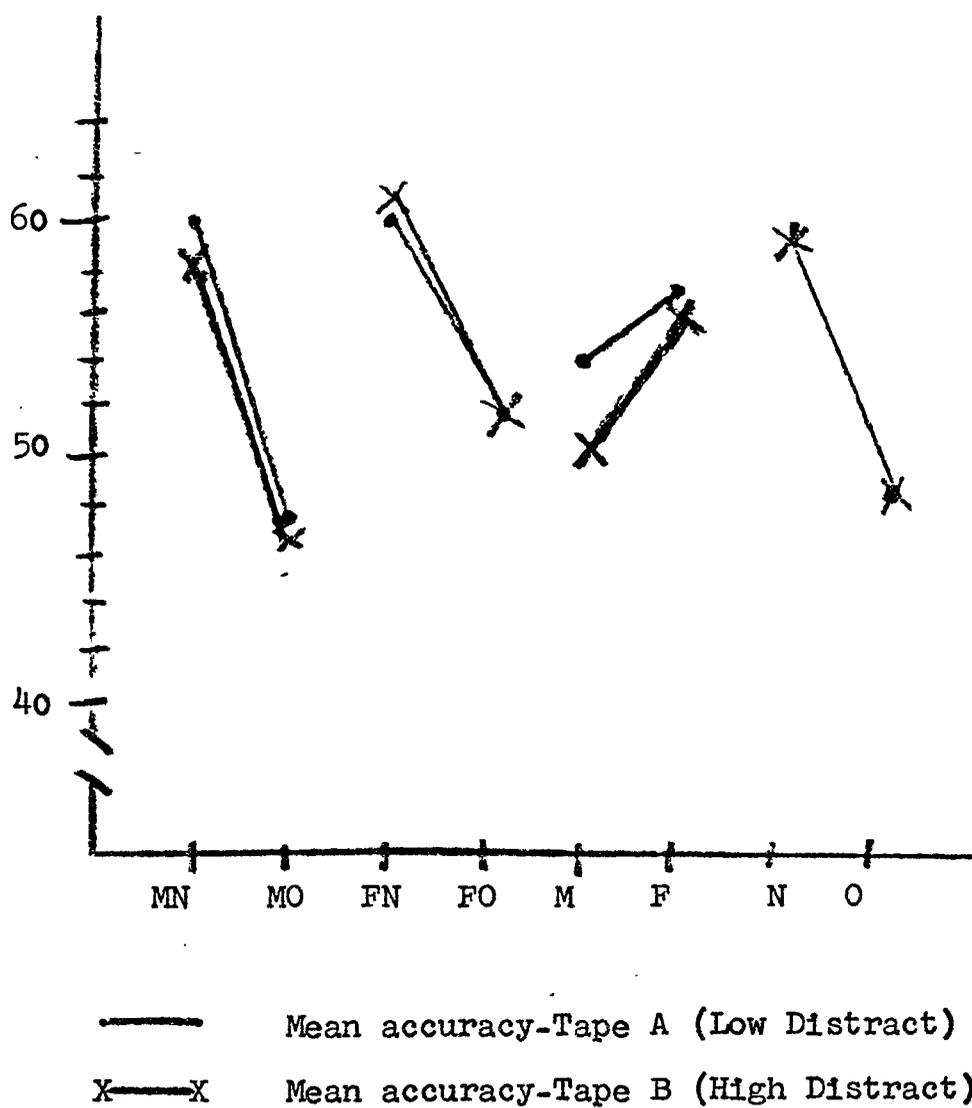
Accuracy Tape A (Low Distract)

	<u>Normal</u>	<u>Obese</u>
Male	.601	.472
Female	.595	.521

Accuracy Tape B (High Distract)

	<u>Normal</u>	<u>Obese</u>
Male	.584	.462
Female	.613	.521

FIGURE II
Mean Accuracy



the High distraction tape to be just insignificant ($.1 > p > .05$). ANOVA also showed no significant differences between groups on the Low distract tape.

C. Stroop Test

Theoretically, the two parts of the Stroop Color-Word test should correlate with the two parts of the proofreading task. The low distract tape should correlate with Stroop XXX scores. The high distract tape should correlate with the Stroop CW scores. As shown by Table VIII results turned out to be modest.

A significant difference was found between the Stroop difference (CW-XXX equals Stroop difference, controls for main Stroop effect the same way as Tape B minus Tape A) with t equal to 2.21, and p between .05 and .02, between Female Normals and Female Obese. The ANOVA for the Stroop difference is shown in Table and was significant ($.01 > p > .05$). There was no significant difference between the Male obese and normals, or between all obese and all normals.

D. Weight Deviation

Weight deviation was calculated from Slim Chance, and taken to be the standard weight for age and height, minus the self-reported weight, divided by the standard, times 100. Low correlations were reported between weight

TABLE IV

Mean Subject Characteristics

<u>Experimental Condition</u>	<u>Age</u>	<u>Height (inches)</u>	<u>Weight</u>	<u>Weight Deviation</u>	<u>G.P.A.</u>
Male normals	21	71	164	.024	2.65
Male obese	24	72	196	.165	2.5
Female normals	21	66	129	.027	2.7
Female obese	23	65	156	.22	3.1

deviation and all distractibility measures with few exceptions. Male obese Ss correlated .6 between weight deviation and the Stroop difference. Meanwhile Female obese correlated - .8 with the Tape B - A score. Male overweight only correlated .2 on the Tape B-A. Female overweight correlated - .1 on the Stroop difference. Table IV.

E. Distractibility Correlations

Only one correlation between distractibility was above a modest level. Male obese correlated a medium .6 when comparing the Stroop differential and Tape A accuracy scores. Tables V + VI

TABLE $\overline{\text{V}}$ Correlations - Female

n=10	<u>Female normal</u>	1	2	3	4	5	6	7	8	9
	1 #lines A	X								
	2 " B		X							
	3 " B - A			X	-.4			.4		
	4 %wght dev				X		-.1			
	5 accuracy A				.1	X				-.2
	6 " B						X			.1
	7 Stroop XXX							X		
	8 " CW								X	
	9 " CW - XXX				.4					X
n=6	<u>Female obese</u>	1	2	3	4	5	6	7	8	9
	1	X								
	2		X							
	3			X						
	4			-.8	X	.2	.1			
	5					X				
	6						X			
	7	-.5		.2				X		
	8		-.5						X	
	9				-.1	.3	-.3			X

TABLE VI

Correlations - Male

n=10	Male normal	1	2	3	4	5	6	7	8	9
1	#lines A	X								
2	" B		X							
3	" B- A			X						
4	%wght dev				X		-.1			.008
5	accuracy A				.3	X				
6	" B						X			
7	Stroop XXX						.08	X		
8	" CW								X	
9	" CW - XXX					-.2	-.005			X
n=6	Male obese	1	2	3	4	5	6	7	8	9
1		X								
2			X							
3				X						
4				.2	X	.2	.1			
5						X				
6							X			
7			-.5	.1				X		
8			-.4						X	
9					.6	.6	.008			X

TABLE VII

Stroop Test

<u>Experimental Group</u>	<u>Color Word time</u>	<u>XXX time</u>	<u>Difference</u>
Male normals	112	59	53
Male obese	117	60	57
Female normals	110	60	50
Female obese	140	66	75

TABLE VIII

EMOTIONALITY

Proofreading . -

Increased Breathing and Heart Rate

	<u>Neutral Tapes</u>	<u>Emotional Tapes</u>
Normals	14.5	14.25
Obese	6.75	23.

Upset, Anxious, Emotionally Aroused

	<u>Neutral Tapes</u>	<u>Emotional Tapes</u>
Normals	18.14	19.31
Obese	9.81	26.31

From Rodin, 1971, p.71.

TABLE IX

First Passage Proofread

<u>Experimental condition</u>	<u>Line finished</u>	<u>Accuracy</u>
Male normal	103	.546
Male obese	102	.455
Female normal	96	.572
Female obese	116	.476

Second Passage Proofread

<u>Experimental condition</u>	<u>Line finished</u>	<u>Accuracy</u>
Male normal	100	.639
Male obese	88	.479
Female normal	100	.636
Female obese	107	.524

CHAPTER IV

DISCUSSION

Results apparently corroborate Nathan's (1975) failure to replicate Rodin's (1971) study in regard to proofreading accuracy. Two possibilities are fairly clear, 1) the distractibility dimension as applied to proofreading suffers a population or methodological problem, or 2) the distractibility dimension in obese Ss is more complex than is accounted for by just the externality hypothesis.

The difference between populations in the three studies may be quite striking. Rodin (1971) study was conducted at Columbia University, a setting which could attract a student different from that attracted to the University of Houston. This difference may extend to the distractibility dimension. However, this seems unlikely since Nathan's (1975) study used noncampus Ss. Furthermore, if there is only a distractibility dimension in Missouri, and not in other parts of the country (i.e. Houston, Texas), then the Distractibility hypothesis doesn't warrant the generalization extended to it. Methodologically, this study's sample of obese is a little lighter in pounds than Rodin's study. However, again, Nathan's study is not lighter. Perhaps the proofreading task suffers a ceiling effect. The difference in scores may be very small when measured at this extreme edge of discernment. It is also possible that the distraction hypothesis fails to adequately account for interaction with

internal "cues" such as fatigue, boredom, etc. Obese may be differentially bored, for example. This study involved proofreading twice as much material on a counterbalanced, double blind design. Nathan's study was associated with a weight loss program and another experiment as a cost of the free weight reduction program. It would still be congruent within the externality rubric to propose that the obese are not only gripped by the salient, external cues more than normals, but that this heightened susceptibility is more easily severed by cues such as boredom and repetitiveness. This can be tested without too much trouble by the introduction of a task designed to be more strongly boring, while still gripping. This explanation seems the most elegant.

The modest correlations found with male obese subjects may be used as a partial predictor of success in a behavior modification program of weight reduction. The small number of obese who participated in this experiment limits generalizability to more than an indicator that this may be an easy, quick tool to use in such a program.

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APPENDIX A

VERBATIM ACCOUNT OF SEA SHELLS TAPE

For the next few minutes we would like you to think only about the things described on the tape so that we may control your level of attention and concentration for our physiological recording. Now relax, and think for a while only about sea shells. Think about all the varied shapes and colors of shells you've seen. Think about seeing them along the beach, about picking them up and saving an unusual one. Think about the way different sea shells look. Some are rough with spiny and irregular edges that tingle when you pick them up. Others are polished smooth by the continuous action of the waves and sand rubbing against them, possibly for hundreds of years. Think of the rich browns and pure white of really fine sea shells, of the dusty corals and gleaming blacks. Picture the pure, full quality of all the colors. What other adjectives describe the variety of shapes and colors of sea shells? Can you think of any? Try as you concentrate and continue to think of sea shells for the next little while.

Perhaps you are finding it difficult to keep thinking about sea shells. Relax, and consider for a while the hundreds of different kinds of sea shells there are. How many varieties have you yourself seen? Remember how, when you were a child, you went hunting for sea shells

along the beach and how you gathered so many different kinds and sizes? Remember how exciting it was to shake the sand off a shell and find that you had picked up a perfect sea shell with no cracked edges or missing pieces? Remember when you found one that had a special color or shape--like no shell you had ever seen before? Remember how some were so dried and brittle that they cracked if you held them in your hand? Think about this sensation.

Think about how other shells feel, some still wet from the ocean, others hard and smooth, still others rough and scratchy. Remember, it is important that you try to keep thinking about the sea shells.

Are you having difficulty thinking about sea shells continually, or do you find it easy to relax and enjoy the thought of their delicate colors, their gleaming hard finish, the pleasure associated with your childhood memories of times spent at the beach collecting sea shells and playing with them, saving them in bottles and jars only to be thrown away when winter came or childhood passed. Can you picture some of the most beautiful sea shells that you have ever seen? How would you describe them? Try your best to keep thinking about this.

Consider the smell of sea shells--the raw, briny smell of the ocean. Imagine the salty waves slapping against the shells, the thick, heavy spray coating them with sea water. Picture the white crust of salt caked on the sea shells and the layer of sand which has to be

washed off before you can fully appreciate the true, rich color of the shells.

Think about the sound from a sea shell...the roar of the ocean when you hold a large conch shell to your ear, the vast echoing of the surf and the waves. Think about all of this for a while as you continue to listen to the tape.

Remember the games you used to play with sea shells? Now think of building things with them, scooping out mounds of sand with them, itemizing them according to type and shape and color, trading them with your friends. Think of how you used to look into each shell to see if possibly the animal was still alive inside. Think of other games you played with the shells. What were they? How did you play with them? Can you manage to keep thinking about this for a while longer?

Are you still relaxing as you continue to think about the wide variety of sea shells? Are you still considering all the associations they provide, musing probably for the first time about the details of the various colors and design. Perhaps you are finding it difficult to keep your attention on sea shells. It is amazing how difficult it is sometimes to keep your mind on a single topic--even one as pleasant and potentially rich in associations as sea shells.

Can you find some other aspect of sea shells besides their appearance to hold your attention for a little

while longer? Please try. Perhaps you can think of some unusual element of sea shells that you never really considered before.

Now picture yourself at the beach looking for sea shells. You walk by the edge of the water, and shells break under your feet. You keep your eyes down, riveted on the sand, looking for an unusual shell--one that has a bright color or a strange shape. Just a little while longer now--keep thinking about the multi-colored shells. Keep thinking about their shiny, gleaming surfaces, their rich pungent, salty smell, the way they glisten when you take them out of the ocean and how quickly they become dried out and brittle. Picture the pearl-like luminescence on the inside of so many shells, the rainbow-like shimmering quality of the interior. Imagine how this same material is sometimes formed into actual pearls. Now think of sea shells as holding these beautiful, beautiful, natural pearls.

Now think of the millions of sea shells on the ocean floor. Picture the action of the waves gliding over the surface of the shells, polishing them smooth. Can you keep thinking about the vastness of the ocean floor and how many shells are constantly being ground into fine sand by the tides? Picture water so clear and pure that you can see the incredible variety of shells on the ocean bed. Just try to keep thinking about shells for a little while longer.

Try to visualize their variety of colors and shapes and how they glisten in the water. Picture the snails and clams and oysters and crabs: all the animals who once lived in the millions of shells now strewn across the beaches and ocean floors. Picture the shells as protection from danger for these small animals.

Try to keep thinking about shells as having important survival value for these animals. Can you think of other ways in which shells are useful?

While it may be difficult for you to keep thinking about sea shells, try to imagine as vividly as possible the way they feel--all sandy and gritty--when you first pick them up. Think of the rough, scratchy feel of the sand on your hands as you try to brush the shells clean. Remember the warm feel of the shell, baked by the sun. Are you actually able to feel this sensation? Try. This session is now completed. Please remove your earphones.

APPENDIX B

VERBATIM ACCOUNT OF HIROSHIMA TAPE

For the next few minutes we would like you to think only about the things described on the tape so that we may control your level of attention and concentration for our physiological recording. Now think for a moment about war--about the killing and violence. Think about the senseless destruction and devastation of war.

Consider the cities which must be rebuilt and the shattered lives of so many people. Think about the bombs and the fires that ravage and destroy. Now think about the atomic bombing of Hiroshima in the early morning of August 6, 1945, which became one of the most debated and disturbing events in world history. Picture how the people reacted after the bomb exploded. Imagine the terror and the inability to consider the enormity of what had occurred. At first, it just seemed that several fire bombs had been dropped, and hundreds and hundreds of people began fleeing from the city, every one of them hurt in some way. Picture how the eyebrows of some were burnt off, and skin hung from their faces and hands. Others were vomiting as they walked. Many were naked or in shreds of clothing. Imagine how on some of the undressed bodies the burns had made patterns--of undershirt straps and suspenders, and on the skin of some women--the shapes of the flowers they had

had on their kimonos. Consider how many--although injured themselves--supported relatives who were worse off. Try as you concentrate, and continue to think of this for the next little while.

Now picture the city, with all the houses crushed and afire. It was impossible to penetrate the ruins since the flames were everywhere. Think how, under many houses, people screamed for help, but often no one could help. Survivors that day only assisted their relatives or immediate neighbors, for they could not comprehend or tolerate a wider circle of misery. Picture the wounded limping past the screams, the dreadfully burned and lacerated people everywhere. Imagine the hundreds of gruesomely wounded suffering together--an awesome and dreadful sight impressed in the memory of everyone who survived. They say that the hurt ones were often quiet, not weeping or screaming in pain, no one complained. None of the many who died did so noisily; not even the children cried, very few people even spoke. Think of the enormity of the suffering. Remember, it is important that you try to keep thinking about this during the experimental session.

Think of the people who drowned on the river banks because they were too weak to move to higher ground when the tides changed. Picture people who were even too weak to lift themselves. Imagine trying to help someone

reaching down and grabbing him by the hands but not being able to hold him because his skin slipped off in huge, glove-like pieces into your hands. Picture all the people with burns covering their bodies--yellow at first, then red and swollen with the skin sloughed off and finally, hours later, full of pus and smelly. Imagine having to keep reminding yourself that these were human beings, because now they looked so terribly un-human. Picture people whose faces were wholly burned, their eyesockets hollow, the fluid from their melted eyes running down their cheeks. Picture their mouths--mere swollen, pus covered wounds--which they were unable to open, so that if they had not died from the burns they would have died from starvation.

Are you able to keep thinking about the devastation at Hiroshima, the victims of the first experiment in the use of atomic power? It is amazing how difficult it is--even as it was difficult for the bomb victims themselves--to think about and comprehend the ultimate horror caused by the bomb. Picture corpses with flesh removed from the bones and people who looked like leprosy victims lying on the asphalt pleading for help. Consider the grotesque scenes viewed by the survivors and their inescapable guilt and shame because they had been spared, and because they were haunted by the requests of the dying which they could not carry out.

Now try to think about the people who survived after the blast. Think about their overwhelming relief and gratitude at having been spared from death or mutation. And now remember that the second state of the destruction set in ten or fifteen days after the bombing. People who had had no burns or injury suddenly fell terribly and inexplicably ill. Imagine how they felt as strange spots began to appear on their bodies. Then their hair began to fall out, and they vomited small clumps of blood. They had diarrhea and fever which sometimes went as high as 106. Finally they began to bleed all over their mouths, and after days of agony and torture, they died. Think of how vulnerable everyone felt to this seemingly new dread attacking them after they believed they had been spared. Thinking of everyone waiting, terrified, thinking sooner or later, "I too will die." Imagine the loneliness and the fear--the physical fear and the sense of impending death that stayed with all of them--like an inescapable death sentence. Think of the misery of being thrown into a world of new terror and fear--fear of the unknown--of the power of the bomb to last and invisibly cause these delayed effects. Think about all of this for a while as you continue to listen to the tape.

Now think about the awful task of getting rid of all the bodies--bodies that were black in color and had

a terrible smell. Imagine the additional smell when they were cremated--a smell caused by the fact that these bodies were decayed, many of them had their internal organs decay even while the person was living. Picture all of these bodies swelled and giving off a bluish color while burning. Some of the bodies were hard to burn. Try to keep imagining the smell that filled the city.

Think about the survivors who even today bear the stigmata of the bomb--the keloid or whitish yellow overgrown scar tissue which disfigures hands and particularly faces. Consider that to the Japanese these have become marks of defect, disease and disgrace so that even now, survivors of the bomb--instead of being national heroes or martyrs are feared, humiliated, and treated as lepers or untouchables. Think about the enormity of the horror that continues to have repercussions even twenty-five years later. Think about the survivors who still feel the effects of having been overwhelmed by the suddenness, grotesqueness and brutality of A-bomb death. The kind of death faced by atomic bomb victims remains with all those who survive--a death unprecedented in history--a total annihilation of human beings. Imagine the emotional scars they carry--the stubborn unhealing wounds. Try to keep thinking about this for the next little while. This session is now completed. Please remove your ear phones.

Proofreading Passage #1

Slums and their populations are the victims (and the perpetrators) of seemingly endless troubles that reinforce each other. Slums operate as vicious circles. In time, these vicious circles enmesh the whole operations of cities. Spreading slums require ever greater amounts of public money - and not simply more money for publicly financed improvement or to stay even, but more money to cope with ever widening retreat and regression. As needs grow greater, the wherewithal grows less.

Our present urban renewal laws are an attempt to break this particular linkage in the vicious circles by forthrightly wiping away slums and their populations, and replacing them with projects intended to produce higher tax yields, or to lure back easier populations with less expensive public requirements. The method fails. At best, it merely shifts slums from here to there, adding its own tincture of extra hardship and disruption. At worst, it destroys neighborhoods where constructive and improving communities exist and where the situation calls for encouragement rather than destruction.

Slum shifting fails because it tries to overcome causes of trouble by dithering with symptoms. Sometimes even the very symptoms. Sometimes even the very symptoms that preoccupy the slum shifters are, in the main, vestiges of former troubles rather than significant indications of current or future ills.

Conventional planning approaches to slums and slum dwellers is thoroughly paternalistic. The trouble with paternalists is that they want to make impossibly profound changes, and they choose impossibly superficial means for doing so. To overcome slums, we must regard slum dwellers as people capable of understanding and acting upon their own self-interests, which they certainly are. We need to discern, respect and build upon the forces for

regeneration that exist in slums themselves and that demonstrably work in real cities. This is far from trying to patronize people into a better life, and it is far from what is done today.

Vicious circles, to be sure, are hard to follow. Cause and effect become confused precisely because they do link and re-link with one another in such complicated ways.

Yet there is one particular link that is crucial. If it is broken (and to break it is no simple matter of supplying better housing), a slum spontaneously unslums.

The key link in a perpetual slum is that too many move out of it too fast—and in the meantime dream of getting out. This is the link that has to be broken if any other efforts at overcoming slums or slum life are to be of the least avail. This is the link that actually was broken and has stayed broken in places like the North End, or the Back-of-the-Yards in Chicago, or North Beach in San Francisco, or the unslumped former slum in which I live. If only a handful of American city slums had ever managed to break this link, we might regard them skeptically as grounds for hope. These places might be freaks. More significant are the great number of slum neighborhoods in which unslumping starts, goes unrecognized, and too often is discouraged by unavailability of necessary money; then where this slowed the unslumping process but still did not bring regression to slum conditions, most of these neighborhoods were destroyed outright — to be replaced by projects which become almost pathological displays of slum troubles. Many areas in the Lower East Side which had started unslumping have been destroyed. My own neighborhood, as recently as the early 1950's, was saved from disastrous amputation only because its citizens were able to fight city hall — and even at that, only because the officials were confronted with embarrassing evidence that the area was drawing in newcomers with money, although this symptom of its unslumped status was possibly the least significant of the constructive changes that had occurred unnoticed.

Herbert Gans, a sociologist at the University of Pennsylvania, has given, in the February 1959 journal of the American Institute of planners, a sober but poignant portrait of an unrecognized unslumming slum, the West end of Boston, on the eve of its destruction. The West End, he pointed out, although regarded officially as a "slum", would have been more accurately described as a "stable, low-rent area." If, writes Gans, "a slum is defined as an area which "because of the nature of its social environment can be proved to create problems and pathologies," then the West End was not a slum. He speaks of the intense attachment of residents to the district, of its highly developed informal social control, of the fact that many residents had modernized or improved the interiors of their apartments - all typical characteristics of an unslumming slum.

Unslumming hinges, paradoxically, on the retention of a very considerable part of a slum population within a slum. It hinges on whether a considerable number of the residents and businessmen of a slum find it both desirable and practical to make and carry out their own plans right there, or whether they must virtually all move elsewhere.

I shall use the designation "perpetual slums" to describe slums which show no signs of social or economic improvement with time, or which regress after a little improvement. However, if the conditions for generating city diversity can be introduced into a neighborhood while it is a slum, and if any indications of unslumming are encouraged rather than thwarted, I believe there is no reason that any slum need be perpetual.

The inability of a perpetual slum to hold enough of its population for unslumming is a characteristic that starts before the slum itself starts. There is a fiction that slums, informing, malignantly supplant healthy tissue. Nothing could be farther from the truth.

The first sign of an incipient slum, long before visible blight can be seen, is stagnation and dullness. Dull neighborhoods are inevitably deserted by their more energetic, ambitious or affluent citizens, and also

by their young people who can get away. They inevitably fail to draw newcomers by choice. Furthermore, aside from these selective desertions and the selective task of vigorous new blood, such neighborhoods eventually are apt to undergo rather sudden wholesale desertions by their nonslum populations. The reasons why this is so have already been stated; there is no need to reiterate the sheer impracticality of the Great Blight of Dullness for city life.

Nowadays, the wholesale desertions by nonslum populations which give a slum its initial opportunity to form are sometimes blamed on the proximity of another slum (especially if it is a Negro slum) or on the presence of a few Negro families, much as in the past slum formation was sometimes blamed on the presence or proximity of Italian or Jewish or Irish families. Sometimes the desertion is blamed on the age and obsolescence of dwellings, or on vague, general disadvantages such as lack of playgrounds or proximity of factories.

However, all such factors are immaterial. In Chicago, you can see neighborhoods only a block and to blocks in from the lakefront parkland, far from the settlements of minority groups, well endowed with greenerery, quiet enough to make one's flesh creep and composed of substantial, even buildings. On these neighborhoods are the literal signs of desertion: "For Rent," "To Let," "Vacancy", "Rooms for permanent and Transient Guests," "To Let-Apartments Available," "Guests Welcome," "Sleeping Rooms." "Furnished Rooms," "unfurnished Rooms," These buildings have trouble drawing occupants in a city where the colored citizens are cruelly overcrowded in their shelter and cruelly overcharged for it. The buildings are going begging because they are being rented or sold only to whites - and whites, who have so much more choice, do not care to live here. The beneficiaries of this particular impasse, at least for the moment, turn out to be the immigrating hillbillies, whose economic choice is small and whose familiarity with city life are still smaller. It is a dubious benefit they receive; inheritance of gull and

dangerous neighborhoods whose unfitness for city life finally repelled residents more sophisticated and competent than they.

Sometimes, to be sure, a deliberate conspiracy to turn over the population of a neighborhood does exist - on the part of real estate operators who make a racket of buying houses cheaply from panicked white people and selling them at exorbitant prices to the chronically housing-starved and pushed colored population. But even this racket works only in already stagnated and low vitality neighborhoods. (Sometimes the racket perversely improves a neighborhood's upkeep, when it brings in colored citizens more competent in general and more economically able than the whites they replaced; but the exploitative economics sometimes results instead in replacement of an uncrowded, pathetic neighborhood with an overcrowded neighborhood in considerable turmoil.)

If there were no slum dwellers or poor immigrants to inherit city failures, the problem of low-vitality neighborhoods abandoned by those with choice would still remain and perhaps would be even more troubling. This condition can be found in parts of Philadelphia where "decent, safe and sanitary" dwellings go empty in stagnated neighborhoods while their former populations move outward into new neighborhoods which are little different, intrinsically, from the old except that they are not yet embedded by the city.

It is easy to see where new slums are spontaneously forming today, and how dull, dark and undiverse are the streets in which they are typically forming, because the process is happening now. What is harder to believe, because it lies in the past, is the fact that lack of lively urbanity has usually been an original characteristic of slums. The classic reform literature about slums does not tell us this. Such literature - Lincoln Steffens' Autobiography is a good example - focused on slums that had already overcome their dull beginnings (but had acquired other troubles in the meantime). A teeming, bustling slum was implanted at a moment in time, with the deeply erroneous implication that as a slum is, so it shall be, unless it is wiped away root and branch.

The unslummed former slum in which I live was just such a teeming place by the early decades of this century, and its gang, the Hudson Dusters, was notorious throught the city, but its career as slum did not begin in any such bustle. The history of the Episcopal chapel a few blocks down the street tells the tale of the slum's formation, almost a century ago in this case. The neighborhood had been a place of farms, billage streets and summer homes which evolved into a semisuburb that became embedded in the rapidly growing city. Colored people and immigrants ifom Europe were surrounding it; neigher physically nor socially was the neighborhood equipped today. Out of this quiet residential area - a charming place, from the evidence of old pictures - there were at first many random desertions by congregatio families; those of the congregation who remained eventually panicked and departed en masse. The cuhrch building saw abandoned to Trinity parish, which took it over as a mission chapel to minister to the influx of the poor who inherited the semisuburb. The former congregation re-established the church far uptown, and colcaized in its neighborhood a new quiet residential area of unbelievable dullness; it is now a part of Harlem. The record do not tell where the next preslum was built by these wanderers.

The reasons wor slum formation, and the processes wy which it happens, have changed surprisingly little over the decades. What is new is that unfit neighborhoods can be deserted more swifcly, and slums can and so spread thimer and farther, thank was the case in the Days before automobiles and government-guaranteed mortgages for suburban developments, when it was less practical for families with choice to flee beighborhoods that were displaying some of the normal and inevitable conditions that accompyan city life (such as prasence of strangers, but none of the natural means for converting these conditions into assets.

At the time a slum first forms, its populstion may rise spectacularly. This is not a sign of popularity, however, on the contrary, it means the

dwelling are becoming overcrowded; this is happening because people with the least choice, forced by poverty or discrimination to overcrowd, are coming into an unpopular area.

The density of the dwelling units themselves may or may not increase. In old slums they customarily did increase because of the construction of tenements. But the rise in dwelling density typically did not cut down the overcrowding. Total population increased greatly instead, with overcrowding superimposed on the high dwelling densities.

APPENDIX D

THE NEED FOR AGED BUILDINGS

Proofreading Passage #2

Cities need old buildings so badly it is probably impossible fore vigorous streets and districts to grow without the . By old buildings I mean not museum-piece old buildings, not old buildings in an excellent and expensive state of rehabilitation - although these make fine ingredients-- but also a good lot of plain, ordinary, low-value old buildings, including some rundown old buildings.

If a city area has only new buildings, the enterprise that can exist there are automatically limited to those that can support the high costs of new construction. These high costs of occupying new buildings may be levied in the form of rent, or they may be levied in the form of an owner's interest and a mortgagor's payments on the capital costs of the construction. However the costs are paid off, they have to be paid off. And for this reason, enterprises that support the cost of new construction must be capable of paying a relatively high overhead - - high in comparison to that necessarily required by old buildings. To support such high overheads, the enterprises must be either (a) high profit or (b) well subsidized.

If you look about, you will see that only operations that are well established, high-turnover, standardized or heavily subsidized can afford, can only, to carry the costs of new construction. Chain stores, chain restaurants, and banks go into new construction. But neighborhood bars, foreign restaurants and pawn shops go into older buildings. Supermarkets and shoe stores often go into new buildings; good bookstores and antique dealers seldom do. Well-subsidized opera and art museums often go into new buildings. But the unfortunatized feeders of the arts -- studios, galleries, stores for musical instruments and art supplies, backrooms where the low earning power of a seat and a table can absorb uneconomic discussions -- these go into old buildings. Perhaps more significant, hundreds of ordinary enterprises,

necessary to the safety and public life of streets and neighborhoods, and appreciated for their convenience and personal quality, can make out successfully in old buildings, but are inexorably slain by the high overhead of new construction.

As for really new ideas of any kind -- no matter how ultimately profitable or otherwise successful some of them might prove to be -- there is no leeway for such a hazy trial, error and experimentation in the high-overhead economy of new construction. Old ideas can sometimes use new buildings. New ideas must use old buildings.

Even the enterprises that can support new construction in cities need old construction in their immediate vicinity. Otherwise they are part of a total attraction and total environment that is economically too limited-- and therefore functionally too limited to be lively, interesting and content. Flourishing diversity anywhere in a city means the mingling of high-yield, middling-yield, low-yield and no yield enterprises.

The only harm of aged buildings to a city district or street is the harm that eventually comes of nothing but old age -- the harm that lies in everything being old and everything becoming worn out. But a city area in such a situation is not a failure because of being all old. It is the other way around. The area is all old because it is a failure. For some other reason or combination of reasons, all its enterprises or people are unable to support new construction. It has, perhaps, failed to hang on to its own people or enterprises that do become successful enough to support new building or rehabilitation; they leave when they become this successful. It has also failed to attract newcomers with choice; they see no opportunities or attractions here. And in some cases, such an area may be so infertile economically that enterprises which might grow into successes in other places, and build or rebuild their shelter, never make enough money in this place to do so.

A successful city district becomes a kind of ever-normal granary so far as construction is concerned. Some of the old buildings, year by year, are replaced by new ones -- or rehabilitated to a degree equivalent to replacement. Over the years there is therefore, constantly a mixture of buildings of many ages and types. This is, of course, a dynamic process, with what was once new in the mixture eventually becoming what is old in the mixture.

We are dealing here again, as we were in the case of mixed primary uses, with the economic effects of time. But in this case we are dealing with the economics of time not hour by hour through the day, but with the economics of time by decades and generations.

Time makes the high building costs of one generation the bargains of the following generation. Time pays off original capital costs, and this depreciation can be reflected in the yields required from a building. Time makes certain structures obsolete for some enterprises, and they become available to others. Time can make the space efficient of one generation the space luxuries of another generation. One century's building commonplace is another century's useful aberration.

The economic necessity for old buildings mixed with new is not an oddity connected with the precipitous rise in building costs since the war, and especially throughout the 1950's. To be sure, the difference between the yield most postwar building must bring and the yield that pre-Depression buildings must bring is especially sharp. In commercial space, the difference between carrying costs per square foot can be as much as 100 or 200 percent, even though the older buildings maybe better build than the new. and even though the maintenance costs of all buildings, including old ones, have risen. Old buildings were a necessary ingredient of city diversity ;back in the 1950's and the 1890's. Old buildings will still be a necessity when today's new buildings are the old ones. This has been, still is, and will be,

true to matter how erratic or how steady construction costs themselves are, because a depreciated building requires less income than one which has not yet paid off its capital costs. Steadily rising construction costs simply accenuate the need for old buildings. Possibly they also make necessary a higher proportion of old buildings in the total street or district mixture, because rising building costs rising the general threshold of pecuniary success required to support the costs of new construction.

A few years ago, I gave a talk at a city design conference about the social need for commercial diversity in cities. Soon my words began coming back at me from designers, planners and students in the form of a slogan (which i certainly did not invent): "We must leave room for the corner grocery store!"

At first I think this must be a figure of speech, the part standing for the whole. But soon I began to receive in the mail plans and drawings for projects and renewal areas in which, literally, room had been left here and there at great intervals for a corner grocery store. These schemes were accompanied by letters that said, "See, we have taken to heart what you said."

This corner-grocery gimmick is a thin, patronizing conception of city diversity, possibly suited to a village of the last century, but hardly to a vital city district of today. Lone little groceries, in fact, do badly in cities as a rule. They are typically a mark of stagnant and undiverse gray areas.

Nevertheless, the designer of these sweetly meant inanities were not simply perverse. They were doing, probably, the best they could under the economic conditions set for them. A suburban-type shopping center at some place in the project, and this wan spotting of corner groceries, were the most that could be hoped for. For these were schemes contemplating either great blankets of new construction, or new construction combine with extensive, prearranged rehabilitation. Any vigorous range of diversity was precluded

in advance by the consistently high overhead. (The prospects are made still poorer by insufficient primary mixtures of uses and therefore insufficient spread of customers through the day.)

Even the lone groceries, if they were ever built, could hardly be the cozy enterprises envisioned by their designers. To carry their high overhead, they must either be (a) subsidized -- by whom and why? -- or (b) converted into routinized, high-turnover mills.

Large swatches of construction built at one time are inherently inefficient for sheltering wide ranges of cultural, population, and business diversity. They are even inefficient for sheltering such range of mere commercial diversity. This can be seen at a place like Stuyvesant Town in New York. In 1959, more than a decade after operation began, of the 32 store fronts that comprise Stuyvesant Town's commercial space, seven were either empty or were being used uneconomically (for storage, window advertising only, and the like). This represented disuse or underuse of 22 percent of the fronts. At the same time, across the boarding streets, where buildings of every age and condition are mingled, were 140 store fronts, of which 11 were empty or used uneconomically, representing a disuse or underuse of only 7 percent. Actually, the disparity is greater than this would appear, because the empty fronts in the old streets were mostly small, and in linear feet represented less than 7 percent, a condition which were not true of the project stores. The good business side of the street is the age-mingled side, even though a great share of its customers are Stuyvesant Town people, and even though they must cross wide and dangerous traffic arteries to reach. This reality is acknowledged by the chain stores and supermarkets too, which have been building new quarters in the age-mingled setting instead of filling those empty fronts in the project.

One-age construction in city areas is sometimes protected nowadays from the threat of more efficient and responsive commercial competition.

This projection--which is nothing more or less than commercial monopoly--is considered very "progressive" in planning circles. The Society Hill renewal plan for Philadelphia will, by zoning, prevent competition to its developer's shopping centers throughout a whole city district. The city's planners have also worked out a "food plan" for the area, which means offering a monopolistic restaurant concession to a single restaurant chain for the whole district. Nobody else's food allowed! The Hyde Park-Kenwood renewal district of Chicago reserves a monopoly on almost all commerce for a suburban-type shopping center to be the property of that plan's principal developer. In the huge Southwest redevelopment district of Washington, the major housing developer seems to be going so far as to eliminate competition with himself. The original plans for this scheme contemplated a central, suburban-type shopping center plus a smattering of convenience stores--our old friend, the lonely corner grocery gimmick. A shopping center economist predicted that these convenience stores might lead to diminished business for the main, suburban-type center which, itself, will have to support high overhead. To protect it, the convenience stores were dropped from the scheme. It is thus that routinized monopolistic packages of substitute city is palmed off as "planned shopping."

Monopoly planning can make financial successes of such inherently inefficient and stagnant one-age operations. But it cannot thereby create, in some magical fashion, an equivalent to city diversity. Nor can it substitute for the inherent efficiency, in cities, of mingled age and inherently varied overhead.

Age of buildings, in relation to usefulness or desirability, is an extremely relative thing. Nothing in a vital city district seems to be too old to be chosen for use by those who have choice--or to have its place taken, finally by something new. And this usefulness of the old is not simply a matter of architectural distinction or charm. In the Back-of-the-Yards, Chicago, no weather-beaten, undistinguished, run-down, presumably obsolete frame house seems to be too far gone to lure out savings and to instigate borrowing -- because this is a neighborhood that people are not

leaving as they achieve enough success for choice. In Greenwich Village, almost no old building is scorned by middle-class families hunting a bargain in a lively district, or by rehabilitators seeking a golden egg. In successful districts, old buildings "filter up."

Physiological Self Report Questionnaire

The following symptoms are frequently cited as subjects' responses to multiple sensory stimulation. For comparative purposes, we wish to know the extent to which you may now be experiencing any of these symptoms. Please circle the number that best reflects your perceived level of each physiological response.

1. Are you experiencing any palpitation (consciousness of your heart beat)?

0	10	20	30	40	50	60	70	80	90	100
None at all									extreme	

2. Do you think your breathing rate is faster than usual?

0	10	20	30	40	50	60	70	80	90	100
Considerably faster								not at all faster		

3. Are you experiencing any generalized numbness or dizziness?

100	90	80	70	60	50	40	30	20	10	0
extreme								none at all		

4. Are you experiencing any headache?

0	10	20	30	40	50	60	70	80	90	100
NONE AT ALL									extreme	

5. Are you feeling generally upset?

0	10	20	30	40	50	60	70	80	90	100
NOT UPSET AT ALL								extremely upset		

6. Are you experiencing a ringing sensation in your ears?

100	90	80	70	60	50	40	30	20	10	0
extreme								none at all		

7. Are you experiencing any anxiety?

0	10	20	30	40	50	60	70	80	90	100
NONE									extreme	
none at all										

8. Are you experiencing any more than usual weariness?

0 10 20 30 40 50 60 70 80 90 100
 none at all extremely more weary

9. Do you feel emotionally aroused?

0 10 20 30 40 50 60 70 80 90 100
 not at all extremely

10. Please check the words that best describe your feelings. You may check as many descriptions as you feel accurately reflect your present state.

surprised

satisfied

annoyed

frightened

interested

confused

happy

sad

afraid

hostile

nervous

angry

anxious

11. Are you experiencing any other physiological sensations? Yes No

If yes, please describe

12. Are you experiencing any other emotional sensations? Yes No

If yes, please describe